

LANDSCAPE AND VISUAL APPRAISAL PROPOSED PLASTICS RECYCLING & PROCESSING FACILITY

GOAT MILL ROAD | MERTHYR TYDFIL | CF48 3TD



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REPORT NUMBER

JAY1001/LVIA

REPORT STATUS

Final

REVISION

0

REPORT DATE

March 2022

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DRAWING SCHEDULE

Drawing Number	Drawing Title	Scale
JAY1000/05/01	Site Location (2.5km Study Area)	1:50000
JAY1000/05/02	Landscape and Visual Context (2.5km Study Area)	1:50000
JAY1000/05/03	Landscape Character LANDMAP Visual Sensory (2.5km Study Area)	1:50000
JAY1000/05/04	Visual Receptors (2.5km)	1:20000
JAY1000/05/05	ZTV (No Visual Barriers)	1:50000
JAY1000/05/06	ZTV (Visual Barriers)	1:50000
JAY1001/05/21	Viewpoint 1 - Photomontage	NTS
JAY1001/05/22	Viewpoint 2 – Photomontage	NTS
JAY1001/05/23	Viewpoint 3 - Photomontage	NTS
JAY1001/05/24	Viewpoint 4 – Photomontage	NTS
JAY1001/05/25	Viewpoint 5 - Photomontage	NTS
JAY1001/05/26	Viewpoint 6 - Photomontage	NTS
JAY1001/04/23	Landscape and Ecological Masterplan	1:2500

APPENDIX SCHEDULE

Appendix Number	Title
Appendix 1	Methodology
Appendix 2	Landscape Character



1. INTRODUCTION

1.1 INTRODUCTION

- 1.1.1 Sirius Planning Limited has undertaken a Landscape and Visual Impact Appraisal (LVIA) in support of a planning application prepared on behalf of Jayplas, who wish to construct and operate a Plastics Recycling and Processing Facility on land off Goat Mill Road, Merthyr Tydfil. The plastics recycling and processing facility is hereby referred to as the 'development'.
- 1.1.2 The assessment and methodology for this LVIA conforms to the relevant parts of the Guidelines for Landscape and Visual Impact Assessment, Third Edition (Landscape Institute and IEMA, 2013). The assessment focuses on the identification of likely 'Substantial' landscape and visual effects, including those that are, positive and negative, direct and indirect, long, medium and short term, and reversible and irreversible, as well as cumulative effects (where applicable). This includes the potential effects on local landscape character and landscape designations, as well as the potential effects on views experienced by people (receptors) including (but not limited to); settlements, public rights of way, registered parks and gardens and transportation corridors.
- 1.1.3 This appraisal outlines the data gathering methodology that was adopted for the LVIA. It then leads to a description of the appraisal methodology, the overall baseline conditions, and an assessment of potential effects. The chapter concludes with a summary of the appraisal results.
- 1.1.4 The main objectives of the LVIA, in relation to this development, are as follows:
- To identify, evaluate and describe the current landscape character of the site and its local surroundings and any notable individual landscape elements within the site;
 - To determine the sensitivity of the landscape to the type of development proposed;
 - To identify potential visual receptors (i.e. people who would be able to see the development) and evaluate their sensitivity to the type of changes proposed;
 - To identify and describe any effects of the development in so far as they affect the landscape and/or views of it and to evaluate the magnitude of change due to these effects; and
 - To assess the effects of the development in consideration of the significance of potential effects to be assessed, mitigation proposals identified and the residual effect (with mitigation in place) and to demonstrate the effectiveness of the mitigation proposed.

1.2 THE SITE

- 1.2.1 The application site is located on land off Goat Mill Road to the west of the A4060 and to the east of Pen-Y-Darren, on the eastern fringes of Merthyr Tydfil. The location of the site is shown on drawing JAY1001/04/01.
- 1.2.2 A site walkover was undertaken in July 2020 to consider local landscape elements and visual receptors. The application site has a total area measuring approximately 14.6 hectares. The land is currently vacant with the site surface comprising open grassland and scrub over a relatively flat site with mature vegetation along its boundaries. The site is bordered by Goat Mill Road to the west and a grass and tree covered embankment to the east, rising towards the A4060 beyond which is the opencast coal mine area and Fofs y Fran Land Reclamation Scheme. The site area has had significant historical development associated with coal and ironstone mining. Since the site was restored to a development platform it has been in an open grassland condition, with open access for informal public recreation uses (focused on dog walking). The site is allocated as an Employment area in the Local Development Plan.

- 1.2.3 Existing employment uses are found to the north of the site, the fringe residential areas of Merthyr are found within the descending areas to the west of the site beyond the road corridor. The application site is accessed by two spur roads leading off roundabout junctions on Goat Mill Road, a well-established route for large vehicles with lorries frequently using the industrial estate to the north, which in turn can be accessed off the A4060 providing good links to the wider road network. This existing access will be utilised during both the construction and operational phases.

1.3 PROPOSED DEVELOPMENT

- 1.3.1 The proposed development is for the installation and operational of a plastics recycling and processing facility and associated infrastructure. The facility will be capable of taking in waste rigid plastics and film from commercial, industrial and the public sector to recycle and process. The closed loop cycle is a sustainable approach to materials management and will help the transition to a zero-waste. The proposed illustrative site layout is shown on Drawing No. JAY1001/04/06.
- 1.3.2 The proposed site, when fully operational, will accept and process c. 150,000 tonnes of plastic materials per annum. The facility is designed with the objective of recovering value from materials destined for landfill and thus reducing the amount of waste being disposed by landfill.
- 1.3.3 The proposed facility consists of the following elements:
- Two individual warehouse units (enclosed steel portal frame), with the first building including an internal office/administration area;
 - Potential expansion area for the provision of a third warehouse unit;
 - External storage area in the form of a concrete hardstanding area;
 - Car parking (including electric charging points) and bike racks;
 - Weighbridge;
 - Combined Heat and Power Unit;
 - Fire water storage tank;
 - Surface water attenuation area; and
 - Landscaping
- 1.3.4 The largest structures on site will be the warehouse units. The northern most building (Building 1) is approximately 14m to eaves and 16m to ridge and measures approximately 135m x 76m having a floor space of 10,260m² and the southern building (Building 2) is approximately 12m to eaves and 14m to ridge and measures approximately 135m x 90m having a floor space of 12,000m². The buildings will be constructed using a steel portal frame design and clad with galvanised steel powder coated profile cladding. Each unit will contain welfare facilities and building 1 includes an integral administrative office covering 2 floors measuring 1,000m² (50m x 10m). Drawing No's. JAY1001/04/08 and JAY1001/04/10 and illustrates building elevations.
- 1.3.5 The buildings have been sized to accommodate the internal plant required for the recycling and processing process.
- 1.3.6 A reserved expansion area has been illustrated on the proposed site masterplan for a potential third warehouse unit if the market requires in the future. The external storage yard measures approximately 75,446m² and will be host incoming plastic materials and processed products. Processed plastic grades will be stored externally in 'bales' prior to onward removal for further processing. Forklift trucks / telehandler are to be used in the storage yard to load and unload bales.

- 1.3.7 The bales (sized 2m x 1m x 1m each) will be stored in units of up a total size of 20m x 10m x 4m as illustrated on Drawing no. JAY1001/04/22.
- 1.3.8 A double weighbridge is located within the centre of the storage yard. Drawing JAY1001/04/17 provides the weighbridge details.
- 1.3.9 A combined heat and power (CHP) unit will be located between the two buildings on site, as illustrated on Drawing No JAY1001/04/06. The CHP unit will be used for Building 2 to provide power and hot water for the washing processes. Indicative details of the CHP unit are shown on Drawing No. JAY1001/04/13. At present, the CHP details are indicative as the wash plant for Building 2 has not yet been fully designed and therefore the actual required sizing and final details of the proposed CHP unit will be confirmed prior to the development of Building 2.
- 1.3.10 The fire storage tank and associated pumps will be located between the two buildings and will provide water supply to an automatic sprinkler system which will be installed throughout the buildings. Drawing JAY1001/04/12 provides the fire tank details.
- 1.3.11 A surface water lagoon is proposed within the southern part of the site. It is proposed that surface water runoff would be directed to the lagoon through channel drainage across the hardstanding areas before discharging off site.
- 1.3.12 The site will be secured by a 2.4m high Paladin security fencing with matching vehicular/pedestrian access gates. Drawing JAY1001/04/19 provides details on the security fencing for the site.

1.4 STUDY AREA

- 1.4.1 It is accepted practice within landscape and visual appraisal work that the extent of the study area for a development is broadly defined by the visual envelope of the proposed development and the anticipated extent of the visibility based on landform, established development and natural features. The study area for this appraisal extends to a c.2.5 km radius from the site boundary. The study area was selected following site assessment and consideration of the current levels of visibility to the existing warehouse / factory buildings in the local area of Goat Mill Road.
- 1.4.2 Although the study area extends to 2.5 km, due to the nature of the local area; dense urban form, landform variations and presence of mature vegetation detailed consideration of the landscape and visual effects of the proposed development will be focused to a 1 km study area. The study area was selected for the assessment on the basis of the scale of the proposal; c. 14m high warehouse buildings, surrounding built form, mature tree cover and landform variations. It is considered that the likelihood of the development being noticeably perceptible at distances over 1km from the site to be low.
- 1.4.3 GLVIA, section 5.2, additionally states that a study area should “include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner. This will usually be based on the extent of landscape character areas likely to be significantly affected either directly or indirectly”.

1.5 CHAPTER STRUCTURE

- 1.5.1 This chapter is structured as follows:

- Introduction;

- Policy Context;
- Methodology;
- Baseline Landscape Conditions;
- Baseline Visual Conditions;
- Landscape and Visual Mitigation;
- Assessment of Landscape Effect;
- Assessment of Visual Effect; and,
- Summary and Conclusion.



2. POLICY CONTEXT

2.1 DEVELOPMENT PLAN

- 2.1.1 This section sets out the local and national planning policies as well as material considerations which are relevant, both to the application site, and the type of development proposed.
- 2.1.2 Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires planning applications to be determined in accordance with the provisions of the Development Plan unless material considerations indicate otherwise.
- 2.1.3 The proposed development site falls within the administrative boundaries of Merthyr Tydfil County Borough Council. The adopted Local Plan for the application site comprises:
- Merthyr Tydfil Replacement Local Development Plan 2016 - 2031 (Adopted January 2020)
- 2.1.4 Given the primacy of the development plan in the decision-making process, it is imperative that this Planning Statement identifies and appraises the planning policies that are of relevance in determining this planning application.

2.2 LOCAL CONTEXT

- 2.2.1 The Merthyr Tydfil Replacement Local Development Plan was formally adopted in January 2020 and provides the local planning policy framework for the area. The Plan is the basis for land use planning decisions in the County Borough.
- 2.2.2 Under the adopted proposals map, the site is located within the settlement limits, allocated as an Employment Site (ref. EcW 1.2) and located within a Heat Priority Area. A small area along the northern boundaries of the site is located within Archeologically Sensitive Area (ASA6).
- 2.2.3 The following table provides an assessment of policies within the Merthyr Tydfil Replacement Local Development Plan which are considered relevant to the proposed development.
- 2.2.4 Overall, it is considered that the proposed development supports the highlighted aims of the Local Development Plan.

Table 2.1: Policy Appraisal – Merthyr Tydfil Replacement Local Development Plan

Policy	Commentary
<u>Policy SW11 – Sustainable Design and Placemaking</u> <i>“Development must contribute to the creation of attractive and sustainable places through high quality, sustainable and inclusive design.</i> <i>Where appropriate new development will be required to:</i> <i>1. Be appropriate to its local context in terms of scale, height, massing, elevational treatment, materials and detailing, layout, form, mix and density ...</i> <i>3. Not result in an unacceptable impact on local amenity, loss of light or privacy, or visual impact, and incorporate a good standard of landscape design...”</i>	The Landscape and Visual Impact Assessment considers the integration of the scheme into the surrounding landscape reviewing effects to the landscape character and visual amenity in the local area; see conclusion.

<u>Policy EnW5 – Landscape and Special Landscape Areas</u> <i>“...Development proposals will be permitted where it can be satisfactorily demonstrated that:</i> <i>a) It would not cause unacceptable harm to the character and quality of the landscape setting of the County Borough ...</i> <i>c) Development respects the local distinctiveness and historic character of the landscape;</i> <i>d) Development will safeguard local landscape character and landscape features, including views, which make a significant contribution to the character, history and setting of the locality;</i> <i>e) Development secures the enhancement of the character, appearance and quality of the landscape, through restoration, management or enhancement where possible;</i> <i>f) There is no satisfactory alternative and the benefits associated with the development can be demonstrated to outweigh the harm; and</i> <i>g) Where damage to local landscape character cannot be avoided appropriate mitigation has been secured”.</i>	The proposed development is to construct and operate a plastics recycling and processing facility on land off Goat Mill Road. The Landscape and Visual Impact Assessment will consider the scale, form and design of new development, and effects upon the character of the area. The existing landscaping delineating the borders of the site will be retained. The LVIA will assess impacts upon landscape features of importance in accordance with this policy; see conclusion.
<u>Policy EcW2 – Protecting Employment Sites</u> <i>“...At...Goatmill Road...development will be permitted if:</i> <i>• It is within Use Classes B1(b), B1(c), B2 OR B8; or</i> <i>• It provides an ancillary facility or service that supports the primary employment use; or</i> <i>• It is an acceptable complementary commercial service outside class B uses; or</i> <i>• It is an appropriate waste management facility compatible with existing industrial and commercial activities...”.</i>	The proposed development is to construct and operate a plastics recycling and processing facility on land off Goat Mill Road. The application site is identified as a preferred area of search for waste management facilities and is located in an area characterised by industrial operations. This Landscape and Visual Appraisal will seek to demonstrate that the proposed development will not have an unacceptable effect on local landscape character.

2.3 MATERIAL CONSIDERATIONS

Planning Policy Wales Edition 11

2.3.1 The Welsh government published the revised Planning Policy Wales Edition 11 (PPW) in February 2021 which forms the overarching national level source of planning policy for Wales. It seeks to support the requirement for sustainable development via the planning system whereby the “presumption in favour of sustainable development” forms the overarching role

2.3.2 Chapter 6, Distinctive and Natural Places is the most relevant to this LVIA. Paragraph 6.3.3 states that:

“...Considering landscape at the outset of formulating strategies and policies in development plans and when proposing development is key to sustaining and enhancing their special qualities, and delivering the maximum well-being benefits for present and future generations as well as helping to deliver and effective and integrated approach to natural resource management over the long-term. Collaboration and engagement with adjacent planning authorities, Natural Resource Wales (NRW), Cadw and the third sector will be necessary to draw a wide range of expertise and evidence. This means:

- Ensuring Wales contributes to meeting international responsibilities and obligations for*

landscapes

- *Ensure statutory and non-statutory designated sites are properly protected and managed;*
- *Ensuring that the value of all landscapes for their distinctive character and special qualities is protected; and*
- *Ensuring the opportunities landscapes provide for...employment...are taken into account and multiple well-being benefits for people and communities secure”.*

Technical Advice Note 5 (TAN 5): Nature Conservation and Planning (2009)

- 2.3.3 TAN 5 provides advice on planning nature conservation in relation to development proposals. TAN 5 outlines support will be given to development if it can retain and enhance the local landscape, paragraph 3.2.2 states *“Sensitive landscaping and planting, the creation, maintenance and management of landscape features important to wildlife, and the skilled adaption of derelict areas can provide extended habitats.”*
- 2.3.4 TAN 5 outlines support will be given to development if it can be proven there is little to no demonstrable harm to local biodiversity conservation, paragraph 1.4.4 states “Section 40(1) of Natural Environment and Rural Communities Act 2006 (NERC) places a duty on every public authority, in exercising its functions, to “have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”.” TAN 5 further outlines the importance of biodiversity in paragraph 1.5.1 “Biodiversity is an important indicator of sustainable development. Biodiversity and geodiversity add to the quality of life and local distinctiveness” and stated within paragraph 1.6.1 “Biodiversity conservation and enhancement is an integral part of planning for sustainable development.”
- 2.3.5 Local and National planning policies are appraised in the Planning Statement.



