

1. INTRODUCTION

- 1.1 Bryn Aggregates Ltd (the “Applicant”) is applying for permission to provide a kickabout pitch for Gelligaer Football Club, a circular walkway for local residents and the extension of the existing quarry for extraction of Pennant sandstone. A screening bund is proposed to be constructed prior to extraction within the extension area, with additional planting of the bund to be undertaken in the next available planting season. The proposals are based at Gelliargwellt Farm (the “Site”). The proposed works will include a new drainage system and settlement ponds, landscape bunds and associated works (the “Development”). Located within the administrative area of Caerphilly County Borough Council (CCBC), the Site has an area of circa 21 hectares (ha) and is shown on Figure 1.1 in Volume 1 of this Environmental Statement (ES). A full description of the Site and Development is provided in Chapter 3 of this ES.

ES Structure

- 1.2 This ES comprises 13 chapters and is supported by figures (located at the back of each chapter within Volume 1) and technical appendices (within a separate Volume 2). A Non-technical Summary (NTS) of the full ES is provided as a separate standalone document. Table 1.2 sets out the structure of the ES.

Table 1.2 ES Structure

Volume 1 – Main Text & Figures		
Chapter No.	Chapter Title	Description
1	Introduction	Introduction to the ES, EIA requirements, details of project team, ES organisation and availability.
2	EIA Methodology	Methods used to prepare each chapter, description of ES structure and content, generic significance criteria, scoping and consultation.
3	Site and Development Description	Site description and details of the Development. Summary of effects with respect to climate change, energy and sustainability.
4	Alternatives and Design Evolution	Outline of the main alternatives considered by the Applicant.
5	Development Methodology and Phasing	Outlines the development methodology and phasing.
6	Landscape and Visual Effects	Assessment of the effects of the development on landscape and visual amenity.
7	Biodiversity	Assessment of the effects relating to biodiversity at the site.
8	Noise	Assessment of the effects of the development relating to noise.
9	Water Resources	Assessment of effects of the Development relating to water resources.
10	Human Health	Assessment of the effects of the development on human health.
11	Blasting	Assessment of the effects of the development relating to blasting.
12	Air Quality	Assessment of the effects of the development in relation to air quality.
13	Summary and Residual Effects	Summary of the residual and interactive effects of the Development.
Volume 2	Technical Appendices	Technical data and reports to support the chapters in Volume 1.

Standalone Document	Non-Technical Summary	Summary of the ES in non-technical language.
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Environmental Statement Availability

- 1.3 The ES is available on: <https://publicaccess.caerphilly.gov.uk/PublicAccess/>.
- 1.4 Comments on the planning application can be either made via the Council's website or can be forwarded to the Planning Division at the following address
- Planning Division, Penallta House, Tredomen Park, Ystrad Mynach, Hengoed CF82 7PG
 - planning@caerphilly.gov.uk
- 1.5 The ES may be purchased in volumes, the costs for which are set out below:
- Non-Technical Summary (NTS) - £15
 - Volume 1: ES Main Text & Figures - £150
 - Volume 2: ES Appendices - £250
 - Full copy (Volumes 1 and 2 with NTS) of the ES on CD - £15
- 1.6 For copies of any of the above please contact Highlight Planning:
- Tel: 07771 649 612
 - Email: joe@highlightplanning.co.uk

2. EIA METHODOLOGY

Introduction

- 2.1 This chapter sets out the methodology used to prepare each chapter of the ES and describes its structure and content. In particular, it sets out the process of identifying and assessing the likely significant effects of the Development on the environment.

Scoping

- 2.2 The Development forms a resubmission of an earlier application which was the subject of a scoping exercise to identify the likely significant effects on the environment that may arise from the Development. The results of the scoping exercise previously undertaken identified that the following subject areas should be included in the ES:
- Landscape and Visual Effects;
 - Biodiversity;
 - Noise;
 - Water Resources;
 - Human Health;
 - Blasting; and
 - Air Quality.

Public Consultation

- 2.3 Pre – Application Consultation and public consultation is being undertaken in the preparation of the planning application.
- 2.4 Further details in relation to the public consultation exercise undertaken for the Development are provided within the Pre-Application Consultation (PAC) document submitted separately in support of the planning application.
- 2.5 Pre-application service has also been sought from the Council's Officers to inform the proposals.

Cumulative Effects

- 2.6 The ES considers the potential for likely significant cumulative effects on the environment.
- 2.7 Two schemes have been identified that could have the potential to lead to likely significant cumulative effects on the environment. Table 2.6 provides details and the location of the schemes.

Table 2.6: Cumulative Schemes

Scheme Name and Application Number	Description	Planning Status	Approximate distance from the Site
Gelliargwellt Uchaf Farm, Gelligaer Road, Gelligaer, Hengoed, CF82 8FY (Ref: 22/0567/FULL)	Conduct engineering works to provide site drainage, an enhanced landscape bund and areas of hardstanding along with landscaping and associated works for the more efficient storage of recyclable waste	Planning permission granted	Approximately 600m south west of the Site.
Twyn Hywel Energy Park Land North-West Of Caerphilly (Ref: 23/0427/DNS)	Construct and operate up to 14 wind turbines and associated infrastructure including: hardstanding areas to include turbine foundations, crane hardstanding and laydown/storage area with associated micro-siting allowances; electrical substation and control building with underground power cables; new access route connecting onto the A472; on-site access tracks, with pipeline and watercourse crossings; borrow pit(s); anemometer mast; temporary construction and storage compound with associated lay down areas near to the Site entrance; Habitat Management Area; and off-site works to facilitate the movement of abnormal loads such as the construction of over-run areas and temporary modifications to street furniture	Undetermined	Approximately 2,300m south of the site