3. METHODOLOGY

3.1 METHODOLOGY

- 3.1.1 The methodology for this LVIA conforms to the relevant parts of the Guidelines for Landscape and Visual Impact Assessment, Third Edition (Landscape Institute and IEMA, 2013). The assessment focuses on the identification of likely landscape and visual effects, including those that are, positive and negative, direct and indirect, long, medium and short term, and reversible and irreversible, as well as cumulative effects.
- 3.1.2 Detailed explanation of the methodology including the basis on which judgements have been made on the sensitivity of the receptors, magnitude of change and level of effects is contained within Appendix 1.
- 3.1.3 For the purposes of clarity, the European Landscape Convention (ELC) (2000), defines the term 'landscape' as "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors".
- 3.1.4 The ELC confirms that the landscape should be considered as a resource in its own right. It provides an integrated way of conceptualising our surroundings and is increasingly considered to provide a useful spatial framework for thinking about a wide range of environmental, land use and development issues. The ELC applies to all landscapes; natural, rural, urban and peri-urban areas, including land, inland water and marine areas. It considers landscapes that might be considered outstanding as well as every day or degraded landscapes.
- 3.1.5 Additional guidance has also been taken from the following publications:
- *Landscape Institute Technical Guidance Note 06/19 September 2019, Visual Representation of Development Proposals;*
 - *LANDMAP Wales, 2003;*
 - *Landscape Character Guidance for England and Scotland, Topic Paper 9, Climate change and natural forces, the consequences for landscape character, SNH/CA; (reference only, noted scheme in Wales)*
 - *Landscape Character Guidance for England and Scotland, Topic Paper 6, Techniques for Judging Capacity and Sensitivity, SNH/CA, 2004; (reference only, noted scheme in Wales), and,*
 - *Council of Europe, The European Landscape Convention (2000, ratified 2006) ETS No. 176.*

Assessment Process

- 3.1.6 This LVA assessment has 3 key stages, summarised as follows:
- Baseline – gathering of documented information; existing landscape character studies, identification of landscape and visual receptors, scoping of the assessment, agreement of viewpoints and assessment parameters, discussion with relevant consultees and the local planning authority, site visits and initial reporting of design issues with client designer;
 - Design – Review of initial design and ongoing design iterations following baseline survey, including responses to other specialisms e.g. ecology and cultural heritage. Consideration of mitigation options and enhancement (where appropriate); and,
 - Assessment – involves of an assessment of the landscape and visual effects of the scheme, involves site and desk based survey and assessment.

Landscape and Visual Effects

- 3.1.7 LVIA is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity (GLVIA 2013, para 1.1).
- 3.1.8 Landscape and visual effects are assessed separately within the LVIA, "the assessments are known as impact assessments but the European Union Directive refers to assessment of the effects, which are changes arising from the development that is being assessed". (GLVIA 2013, para 1.15). Impact is defined as 'action being taken' and the effect is defined as the 'change resulting from the action'.
- 3.1.9 Landscape effects are defined as "An assessment of landscape effects deals with the effects of change and development on landscape as a resource. How the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character" (GLVIA 2013 para 5.1).
- 3.1.10 Visual effects are defined as "An assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity. Assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements" (GLVIA 2013 para 6.1).

Level of Effect

- 3.1.11 This LVA assessment has 3 key stages, summarised as follows:
- 3.1.12 The assessment will consider the landscape and visual baseline characteristics within the defined study area, together with an assessment of landscape and visual effects. Effects will be considered to be either 'Substantial' or 'Not Substantial' in accordance with the criteria in the methodology. 'Substantial' effects are those that should be considered in the eventual decision, effects that are 'Not Substantial' are of a lesser concern.
- 3.1.13 This assessment is for a scheme which does not constitute EIA development; the Landscape Institute has issued advice in relation to L&V Appraisals (Assessments) outside a formal EIA process in its 'Statement of Clarification 1/13':

"In carrying out appraisals, the same principles and process as LVIA may be applied but, in so doing, it is not required to establish whether the effects arising are or are not significant given that the exercise is not being undertaken for EIA purposes. ... The emphasis on likely 'significant effects' in formal LVIA stresses the need for an approach that is proportional to the scale of the project that is being assessed and the nature of its likely effects. The same principle – focussing on a proportional approach – also applies to appraisals of landscape and visual impacts outside the formal requirements of EIA".

- 3.1.14 The detailed criteria used to determine the level of effect is listed in Appendix 1 Methodology. As with all LVIAs, it should be noted that while the methodology is designed to be robust and transparent, in line with best practice, professional judgement is finally applied to determine the level of effects, and whether the effects are considered 'Substantial' or 'Not Substantial'.

Timescale of Effects

- 3.1.15 The principal landscape and visual effects, which are reversible, occur during the operational lifetime of the development, considered to be permanent. The effects of the development are likely to reduce as mitigation planting matures.

Seasonal Effects

- 3.1.16 Within the assessment consideration is given to the seasonal differences in effects arising from the varying degree of screening and/or filtering of views by vegetation that will apply year round. The assessment considers the visual screening effects that vegetation would provide in both summer and winter months (when deciduous vegetation is not in leaf), and if it is considered that there would be substantial differences in the screening and/or filtering of vegetation between the summer and winter months, it will be stated.

Subjectivity of the Nature of Effects

- 3.1.17 This LVIA does not state explicitly whether the effects of the development on landscape and visual amenity is adverse, neutral or beneficial. However, it is acknowledged that the GLVIA 2013 states that professional opinion should be applied, and a positive or negative judgement stated (Para 5.37 and 6.29).
- 3.1.18 It is commonly accepted that the nature (or valency) of effects of a development are subjective based upon the attitude of the individual.
- 3.1.19 In accordance with GLVIA a 'precautionary approach' is taken and therefore, although the nature of effects is not stated within the assessment, effects would be negative unless stated otherwise. This precautionary approach of negative effects should be considered with the caveat that the valency of effect must always be considered by the decision makers, the approach should not be concluded to be the final judgement and it should be acknowledged that many people may see the development as either a positive or neutral addition.

Assessment Limitations

- 3.1.20 The appraisal of landscape and visual effects is undertaken from publicly accessible locations only including; roads, parks and public rights of way to represent potential impacts on a range of receptors. Consideration of the effect on views from residential receptors is undertaken from representative publicly accessible points and analysis of map data. Should specific residential receptors require detailed assessment, a residential visual amenity assessment would be undertaken following discussions with the Local Planning Authority (potentially in EIA level development only). This assessment does not consider or assess impacts from every theoretical location where the development would be visible.



4. LANDSCAPE ASSESSMENT - BASELINE

4.1 LANDSCAPE ASSESSMENT – BASELINE SITUATION

4.1.1 An overview of the existing landscape for both the application site and the wider study area as a whole has been determined by observations made during site visits and review of the published Landscape Character Assessments (LCA).

4.1.2 In order to assess whether landscape character is ‘substantially’ affected by a development, it should be determined what and how each of the key characteristics would be affected. The judgement of magnitude therefore reflects the degree to which the key characteristics and elements which form those characteristics will be altered by the proposals. The scale of the development, the nature and sensitivity of the receiving landscape, and local ‘barriers’ in the landscape (such as breaks of topography, woodlands, settlements, and roads or rivers) will influence the exact extent of effect of the development.

4.1.3 The boundaries of the Landscape Character Areas (LANDMAP Visual and Sensory Aspect Areas, as considered the most relevant) are illustrated on Drawing JAY1001/05/03 Landscape Character.

National Landscape Character

4.1.4 National Landscape Character Areas (NLCA) form the broadest scale of landscape character assessment in Wales, undertaken by Natural Resources Wales.

“NLCAs are defined at a broad landscape scale throughout Wales. The descriptive profiles for the 48 individual character areas highlight what distinguishes one landscape from another, with reference to their regionally distinct natural, cultural and perceptual characteristics”.

4.1.5 The NLCAs assist in the development (and assessment) of policy strategy and guidelines. NRW’s Area Statements incorporate NLCA information. The site is within one of the largest NLCAs; NLCA 37 South Wales Valleys. The full description can be found in Appendix 2, but in summary the key characteristics that are considered relevant to the application site, referenced in the description include:

“Extensive ribbon development fills many valley bottoms and lower slopes. Their urban and industrial character is juxtaposed with dramatic upland settings with steep hillsides, open moors or forests. Networks of railways and roads connect valley settlements. Topography constrains passage between valleys.

Underlying geology and mineral deposits provided the resources that fuelled a rapid spread of industrial development in the C19th. Once rail transport became possible, new coal, steel and iron industries created an extensive infrastructure of large buildings, furnaces, towers, chimneys, viaducts, spoil heaps and levels. Housing for workers resulted in the extensive and iconic rows of terraced houses that run along hillsides.

Decline of industries in the late C20th resulted in the closure, removal, abandonment or redevelopment of many former industrial sites. These changes continue today, as do the consequential social changes to the way of life and community identity. The area is now seen as part of a wider, increasingly post-industrial, ‘city region’.

- *Numerous steep-sided valleys - typically aligned in parallel, flowing in southerly directions, shaped by southward flowing glaciers, leaving behind distinctive corrie ('cwm') and crag features. Major rivers include the Tawe, Taff and Rhymney.*
- *Ribbon urban and industrial areas in valleys – in places extending up valley sides and to valley heads.*
- *Extensive remains of heavy industry – with a mix of derelict, preserved and largely redeveloped areas, notably for coal mining*
- *Large blocks of coniferous plantation and deciduous woodland fringes – covering many steep*

hillsides and hilltops, most notably in the middle to western portion of the area, providing a softer contemporary landscape where there was once industry

- 4.1.6 It is considered that the site (and local area) contains few of the discussed characteristics due to its urban fringe location and the legacy of historic land uses, forming a disturbed landscape. The wider areas of the study area, beyond the urban core of Merthyr are more characteristic.

LANDMAP

- 4.1.7 LANDMAP (Natural Resources Wales) details the Welsh national level approach to landscape assessment. It is a GIS (Geographical Information System) based landscape resource where landscape characteristics, qualities and influences on the landscape are recorded and evaluated into a nationally consistent data set.
- 4.1.8 LANDMAP is formally recognised in Planning Policy Wales (PPW) as the starting point for landscape assessments in Wales. LANDMAP provides information for all of Wales' landscapes apart from the built-up areas of Cardiff and Swansea. It states that *"all EIAs in Wales should therefore include an assessment using the information provided in LANDMAP as part of their ES chapter on landscape and visual effects. In particular, it should be used to inform a thorough understanding of the baseline conditions"* (LANDMAP Guidance Note 3, May 2013).
- 4.1.9 LANDMAP Information is defined by five methodological chapters: Cultural Landscape, Geological Landscape, Historic Landscape, Landscape Habitats and Visual & Sensory. These chapters are considered the key national level landscape guidance for Wales. LANDMAP, as the most comprehensive landscape resource, will be utilised in this assessment.
- 4.1.10 Although the development does not constitute 'EIA development', LANDMAP, as the most comprehensive landscape resource, will be utilised in this assessment and discussion of landscape baseline. Considering the scale of the proposed development and local setting only the Visual and Sensory Aspect Areas will be reviewed in detail. All Aspect Areas that cover the site are noted. With regard to the site, it is located within the following Aspect Areas:
- Geological – GL008 Dowlais Top (Moderate Evaluation)
 - Landscape Habitats – LH009 (Moderate Evaluation)
 - Visual and Sensory – VS876 Merthyr East Flank (Low Evaluation)
 - Historic Landscape – HL008 East Merthyr (Low Evaluation)
 - Cultural Landscape – CL040 Merthyr East Flank (No evaluation, classed as a development area)
- 4.1.11 With regard to the **Visual and Sensory** aspect, the following aspect areas are contained within the 2.5 km study area:

Aspect Area	Area name	Potential for theoretical inter visibility (ZTV with Visual Barriers)	Evaluation
VS876	Merthyr East Flank	Host area	Low
VS355	Ffos-y-fran Merthyr Upper East Flank	Extremely limited	Low
VS452	Merthyr Common	Extremely limited	Low
VS317	Mid Taff Valley	Extremely limited	Low
VS122	Merthyr Tydfil	Very limited	Low
VS917	Merthyr West Flank	Yes	Moderate
VS588	Cyfarthfa Park	Limited	High
VS198	Vaynor Farmlands	No	Moderate
VS313	Merthyr North Flank	Yes	Moderate
VS361	Rhoslas	Extremely limited	Moderate

- 4.1.12 The Visual and Sensory Aspect Areas with a moderate and high evaluation, and the potential for theoretical visibility (greater than limited) will be considered within the landscape assessment section. In addition to the host area, this includes:

- VS917 Merthyr West Flank
- VS588 Cyfarthfa Park
- VS313 Merthyr North Flank
- VS361 Rhoslas

Host Visual and Sensory Aspect Area: VS876 - Merthyr East Flank

- 4.1.13 The area is described as:

‘Defined by the degree of disturbance of the landform and the lack of diversity in vegetation cover. Almost all the area has clearly been disturbed and is apparently currently unused or reclaimed. The slopes form a stark and unattractive backdrop to this side of the town. Large areas of reclaimed land are open covered in pasture for sheep grazing with some fencing against the road edge e.g. the slopes to the west of former Trecatti landfill site and the plateau on each side of the realigned A4060. These form a bleak and apparently sterile landscape. Planting may help to integrate some areas in time. Recent development has reduced area around Incline Top. There are also examples of reclamation which much more successfully create new landscapes which add to the visual quality of the area e.g. the western edge of Incline Top where small blocks of woodland and stone wall detailing create a semi-rural character. Some open cast is being carried out and also landfill which is just visible on the exposed ridge.’

- 4.1.14 The site area is referred to specifically in the description, known as Incline Top, notably discussing the mature tree planting around the site that will remain unaffected by the development. The site is considered to be of a ‘low’ value, a ‘fair’ condition, an ‘Improving’ trend however overall, the Aspect Area, and site which sits within a key part of it, is considered to be of a ‘Low’ Evaluation:

‘The area is still a raw landscape, prominent on the valley sides above Merthyr. While some areas are establishing a landscape infrastructure there are extensive areas which are open and lacking diversity of texture and cover. There remain a few detractors.’

Local Landscape Character

- 4.1.15 An overview of the existing landscape elements and features of the site, and the study area has been determined by observations made during site visits and through review of the published landscape character information up to the defined study area boundaries. The local landscape of the site, and its immediate surroundings, is not covered by any national or local landscape designations however this does not mean that the site would not be valued locally. Local landscape character is considered in detail at a site level and up to a c.250m focussed study area.

Landscape Value

- 4.1.16 Paragraph 5.19 of GLVIA3 identifies that following a review of existing landscape designations, “the value attached to undesignated landscapes also needs to be carefully considered and individual elements of the landscape – such as trees, buildings or hedgerows – may also have value.” This LVIA provides a review of undesignated landscapes and landscape elements, which includes (but is not limited to) hedgerows, woodland, watercourses and trees, and attributes a value to each element.
- 4.1.17 The value of the landscape potentially affected by a proposed development is evaluated when establishing the landscape baseline and is judged as being High, Moderate or Low. This is in accordance with paragraph 5.44 of GLVIA3. Landscape value is also referred to in the following section as part of

the method for 'Assessing the Level of Landscape Effects'.

- 4.1.18 The landscape value of the site and the immediate adjoining area is considered with reference to the indications of Landscape Value as identified in Table 1.2 of the Methodology (Appendix 1). The following table provides an analysis of each of the indications and classifies the landscape value in accordance with the Methodology.

Landscape Indications Value Considerations	Description	Value Method Criteria	Value Assessment
Landscape Quality (condition)	The physical condition of the site is considered to be poor, a former mining / steelworks site, that following closure of the works has been restored to a development platform, now awaiting redevelopment. Common appearance of brownfield scrub land awaiting redevelopment. Areas of mature tree cover surrounding the site provide established and contained setting.	<i>Low importance and rarity at local scale. Does not lie within or adjacent to a designated landscape. characteristics</i> <i>Does not present locally distinctive landscape characteristics with some scenic interest.</i>	Low
Scenic Quality	The application site is enclosed by surrounding features of minimal scenic quality typical of former colliery and brownfield land, viewed as colonised scrub land. The site has no features that would be lost that contribute to scenic quality locally. Site level numerous local detractors – nearby areas of employment and industry and busy road corridors.	<i>Low importance and rarity at local scale.</i> <i>Does not present locally important / distinctive landscape characteristics or scenic interest / value.</i> <i>Does not present important public amenity value by way of views.</i>	Low
Rarity	The site area contains no rare elements in relation to landscape character.	<i>Low importance and rarity at local scale.</i>	Low
Representativeness	The site is partially representative of the LANDMAP visual and sensory layer and the NLCA in that it is a former colliery site, with industrial development and coniferous plantation. These are considered low sensitivity features of a common occurrence locally.	Partial representation of local landscape characteristics but of limited scenic interest / value.	Low
Conservation Interests	The site contains no features of wildlife, earth science, archaeological, historical and cultural interest.	Low importance and rarity at local scale.	Very Low

Recreational Value	There is currently no defined public access to the site area (although well used by informal dog walkers). No public access (rights of way) is proposed as part of the works.	Does not present important public amenity value by way of views, access (officially), biodiversity, cultural or opportunity for quiet enjoyment (relative tranquillity).	Medium (although this is undefined / unofficial access)
Perceptual Aspects	The site and local area are historically influenced by industrial land uses, notably mining which has shaped the landscape, a landscape of change. Influence localised by built features and vegetation, no wildness or tranquillity aspects.	Low importance and rarity at local scale. Areas identified as having some redeeming feature(s) and possibly identified for improvement. Does not lie within or adjacent to a designated landscape.	Very Low
Associations	The site area is not associated with any specific historical events, people or literature, although typical of the areas industrialised past (a common feature).	Does not present locally important / distinctive landscape characteristics or scenic interest / value	Low
Landscape Value Summary	Overall, through the consideration of the indicators of landscape value, the site is concluded to be of a Low importance and rarity at a local scale. The site's value is influenced by its former uses; open cast mining and associated steel works. There is currently no defined public access to the site area (although well used informally). The site has been 'restored' to create a development ready platform, a feature characteristic within the local area, therefore of limited wider landscape value.		Low

Landscape Receptors

Landscape Designations within 2km

- 4.1.19 Landscape designations within the study area (applicable to this LVIA) are illustrated on Drawing JAY1001/05/02. Relevant designations mapped at this stage would include; Registered Parks and Gardens (RPG); Country Parks (CP); and, landscape designations within the Local Plan (if still applicable) such as: Special Landscape Areas (SLA) and any national landscape designations; Areas of Outstanding Natural Beauty (AONB); and, National Parks (NP).
- 4.1.20 Review of local data has confirmed that there are 2 proposed Special Landscape Areas within the study area (identified within Merthyr Tydfil County Borough Council Local Development Plan 2016 – 2031) SLA background paper)
- SLA1: Nant Morlais and Cwm Taf Fechan c.1.4 km to the north (closest point)
 - SLA 3: Merthyr West Flank c.1.8 km to the south-west (closest point)
- 4.1.21 Cyfarthfa Castle and Park, Registered Park and Garden (Grade II*) is c.1.2km to the west. The ZTV illustrates that there is the potential for very limited intervisibility between the development and the

RPG, focussed to a grass field within the north eastern area of the parkland.

Landscape Mitigation

- 4.1.22 Mitigation is included as it is an integral part of the design and assessment process. The mitigation proposals incorporate features considered in the assessment of landscape and visual effects and incorporates recommendations from the ecological appraisal. Mitigation measures seek to achieve a better visual integration of the development into the local landscape whilst looking to provide landscape and ecological enhancements where appropriate.

Existing vegetation

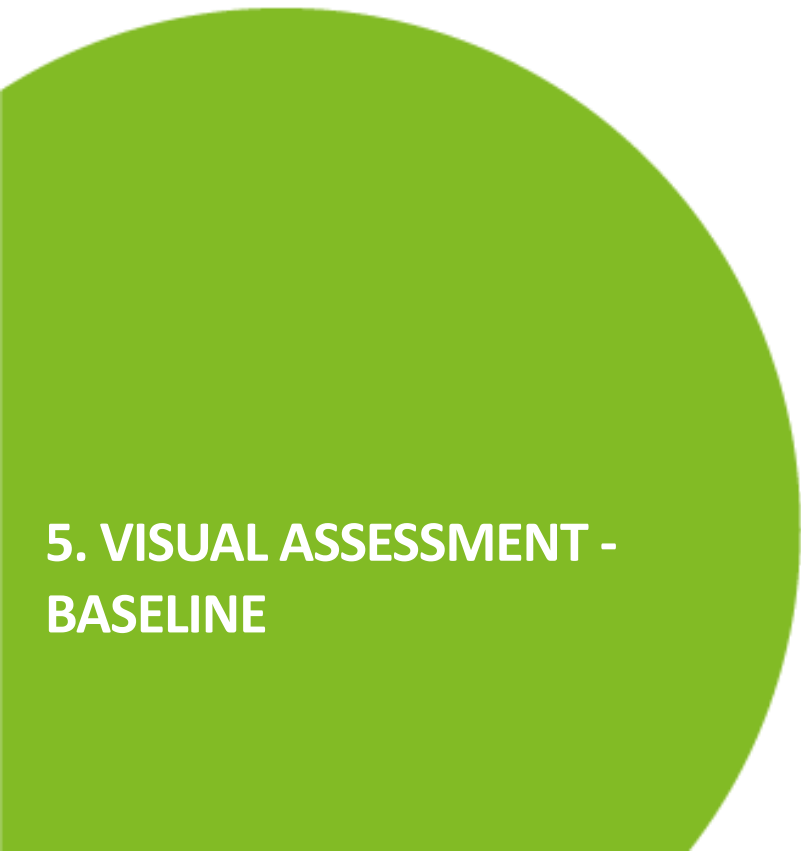
- 4.1.23 There is very limited tree and scrub vegetation within the main development area with the potential to be affected by the development owing to the historic nature of the site and setting as a prepared development platform.
- 4.1.24 All mature tree cover around the site perimeter will be retained and protected, the vegetation is key to forming an established setting for the development and screening visibility over the wider landscape. Some scrubby self-seeded blocks of trees and scrub will be removed as part of the storage yard and surface water lagoon construction, the birch and willow species contribute little to the landscape setting of the site or screening, more immature than tree species surrounding the site that will be retained.

Proposed Landscape Mitigation

- 4.1.25 Mitigation is proposed with reference to the site ecology assessments and following a site walkover to review landscape and visual issues and following ongoing design development input into the scheme proposals.
- 4.1.26 Approximately 10ha of land is proposed to be developed. The bulk of this lost area is formed as Open Mosaic Habitat (OMH) land of low quality. It is proposed that three areas (north and south of the developable area respectively) of OMH will be retained and enhanced as part of the proposals. In total these three areas will retain c.1.7ha of OMH (c.0.45ha and 0.25ha in the north and c.1ha in the south). Whilst being smaller in area to that which is being lost, the retained areas will be managed such that their condition will be maintained in the long term. This is something that cannot be assured with the current land use/management of the site.
- 4.1.27 The following points outline proposed habitat mitigation, for both ecology and landscape and visual reasons:
- The plantation woodland on the outer boundaries of the site will be retained. Trees within the retained woodland will be selectively thinned to promote the development of the woodland and to allow individual trees to reach maturity. Any wood produced from tree management will be retained on site as habitat piles.
 - The established grassland adjacent to the boundary woodland will also be retained and will form a functional link to the two areas of retained OMH in the north and south of the Site.
 - Areas both north and south of the proposed development will be retained and managed as OMH. Small volumes of cut material taken from the development footprint will be spread in the retained OMH areas.
 - Scrub will be managed in the two retained OMH areas to prevent encroachment and succession.
 - Additional tree planting to take place upon the southern boundary to screen internal views into the site and to compensate for lost scrub planting following the construction of the surface water lagoon.
 - Additional tree planting to take place upon the northern boundary to screen views from employment areas to the north and future LPA 'Active Travel Route'.

- The retained OMH areas will be subject to managed disturbance. Grasslands will be rotationally cut or rotavated, but not uniformly. Cutting will always retain some areas of longer swards to ensure heterogeneity. Rocky substrate and earth will be rotationally moved around the two retained OMH areas to prevent total succession into grassland. The maintenance of areas of bare ground will be prioritised.
- A new surface water lagoon will be constructed in the south of the site. It will be encompassed by the southern retained area of OMH. It would be recommended that this lagoon is designed in a manner that does not preclude biodiversity. The edges should be sloped in a manner which allows terrestrial animals to enter and escape. Native aquatic and riparian planting will be provided to enhance the value of this feature. To ensure early establishment plants and seeds will be collected from the wet ditches already present on site. Detailed design of SW pond will be included in the separate SAB application.
- Close boarded timber fence to be added along the southern boundary to screen views into the outdoor storage areas.
- Additional feathered and standard sized native tree planting to be implemented in the area between the lagoon and southern boundary.
- Both the retained woodland, grassland and OMH will continue to provide foraging and nesting resources for birds. Additional habitat including the surface water lagoon will increase both food resources available on site for birds. A nest box and bat box scheme is detailed within the CLEMP (construction and landscape ecological management plan) presented in Appendix E.
- Further details of the management recommendations described above are found in the accompanying CLEMP (Appendix E).

4.1.28 Specific landscape and visual mitigation proposals are shown on the site Landscape and Ecological Masterplan illustrated on Drawing JAY1001/04/23.



5. VISUAL ASSESSMENT - BASELINE

5.1 VISUAL ASSESSMENT – BASELINE SITUATION

Zone of Theoretical Visibility (ZTV)

- 5.1.1 Land that may potentially be visually connected with the proposed development is usually identified and mapped at the outset (of a full landscape and visual assessment) in accordance with paragraph 6.6 of GLVIA3. Zone of Theoretical Visibility (ZTV) mapping is produced to determine the area over which the proposed development could theoretically be seen. ZTV maps are generated by computer from a Digital Terrain Model (DTM) representing the bare ground topography overlaid on a map base without significant areas of screening vegetation and built form.
- 5.1.2 The predicted ZTV for the scheme can be seen on Drawings JAY1001/05/05 and JAY1001/05/06.
- 5.1.3 ZTV mapping has been produced to determine the areas over which the proposed development could theoretically be seen. The analysis uses map data (taken from Ordnance Survey Vector Map District) and includes the addition of the 'Building' layer, modelled at a height of 8m above ground level, and the 'Woodland' layer, modelled at a height of 12m above ground level. The addition of these visual barriers over the bare earth topographic model provides a more realistic indication of the potential visibility of the development within the local landscape (urban) setting. It is noted however that there are still likely to be other visual barriers not marked, e.g. individual trees and hedgerows, recently constructed buildings. As not all barriers can be modelled, visibility levels are further refined through the site survey and consideration of visibility from the identified receptors; settlements, recreational routes, landscape receptors and the viewpoint assessment. Visibility mapping is presented on 1:10,000 scale OS base mapping. The ZTV is modelled based on a building height of: Building 1, 14m to eaves and 16m to ridge and Building 2, 12m to eaves and 14m to ridge.
- 5.1.4 The ZTV illustrates that visibility is restricted by topography within the local area (notably to the east) combined with screening from the mature tree belt around the western perimeter. The landscape and urban areas of Merthyr initially descend to the west, this restricts near visibility into the development area, the dense urban grain of the settlement further limits the majority of long-distance views. Visibility focussed to the rising hillsides to the west and north > 2km from the site area, the site set within a large-scale urban context would form a small scale feature. Near range views are shown from Goat Mill Road and the adjoining employment areas only. Due to the large change in ground levels no visibility is possible from the A road corridor to the east, the A4060 as it passes beside Dowlais Great Tip area.

Geographical Extent

- 5.1.5 The geographical extent of effects is influenced by the landscape setting and established features around the site, the scale of the proposed development (Warehouse (Building 1, 14m to eaves and 16m to ridge and Building 2, 12m to eaves and 14m to ridge and outdoor storage areas), the site levels and localised vegetation.
- 5.1.6 Visibility of the site is restricted due to the plateau setting within the hillside, surrounded by mature vegetation and significant changes in topography, restricting visibility as described in the previous section.
- 5.1.7 Although the development is of a large scale at a site level, the visual effects are of a small-medium scale and limited to a small geographical area. A low level of effect is concluded when considering the geographical extent of the development.

Key Receptors

- 5.1.8 The key visual receptors within the study area would consist of (people at) residential properties, heritage attractions (where views are an important component), users of public rights of way (national

trails, cycle ways and footpaths), and users of recreational facilities and transportation networks. The receptors have been identified through site appraisal surveys and desk top surveys.

Residential Properties

- 5.1.9 Residential properties are considered to have a high sensitivity to visual change as there is the potential for large numbers of receptors (people) to be concentrated in the properties / settlements with continuous fixed views. It should be noted that many individual dwellings and dwellings within settlements, even when close to other proposed developments, may have 'no' or 'limited visibility' of the proposed development. For each individual property close to the development site, the exact degree of visibility will depend on the orientation of the property, the orientation of the windows in the property, and the degree of screening provided by localised landform, trees, hedgerows and surrounding built features. The properties within 1km are assessed.
- 5.1.10 Due to the urban location of the site, there are a large concentration of residential properties within the study area. The assessment will consider visual effects from geographically zoned groupings within a focussed 1km study area. Due to the urban and urban fringe location, and considering the development form and location, it is considered that there would be no potential for visual effects of a substantial nature greater than 1km from the site.
- 5.1.11 Due to the dense urban grain of the nearby residential areas of Merthyr, it is not possible to consider individual properties. Residential receptors are therefore grouped into larger geographic areas. Should any substantial effects be predicted further detailed analysis will be undertaken. There are 12 settlement groups considered in detail within the local 1km study area, see drawing JAY100/05/04. Residential receptor groups include:
- R1, Mount View, c 10m to the south
 - R2, Incline Top (area), c.50m to the west
 - R3, Bradley Gardens (area), c.70m to the south west
 - R4, Mountain Hare (area), c.150m to the south west
 - R5, Church Street (area), Pen Y Darren, c.350m to the north west
 - R6, Glynne Jones Crescent (area), Dowlais, c.400m to the north
 - R7, Baden Terrace (area), Penyard, c.380m to the west
 - R8, Victoria Street (area), Dowlais, c.550m to the north
 - R9, Penbryn Villas (area), Pen y Darren, c.550m to the north west
 - R10, Pontmorlais area, c.530m to the west
 - R11, Thomas Town area, c.700m to the south west
 - R12, Twynyrodyn area, c.550m to the south

**distances quoted are to the closest area of grouping from the site boundary.*

Transportation and Public Access Network

Recreational Routes

- 5.1.12 There is a very limited network of footpaths and trails within the 1km study area and no higher sensitivity regional/national routes. National Cycle Network Route 477 Trevithick Trail 477 is located within central Merthyr, c.1.3km south-west at the closest point. National Cycle Network Route 8, Lon Las Cymru, is also c.1.5km to the south-west. As both of these routes are over 1km from the site and are shown to experience no theoretical visibility by the ZTV, they will not be considered within the assessment. There is one public footpath which connects with the western boundary at Goat Mill Road and descending away from the site. The path passes within woodland and is bordered by the woodland belt upon the site boundary, no visibility from the route is predicted.

Vehicular Routes

- 5.1.13 The main public road with the potential for visibility into the site is Goat Mill Road however views are likely to be focused to the site entrance area only, viewed from within an established employment zone (urban area) already. The entrance roundabout is the location for Viewpoint 1.

Selected Recreational Destinations

- 5.1.14 There are limited other recreational destinations within the study area, views from the main park within the local area, Cyfarthfa Park, are considered as a location for Viewpoint 4. This is located upon the fringe of the Registered Park and Garden, but selected as the area with the most open visibility to the site area. There would be no visibility to the site from the main areas of the parkland.

Viewpoint Assessment – Baseline Views

- 5.1.15 Six viewpoints have been selected on the basis that they provide representative visibility to the proposed development from publicly accessible locations. The locations provide views to (or illustrate the limited visibility) of the proposed development and illustrate the potential of the mitigation proposals (where applicable).
- 5.1.16 A full description of the location, justification for selection and baseline description is included in the following table. The viewpoint locations are illustrated on Drawing JAY1001/05/04 Visual Receptors.