3. SITE AND DEVELOPMENT DESCRIPTION

Site Context

- 3.1 The Site (refer to Figure 1.1 in Volume 1 of this ES), is located within the administrative boundary of Caerphilly County Borough Council (CCBC). The existing Bryn Quarry sits in close proximity to Gelliargwellt Uchaf Farm. The quarry supplies high quality aggregate products to meet demand across the UK.
- 3.2 The Site is located in between the villages of Nelson and Gelligaer, and in close proximity to Llancaich Fawr Manor. The Site is bounded by agricultural land and Parc Penallta Country Park (which comprises an area of public open space and woodland) to the south. Penybryn lies to the east of the Site, and contains several residential properties, local shops, and Calvary Evangelical Church Penybryn. In addition, Penallta Industrial Estate is located further to the east, with the Nant Cylla watercourse, the larger settlements of Penpedairheol and Hengoed to the north east and south east, respectively.
- 3.3 Gelligaer Road is located to the west of the Site, which connects Gelligaer and the B4255 together. Pengam Railway Line is located roughly 3km to the east of the Site, providing regular trains to Cardiff and other areas in South Wales.
- 3.4 The land use in the immediate vicinity of the Site is predominantly agricultural and rural in nature. The Site is not subject to any statutory ecology or landscape designations, but the Waun Rydd Site of Importance for Nature Conservation (SINC) is located in the north of the site and borders the southern edge of Gelligaer. Nelson Bog Site of Special Scientific Interest (SSSI) is 350m located to the south of the Site. Coed Gelliau'r – Gwellt SINC is located approximately 550m to the north west of the Site and comprises ancient woodland.
- 3.5 The Rhymney Valley Ridgeway Walk Public Right of Way (PRoW) lies to the south of the Site runs west to east.
- 3.6 According to the Welsh Government's Lleⁱ Map, there are two Grade II Listed Buildings roughly 200m west of the Site, being Gelliargwellt Uchaf Farmhouse (Record Number: 25536) and Bee-boles at Gelliargwellt Uchaf (Record Number: 25537). There are also two churches in Gelligaer designated as Grade II Listed Buildings. In addition, the Lle Map shows a cluster of Listed Buildings to the south of Penallta Industrial Estate.

- 3.7 The Lle Map shows two Scheduled Monuments (Gelligaer Roman Site: GM016 and Twyn Castell: GM121) to the north of Gelligaer and its Listed Buildings (Church of St Catwg: 25526 and Horeb Baptist Church: 21429).
- 3.8 According to Natural Resources Wales (NRW) Development Advice Map, the Site is wholly located within Flood Zone A, which is '*considered to be at little or no risk of fluvial or coastal /tidal flooding*'. This Development Advice Map is used alongside Planning Policy Wales (PPW) and Technical Advice Note (TAN) 15 to direct new development with respect to flood risk.
- 3.9 Directly adjacent to the western boundary of the Site, part of the recycling site has been designated as a 'historic landfill site'.
- 3.10 According to the Welsh Government Lle Map, the Site is not located within a Source Protection Zone (SPZ).
- 3.11 The Site does not fall within an Air Quality Management Area (AQMA).

Site Description

- 3.12 The Site is centred at National Grid Reference (NGR) ST130963 and is approximately 20.88 hectares (ha) in area. Please see Figure 1.1 in this ES.
- 3.13 The Site comprises agricultural land set within Gelliargwellt Farm and a partly constructed bund associated with the operational quarry. Vegetation within the Site includes field boundaries, scrubland with some hedgerows and trees.

Description of Development

- 3.14 The Development comprises:

"Proposed sports pitch and circular walkway footpaths along with the proposed extension to existing quarry operations including drainage, landscape bunds and associated works."

- 3.15 The Development seeks to provide a kickabout pitch for Gelligaer Football Club, a circular walkway for local residents and the extension of the existing quarry for extraction of Pennant sandstone. A screening bund is proposed to be constructed prior to extraction within the extension area, with additional planting of the bund to be undertaken in the next available planting season.
- 3.16 No buildings are proposed as part of the Development. The proposed extension will utilise the existing access arrangements to the Site. The existing surface water attenuation management system will be upgraded with new settling lagoons before connecting into the adjacent watercourse. Further information on the upgraded water attenuation management system can be found within

the Water Resources Assessment.

- 3.17 The proposed extension area (extraction and operations) will take up to 19 years and, at its furthest point, extend the quarry 131m northwards and eastwards. The operational area will be located 301m away from sensitive land uses and therefore in excess of the 200m buffer zone set in Minerals Technical Advice Note (MTAN) 1. In addition, a landscape bund will be constructed around the Site to provide screening to the south eastern boundary. The earth bund has been granted planning permission (17/0973/FULL) and is currently under construction.
- 3.18 The restoration of the Site will be progressed in parallel throughout the life of the mineral operations whilst the final restoration scheme seeks to restore the land to agricultural use. The restoration works will be completed approximately 6 years following the completion of the mineral extraction.

4. ALTERNATIVES & DESIGN EVOLUTION

The Alternative Options

The 'do nothing' Alternative

- 4.1 Under the 'do nothing' scenario, the Development would not be progressed. In this situation, the existing configuration of the Site would not make the most efficient use of the land and the mineral resource (which comprises High Specification Aggregate of national need) would not be able to be utilised. In addition, the beneficial effects outlined in this ES relating to the Development would not occur.

Consideration of Alternative Design/Layout for the Development

- 4.2 The physical constraints and opportunities of the Site have been critical in developing a proposal. Aspirations for the Development are to:
- Deliver green infrastructure and community benefits through enhancements to the natural environment and providing recreational and educational opportunities for the local community; and
 - Maximise the extraction of High Specification Aggregate whilst ensuring that environmental and residential amenity are safeguarded;
- 4.3 To achieve the stated objectives, the key design principles of the Development are:
- The area of quarrying will stay entirely within the Mineral Buffer Zone allocated within the CCBC LDP;
 - The area of quarrying will avoid the Green Wedge designation allocated within the CCBC LDP;
 - Inclusion of a landscape bund to surround the quarry on its northern and eastern side to minimise landscape, noise and dust impacts. The northern bund (to Gelligaer) has been approved by CCBC's

Planning Committee (Ref: 17/0973/FULL) and is already under construction. Improvements to the eastern bund (to Pen y Bryn) will provide additional screening, tree planting and wildlife enhancement areas and a gentler land profile;

- Preservation and enhancement of biodiversity including the creation of peat cells as a part of the landscape bund and re-wetting of parts of the Waun Rydd Site of Importance for Nature Conservation;
- Provision of a kickabout pitch for Gelligaer Football Club, a circular walkway with biodiversity interpretive panels and a viewpoint towards the quarry;
- Vehicle movements to remain at the same level as the existing quarry; and
- Hours of operation to remain the same as the existing quarry.

Design Evolution

4.4 The main evolution in the design has included:

- A reduction in the area of quarrying to ensure that it remains in line with the Mineral Buffer Zone allocated within the CCBC LDP;
- A reduction in the area of quarrying to ensure that it avoids the Green Wedge allocated within the CCBC LDP;
- Further landscaping and vegetation planting being incorporated on the bund;
- Further provision of ecological enhancement areas – including proposed rough grassland providing ecological connectivity and woodland buffering and proposed aquatic marginal planting to attenuation ponds;
- Provision of a kickabout football pitch, circular walkway and educational resources.

5. DEVELOPMENT METHODOLOGY & PHASING

Introduction

5.1 This chapter describes the anticipated development methodology and phasing of the Development. Consideration of likely significant effects on the environment that may arise during the excavation phases, and any necessary mitigation measures, are provided within the respective technical chapters of this ES.

Anticipated Programme

5.2 Extraction is anticipated to commence in 2025, subject to gaining planning permission, and span approximately 19 years. Overall, the excavation and restoration processes are expected to be

completed by 2050.

Access Road

- 5.3 Access to the quarry will continue to be via the existing priority junction with Gelligaer Road, as this access is established and has a good safety record. Corun Consulting Engineers' Transport Assessment confirms that "the access also meets the visibility requirements of TAN18 based on observed 85th percentile speed data".

Excavation

- 5.4 Extraction is proposed to take place at a rate that accords with the planning conditions which control the transport movements associated with the existing quarry. Consequently, the development will not alter or increase the type or quantum of material currently being imported or exported to/from the quarry or permitted to be imported/exported under the existing quarry consent.

Drainage works

- 5.5 Hydrogeo were commissioned by Bryn Aggregates to undertake an assessment of the potential impacts on water resources associated with the extraction of minerals in the proposed extension area to Bryn Quarry. Following a water resources impact assessment, and to ensure consistency with the current operations, surface water in the extraction area will continue (during the operation of the quarry) to flow to the attenuation and settlement lagoons and be discharged into the adjacent watercourse. However, it is proposed that the lagoons will be upgraded to accommodate the additional run off waters. Further detail is included in Chapter9 of this ES.

Landscaping

- 5.6 It is considered that the Development will respect the pattern of isolated settlements, small copses, and irregular fields within the Special Landscape Area (SLA), which is in line with the existing planning permission. Landscaping work will involve tree and hedgerow planting, contributing to the quality of the SLA and Green Wedge land. Planting will consist of small stands of trees and hedgerows enclosing areas of pasture and, on steeper sections, native species shrub blocks alternating with more open areas with wildflower swards and scattered small trees.
- 5.7 A further primary measure includes the siting and design of the proposed perimeter screening mounds in locations which fit within the existing structure and pattern of the local landscape, wherever practicable.

Construction Phase Vehicle Movements

- 5.8 Construction vehicle movements will be managed to minimise the impact on the local road network. The HGV movements would be dispersed across the working day outside of the AM and PM peak periods.

Construction Traffic Access and Management

- 5.9 Non-HGV traffic associated with the development has been distributed according to the existing vehicular turning proportions at each junction.

Controls to Protect the Environment

- 5.10 The environmental controls (or mitigation measures) to eliminate, reduce or offset any potential significant effects on the environment during the excavation phases are identified below.
- 5.11 The first control includes landscaping work, which will involve tree and hedgerow planting, contributing to the quality of the SLA and Green Wedge land. Planting will consist of small stands of trees and hedgerows enclosing areas of pasture and, on steeper sections, native species shrub blocks alternating with more open areas with wildflower swards and scattered small trees.
- 5.12 A further control includes the siting and design of the proposed perimeter screening mounds in locations which fit within the existing structure and pattern of the local landscape, wherever practicable.
- 5.13 Effective dust management at surface mineral operations will require integrated action on three aspects of control including the following:
- Design and engineering control to minimise impacts from each phase of the proposed quarry extension and restoration programme including: the location of haul roads and other dusty activities away from sensitive receptors; the selection and use of appropriate plant; and dust suppression systems;
 - Effective process supervision, to ensure that staff are adequately trained and aware of their environmental responsibilities; and
 - Effective monitoring and review to ensure that any shortcomings in the quarry operations are quickly identified and resolved.

Kickabout Pitch and Circular Paths

- 5.14 The proposed kickabout pitch and circular paths will be constructed in a sensitive manner reflective of their location as part of a Site of Importance for Nature Conservation. The method of working will be agreed with CCBC through an appropriate condition and documented within a Construction Environmental Management Plan.

Hours of Work

- 5.15 Working hours on the Site will be agreed with CCBC through an appropriate condition. However, it is likely that the standard hours of work will be adhered to. These are:
- Monday to Friday, 8am to 6pm;
 - Saturday, 8am to 1pm; and
 - Sunday and Bank Holidays, no noisy activities on-site.
- 5.16 It is proposed, as is the case with the existing planning permission at the site (19/0276/NCC), that utility providers and their contractors have the ability to collect aggregates from the quarry outside of the stated operational hours for a maximum of 60 occurrences per yearly quarter (3-month calendar period).
- 5.17 All work outside these hours will be subject to prior agreement of, and/or reasonable notice to, CCBC as appropriate.

Response to Complaints

- 5.18 Any complaints will be logged on-site and, where necessary, reported to the relevant individual within CCBC, as appropriate, (and vice versa) as soon as practicable.

Prior Notice

- 5.19 In the event of unusual activities or events, these will be notified to CCBC, as appropriate, and relevant property owners or occupiers in advance. The relevant activities will be agreed with CCBC, as appropriate, once the detailed programme of excavation and restoration is defined.

6. LANDSCAPE AND VISUAL

- 6.1 The assessment of the existing (baseline) condition of the landscape has taken account of the current published landscape character information and provided appropriate commentary on the evolving state of the receiving landscape, where such information has not kept pace with the changes in both the local and the wider landscape since that information was last reviewed by its providers.
- 6.2 The Site lies within a formerly agricultural area dominated by livestock farming. This agricultural area is bounded on the north by established high-density residential development at the edges of Gelligaer and by further high-density residential development in Penybryn to the east. The Waun Rydd SINC separates Gelligaer from the northern earth bunding. To the west and south-west of the Gelliargwellt Uchaf Farm, the land use is dominated by waste management, treatment, and recycling facilities along with associated infrastructure. The active sandstone quarry workings lie to the south, at the edge of

the shallow valley between Nelson and Penallta.