Table 3: Viewpoints

Number	Visual Assessment Point Name	Location		Reason for Selection	Receptors
Viewpoint 1	Site Entrance, Goat Mill Road	Distance from site	c.10m	View from Goat Mill Road as it passes close to the site entrance, also representative of views from nearby employment uses. Mature boundary vegetation also evident	Road users and Employment (Low sensitivity)
		Direction from site	North west		
		NGR	E. 306171, N. 207234		
		Height	c.280m aod		
Baseline Description	The viewpoint illustrates the view SE from the main entrance roundabout towards the site area from Goat Mill Road. The mature tree cover that borders the site and Goat Mill Road is evident within the view. Ground level views into the site area are screened by near scrub vegetation (that will be kept) however there is intermediate visibility east to the banking of tree cover that rises up to the corridor of the A4060. The photograph is located on a roundabout host to other office and warehouse buildings, of a similar character to that proposed with the development site. Distant visibility restricted by near vegetation.				
Viewpoint 2	Victoria Street, Dowlais	Distance from site	c.875m	View from central area of Dowlais residential area of Merthyr. Located within an elevated open area with views over lower lying areas to the south.	Roads users (Low Sensitivity) Residents (High Sensitivity)
		Direction from site	North		
		NGR	E. 306518, N. 207871		
		Height	c.310m		
Baseline Description	The viewpoint is set within an area of Merthyr that allows elevated views to the south over the town. Views to the lower lying areas focussed to tree coverage, set within the urban area and upon the fringes of the settlement. The				

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	elevated area of Dowlais Great Tip dominates views to the east. The A4060 road corridor visible upon the rising hillside beneath the tip area. There is limited visibility to the employment areas close to Goat Mill Road, partial visibility to roof sections of warehouse and employment buildings in the locality. Local views dominated by the near urban area, a range of residential and retail, which despite the changes level locally, still combine to screen many distant views. Electricity pylon that is found to the north of the site also evident.				
Viewpoint 3	Mitchell Crescent, Penybryn	Distance from site	c.975m	Views from residential area of Merthyr, offering expansive views south and east	Residential (High Sensitivity)
		Direction from site	North west		
		NGR	E. 305699, N. 208039		
		Height	c.325m		
Baseline Description	The location offers expansive panoramic views over the eastern, lower lying, urban areas of Merthyr and the site area. It is possible to see beyond boundary vegetation to the northern internal zone of the site viewed beyond the existing warehouse and office units that front the northern end of Goat Mill Road. The grass and scrubland coverage within the site evident. The backdrop to the site area is formed by the tree cover upon the banks rising to the A4060, Dowlais Great Tip forms the horizon beyond, a dominating, albeit historically established feature. Near views to residential areas, and distant aligned views along the valley to the south-east.				
Viewpoint 4	Cyfarthfa Castle Park (grounds)	Distance from site	1.57 km	Location set within the grounds of the Registered Park and Garden. Large mature trees within the gardens so open glad area one of the limited areas with potential for visibility east towards the site area.	Visitors to the Registered Park and Garden. (High Sensitivity)
		Direction from site	North West		
		NGR	E. 304544 N.207452		
		Height	c.265 m aod		
Baseline Description	Viewpoint is located within open grassed area of Registered Park and Garden, shown to experience theoretical visibility on the ZTV. Views are possible over the central / eastern areas of Merthyr, although mature tree cover in the local area around the park restricts many near views to adjoining residential areas. Dowlais Great Tip forms a large scale feature on the distant horizon, beneath are the tree covered banks of the A4060 that form the eastern boundary to the site area, although the site area is screened by near and distant tree cover, focused around the area previously known as Incline Top.				
Viewpoint 5	Mount View	Distance from site	5m	Small residential street and group of properties close to the southern boundary of the site (open storage area)	Residential (focussed to road when accessing properties) (High Sensitivity)
		Direction from site	South		
		NGR	E. 306242, N. 206426		
		Height	c.285m aod		
Baseline Description	The viewpoint is aligned north into the southern area of the site, the proposed open storage area, views are though restricted by scrub and tree planting within the southern area, restricting distant views north over the main area of the site. The location illustrates the mature tree coverage found around the site perimeter, limiting all other views excluding very limited channelled views north.				
Viewpoint 6	Gallon Uchaf Road, close to	Distance from site	900m	Residential area of central / east Merthyr to the west of	Residential and employment

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	junction with Gwuanfarren rd	Direction from site	West / north west	the site. Selected open area with potential for views.	(High Sensitivity)
		NGR	E. 305253, N. 207440		
		Height	c.270m aod		
Baseline Description	Limited views east over the lower lying central eastern area of Merthyr. Near vegetation and built form limits visibility to the east, only restricted views to the southern area of former Incline Top and Penyard area. Partial visibility to Dowlais Great Tip area upon the horizon. Near telecoms mast forms local focus of built form.				

Visual Mitigation

- 5.1.17 The mitigation proposed for visual effects is as discussed previously for the landscape mitigation, developed to serve a dual purpose, which will be considered in the assessment of effects.



6. LANDSCAPE ASSESSMENT

6.1 INTRODUCTION

- 6.1.1 Landscape assessment involves assessing the sensitivity of a landscape receptor against the magnitude of change that will be likely to be caused by a development to evaluate the significance of effects upon that receptor.
- 6.1.2 The significance of the effect of a development on the landscape is not an absolute scale but is a judgement based on the magnitude of the anticipated effect (or scale of change) and the sensitivity of the landscape to development.

6.2 EFFECTS ON LANDSCAPE CHARACTER – LANDSCAPE CHARACTER AREAS, LANDMAP ASPECT AREAS AND LANDSCAPE RECEPTORS

- 6.2.1 The landscape resource is assessed in terms of sensitivity, which combines judgements of their susceptibility to the type of change or development concerned and the value attached to the landscape. Sensitivity is specific to the project/development.
- 6.2.2 Landscape characteristics of the application site and consequences of the development upon landscape character is considered. The assessment includes the host and selected Visual and Sensory LANDMAP Aspect Areas as outlined in the baseline section.

Landmap Assessment Tables

- VS876 - Merthyr East Flank (Host area)
- VS122 – Merthyr Tydfil (Host area – small zone)
- VS917 Merthyr West Flank
- VS588 Cyfarthfa Park
- VS313 Merthyr North Flank

Landmap Visual and Sensory Aspect Areas

VS876 - Merthyr East Flank (Host area)		
BASELINE	Susceptibility to change	<i>The area is primarily defined by the degree of disturbance of the landform and the lack of diversity in vegetation cover... Almost all the area has clearly been disturbed and is apparently currently unused or reclaimed... Large areas of reclaimed land are open covered in pasture for sheep grazing with some fencing against the road edge e...g... the slopes to the west of former Trecatti landfill site and the plateau on each side of the realigned A4060... These form a bleak and apparently sterile landscape... Planting may help to integrate some areas in time... There are also examples of reclamation which much more successfully create new landscapes which add to the visual quality of the area e...g... the western edge of Incline Top where small blocks of woodland and stone wall detailing create a semi-rural character...</i> Low susceptibility to the form of development
	Value of landscape receptor	Low <i>'The area is still a raw landscape, prominent on the valley sides above Merthyr... While some areas are establishing a landscape infrastructure</i>

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		<i>there are extensive areas which are open and lacking diversity of texture and cover... There remain a few detractors'</i>
	Sensitivity of landscape receptor	Low (Low Landmap evaluation)
Scale of landscape effect		Direct effects upon the preformed, and previously disturbed development plateau area only. Low
Geographical extent		Focussed upon the AA, although due to near boundaries potential to extend into adjoining AAs. Local effects, site and immediate setting. Medium / Low
Duration and reversibility of effect		Long term duration, permanent scheme.
Magnitude of landscape effect		Medium
Level of Landscape Effect		Moderate-Low, a NOT SUBSTANTIAL landscape effect

VS122 – Merthyr Tydfil (Host area – small zone)		
BASELINE	Susceptibility to change	<i>This urban area includes Merthyr Tydfil itself and a series of linked village communities and housing estates, which surround the town centre.. This is an extremely complex area... The pattern of development has historically been controlled by the exploitation of local minerals and related industrial development... With this in mind the area can be divided into older settlement cores and the matrix of areas in between which comprise newer housing developments, industrial and commercial sites, open spaces and apparently unused and reclaimed land... The open spaces between built up areas are in varying condition... Some have revegetated naturally... Other areas have been reclaimed to form "green tips" with engineered sides and flat terraces for industry or recreation... Substantial time and investment in recent years has meant that others still have been reclaimed with sensitive landform, water bodies, substantial planting and access routes... Planting and vegetation is, over time, integrating and softening these formerly visually harsh but distinctive landscapes... All, however, currently still bear the hallmark of reclaimed or disturbed landscapes.</i>

		Low susceptibility to the form of development within established urban area.
	Value of landscape receptor	Low 'The town has a very complex form with no discernible pattern and coherence... Some areas are in poor condition and there are numerous detractors... New development and reclamation have obscured the important heritage of the area in parts.
	Sensitivity of landscape receptor	Low (Low Landmap evaluation)
Scale of landscape effect		Direct effects upon a small area of the preformed, and previously disturbed development plateau area only. Low
Geographical extent		Focussed upon the adjoining AA, VS876, limited effects over wider area. Local effects, site and immediate setting. Low
Duration and reversibility of effect		Long term duration, permanent scheme.
Magnitude of landscape effect		Low
Level of Landscape Effect		Low, a NOT SUBSTANTIAL landscape effect

VS917 - Merthyr West Flank		
BASELINE	Susceptibility to change	<i>'This area lies between the town and the ridgeline and reaches right down to the River Taf at various points along its lower edge... It is somewhat akin to a massive area of urban fringe in that the influence of the town is evident throughout yet it is still distinctly rural in overall character... It is a complex mosaic of tips, transport features and mine sites intermingled with an upland pasture field pattern... There are areas of woodland and substantial natural regeneration, which look like natural habitats from a distance... There is a large total area of disused sites yet the majority of them are becoming well integrated within the mosaic... At both viewing distances the diversity and pattern of this landscape are distinctive and of high value... The naturally regenerated habitat mosaics are a particular feature of the Merthyr landscape and compare favourably visually with some of the sterile reclamation projects designed purely for industrial development or grazing.'</i>

		Medium susceptibility to the form of development within established urban area.
	Value of landscape receptor	Medium 'The area has a distinctive sense of place, with a mix of vegetation and industrial heritage features and patterns with a particular richness... The area provides a positive backcloth to the town of Merthyr and dominates its views west... However, there are detractors such as unvegetated tips.
	Sensitivity of landscape receptor	Medium (Moderate Landmap evaluation)
Scale of landscape effect		No direct effects upon the area, located c.2km from the site boundary. Negligible
Geographical extent		Focussed upon the host AA only, no effects over wider area at this separation distance considering intermediate urban area. Negligible
Duration and reversibility of effect		Long term duration, permanent scheme.
Magnitude of landscape effect		Negligible
Level of Landscape Effect		Neutral, a NOT SUBSTANTIAL landscape effect

VS588- Cyfarthfa Park		
BASELINE	Susceptibility to change	<i>Cyfarthfa Park is the largest open space in the Merthyr Tydfil conurbation, representing a mature designed landscape, graded as II*... The house was commissioned by William Crawshay in 1825, and was designed by Robert Lugar as a mock castle... The impressive house (a Grade I Listed Building) overlooks grounds dropping to the southwest and the Cyfarthfa Ironworks, on the far side of the River Taf... It is therefore prominent in the landscape... The areas behind the house, to the east and north, have developed as mixed woodland... The large attractive lake in the west of the park supplied water to the Cyfarthfa Ironworks via a trough on the Pont y Cafnau Bridge...</i> High susceptibility to the form of development

	Value of landscape receptor	High 'Cyfarthfa Park acts as an important setting to the castle and is prominent in views from the A470 and other parts of Merthyr... It has a strong visual relationship with the related furnaces across the valley which is a rare feature... The park is very attractive with mature trees and well maintained grounds...
	Sensitivity of landscape receptor	High (High Landmap evaluation)
Scale of landscape effect		No direct effects upon the area, located c.1.2km from the site boundary. Negligible
Geographical extent		Intervisibility potential to mixed woodland and meadow areas only, not main formal grounds. Effects focussed upon the host AA only, no effects over wider area at this separation distance considering intermediate urban area. Low
Duration and reversibility of effect		Long term duration, permanent scheme.
Magnitude of landscape effect		Low
Level of Landscape Effect		Moderate, a NOT SUBSTANTIAL landscape effect

VS313 - Merthyr North Flank		
BASELINE	Susceptibility to change	<i>'The area is of exposed upland character with moorland rising to 530m. The visual and sensory character is generally bleak and open with long views. It is a complex area in which the variety of land uses over time have fragmented the appearance and changed the otherwise large scale upland. The resulting mix is sometimes jarring but elsewhere the diversity adds interest. The unifying influence is the fact that these land uses have clearly altered the landscape. Settlement is present on the north side of the A465 and abuts the area - terraced housing, large scale industry and retail parks. The retail park in particular is very exposed and sits uncomfortably on the edge of the upland moorland.'</i> Medium susceptibility to the form of development within established urban area.

	Value of landscape receptor	Medium 'mosaic of post industrial and prehistoric features combined with moorland create a landscape of distinctive character with dramatic characteristics in places.'
	Sensitivity of landscape receptor	Medium (Moderate Landmap evaluation)
Scale of landscape effect		No direct effects upon the area, located c.2km from the site boundary. Relatively small area within the study area. Negligible
Geographical extent		Focussed upon the host AA only, no effects over wider area at this separation distance considering intermediate urban area. Negligible
Duration and reversibility of effect		Long term duration, permanent scheme.
Magnitude of landscape effect		Negligible
Level of Landscape Effect		Neutral, a NOT SUBSTANTIAL landscape effect

6.2.3 Overall, the assessment of landscape effects upon the selected Landmap Visual and Sensory Aspect Areas has concluded that none would experience landscape effects of a substantial nature as a result of the proposed development.

6.3 EFFECTS UPON LANDSCAPE RECEPTORS

6.3.1 Effects upon the Cyfarthfa Park Registered Park and Garden are as considered for the visual and sensory aspect area which covers the same boundary as the RPG, not substantial effects upon the setting of the RPG are concluded. A viewpoint will also consider the effects upon views from a representative location within the RPG.

6.3.2 Effects upon the two Special Landscape Areas (SLA1 and SLA3) are also considered to be not substantial based on the assessment of the Landmap Visual and Sensory Aspect Areas. SLA1 broadly aligns with the boundaries as delineated by VS313 – North Merthyr Flank, effects are considered to be of a 'Neutral' level, not substantial. SLA3 broadly aligns with the boundary of VS917 – Merthyr West Flank, effects are considered to be of a 'Neutral' level, not substantial level based on the considerations within Section 6.2.

6.4 SITE LEVEL EFFECTS ON LANDSCAPE CHARACTER – LANDSCAPE SENSITIVITY

6.4.1 Landscape receptors are assessed in terms of sensitivity which combines judgements of their susceptibility to the type of change or development concerned and the value attached to the landscape. Sensitivity is specific to the project/development.

Susceptibility to change

6.4.2 The susceptibility to change of the landscape to the development is determined with reference to the baseline assessment of the existing landscape (and described as High, Medium, or Low). It is assessed

by considering the existing landscape, elements and features, landscape character and key characteristics and landscape value. Landscape characteristics of the application site and immediate surroundings (up to ~250m) are considered which includes the host Landmap Visual and Sensory Aspect Area (VS876 - Merthyr East Flank).

- 6.4.3 Considering the scale of the proposed development, established similar development in the locality, local landscape features (including already established development platform), the susceptibility to change of the landscape is judged to be Low. It is considered that the local landscape of the site and immediate surrounds could accommodate the development without a substantial change in character as it contains no landscape characteristics that would be vulnerable to the proposal.

Value of the Landscape Receptor (Site <250m)

- 6.4.4 The value of the landscape receptor, a former tip / works, restored to a development platform, is considered with regard to its current condition, with reference to the methodology and the landscape value conclusions from the baseline chapter.
- 6.4.5 The site and surrounding area (<250m) are not subject to any national, regional or local landscape designations and contains few sensitive elements cited in the referenced Landmap descriptions.
- 6.4.6 There is currently no official public access to the site although it likely to be valued locally as an informal recreational open space (primarily for dog walkers). Upon redevelopment, the site will be inaccessible to the general public (perimeter access to be determined). The landscape structure will remain (considered to be the main features of value at the local level) this is focussed upon mature tree and scrub cover upon all boundary areas, which provide a setting for the development, which also act to limit the scale of effects beyond the site boundary.
- 6.4.7 Overall, in terms of value, it is considered that in the current development ready condition that the site is of a low landscape value. *“Areas identified as having some redeeming feature(s) and possibly identified for improvement. Does not lie within or adjacent to a designated landscape. Does not present locally important / distinctive landscape characteristics or scenic interest / value.”*

Overall sensitivity of the site and local area

- 6.4.8 The susceptibility to change of the local landscape and landscape value indicators are considered to be low and low. The landscape sensitivity of the site to the proposed development is therefore concluded to be low.
- 6.4.9 In accordance with the methodology, these are *“Landscape character, elements, and associated land uses which by nature of their character would be able to accommodate change of the type proposed. Including; Lower value and non-designated landscapes, comprised of features and elements indistinct character with little or no sense of place, Likely to contain few features or elements that could not be replaced. Landscape elements with a low susceptibility to change, able to accommodate the proposed development without undue consequences”*.
- 6.4.10 Retention of the established perimeter vegetation will aid the integration of the development, retaining local green infrastructure, whilst also mitigating potential visual effects.

Magnitude of Landscape Effects

- 6.4.11 Landscape effects arising as a result of the proposed development are considered with reference to the criteria established in the methodology including; size and scale of effect; geographical extent; and, duration and reversibility. The type of effect considered includes:
- The potential operational effects upon the landscape fabric within the site (direct effect);
 - The potential operational effects on the host landscape character area (direct effect), including

the consideration of any effects within designated areas; and,

- The potential operational effects on the wider landscape character areas within the study area (indirect effects), including consideration of any effects within designated areas. *Note – not applicable in this instance due to the scale of development and local landscape setting.*

- 6.4.12 The direct effect of the proposed development upon the landscape character of the site and local area depends on; the key characteristics of the receiving environment (as previously considered), and, the degree to which the development may be consistent or at odds with the landscape and how the development would be perceived within the landscape. Perceptions can be influenced by; the distance to the site, weather conditions, appearance/fit of the development (levels of visibility), and, relationships to other built and natural features in the landscape.

Scale of Effect

- 6.4.13 Consideration is given to the scale of the change in the landscape that is experienced as a result of each effect and can include both the loss and addition of new features. The development would result in a change to a pre-defined development platform area of c. 10 ha of the site within an overall ownership area of c. 14.6 ha.
- 6.4.14 The site has no internal features that contribute to landscape character would be lost (only open scrub land). The change to new development, considering current adjoining land uses, would have a limited effect upon the aesthetic and perceptual aspects of the local landscape. Due to the established site setting, the development would have a negligible effect upon the key characteristics of the wider landscape, retained by the existing perimeter landscape structure and adjoining land uses. The overall scale of effect is considered to be **low**.

Geographical Extent

- 6.4.15 The geographical extent of effects is influenced by the landscape setting (established features around the site), the scale of the proposed development, the site and localised topography and is distinct from the scale of effect.
- 6.4.16 Due to the local features, the mature vegetation retained around the site perimeter, the industrial development to the north / north-east and embanked A4060 road corridor to the east, it is considered that the geographical extent of effect would be limited to a site level and the immediate setting (adjoining areas) only. The geographical extent of effect is low.

Duration and Reversibility of the Landscape Effects

- 6.4.17 The development is considered long term and largely irreversible due to building layout and hard standings. A **high** level of effect is concluded when considering the form of built development, duration and reversibility of landscape effects.

Overall Magnitude of Landscape Effects

- 6.4.18 Magnitude is considered with regard to the methodology and the; scale, geographical extent, and duration and reversibility of landscape effects.
- 6.4.19 Overall, with a particular focus upon the scale and geographical scale of effect, the magnitude of change is considered to be low. *“Very minor loss to landscape elements, characteristic of the baseline and the introduction of elements that are not uncharacteristic of the surrounding landscape”.*
- 6.4.20 The development would result in the loss of an existing open development platform, current scrub and unrestricted access area, replaced by the buildings and hard standing of the development. Due to the existing presence of surrounding industrial land users, the retention of surrounding vegetation and tree

cover, it is considered that the proposed development would not lead to a characterising effect upon the landscape of the local area outside of the site boundary and immediate adjoining areas (<100m).

Overall Level (Significance) of Landscape Effect upon the Site and Local Area

- 6.4.21 The level of effect is determined by consideration of the landscape sensitivity and magnitude of landscape effect. With reference to the evaluation of the landscape effects in accordance with the methodology, a 'Low' landscape sensitivity and a 'Low' magnitude of change is considered to result in a Minor significance of landscape effect overall, this is a Not Substantial effect.
- 6.4.22 These are effects that would; *'not quite fit in with the scale and landform of the landscape' 'affect an area of landscape character of low value / susceptibility to change' and are 'limited within the local context, affecting an area of undistinctive sense of place'.*
- 6.4.23 Overall, the effects would not be considered to be effects that would be a material factor in the decision making process.



7. VISUAL ASSESSMENT

7.1 VISUAL ASSESSMENT

Assessment of Predicted Visual Effect on Residential Properties within 500m

- 7.1.1 As outlined within the baseline section, there are eight residential receptors / groups within the study area with potential visibility to the proposed development:

Table 7.1: Residential Receptors Visual Assessment

R1, Mount View properties	
Distance from site (closest area of the site boundary)	c.10m south
Susceptibility to change	Residents. Properties not accessible so view considered from road that borders the site boundary and analysis of aerial photography. High
Value of view	No recognition of importance in local planning policy or published literature. Views are likely to be valued by the residents and visitors to the property.
Sensitivity of visual receptor	High
Scale of visual effect	View also considered in Viewpoint 5 although viewpoint represents view from street, properties are not aligned with as direct views. Excluding 2 properties all properties aligned away from the site, restricting potential visibility. Two properties aligned to the north however the view is focussed upon site perimeter scrub and tree planting, also restricted by local landform. Vegetation in this area to remain. It is therefore considered that all views to the site would be screened. Neutral.
Geographical extent	No visibility – not applicable
Duration and reversibility of effect	No visibility – not applicable
Magnitude of visual effect	Neutral
LEVEL OF VISUAL EFFECT	Neutral A NOT SUBSTANTIAL visual effect

R2, Incline Top (area)	
Distance from site (closest area of the site boundary)	c.50m west
Susceptibility to change	Residents. Properties not accessible so view considered from roads Within the area, consideration of the ZTV and analysis of aerial photography. High.
Value of view	No recognition of importance in local planning policy or published literature. Views are likely to be valued by the residents and visitors to the properties.
Sensitivity of visual receptor	High
Scale of visual effect	The ZTV indicates very limited potential for theoretical visibility to the site from the area. The properties are set at a lower level than the site, upon a western facing slope, with the site to the east at a higher level. The intermediate area contains mature banks of tree, particularly those along Goat Mill Road. Due to

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	the change in elevation and intervening features all views to the site are considered to be screened. Neutral.
Geographical extent	No visibility – not applicable
Duration and reversibility of effect	No visibility – not applicable
Magnitude of visual effect	Neutral
LEVEL OF VISUAL EFFECT	Neutral A NOT SUBSTANTIAL visual effect

R3, Bradley Gardens (area)	
Distance from site (closest area of the site boundary)	c.70m south-west
Susceptibility to change	Residents. Properties not accessible so view considered from roads Within the area, consideration of the ZTV and analysis of aerial photography. High.
Value of view	No recognition of importance in local planning policy or published literature. Views are likely to be valued by the residents and visitors to the properties.
Sensitivity of visual receptor	High
Scale of visual effect	The ZTV indicates very limited potential for theoretical visibility to the site from the area. The properties in the area are set at a lower level than the site, upon a south western facing slope, with the site to the north east at a higher level. The intermediate area contains numerous blocks of built development, mature banks of tree, particularly those along Goat Mill Road and Incline Top. Due to the change in elevation and intervening features all views to the site are considered to be screened. Neutral.
Geographical extent	No visibility – not applicable
Duration and reversibility of effect	No visibility – not applicable
Magnitude of visual effect	Neutral
LEVEL OF VISUAL EFFECT	Neutral A NOT SUBSTANTIAL visual effect

R4, Mountain Hare (area)	
Distance from site (closest area of the site boundary)	c.150m south west
Susceptibility to change	Residents. Properties not accessible so view considered from roads Within the area, consideration of the ZTV and analysis of aerial photography. High.
Value of view	No recognition of importance in local planning policy or published literature. Views are likely to be valued by the residents and visitors to the property.
Sensitivity of visual receptor	High

Scale of visual effect	The ZTV indicates no potential for theoretical visibility to the site from the area. Similar to R3, the properties in the area are set at a lower level than the site, upon a southern facing slope, with the site to the north at a higher level. Due to the change in elevation and intervening features all views to the site are considered to be screened. Neutral.
Geographical extent	No visibility – not applicable
Duration and reversibility of effect	No visibility – not applicable
Magnitude of visual effect	Neutral
LEVEL OF VISUAL EFFECT	Neutral A NOT SUBSTANTIAL visual effect

R5, Church Street (area), Pen Y Darren	
Distance from site (closest area of the site boundary)	c.350m north-west
Susceptibility to change	Residents. Properties not accessible so view considered from roads Within the area, consideration of the ZTV and analysis of aerial photography. High.
Value of view	No recognition of importance in local planning policy or published literature. Views are likely to be valued by the residents and visitors to the property.
Sensitivity of visual receptor	High
Scale of visual effect	The ZTV indicates no potential for theoretical visibility to the site from the area. The properties in the area are set at a lower level than the site (local valley feature), upon an eastern facing slope, with the site to the south-east at a higher level. Due to the change in elevation and intervening features (Vegetation of Whitey park and that lining Goat Mill Road and former Incline Tip area). All views to the site are considered to be screened. Neutral.
Geographical extent	No visibility – not applicable
Duration and reversibility of effect	No visibility – not applicable
Magnitude of visual effect	Neutral
LEVEL OF VISUAL EFFECT	Neutral A NOT SUBSTANTIAL visual effect

R6, GylInne Jones Crescent (area), Dowlais	
Distance from site (closest area of the site boundary)	c.400m north
Susceptibility to change	Residents. Properties not accessible so view considered from roads Within the area, consideration of the ZTV and analysis of aerial photography. High.
Value of view	No recognition of importance in local planning policy or published literature. Views are likely to be valued by the residents and visitors to the property.

Sensitivity of visual receptor	High
Scale of visual effect	The ZTV indicates very limited potential for theoretical visibility to the site from the residential area. The properties in the area are set at a similar level to the site. The intervening area contains areas of regeneration planting and built form including warehouses. The warehouses close to the site area are visible which indicates that there would also be partial visibility to the upper and roof sections of the proposed buildings. Low
Geographical extent	Development partially visible within (and beyond) intermediate urban area in the south. Low.
Duration and reversibility of effect	Permanent scheme
Magnitude of visual effect	Medium
LEVEL OF VISUAL EFFECT	Moderate - Minor A NOT SUBSTANTIAL visual effect

R7, Baden Terrace (area), Penyard	
Distance from site (closest area of the site boundary)	c.380m west
Susceptibility to change	Residents. Properties not accessible so view considered from roads Within the area, consideration of the ZTV and analysis of aerial photography. High.
Value of view	No recognition of importance in local planning policy or published literature. Views are likely to be valued by the residents and visitors to the property.
Sensitivity of visual receptor	High
Scale of visual effect	The ZTV indicates no potential for theoretical visibility to the site from the area. The properties in the area are set at a lower level than the site upon an eastern facing slope, with the site to the east at a higher level. Due to the change in elevation and intervening features (Vegetation of Whitey park and that lining Goat Mill Road and former Incline Tip area). All views to the site are considered to be screened. Neutral.
Geographical extent	No visibility – not applicable
Duration and reversibility of effect	No visibility – not applicable
Magnitude of visual effect	Neutral
LEVEL OF VISUAL EFFECT	Neutral A NOT SUBSTANTIAL visual effect

R8, Victoria Street (area), Dowlais	
Distance from site (closest area of the site boundary)	c.550m north
Susceptibility to change	Residents (properties and the site not accessible so view considered from nearby roads and analysis of aerial photography). High
Value of view	No recognition of importance in local planning policy or

	published literature. Views are likely to be valued by the residents and visitors to the property.
Sensitivity of visual receptor	High
Scale of visual effect	The ZTV indicates very limited potential for theoretical visibility to the site from the residential area. The properties in the area are set at a level above that of the site offering the potential for expansive views south over the urban areas of the town. The intervening area contains areas of regeneration planting and built form including warehouses, some set at a similar level to the proposed development. The warehouses close to the site area are visible which indicates that there would also be partial visibility to the upper and roof sections of the proposed industrial units. Low
Geographical extent	Development partially visible within (and beyond) intermediate urban area in the south. Low.
Duration and reversibility of effect	Permanent scheme
Magnitude of visual effect	Medium-Low
LEVEL OF VISUAL EFFECT	Minor A NOT SUBSTANTIAL visual effect

R9, Penbryn Villas (area), Pen y Darren,	
Distance from site (closest area of the site boundary)	c.550m (to 1km) to the north-west
Susceptibility to change	Residents (properties and the site not accessible so view considered from nearby roads and analysis of aerial photography). High.
Value of view	No recognition of importance in local planning policy or published literature. Views are likely to be valued by the residents and visitors to the property.
Sensitivity of visual receptor	High
Scale of visual effect	The ZTV indicates limited potential for theoretical visibility to the site from the residential area. The properties in the area are set at a level above that of the site offering the potential for expansive views south-east over the lower lying urban areas of the town. The intervening area contains areas of regeneration planting and built form including warehouses, some set at a similar level to the proposed development. The warehouses close to the site area are visible from many locations in the local area, which indicates that there would also be partial visibility to the upper and roof sections of the proposed industrial units. Low
Geographical extent	Development partially visible within (and beyond) intermediate urban area in the south-east. Low.
Duration and reversibility of effect	Permanent scheme
Magnitude of visual effect	Medium-Low
LEVEL OF VISUAL EFFECT	Minor A NOT SUBSTANTIAL visual effect

R10, Pontmorlais area, c.530m to the west	
Distance from site (closest area of the site boundary)	c.530m (to 1km) to the west
Susceptibility to change	Residents. Properties not accessible so view considered from roads Within the area, consideration of the ZTV and analysis of aerial photography. High.
Value of view	No recognition of importance in local planning policy or published literature. Views are likely to be valued by the residents and visitors to the property.
Sensitivity of visual receptor	High
Scale of visual effect	The ZTV indicates that there would be no potential for theoretical visibility to the site from the residential area. The properties in the area are generally set at a lower level than the site upon an eastern facing slope, with the site to the east at a higher level, beyond a large intervening urban area. Due to the change in elevation and intervening features (Residential areas R2 and R7). All views to the site are considered to be screened. Neutral.
Geographical extent	No visibility – not applicable
Duration and reversibility of effect	No visibility – not applicable
Magnitude of visual effect	Neutral
LEVEL OF VISUAL EFFECT	Neutral A NOT SUBSTANTIAL visual effect

R11, Thomas Town area	
Distance from site (closest area of the site boundary)	c.700m to the south-west
Susceptibility to change	Residents. Properties not accessible so view considered from roads Within the area, consideration of the ZTV and analysis of aerial photography. High.
Value of view	No recognition of importance in local planning policy or published literature. Views are likely to be valued by the residents and visitors to the property.
Sensitivity of visual receptor	High
Scale of visual effect	The ZTV indicates that there would be no potential for theoretical visibility to the site from the residential areas, visibility focussed to an area of public open space / playing fields only. The properties in the area are set at a lower level than the site upon an north eastern facing slope, with the site to the north-east at a higher level, beyond a large intervening urban area. Due to the change in elevation and intervening features (Residential areas R2 and R3). All views to the site are considered to be screened. Neutral.
Geographical extent	No visibility – not applicable
Duration and reversibility of effect	No visibility – not applicable
Magnitude of visual effect	Neutral

LEVEL OF VISUAL EFFECT	Neutral A NOT SUBSTANTIAL visual effect
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R12, Twynyrodyn area	
Distance from site (closest area of the site boundary)	c.550m to the south
Susceptibility to change	Residents. Properties not accessible so view considered from roads Within the area, consideration of the ZTV and analysis of aerial photography. High.
Value of view	No recognition of importance in local planning policy or published literature. Views are likely to be valued by the residents and visitors to the property.
Sensitivity of visual receptor	High
Scale of visual effect	The ZTV indicates that there would be no potential for theoretical visibility to the site from the residential areas. The properties in the area are set at a lower level than the site upon an north eastern facing slope, with the site to the north-east at a higher level, beyond a large intervening urban area. Due to the change in elevation and intervening features (Residential areas R2, R3 and R4). All views to the site are considered to be screened. Neutral.
Geographical extent	No visibility – not applicable
Duration and reversibility of effect	No visibility – not applicable
Magnitude of visual effect	Neutral
LEVEL OF VISUAL EFFECT	Neutral A NOT SUBSTANTIAL visual effect

- 7.1.2 In summary, the residential visual receptor groups within 1km of the site have been assessed and it is concluded that none would experience visual effects of a substantial nature. The assessment has established that (in general) there would be extremely limited visibility to the site area and development proposals from the residential receptors within the study area. It is caveated that this is based upon general assessment of the areas, from publicly accessible spaces. There remains the potential for more extensive visibility from individual properties, aligned with open views towards the site. Overall, however, considering the urban context and separation distances, even if the development is visible, it is considered that the effects would remain at a not substantial level.

Assessment of Predicted Visual Effect on Recreational Routes within 1km

- 7.1.3 As discussed in the baseline section there is a very limited network of footpaths and trails within the 1km study area and no higher sensitivity regional/national routes. Following analysis of the ZTV it is considered that all views from these routes would be screened (or extremely limited) therefore it is not considered necessary to assess in further detail. Not substantial effects are concluded from recreational routes in the study area.

Assessment of Predicted Visual Effect on Vehicular Routes within 1km

- 7.1.4 As discussed in the baseline section the main public road with the potential for visibility into the site is Goat Mill Road however views are likely to be focused to the site entrance area only, viewed from within an established employment zone (urban area) already (the entrance roundabout is the location for Viewpoint 1). Views from the remaining sections of the road upon the boundary are considered to

be screened by the mature tree and scrub belt that borders the site, 'not substantial' effects are concluded.

Night-time Visual Effects

- 7.1.5 A lighting assessment has been undertaken and is presented in Appendix N. The assessment confirms that the lighting of the proposed industrial units and site would result in a permanent impact on the visual scene, however, through the use of a design practice, the impact can be minimised through sensitive design. The number of columns within the site has been reduced along with overall height, in addition to the use of modern LED lanterns with shielding light to create a well-controlled illuminated environment. The assessment confirms that the optics have been selected to avoid glare and light spill as much as possible whilst achieving the required lighting levels for health and safety reasons. Columns close to ecological sensitive areas have rear shields added to further reduce rear light spill.
- 7.1.6 When the site is viewed at night it will be visible within the established urban context, which is currently illuminated, reducing the prominence of the site, seen within the overall urban environment. Night-time visual effects are considered to be not substantial.