- 6.3 This is a medium scale landscape. The original irregular field pattern has been locally modified by boundary treatment changes as part of agricultural management, and the changes in land use to accommodate quarrying and waste management and recycling operations. Small stands of broadleaved woodland and scrub intersperse grassland fields, of varying sizes, which are bounded by a mixture of mature hedgerows with occasional trees, drystone walls and post and wire fences, some flanking drainage ditches. The Site lies within the lowlands landscape type identified by CCBC in the description of the Mynydd Eglwysilan SLA, but the Site and its vicinity are not representative of the characteristics used to justify the SLA designation; In particular it does not exhibit the 'attractive rolling lowland landscape' attributes referred to in the data.
- 6.4 Even though there are long views out over the land to the south and south-west, these are substantially marred by the nearby presence of frequent overhead high-voltage electricity lines and their supporting steel lattice towers and wood poles. Although lying partly within an area of land designated as Green Wedge in the adopted Local Development Plan, the Site and its vicinity is not an inherently attractive landscape; and, in any event, Green Wedge is a planning designation intended to prevent the coalescence of settlements and conserve openness, not a policy measure intended to conserve an area of inherently high-value landscape. It is a landscape which is moderately sensitive to the type of Development proposed.
- 6.5 The assessment of landscape and visual effects arising from the proposed quarry extension has been based upon information provided by particular specialist disciplines within the project team, notably engineering and ecology. The nature and extent of the proposed extension to the stone quarrying operations is such that there will be a relatively concentrated period which will experience a high degree of local change. This change will result from the extensive preparatory works involved – such as the stripping of topsoil and removal of the upper ground layers (overburden) which lie above the stone deposits – and the completion of perimeter screening mounds, which all effectively comprise *the construction phase* of the works. This phase is followed by a protracted period of effects experienced during the duration of the stone extraction process (*the operational phase*). However, these effects will be much more restricted, in both nature and extent, arising from a sequence of worked areas which are followed closely by related phased restoration works. The great majority of these works will be entirely contained – both physically and visually – within the perimeter screening mounds on which planting will also be establishing. This assessment of landscape and visual effects has addressed in detail both the construction and operational phases of the proposed quarry working.
- 6.6 The findings of the landscape and visual assessment conclude that the few significant effects arising are confined to within a radius of 2km from the edge of the site, and mostly at much

closer range. These effects are mostly predicted to arise from *the construction phase* of the works when the greatest amount of perceived change is expected to occur. The mitigation of landscape and visual effects arising from the proposed quarry extension has been achieved through the creation of extensive perimeter earth mounding, much of which is already consented as part of planning application Reference 17/0973/FULL. These enclosing features will be constructed from materials won from stripping the site to expose the sandstone, as well as incorporating inert by-products arising from the current quarrying and stone processing operations. Following the completion of the earthworks, extensive areas of these mounds will be planted with native species of trees and shrubs which are appropriate to the wider locality. Other landscape features to be created will include extensive areas of excavated peat, which form part of the overburden materials overlying the sandstone, to be conserved by being carefully deposited in defined specially prepared areas (cells) designed to retain the conserved peat with a high water content. Here, they will be allowed to develop their own vegetation, both by natural regeneration and by some introduction of wetland plants. Large areas of marshy grassland will also be created and managed as habitat to encourage the breeding of lapwing, as well as agricultural grassland to be used for cattle grazing by the dairy herd at Gelliargwellt Uchaf Farm. A comprehensive, enhanced package of Green Infrastructure benefits are provided by the Development. Many of these proposed enhancements would be within the Waun Rydd SINC, the majority of which is within the applicant's ownership. Short and long term management measures will be put in place to conserve and enhance the nature conservation value of the SINC. An all-weather circular permissive footpath, with a spur leading off this to a viewpoint on the earth bunds overlooking the quarry, will provide significant public access benefits. The SINC will also provide excellent educational opportunities for outdoor learning within the science and environment curriculum for local schools and an overall improved quality of place.

- 6.7 The implementation of this range of extensive mitigation measures means that the effects remaining after all such measures are taken into account (residual effects) are as set out below.
- 6.8 There would be *no effects* upon the visual setting of the Gelligaer Conservation Area and the Nelson Conservation Area. There will be *no effects* upon the visual setting of Llancaiach Fawr, a Grade I- Listed Building heritage attraction. There will be *negligible adverse* effects on the visual setting of the Grade II-Listed Buildings at Gelliargwellt Uchaf farmhouse.
- 6.9 Most views from the nearby Penallta Country Park will be unaffected by the Development, due to intervening topography and dense woodland cover within the Park. However, there will be some glimpsed views, particularly in winter, of the southern end of the perimeter mound from a few locations, including from the 'Sultan' pit pony sculpture and from 'The Observatory' high point. With time, such views will become progressively more limited, as a result of the continuing development of the intervening tree cover. The magnitude of change in views obtainable

by park users would be, at most, *minor adverse* during construction, resulting in a *moderate-minor* level of effect which would *not be significant*.

- 6.10 Several public footpaths are in the vicinity of the Site. A section of the locally-promoted Rhymney Valley Ridgeway Walk runs along the edge of the Penybryn residential area to the south-east of the Site. Users of this promoted footpath here are classified as *medium* sensitivity receptors. The predicted level of change in their views is assessed as being *moderate adverse*, resulting in a *moderate-minor adverse*, level of effect which would *not be significant*. From another footpath to the west of the Site, existing tree and hedgerow vegetation will screen much of the perimeter mounds. The magnitude of change in views for these local footpath users would be a maximum of *moderate adverse* during construction, with a resultant *moderate-minor adverse* level of effect which *would not be significant*.
- 6.11 It is likely that there will be *no effects* on users of the nearby section of National Cycle Route 47, running along the valley floor to the south of the Site, because of the screening effects of intervening landform and mature woodland and scrub vegetation.
- 6.12 There appear to be no views from the B4254 running east-west some way to the north of the Site, or from the A472 Caerphilly Road to the south. There is likely to be a brief glimpsed view of part of the perimeter screening mounds obtainable from a short section of Penallta Road, where the high-voltage transmission line crosses between Gelligaer and Penybryn. The magnitude of change in the view obtainable by road users would be a maximum of *minor adverse* during construction. The resultant level of effect would be *minor-negligible adverse and not significant*. There would be some glimpses of the perimeter screening mounds obtainable from a few sections of the local residential access road network within nearby areas of Gelligaer and Penybryn. The magnitude of change in views obtainable by these road users would be a maximum of *minor adverse*, during construction. The resultant level of effect would be *minor - negligible adverse and not significant*.
- 6.13 The existing quarry will be excavated progressively in a north-easterly direction behind previously constructed perimeter mounds. The resource will be worked in a series of 'cuts', progressing in a northerly and then westerly direction, beginning at the southern boundary of the Site. The restoration of the Site will be progressed sequentially throughout the life of the quarry operations and be completed some 7 years following completion of the mineral extraction. The completed scheme seeks to restore the land to a combination of broadly agricultural use, together with the incorporation of substantial areas of land which are primarily intended to meet nature conservation and enhanced public access objectives.