Viewpoint Assessment

- 7.1.7 Visual receptor sensitivity to change is defined as being; high, medium, low or negligible depending upon the activity of the receptor. The viewpoint assessment considers:
- The nature of the view of the development e.g. full, partial, glimpse.
 - The proportion of the development or features that would be visible e.g. full, most, small, part, none.
 - The distance of the viewpoint from the development and whether the viewer would focus on the development due to its scale and proximity or whether the development would be only a small, minor element in a panoramic view.
 - Whether the view is stationary or transient or one of a sequence of views, as from a footpath or moving vehicle.
 - The nature of the changes, e.g. changes in the skyline profile, a new visual focus, changes in visual simplicity or complexity and alteration of visual scale.
- 7.1.8 The existing level of visibility from the six viewpoints is illustrated on the viewpoint sheet figures. Detailed analysis of the viewpoints is made with reference to the current baseline views. The viewpoint assessment considers the existing visible local features, e.g. trees and built structures and the proposed mitigation vegetation at scheme opening and ~5 years from planting to take account of the screening and enhancement potential of the existing vegetation and mitigation. The analysis of the magnitude of change, and the resulting visual effect is considered in the following table as follows:

Viewpoint 1 - Site Entrance, Goat Mill Road	
Visual receptor / susceptibility to change	Road users and nearby employment units (Medium sensitivity).
Value of view	No recognition in planning terms (landscape and heritage) or literature. Not a defined scenic route.
Sensitivity of visual receptor	Medium
Scale of visual effect	As expected, due to the close nature of the viewpoint location at the site entrance the location offers clear visibility to the northern warehouse unit (Building 1), north western façade, as it fronts Goat Mill Road and the roundabout. The view and experience of road users is very similar to the existing views to the established warehouse units, although views aligned in an opposing direction. There is no visibility to Building 2, all views screened

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	by Building 1. The mature vegetation remains upon the site boundary / Goatmill Road screening and filtering views into the area, no visibility to the outdoor storage area. High.
Geographical extent	Viewpoint c.10m from the site boundary upon the opposing side of the roundabout. Extensive near range views. High.
Duration and reversibility of effect	Development a permanent feature. Vegetation upon the site boundary to mature to a greater height over time, filtering and screening views further. High
Magnitude of visual effect	High
LEVEL OF VISUAL EFFECT	Major, a SUBSTANTIAL visual effect

Viewpoint 2 - Victoria Street, Dowlais	
Visual receptor / susceptibility to change	Roads users (Low Sensitivity) Residents (High Sensitivity)
Value of view	No recognition in planning terms (landscape and heritage) or literature. Assume views valued by local residents.
Sensitivity of visual receptor	High
Scale of visual effect	The location within central Dowlais allows open views to the south over the lower lying urban areas of Merthyr. The photomontage illustrates that the roof sections of Warehouse building 1 are likely to be perceptible (with very limited visibility to Building 2). The photomontage also illustrates the limited visibility to the external storage yard containing plastic bales. Overall, considering the separation distance, the new development forms a small scale feature, set within the wider established urban context, a development typically seen within the wider area. Low.
Geographical extent	Viewpoint c.875m north-west of site. Development seen in distance within wide panorama. Low
Duration and reversibility of effect	Development a permanent feature. Vegetation upon the site boundary, and intermediate area has the potential to mature to a greater height over time, filtering and screening views further. High
Magnitude of visual effect	Low
LEVEL OF VISUAL EFFECT	Minor, a NOT SUBSTANTIAL visual effect

Viewpoint 3 - Mitchell Crescent, Penybryn	
Visual receptor / susceptibility to change	Residential (High Sensitivity)
Value of view	No recognition in planning terms (landscape and heritage) or literature. Assume view valued by local residents.
Sensitivity of visual receptor	High.
Scale of visual effect	The photomontage location offers expansive views over the eastern areas of Merthyr. The development is clearly visible upon the fringes of the town, the roof sections of both buildings perceptible. The proposed buildings viewed in a grouping with the other established warehouses in the local area so seen within an established context, although the proposed buildings are of a greater scale than the existing buildings. Limited visibility to the exhaust stack of the CHP between buildings 1 and 2, but at a lower overall level. Despite the increased scale, views remain to the vegetation around the site

	and that beyond approaching the A4060, the buildings set within a mature context of established tree cover, which reduces the visible scale of development. The green cladding of the buildings assists the buildings to blend in with the local context further. Medium - Low
Geographical extent	Location c.975m north-west of the site boundary. Development seen in distance within wide panorama. Low.
Duration and reversibility of effect	Development a permanent feature. Vegetation upon the site boundary, and intermediate area has the potential to mature to a greater height over time, filtering and screening views further. High
Magnitude of visual effect	Medium-Low
LEVEL OF VISUAL EFFECT	Moderate-Minor, a NOT SUBSTANTIAL visual effect

Viewpoint 4 – Cyfarthfa Castle Park (grounds)	
Visual receptor / susceptibility to change	Visitors to the Registered Park and Garden. (High Sensitivity)
Value of view	Not a specific defined (or designed) view however in general views out, and setting of, RPGs is valued.
Sensitivity of visual receptor	High
Scale of visual effect	The photomontage illustrates the open visibility to the south-east from the RPG. It is noted that the RPG contains many areas of mature tree cover which generally restricts visibility to the east. From the selected location it is possible to see over the lower lying intermediate urban areas of Merthyr to the former Incline Tip area, small areas of the roof sections of Buildings 1 and 2 are perceptible above the tree line, however the green cladding of the building significantly reduces their visual prominence when viewed in the local setting of established tree cover. Low
Geographical extent	Site c.1.5km to the south-west. Development seen in distance within wide panorama. Low.
Duration and reversibility of effect	Development a permanent feature. Vegetation upon the site boundary, and intermediate area has the potential to mature to a greater height over time, filtering and screening views further. High
Magnitude of visual effect	Low
LEVEL OF VISUAL EFFECT	Moderate-Minor, a NOT SUBSTANTIAL visual effect

Viewpoint 5 - Mount View	
Visual receptor / susceptibility to change	Road users (Medium) as nearby residential set back from photograph location.
Value of view	No recognition in planning terms (landscape and heritage) or literature. Assume view valued by local residents.
Sensitivity of visual receptor	Medium.
Scale of visual effect	The photomontage location offers near range views into the southern area of the site, focussed over the southern area of retained OMH and the new surface water lagoon (not visible, although fencing around the outer edge can be seen). Beyond the open area and site boundary fence (close boarded) there is limited visibility to the outdoor bale storage area and the south eastern elevations of Buildings 2 and 1, set within the established tree

	context. The photomontage also illustrates the loss of some internal tree and scrub vegetation, this is immature and additional diverse mitigation tree planting will be undertaken south of the lagoon, which would over time screen this current open view into the site area. Central scrub areas are cleared to create additional areas of OMH, translocated from developed areas of the site. Distant views to trees beyond the site and hill sides are still possible. Development viewed within context of surrounding vegetation, limiting views out from the area. Medium.
Geographical extent	Location c.5m from site boundary but Outdoor storage area c.250m and Building 2 are c.400m from the photograph location. Medium.
Duration and reversibility of effect	Development a permanent feature. Vegetation upon the site boundary, and intermediate area has the potential to mature to a greater height over time, filtering and screening views further. High
Magnitude of visual effect	Medium
LEVEL OF VISUAL EFFECT	Moderate-Minor, a NOT SUBSTANTIAL visual effect

Viewpoint 6 - Gallon Uchaf Road, close to junction with Gwuanfarren rd	
Visual receptor / susceptibility to change	Road users (Medium sensitivity) Residential (High sensitivity)
Value of view	No recognition in planning terms (landscape and heritage) or literature. Assume view valued by local residents.
Sensitivity of visual receptor	High.
Scale of visual effect	Due to the presence of near buildings (school) and mature tree cover all views aligned towards the site area are screened. Distant views are possible to the south-east, in the general direction of the site but only the area of trees that form the banking of the former tip area approaching the A4060. As views also screened by buildings it is considered visibility would be screened all year round.
Geographical extent	N/A – development not visible.
Duration and reversibility of effect	N/A – development not visible.
Magnitude of visual effect	Neutral
LEVEL OF VISUAL EFFECT	Neutral, a NOT SUBSTANTIAL visual effect

- 7.1.9 In summary the viewpoint assessment, undertaken from a selection of the most visible publicly accessible locations in the study area, demonstrates that the main visual changes would be focussed to the site entrance, and as expected substantial visual effects are concluded from the public highway as it passes beside the site and proposed buildings. It is however noted that the buildings are not seen out of context due to the presence of existing warehouse type buildings in the local area, with the proposed buildings to be sited upon an existing brownfield site, a pre prepared development platform.
- 7.1.10 Views from the wider study area are focussed to the rising residential areas (>750m) to the west and north-west of the site. The building roofs / upper sections are visible, but again seen within the context of the existing warehouse buildings and set within an established vegetated fringe of mature tree cover, backed by the elevated (upon the hillside) road corridor and the operational mining areas beyond. All remaining viewpoints are considered to experience effects of a ‘not substantial’ nature.

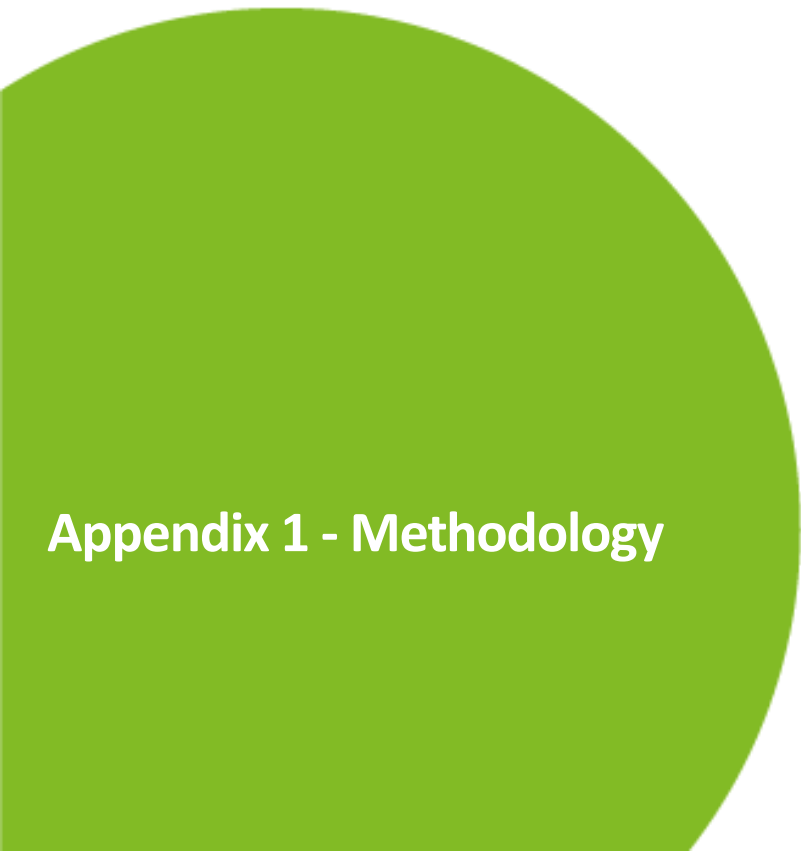


8. SUMMARY AND CONCLUSION

8.1 SUMMARY AND CONCLUSIONS

- 8.1.1 This Landscape and Visual Impact Appraisal (LVIA) has demonstrated that the proposed development (building units 1 and 2 and outdoor storage areas) can be assimilated within the local landscape of the site and the study area without any substantial landscape effects. The site proposals utilise a previously developed site; former coal and ironstone mining area that has been restored to a development ready level platform, restored for continued 'developed' use, currently an area of 'rough' ground, open mosaic habitat and scrub.
- 8.1.2 Overall, through the consideration of the indicators of landscape value, the site is concluded to be of a Low landscape value. The site is considered to have a low importance and rarity at a local scale, its value is influenced by its former uses; open cast mining and associated steel works. There is currently no defined public access to the site area (although well used informally). The site has been 'restored' to create a development ready platform, a feature characteristic within the local area, therefore in its current form is of limited wider landscape value.
- 8.1.3 With regard to the susceptibility to change of the local landscape, due to the scale and type of the proposed development, the established similar development in the locality, local landscape features (including already established development platform and surrounding mature vegetation), the susceptibility to change of the landscape is judged to be Low. It is considered that the local landscape of the site and immediate surrounds could accommodate the development without a substantial change in character as it contains no landscape characteristics that would be vulnerable to the proposal.
- 8.1.4 The landscape sensitivity of the site to the proposed development is therefore concluded to be low. In accordance with the methodology, these are *"Landscape character, elements, and associated land uses which by nature of their character would be able to accommodate change of the type proposed. Including; Lower value and non-designated landscapes, comprised of features and elements indistinct character with little or no sense of place, Likely to contain few features or elements that could not be replaced. Landscape elements with a low susceptibility to change, able to accommodate the proposed development without undue consequences"*.
- 8.1.5 Retention of the established perimeter vegetation will aid the integration of the development, retaining the established local green infrastructure, whilst also mitigating potential visual effects.
- 8.1.6 With regard to the overall magnitude of landscape effects, with a particular focus upon the scale and geographical scale of effect, the magnitude of change is considered to be low. *"Very minor loss to landscape elements, characteristic of the baseline and the introduction of elements that are not uncharacteristic of the surrounding landscape"*.
- 8.1.7 The development would result in the loss of an existing prepared development platform; current scrub, OMH with unrestricted access area, to be replaced by the buildings and hard standing of the development. Due to the existing presence of surrounding industrial land users, the retention of surrounding vegetation and tree cover, it is considered that the proposed development would not lead to a characterising effect upon the landscape of the local area outside of the site boundary and immediate adjoining areas (<100m).
- 8.1.8 With reference to the evaluation of the landscape effects in accordance with the methodology, a 'Low' landscape sensitivity and a 'Low' magnitude of change is considered to result in a Minor significance of landscape effect overall, this is a Not Substantial effect.

- 8.1.9 Overall, the effects would not be considered to be effects that would be a material factor in the decision making process.
- 8.1.10 The visual assessment considered the main receptors within 1km of the site. It is concluded that none would experience visual effects of a substantial nature. The assessment has established that (in general) there would be extremely limited visibility to the site area and development proposals from the residential receptors within the study area. It is caveated that this is based upon general assessment of the areas, from publicly accessible spaces and roads. There remains the potential for more extensive visibility from individual properties, aligned with open views towards the site. Overall, however, considering the urban context and separation distances, even if the development is visible, it is considered that the effects would remain at a 'not substantial' level, as illustrated within the photomontages.
- 8.1.11 In summary, the viewpoint assessment undertaken from a selection of the most visible publicly accessible locations in the study area, demonstrates that the main visual changes would be focussed to the site entrance, as expected 'substantial' visual effects concluded as the public highway passes beside the site and proposed buildings. It is however noted that the buildings are not seen out of context due to the presence of existing warehouse type buildings in the local area, the proposed buildings to be sited upon an existing brownfield site.
- 8.1.12 Visibility from the wider study area is focussed to the rising residential areas (>750m) to the west and north-west of the site. The building roofs / upper sections are visible, but again seen within the context of the existing warehouse buildings and set within an established vegetated fringe of mature tree cover, backed by the road corridor and the operational mining areas beyond. All remaining viewpoints are considered to experience effects of a 'not substantial' nature.
- 8.1.13 This LVIA demonstrates that the proposed development could be successfully integrated into the surrounding landscape without causing substantial harm to the landscape character and visual amenity in the local area.



Appendix 1 - Methodology

9.1 METHODOLOGY

Landscape and Visual Appraisal (LVA) Methodology (non EIA)

Introduction

9.1.1 The methodology for this LVA is based upon LVIA methodology and conforms to the relevant parts of the Guidelines for Landscape and Visual Impact Assessment, Third Edition (Landscape Institute and IEMA, 2013). The assessment (appraisal in this instance) focuses on the identification of likely substantial landscape and visual effects, including those that are, positive and negative, direct and indirect, long, medium and short term, and reversible and irreversible, as well as cumulative effects.

9.1.2 For the purposes of clarity, the European Landscape Convention (ELC) (2000), the term 'landscape' is defined as:

"An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors"

9.1.3 The ELC confirms that the landscape should be considered as a resource in its own right. It provides an integrated way of conceptualising our surroundings and is increasingly considered to provide a useful spatial framework for thinking about a wide range of environmental, land use and development issues. The ELC applies to all landscapes; natural, rural, urban and peri-urban areas, including land, inland water and marine areas. It considers land landscapes that might be considered outstanding as well as every day or degraded landscapes.