Landscape Character

- 6.14 The perimeter screening mounds will have been formed during the construction phase. However, the essential physical relationship between the quarry edge, relatively flat open agricultural land and urban

edge will not be significantly changed. During the operational phase, the mounds will be seeded where laid to permanent grassland and, on some steeper sections, stands of naturalistic woodland and new native-species hedgerows will be planted. The overall magnitude of effects on vegetation arising from the operational phase of the Development are therefore assessed as being *moderate and beneficial* but *not significant*. These features, together with further planting on nearby areas of land in the applicant's ownership, including a belt of native scrub along the northern SINC boundary with Gelligaer, will contribute positively to local landscape character. The proposed landscape framework, encompassing the completed mounds and some adjoining areas of land and connecting hedgerows, will serve to assimilate the Development into its wider surroundings. Consequently, we anticipate that the proposed screening mounds will have only a *minor adverse* effect during the operational phase. Neighbouring urban landscape character areas would be unaffected.

- 6.15 Given the *medium* sensitivity of the local landscape and the *moderate* landscape magnitude of change, the predicted resultant level of effect on the landscape of the Site during the operational phase is considered to be *moderate – minor adverse* and *not significant*. The level of effect of the completed scheme on the landscape beyond the immediate surrounds to the Site would generally be *minor adverse* and therefore *not significant*.

8. NOISE

- 8.1 A noise impact assessment has been undertaken of the Proposed Development. The assessment methodology and results are detailed in full in Hunter Acoustics Noise Impact Assessment report (Ref: 4153/NIA1_Rev4) dated 17th April 2024. This is included in full in Appendix 8.1 in Volume 2 of this ES.
- 8.2 Criteria at the nearest noise sensitive premises (NSPs) have been established based on results of an environmental noise survey and methodology for setting limits outlined in MTAN1ⁱⁱ.
- 8.3 Results of baseline monitoring carried out as part of previous environmental noise impact assessments at the Site in 2010 and 2011 have been used to set limits at nearest noise sensitive receivers. This has now been validated with a further baseline noise survey carried out in 2020.
- 8.4 Noise map modelling of the Development has been carried out to predict noise levels at the nearest NSPs.
- 8.5 Table 8.3 contains a summary of the predicted levels of the Proposed Development at the nearest NSPs and shows that limits set in accordance with MTAN1 are met at all NSPs with exception of Green Acres Bungalow (which is under the control of the Applicant). Therefore, even though the Site is located within buffer zones, it is considered that the Development is acceptable given that no likely significant effects are anticipated and the predicted noise levels remain in line with limits set out in MTAN1.

8.6 Mitigation measures include:

- Inclusion of a bund along the entire north-eastern and south-eastern boundaries to remove line of sight from nearest noise sensitive premises to quarry operations is proposed (The earth bund has been granted planning permission (17/0973/FULL) and is currently under construction);
- Careful positioning of the crusher and screener plant is required to maximise acoustic screening from the quarry rock face. Refer to diagrams 4153/D1-D6 in the full Noise Impact Assessment report which show the plant located at the southern-most corner of the quarry; and
- Control of noise at source (minimise drop heights, plant maintenance, haul road maintenance etc).

8.7 Cumulative effects have been considered and are not indicated to be significant.

9. WATER RESOURCES

- 9.1 The assessment covers the construction/preparation and operational stages of the Development and identifies aspects that may affect the existing baseline conditions at the Site. Where likely significant effects have been identified, their significance has been assessed and measures incorporated into the design to mitigate their effects.
- 9.2 The majority of Site is located within the inferred Nelson Bog catchment area, with the surface water run-off and incidental rainfall across the site either enters the quarry void and is ultimately discharge across the Nelson Bog SSSI; or is collected by water features which enter the Nelson Bog SSSI.
- 9.3 Incidental rainfall over the screening bund is expected to primarily shed northwards into the SINC, eventually collecting in surface waters and ultimately discharging into the Nant Cylla. The screening bund is founded upon the glacial till clay and is expected to prohibit waters held within the peat deposits from migrating southwards away from the SINC.
- 9.4 Groundwater, level and spring flow monitoring on a monthly basis, as part of the monitoring programme is recommended as a mitigation measure, and will allow the identification of any significant adverse effects of the dewatering activities on the hydraulic gradient beneath the Site.
- 9.5 Re-designing the channels and ponds will ensure that all waters pumped from the extraction area are sent through the water management system and ensure their ability to accommodate the additional hydrological loading from the Development and will increase the settlement of suspended solids before discharge into Stream 2 and ultimately the Nelson Bog SSSI.
- 9.6 Surface Water quality monitoring of multiple points across the Site on a monthly basis, as part of

the monitoring programme recommended as a mitigation measure, will also allow for the identification of any significant suspended solids loading events and their origin within the dewatering operation.

- 9.7 Therefore, the potential residual effect from the creased risk of contamination to surface waters is believed to be Minor Adverse.

10. POPULATION AND HUMAN HEALTH

- 10.1 An assessment has been made of the likely significant effects of the Development on the environment with respect to population and human health. The assessment has considered the development/operational phases on employment, primary education, air quality, environmental and sustainable factors and wider health effects. The baseline conditions have been established using published statistics.
- 10.2 The Development seeks to extend the existing quarry to extract additional Pennant sandstone. Therefore, the Development will generate a minor beneficial effect (both directly and indirectly) with effects on local employment and the resilience of the local economy through supporting road repairs and building.
- 10.3 The wider human health effects of the Development have been taken into consideration through the Development design, best practice measures and mitigation measures and are therefore are considered to be negligible.
- 10.4 A cumulative assessment has identified negligible effects on the population and human health of the closest sensitive receptors, given the nature and location of the Development.

11. BLAST VIBRATION

- 11.1 An assessment of blast vibration has been undertaken of the Proposed Development. The assessment methodology and results are detailed in full in Hunter Acoustics report 5100/VIB1_Rev1 7th February 2019 and 5100/VIB2 dated 2nd June 2020. These are included in full in Appendix 11.1 and 11.2.
- 11.2 Criteria at the nearest receptors have been established based on the blast vibration planning condition for the current operations.
- 11.3 Table 8.2 gives results of a blast at the existing quarry measured at approximately 300m away, in line with the nearest receptors to the proposed quarry extension.