9.1.4 Additional guidance has also been taken from the following publications:

- Landscape Institute Advice Note 01/11 – *Photography and photomontage in landscape and visual impact assessment* (Landscape Institute, January 2011);
- Landscape Character Guidance for England and Scotland, Topic Paper 9, *Climate change and natural forces, the consequences for landscape character*, SNH/CA;
- Landscape Character Guidance for England and Scotland, Topic Paper 6, *Techniques for Judging Capacity and Sensitivity*, SNH/CA, 2004;
- *Landscape Character Assessment: Guidance for England and Scotland* (The Countryside Agency and Scottish Natural Heritage, 2002); and
- Council of Europe, The European Landscape Convention (2000, ratified 2006) ETS No. 176.

Data Gathering Methodology

Introduction

9.1.5 The evaluation of landscape and visual effects are discussed in separate sections. At the outset of the LVA it is useful to provide a definition of the terms 'landscape effects' and 'visual effects':

- **Landscape Effects:** These consist of the changes in the fabric, character and quality of the landscape which it is predicted would result from the development, "*assessing effects on the landscape as a resource in its own right*" (GLVIA 2013). Consideration is given to how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual

aspects of the landscape and its distinctive character. The development will have direct and indirect effects on the landscape. Direct effects physically alter landscape elements (directly attributable to the proposed development), whereas indirect effects can affect the landscape character, often away from the site. In order to establish the potential landscape effects the value of the landscape needs consideration.

- **Visual Effects:** These are the predicted effects on views available from publicly accessible areas and residential dwellings i.e. visual receptors and peoples general visual amenity. Specific effects result from changing the constituent elements within an existing view. This may be caused by the construction of a feature, or the obstruction, or modification of an existing view. *“assessing effects on specific views and on the general visual amenity experienced by people”* (GLVIA 2013).

- 9.1.6 The significance (level) of any landscape / visual effects is a product of the magnitude of any change and the sensitivity of the receptor, which may include the landscape, landscape receptors or people either at home, using the local roads, cycle ways and public rights of way (PROW) network, visiting viewpoints, tourist attractions, and undertaking recreational activities.

Appraisal Methodology

- 9.1.7 The following section outlines the stages in the appraisal of the landscape and visual effects as a result of the proposed development.

Assessing Landscape Effects

- 9.1.8 The potential landscape effects, occurring during the construction and operation period, may therefore include but are not restricted to, the following:

- Changes to landscape elements;
- Changes to landscape qualities;
- Changes to landscape character;
- Effects upon nationally and locally designated landscapes (e.g. Registered Parks and Gardens, Country Parks; and,
- Cumulative landscape effects.

Establishing the value of the landscape

- 9.1.9 Landscape value is the “the relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons” (GLVIA 2013). Landscape value is assessed as part of the landscape baseline.

- 9.1.10 In some cases, landscape value is indicated by the presence of a landscape planning designation such as a National Scenic Area or National Park indicating a landscape of national value or a locally designated landscape such as an Area of Great Landscape Value or Special Landscape Area. It should be noted that, in virtually all circumstances, landscapes are valued (frequently highly) in the local context by various, if not all, sections of the local community.

- 9.1.11 Factors that can help (but are not limited to) in the identification of valued landscapes are listed in Table 6.3.2.

Table 1 Indications of Landscape Value

Landscape quality (condition)	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and condition of individual elements.
Scenic quality	The term used to describe landscapes that appeal primarily to the senses (primarily but not wholly the visual senses).
Rarity	The presence of rare elements or features in the landscape the presence of a rare Landscape Character Type.
Representativeness	Whether the landscape contains a particular character and/or features and elements which are considered particularly important examples.
Conservation interests	The presence of features of wildlife, earth science or archaeological or historical and cultural interest can add to the value of the landscape as well as having value in their own right.
Recreation value	Evidence that the landscape is valued for recreational activity where experience of landscape is important.
Perceptual aspects	A landscape may be valued for its perceptual qualities, notably wildness and /or tranquility
Associations	Some landscapes are associated with particular people, such as artists or writers, or events in history that contribute to perceptions of the natural beauty of the area.

9.1.12 Following consideration of the value indicators, landscape value is classified as either, High, Medium or Low, based on the criteria set out in Table 6.3.3.

Table 2 Landscape Value Classification

Value	Sub Value	Typical criteria, scale and examples.
High	Exceptional	Very high importance and rarity, no or limited potential for substitution. International, national importance. World Heritage Site, National Park, AONB.
	High	High importance and rarity, limited potential for substitution. National importance. National Park, AONB, AGLV. Important to the setting of a registered historic park and garden. Presents locally important landscape characteristics or scenic value; or Presents important public amenity value by way of views, access, biodiversity, cultural or opportunity for quiet enjoyment (relative tranquility).
Medium	Medium	Medium importance and rarity, limited potential for substitution. Regional and local scale. Undesignated but value expressed

		through non official publications or demonstrable use. Lies wholly or partially within a designated landscape but where localised character and scenic value is less distinctive or has become degraded. Lies adjacent to a designed landscape. Presents locally distinctive landscape characteristics with some scenic interest. Presents some public amenity value by way of views, access, biodiversity, cultural or opportunity for quiet enjoyment (relative tranquility).
Low	Low	Low importance and rarity at local scale. Areas identified as having some redeeming feature(s) and possibly identified for improvement. Does not lie within or adjacent to a designated landscape. Does not present locally important / distinctive landscape characteristics or scenic interest / value. Does not present important public amenity value by way of views, access, biodiversity, cultural or opportunity for quiet enjoyment (relative tranquility).
	Very Low	Low importance and rarity at local scale. Areas identified for recovery, restoration and enhancement.

Assessing the level of landscape effects

- 9.1.13 Landscape effects, for each identified landscape receptor, are established through combination of (i) the sensitivity of the landscape receptor and (ii) the magnitude of effect.

Landscape Sensitivity

- 9.1.14 Landscape receptors are assessed in terms of their sensitivity combining judgements of their susceptibility to the type of change or development proposed and the value attached to the landscape. Sensitivity is specific to the particular project or development that is being proposed and to the location in question.

Susceptibility to change

- 9.1.15 Susceptibility in considering landscape sensitivity considers the ability of a defined landscape (or visual receptor) to accommodate the specific proposed development without undue negative consequences. This means “the ability of the landscape receptor (whether it be the overall character or quality / condition of a particular landscape type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the proposed development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies”. (GLVIA 2013). Susceptibility to change should not be recorded as part of the landscape baseline but it should be considered as part of the appraisal of effects.

Table 3: Guidelines Indicating the Susceptibility of Landscape Character to Change

Susceptibility	Description
Very High	Key characteristics of the landscape highly vulnerable to the proposal and the development could not be accommodated without a significant change in character, leading to a new character.
High	Key characteristics are vulnerable to the proposal and it is likely that the development could not be accommodated without a significant change in character.
Medium	Some characteristics of the landscape are vulnerable to the proposal, but in general the landscape could accommodate the development without a significant change in the character.
Low	The development is only likely to have a minor influence on the key characteristics and the landscape could accommodate the development without a significant change in character.
Negligible	The development is not likely to influence the key characteristics and the landscape could accommodate the development with no change in character.

Value of the Landscape Receptor

9.1.16 The value of the landscape receptors is established during the baseline covering:

- The value of the landscape character types / areas or landscape receptor that may be affected, based on a review of designations at both a national and local levels, and, where there are no designations, judgments based on criteria that can be used to establish landscape value;
- The value of individual contributors to landscape character, especially the key characteristics, which may include individual elements of the landscape, particular landscape features, notable aesthetic, perceptual or experiential qualities, and combinations of these contributors.

9.1.17 There can be complex relationships between the value attached to landscape receptors and their susceptibility to change. This is especially important when considering change within or close to designated landscapes. For example:

- An internationally, nationally or locally valued landscape does not automatically, or by definition, have high susceptibility to all types of change. It is possible to have a low susceptibility to change resulting from a particular type of development, by virtue of the characteristics of the landscape and nature of the proposal.
- The particular type of change or development proposed may not compromise the specific basis for the value attached to the landscape.

Magnitude of Landscape Effect

9.1.18 Effects of development upon landscape receptors need to be assessed in terms of its scale of effect, the geographical extent of the area influenced, and its duration and reversibility.

Scale of effect

9.1.19 Judgements on the scale of change in the landscape that is likely to be experienced as a result of each effect. The effect of both loss or addition of new features may be judged as major, moderate, minor or none, taking account of:

- The extent of landscape elements that will be lost, proportion of total extents and contribution of elements to the landscape character;
- The degree to which aesthetic or perceptual aspects of the landscape are altered either by removal of existing components of the landscape or addition of new ones; and
- Whether the effect changes the key characteristics of the landscape, which are critical to its distinctive character.

Geographical Extent

9.1.20 This is distinct from the size / scale of effect, there may, for example, be moderate loss of landscape elements over a large geographical area, or a major addition affecting a very localised area. In general, effects may have an influence at the following scales, although this varies due to the nature of the project, and all are not always relevant on every occasion:

- At the site level, within the development site itself;
- At the level of the immediate setting of the site;
- At the scale of the landscape type or character area within which the proposal lies;
- On a larger scale, influencing several landscape types or character areas.

Duration of Landscape Effect

9.1.21 Duration can be judged on the scale such as short term, medium term or long term, where, for example, short term might be zero to five years, medium term five to ten years and long term ten to twenty-five years. There is no fixed rule on this definition however (GLVIA 2013). When duration is included in an appraisal of effects, the assumptions behind the judgement must be made clear.

Reversibility of effect

9.1.22 Reversibility is a judgement about the prospects and the practicality of the particular effect being reversed in, for example, a generation. Some forms of development, like housing, can be considered permanent however other developments such as wind turbines are considered to be reversible since they have a limited and defined life span (c.25 years) and they can be removed and land reinstated.

9.1.23 Consideration of the effect of the development upon the landscape resource is assessed through professional judgment, based on (i) the sensitivity of receptors and (ii) the magnitude of the predicted effects. (GLVIA 2013).

Landscape Sensitivity and Magnitude

9.1.24 The evaluation of landscape sensitivity and magnitude are described in the following table and the level of an effect is determined by the consideration of sensitivity and magnitude of change.

Table 4: Landscape Sensitivity and Magnitude

Landscape Sensitivity Categories	
High	Landscape character, elements, and associated land uses where through consideration of the landscape resource and value they would be unable to accommodate change of the type proposed. Generally, this would be: • High value landscapes, protected at an international or national level (World Heritage Site/Areas of Outstanding Natural Beauty). However aspects which underpin such value may also be present outside designated areas, especially at a local scale. • Areas of special recognised value through use, perception or historic and cultural associations. • Likely to contain features that are rare and could not be replaced. • Landscape elements with a high susceptibility to change, unable to accommodate proposed development without undue consequences.
Medium	Landscape character, elements, and associated land uses which by nature of their character would be able to partly accommodate change of the type proposed. Generally, this would be: • Medium value landscape protected at a local level (Area of Important Landscape Value) or at a non-designated local level. • Where there is evidence of local value and use (non-statutory local publications) through use, perception or historic / cultural associations. • Comprised of commonplace elements and features creating generally unremarkable character, but some sense of place. • Likely to contain some features and elements that could not be replaced. • Landscape elements with a medium susceptibility to change, partly able to accommodate the proposed development without undue consequences.
Low	Landscape character, elements, and associated land uses which by nature of their character would be able to accommodate change of the type proposed. Generally, this would be: • Lower value and non-designated landscapes.

- Comprised of features and elements that are discordant, derelict or in decline, indistinct character with little or no sense of place. - Containing few, if any, features of value through use, perception or historic / cultural associations. - Likely to contain few, if any, features or elements that could not be replaced. - Landscape elements with a low susceptibility to change, able to accommodate the proposed development without undue consequences.	
Magnitude of Change Categories	
High	Total loss or substantial alteration to key landscape elements/features/characteristics of the baseline or introduction of uncharacteristic elements which would give rise to a fresh characterising effect.
Medium	Partial loss or moderate alteration to one or more key landscape elements/features/characteristics of the baseline and/or introduction of elements that may be prominent but not necessarily substantially uncharacteristic with the attributes of the receiving landscape but which could co-characterise parts of the landscape.
Low	Minor loss or alteration to one or more key landscape elements/features/characteristics of the baseline and/or introduction of elements that may not be uncharacteristic with the surrounding landscape or may not lead to a characterising or co-characterising effect.
Negligible	Very minor loss or alteration to one or more key landscape elements/features/characteristics of the baseline and/or the introduction of elements that are not uncharacteristic of the surrounding landscape. Change would be barely distinguishable approximating to no change.
No Change	No noticeable loss, damage or alteration to character or features or elements.

Level (Significance) of Landscape Effect

- 9.1.25 The significance of effect is determined by consideration of landscape sensitivity and the magnitude of change.
- 9.1.26 In accordance with paragraphs 3.34 and 3.35 of GLVIA 3rd Edition it is acknowledged that the historic use of a matrix, a formulaic approach, led to the same weighting of level of effect (significance in EIA terms) levels which were not always appropriate. The following criteria are therefore provided to assist in determining the level of effect. The table applies typical criteria to each level of effect however it should be noted that different scenarios of landscape value, sensitivity, susceptibility to change, scale of effect, geographical extent, and reversibility of effects could apply to influence significance as discussed in the appraisal. The criteria are typical examples, intermediate levels (e.g. Moderate - Minor) may apply and all effects are clearly explained.

Table 5: Typical criteria for determining the overall level of landscape effects

Level (Significance in EIA terms) of Landscape Effect	Typical Criteria
Severe	The proposal would: • Be at complete variance with the character (landform, scale, and pattern) of the landscape, both locally and at a wider scale. • Permanently degrade, diminish or destroy the integrity of valued characteristic features, elements and/or their setting. • Cause a high value / high susceptible to change landscape to be permanently changed. • Cause a sense of place to be lost. <i>Indicates an effect that is very important in the planning decision making process.</i>
Major	The proposal would: • Be at considerable variance with the character (landform, scale, and pattern) of the landscape. • Degrade or diminish the integrity of valued characteristic features, elements and /or their setting. • Cause a high value / high susceptible to change landscape to be markedly changed. • Large effect within the context of the wider area. • Cannot be fully mitigated and may cumulatively amount to a 'substantial' effect. • Damage a sense of place. <i>Indicates an effect that is, in itself, material in the planning decision making process.</i>
Moderate	The proposal would: • Conflict with the character (including quality and value) of the landscape. • Have an adverse impact on characteristic features or elements. • Cause a medium value / medium susceptible to change landscape to be markedly changed. • Noticeable effect within the context of the wider area. • Diminish a sense of place. <i>Indicates a noticeable effect that is not, in itself, material in the decision making process.</i>
Minor	The proposal would: • Not quite fit into the landform and scale of the landscape. • Affect an area of recognised landscape character of medium to low value / susceptibility to change. • Limited effect within the local context. • Affect an area of undistinctive sense of place. <i>Indicates that effect that is trivial in the planning decision making process.</i>

Neutral	The proposal would: • Complement the scale, landform and pattern of the landscape. • Maintain / un-affect existing landscape policy. • Result in a degree of change so small as to have little or no effect upon landscape receptors of low sensitivity. <i>Indicates an effect that is akin to no change and is thus not relevant to the planning decision making process.</i>
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- 9.1.27 For this appraisal, 'Substantial' landscape and visual effects resulting from the proposed development would be all those effects that result in a 'Severe' or a 'Major' effect and any exceptions would be clearly explained. There may, for example, be exceptions in the case of lower magnitudes of change affecting receptors of higher landscape and or visual sensitivity leading to a Major effect. Substantial effects are not necessarily adverse effects or unacceptable.
- 9.1.28 Where intermediate ratings are given, e.g. Moderate-Minor, this indicates an effect that is both less than Moderate and more than Minor, rather than one which varies across the range. In such cases the higher range is always given first, but this does not mean the impact is closer to that higher rating but done to facilitate the identification of effects within tables. A Major-Moderate effect can be either substantial or not substantial and dependent upon locally specific factors which will be clearly explained.
- 9.1.29 The conclusion that some effects are 'substantial' must not be taken to imply that the development should warrant refusal. As with many aspects of landscape and visual appraisal, the level of the effect also needs to be qualified with respect to the scale over which it is felt and the type or nature of the effect. An effect may be locally substantial, or substantial with respect to a small number of receptors, but not substantial when judged in a wider context, considered with other potential effects and benefits.
- 9.1.30 A final statement summarising the substantial effects will be provided distinguishing between substantial effects that are likely to influence the eventual decision and those that may be of a lesser concern.