- 11.4 Results of the monitoring at 300m remain below the limits set out in the planning condition (which are more onerous than those in MTAN1ⁱⁱ). Therefore, even though the Site is entirely within buffer zones, it is considered that the Development is acceptable given that no likely significant effects are anticipated and the vibration levels remain below those set in the existing planning condition.
- 11.5 Mitigation measures from BS 5228-2:2009 are referenced and the blast team (EPC-UK) have advised that they continue to follow the best industry practice and always conform to the mines and quarries regulations 1999.
- 11.6 Cumulative effects have been considered and are not indicated to be significant. Therefore, it is considered that the cumulative effects of the Development are negligible.
- 11.7 There are no documented significance criteria for the assessment of blast vibration from mineral workings at residential receivers. Therefore, our assessment compares blast vibration against limits set in accordance with the existing planning conditions and MTAN1.

12 AIR QUALITY AND DUST

- 12.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of Air Quality. This chapter considers the air quality impacts of the proposed development on residents living in the vicinity. This considers the potential adverse health impacts resulting from exposure to airborne particles (PM₁₀ and PM_{2.5}), taking account of the proposed phasing and the intensity of working. The assessment also considers potential loss of amenity arising from dust deposition, and on designated ecological sites.
- 12.2 The Development will bring the excavations to within just over 300m of the nearest residential areas with the potential for significant adverse impacts due to emissions of dust particles from the quarry operations. The main sources of dust from the quarry are from the crushing and screening plant, the movement of vehicles over unsurfaced roadways and the transfer and loadout of materials, and the deposit and spreading out of materials used to restore the site. Vehicle exhaust emissions from HGVs and off-road mobile plant will also contribute to local air pollution. The main source of dust particles is likely to be from the unsurfaced haul roads within the quarry. The results from two monitoring campaigns at the existing quarry for PM₁₀ and PM_{2.5} conducted by independent specialist contractors indicate that the existing quarry is not a significant source of air pollution.
- 12.3 This assessment is intended to identify and assess relevant human health impacts from moving the proposed operations closer to residential receptors. Air quality impacts have been

assessed against Welsh air quality Limit Values for PM₁₀ and PM_{2.5}. Impacts from the proposed operations have been predicted using ADMS, an advanced dispersion model widely used in the UK for environmental impact assessment. Dispersion conditions take account of local topographical conditions, 5 years of hourly sequential meteorological data from St Athans and site-specific meteorological data. Emissions from the process are based on emission factors published by the US Environmental Protection Agency. The aim of this assessment is to consider the significance of the change in particle exposure likely to arise as a consequence of the proposed quarry extension. The predicted concentrations of particles are intended to provide a general indication of the likely impact. Impacts have been assessed in accordance with the non-statutory professional Guidance published by the IAQM. The assessment considers three Scenarios based on the worst-case, where operations are closest to the nearest human receptors and Nelson Bog SSSI. Baseline levels of PM₁₀ and PM_{2.5} are based on measured levels from the monitoring near the quarry.

Worst Case Predicted Air Pollution

Pollutant	Baseline S1	Scheme S2	Change	Significance
PM ₁₀	15.7	17.6	5%	Negligible
PM _{2.5}	7.4	7.7	1%	Negligible

N.B. Units = ug/m³ annual mean (no mitigation)

- 12.4 The worst-case levels of particle air pollution are summarised in the Table above. Baseline levels of PM₁₀ and PM_{2.5} are predicted to comply with the annual mean Limit Values at all sensitive receptors considered within the study area. The predicted increase in the annual mean levels of PM₁₀ and PM_{2.5} as a consequence of the proposed quarry extension is of Negligible significance at all sensitive receptors considered within the study area in terms of the IAQM/EPUK assessment framework. Impacts on the adjacent Nelson Bog SSSI are predicted to be Insignificant.

13 SUMMARY AND RESIDUAL EFFECTS

- 13.1 In summary, the Development will result in the following beneficial residual effects:

- The Site will be restored to a gentle naturalistic contours and the land to a broadly agricultural use with the incorporation of land intended to meet nature conservation objectives.
- A minor beneficial effect resulting from habitat creation and long term management (for peatland habitats, pond and ditches, reptiles, invertebrates and wading birds).
- Moderate beneficial effects resulting from the delivery of sports, leisure and recreational community facilities in the form of a football pitch and circular walkway.
- Benefits to the local economy, from employment generation during both the extraction and

operation period of the Development.

13.2 In summary, the Development will result in the following adverse residual effects:

- Some minor effects on landscape and visual during the operational phases of the Development.
- Minor adverse effects on water resources during extraction and operational phases.



KEY

Application area ≈ 208,800m²

Screening bund

Access track

Quarry extent

Topsoil storage area

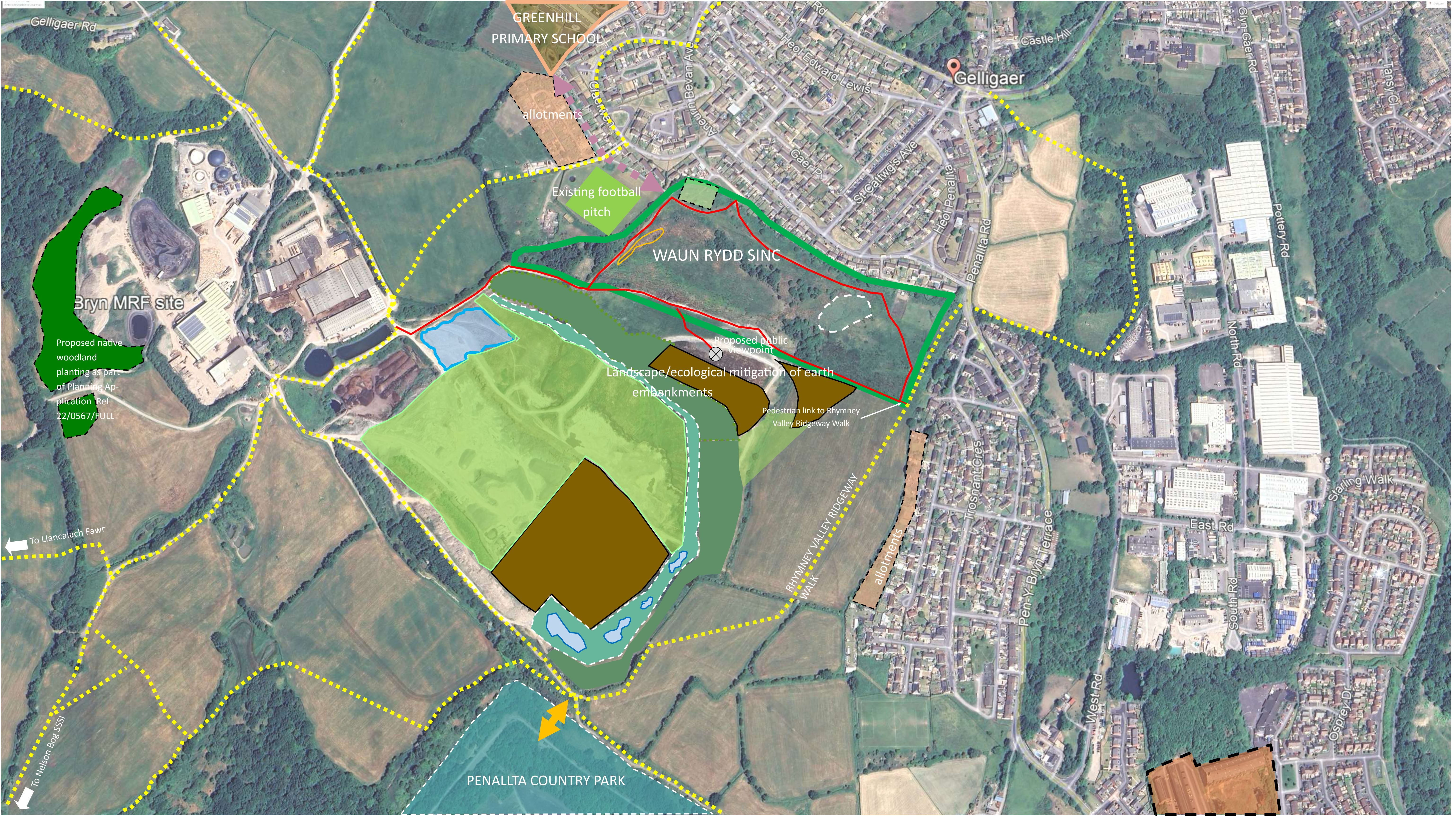
Waun Rydd SINC

LDP Green Wedge SI 1.12

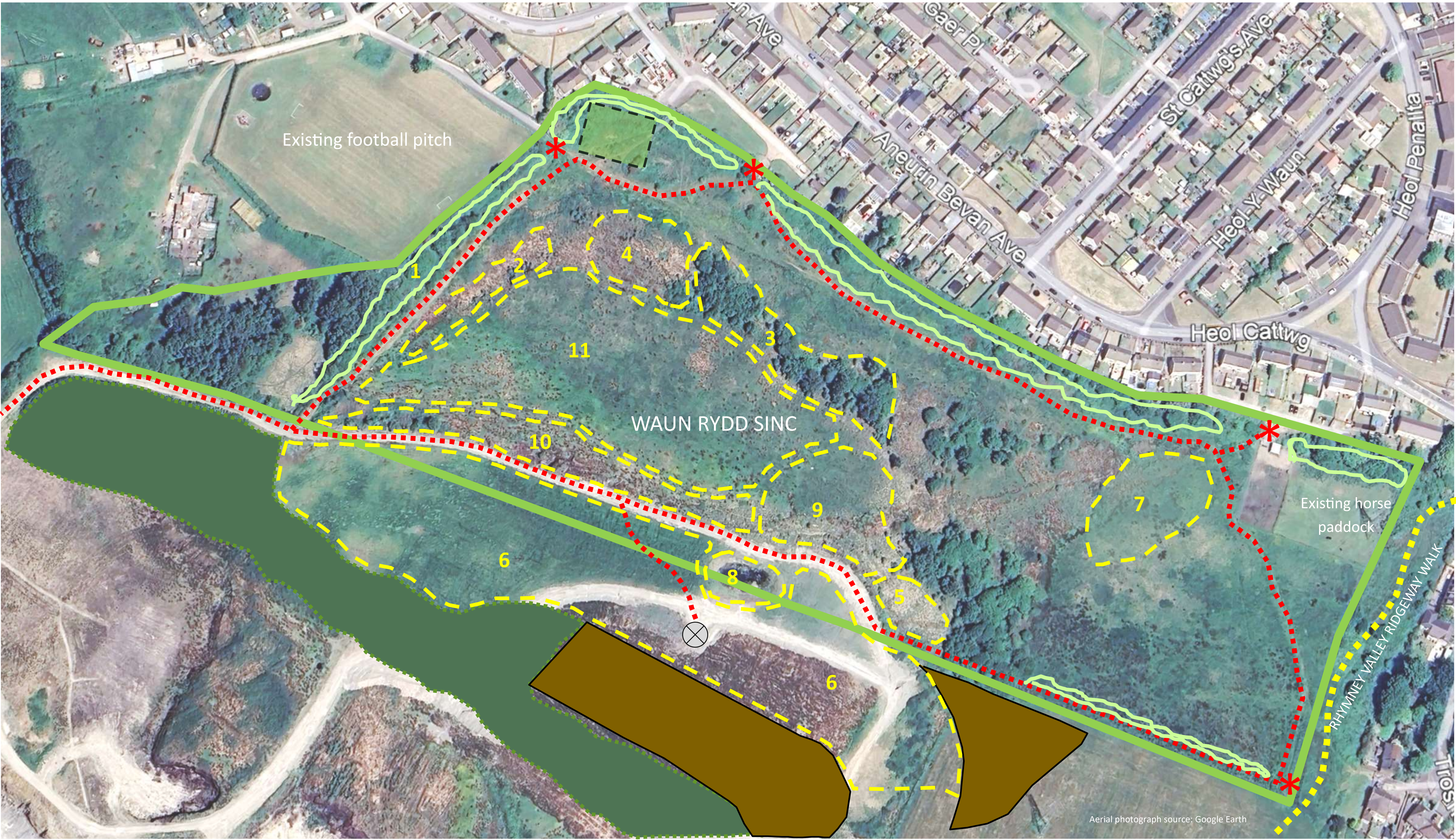
Approximate PROW

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REV'N	DATE	AMENDMENT
J P C E Limited		
CLIENT		JOHN PERKINS
BRYN AGGREGATES LTD		CONSULTING ENGINEER
GELLIARGWELT FARM		Bronhaul,
GELLIGAER ROAD		Abernant Road
GELLIGAER		Aberdare CF44 0PY
CAERPHILLY		Tel 07889 644649
CF82 8PY		e-mail jpce@hotmail.co.uk
DRAWING TITLE & SCHEME		
PROPOSED EXTENSION TO TO EXISTING QUARRY AT GELLIARGWELT FARM, GELLIGAER CF82 8FY		
LOCATION PLAN		
Drawing Number JPCE-BAL-2024-NQE-001		Drawn By: J PERKINS
Date: January 2024	Scale 1:5000@A3	Checked:



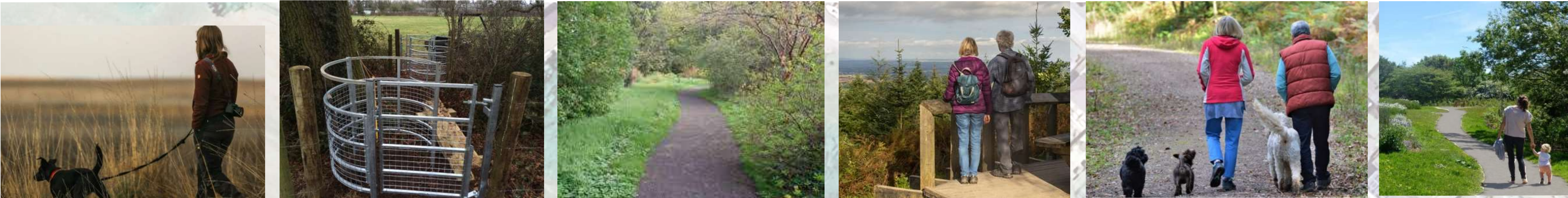
Aerial photograph source: Google Earth



OUTLINE MANAGEMENT OPTIONS

Generally: allow for effective site-wide litter control, safety fence maintenance and planting aftercare. Maintain all permissive paths with a loose surface to dust

Option	Management Description	Option	Management Description
1	Reinforce scrub line on bank with native species shrubs	7	Area of proposed increase in marshy grassland
2	Control scrub (options include grubbing-up, spot herbicide use, cyclical cutting)	8	Agree and set limits to <i>Typha</i> coverage of pond – probably a maximum of 40-50%?
3	As per Option 2, but thin scrub line to retain varied structure and still provide visual filtering in views from Gelligaer towards Site. Manage on rotation	9	Maintain drainage check dams and keep the options for more dams under review; the aim is to spread the overall wetness. Consider inoculation of impounded areas above check dams with appropriate sphagnum and other moss species of local provenance
4	Largely bare peat to be managed as part of Option 3 above	10	Consider inoculation of exposed peat with appropriate sphagnum and other moss species
5	Eradicate encroaching scrub	11	Allow the spread of <i>Juncus</i> to take place.
6	Bring planted areas of bunds into management. Potential for future access. Develop as open-canopy woodland with scalloped edges and glades of damp/rough grassland. Over time diversify the woody species to include downy birch, grey willow and clumps of oak along the edges. The aim here will be to develop habitat to complement the SINC and extend the overall SINC management unit.		



OPPORTUNITIES FOR PUBLIC ACCESS AND EXERCISE: Proposed development will provide circular permissive footpath for public access around the perimeter of the Waun Rydd SINC. This will be all weather with a loose quarry dust finish. There would also be pedestrian links to the existing wider public footpath network in the area. A public viewpoint will be provided overlooking the quarry operations but also allowing extensive panoramic views across the surrounding countryside and settlements



OUTDOOR EDUCATIONAL OPPORTUNITIES: The SINC's proven nature conservation value would be enhanced by various management measures providing valuable outdoor educational opportunities for local schools in relation to the science and environment curriculum in relation to climate change and understanding wildlife habitats. The SINC's peat resource is of particular value in teaching the issues associated with climate change and how these might be combatted.



TEACHING AND INFORMATION RESOURCES: Smart phone download points, posters and information panels can all be used to extend the teaching and educational value of the SINC, not just for schools but other local users and visitors.



EXISTING WAUN RYDD HABITATS: Photographs illustrate elements of the range of existing habitats in the SINC. These include areas of peat being vegetated by substantial areas of soft rush and then drier areas where scrub has developed. Informal public access has led to desire lines of trampled grass and it is intended to use these disturbed areas to located the proposed circular permissive public footpath

BRYN QUARRY EXTENSION REAPPLICATION

Indicative Green Infrastructure Masterplan

Sheet 4: Precedent images for outdoor learning and public access opportunities for Waun Rydd SINC

May 2024

Prepared by McQuitty Landscape Design and BSG Ecology



WOODLAND PLANTING ON EARTH BUNDS: Native tree and shrub planting will be undertaken on the restored profiles of the earth bunding will be formed around the quarry extension area. Species such as black alder with pendunculate and sessile oak will provide much of the structure and understorey shrubs will add diversity.. In time, as the woodland establishes, glades will be formed and there will be longer term opportunities for public access.



NATIVE SCRUB, HEDGEROWS AND HIBERNACULA: There are various opportunities throughout the Site to plant up areas of native scrub and hedgerows providing increased ecological connectivity. The shrub species will encourage pollinators. Hibernacula will be created to encourage reptiles such as slowworms.



SCRAPES AND POOLS: It is intended to create a series of scrapes which will then provide the opportunities for ephemeral pools vegetated with drier and wetter variants of marshy grassland. These habitats will be attractive to bird species such as snipe, lapwing and little ringed plover.



PONDS AND DITCHES: As part of the mitigation proposals, a series of ponds and ditches will be created which will be become habitats for a range of flora and fauna. While plants such as soft rush will colonise naturally, marginal planting of native species such as flag iris and marsh marigold will add to the biological diversity. Amphibians, including great crested newts, already with a limited presence on the site, will be protected and their habitat enhanced. Insect species such as damselfly will be encouraged by the habitat mix of ponds, ditches and associated vegetation.



PEAT CELL REVEGETATION: Examples of how peat cells which have been created as part of restoration of Aberpergwm Quarry Site in the Neath Valley are becoming well vegetated with rush after only a few years . Sphagnum moss is also being successfully inoculated into the cells and becoming established. It is intended to use similar techniques in the restoration of the proposed peat cells in the restored former quarry, and also within appropriate parts of the SINC