Nature of Landscape Effect

- 9.1.31 This LVA does not state explicitly whether the effects of the development on landscape and visual amenity is adverse, neutral or beneficial, however it is acknowledged in the GLVIA 2014 state that professional opinion should be applied, and a positive or negative judgement applied (Para 5.37 and 6.29).
- 9.1.32 It is commonly accepted that the nature (or valency) of effects of a development are subjective based upon the attitude of the individual and public opinion should also be considered. All responses are equally valid and will affect the perceptual aspects of landscape character. In examining landscape effects, it is not realistic to ignore public opinion (nor the likelihood that professionally qualified landscape architects may have differing positions).
- 9.1.33 In accordance with GLVIA a precautionary approach is taken so although the nature of effects is not stated within the appraisal, effects would be negative unless stated otherwise. The precautionary approach of negative effects should be considered with the caveat that the valency of effect must

always be considered by the decision makers, the approach should not be concluded to be the final judgement and it should be acknowledged that many people would see the development as either a positive or neutral addition.

Assessing Visual Effects

- 9.1.34 The appraisal of visual effects deals with the effects of change and development on the views available to people and their visual amenity. Consideration is given to assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements.
- 9.1.35 The visual effects are identified for different receptors (people) who will experience the view; at their places of residence, during recreational activities, at work, or when travelling through the area. The visual effects may include the following:
- Visual obstruction: Physical obstruction or blocking of a view, only likely to occur close to the development or within the development site boundary;
 - Visual effect: a change to an existing view, views or wider visual amenity as a result of development or the loss of particular landscape elements or features already present in the view;
 - Visual amenity: The overall visual amenity of an area may be affected to the extent that the visual appearance of a particular visual setting, or 'sense of place' of a particular location, such as a settlement or individual property, could be altered by a development. Effects on visual amenity of key locations are considered in the context of landscape change and may also be either negative or positive; and
 - Cumulative visual effects: the cumulative or incremental visibility of similar types of development may combine to have a cumulative visual effect.

Assessing the level (significance in EIA terms) of visual effects

- 9.1.36 Visual effects, for each identified visual receptor, are established through combination of (i) the sensitivity of the visual receptor and (ii) the magnitude of visual effect.

1, Visual Receptor Sensitivity

- 9.1.37 The sensitivity of visual receptors (people) is assessed in terms of their susceptibility to the type of change or development proposed and the value attached to the particular views. Sensitivity is specific to the particular project or development that is being proposed and to the location and view in question.

Susceptibility to change

- 9.1.38 The susceptibility of different visual receptors to changes in views and visual amenity is mainly a function of :
- The occupation or activity of people experiencing the view at particular locations; and

- The extent to which their attention or interest may therefore be focussed on the views and the visual amenity they experience at particular locations.

9.1.39 The visual receptors most susceptible to change are generally likely to include:

- Residents at home;
- People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focused on the landscape and particular views;
- Visitors to heritage assets, or to other attractions, whose views of the surroundings are an important contributor to the experience; and
- Communities where views contribute to the landscape setting enjoyed by residents in the area.

9.1.40 Travellers on road, rail or other transport routes fall into an intermediate category of moderate susceptibility to change. Where travel involves recognised scenic routes, awareness of views is likely to be particularly high.

9.1.41 The visual receptors likely to be least sensitive to change include:

- People engaged in outdoor sport or recreation which does not involve or depend upon appreciation of views of the landscape; and
- People at their place of work whose attention may be focused on their work or activity, not on their surroundings, and where the setting is not important to the quality of working life (although to be judged on case by case basis as there may on occasion be cases where views are important to the setting and quality of working life).

9.1.42 The division in levels of susceptibility to change is a gradual one; each project should consider the nature of the groups of people who will be affected and the extent to which their attention is likely to be focused on views and visual amenity. The susceptibility of visual receptors to change is recorded as high, medium or low. (GLVIA 2013).

Value attached to views

9.1.43 When considering the susceptibility of visual receptors to change additional judgements should be made about the value attached to the views experienced, this should take account of:

- Recognition of the value attached to particular views, for example in relation to designed landscapes, or through planning designations;
- Indicators of the value attached to views by visitors, for example through appearances in guidebooks, tourist maps or through the provision of facilities for their enjoyment (e.g. parking / viewing areas, interpretation material and references in literature / art. (GLVIA 2013)

2, Magnitude of Visual Effects

- 9.1.44 Effects of development upon landscape receptors need to be assessed in terms of its scale of effect, the geographical extent of the area influenced, and its duration and reversibility.

Scale of effect

- 9.1.45 Judging the magnitude of the visual effects identified needs to take account of:
- The scale of the change in view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the development;
 - The degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of form, scale, mass, line, height, colour and texture;
 - The nature of the view of the proposed development, in terms of the relative amount of time over which it will be experienced and whether views will be full, partial or glimpses.

Geographical extent

- 9.1.46 The geographical extent of a visual effect will vary with different viewpoints and is likely to reflect:
- the angle of view in relation to the main activity of the receptor;
 - the distance of the viewpoint from the proposed development;
 - the extent of area over which changes would be visible.

Duration and reversibility of visual effects

- 9.1.47 As with landscape effects these are separate but linked considerations. Similar categories are used, short term, medium term or long term, provided that their meaning is clearly stated with criteria for the lengths of time encompassed in each case. (GLVIA 2013).

Visual Sensitivity and Magnitude

- 9.1.48 The evaluation of visual sensitivity and magnitude are described in the following table, the level of an effect is determined by the consideration of sensitivity and magnitude of change.

Table 6 Visual Receptor Sensitivity and Magnitude

Definition of Visual Receptor Sensitivity (Susceptibility to change) Categories	
High	Residents. Users of outdoor recreational facilities including footpaths, cycle ways and recreational (scenic) road users. People experiencing views from important landscape features of physical, cultural or historic interest, beauty spots and picnic areas.

Medium	Road users and travellers on trains experiencing views from transport routes. People engaged in outdoor sport that involves an appreciation of the landscape. Schools and other institutional buildings, and their outdoor areas.
Low	Workers, users of facilities and commercial buildings (indoors) experiencing views from buildings, where setting is not important to the quality of working life. People engaged in outdoor sport / recreation that does not involve / depend upon an appreciation of the landscape.
Magnitude of Change	
High	Substantial change, where the proposals would have a defining influence on the view. Change very prominent leading to a substantial obstruction or complete change in character and composition of the baseline existing view.
Medium	Moderate change in view, occurs where the proposals would be clearly noticeable and an important new element in the view. It may involve partial obstruction of existing view or partial change in character and composition of the baseline existing view.
Low	The proposals would be partially visible or visible at sufficient distance to be perceptible and result in limited or minor changes to the view. The character and composition, although altered will be similar to the baseline existing situation.
Negligible	Change would be barely perceptible. The composition and character of the view would be substantially unaltered, approximating to little or no change.

Level (Significance in EIA terms) of Visual Effect

- 9.1.49 The level of effect is determined by consideration of the visual receptor sensitivity and magnitude of visual change.
- 9.1.50 In accordance with paragraphs 3.34 and 3.35 of GLVIA 3rd Edition it is acknowledged that the historic use of a matrix, a formulaic approach, led to the same weighting of levels which were not always appropriate. The following criteria are therefore provided to assist in determining the level of effect. The table assigns typical criteria to each level however it should be noted that the different scenarios of susceptibility to change, value of the view, sensitivity of the receptor location, size, geographical extent and reversibility of effects could apply to influence effects as described in the appraisal. The criteria in the following table are provided as typical examples only, intermediate levels (e.g. Moderate-Minor) may apply and all effects will be clearly explained.

Table 7 Typical criteria for determining the overall level of visual effects

Level (Significance in EIA terms) of Visual Effect	Typical Criteria
Severe	The proposal would: • Cause the permanent loss of views from a high sensitivity / susceptibility to change receptor and / or experienced by a very large number of people, and; • Constitute a dominant discordant feature in the view, totally out of character with the existing situation. <i>Indicates an effect that is very important in the planning decision making process.</i>
Major	The proposal would: • Cause a substantial deterioration to a view from a high sensitivity / susceptible to change receptor, and; • Constitute a major discordant feature in the view. <i>Indicates an effect that is, in itself, material in the planning decision making process.</i>
Moderate	The proposal would: • Cause a noticeable deterioration to a view, but not dominating from a medium sensitivity / susceptible to change receptor, • Be experienced by a medium number of people, and; • Constitute a moderate discordant feature in the view <i>Indicates a noticeable effect that is not, in itself, material in the decision making process.</i>
Minor	The proposal would: • Cause a barely noticeable deterioration to a view from a low sensitivity / susceptible to change receptor • Be experienced by a small number of people, and; • Constitute a minor discordant feature in the view <i>Indicates that effect that is trivial in the planning decision making process.</i>
Neutral	The proposal would: • Result in no discernible deterioration (or improvement) to the existing view; • Be experienced by a very small number of people, visual receptors would be of low sensitivity to the changes. <i>Indicates an effect that is akin to no change and is thus not relevant to the planning decision making process.</i>

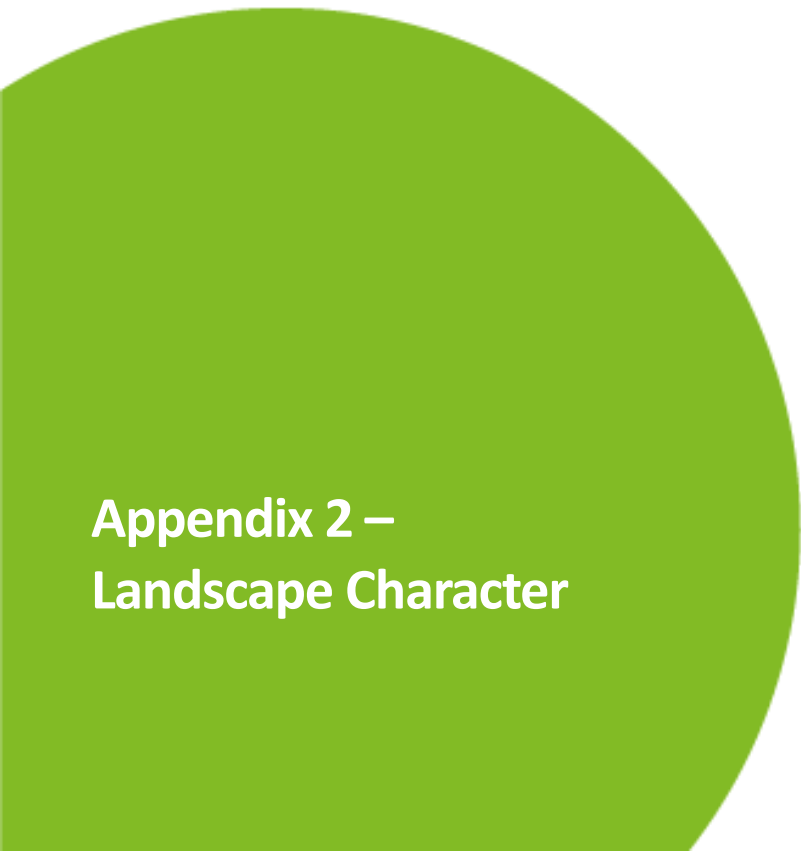
9.1.51 For this appraisal, 'Substantial' visual effects resulting from the development would be all those effects that result in a 'Severe' or a 'Major' effect and any exceptions would be clearly explained. There may,

for example, be exceptions in the case of lower magnitudes of change affecting receptors of higher sensitivity leading to a Major effect. Substantial effects are not necessarily adverse effects or unacceptable.

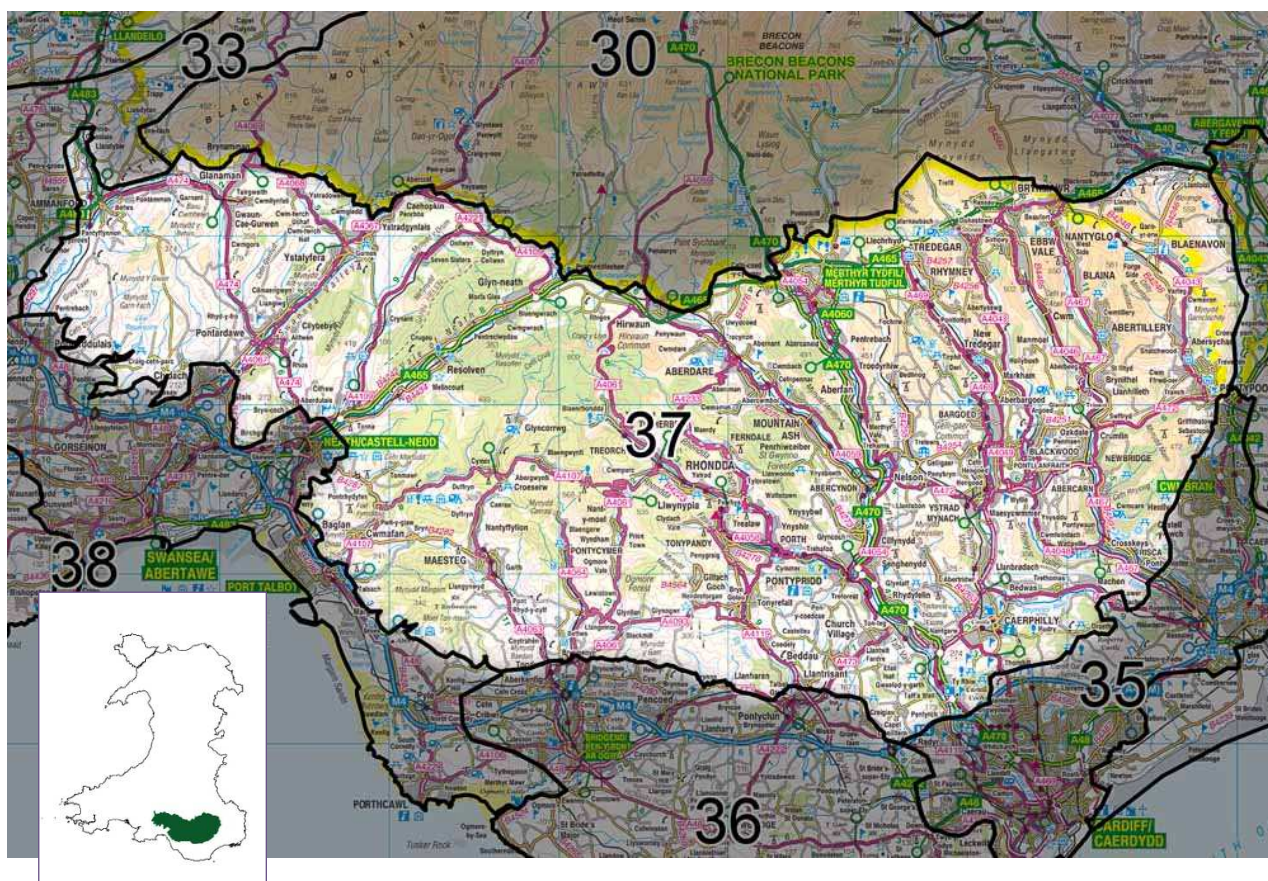
- 9.1.52 Where intermediate ratings are given, e.g. Moderate-Minor, this indicates an effect that is both less than Moderate and more than Minor, rather than one which varies across the range. In such cases the higher range is always given first, but this does not mean the impact is closer to that higher rating but done to facilitate the identification of effects within tables. A Major-Moderate effect can be either substantial or not substantial and dependent upon locally specific factors which will be clearly explained.
- 9.1.53 A final statement summarising the substantial effects will be provided distinguishing between substantial effects that are likely to influence the eventual decision and those that may be of a lesser concern.

Nature of Visual Effect

- 9.1.54 This LVA does not state explicitly whether the effects of the development on landscape and visual amenity is adverse, neutral or beneficial, however it is acknowledged the GLVIA 2014 state that professional opinion should be applied, and a positive or negative judgement applied (Para 5.37 and 6.29).
- 9.1.55 It is commonly accepted that the nature (or valency) of effects of a development are subjective based upon the attitude of the individual and public opinion should also be considered. All responses are equally valid and will affect the perceptual aspects of visual amenity. In examining visual effects, it is not realistic to ignore public opinion (nor the likelihood that professionally qualified landscape architects may have differing positions).
- 9.1.56 In accordance with GLVIA a precautionary approach is taken so although the nature of effects is not stated within the appraisal, effects would be negative unless stated otherwise. The precautionary approach of negative effects should be considered with the caveat that the valency of effect must always be considered by the decision makers, the approach should not be concluded to be the final judgement and it should be acknowledged that many people would see the development as either a positive or neutral addition.
- 9.1.57 It should be reiterated that although the LVA has considered visual effects from a number of viewpoints, including some from residential properties, planning law confers no right of view. Accordingly, a finding that there may be adverse effect upon a view would not be, of itself, capable of justifying a decision to grant or refuse planning permission.



Appendix 2 – Landscape Character



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Cymoedd y De – disgrifiad cryno

Mae llawer o gymoedd dwfn, trefoledig yn brathu i fynydd-dir eang. Ynghyd â'r etifeddiaeth ddiwydiannol, a hunaniaeth bendant ei phobl, mae ardal Cymoedd y De wedi esgor ar rai o ddelweddau cenedlaethol mwyaf adnabyddus ac eiconig Cymru.

Mae datblygiad strimynnog yn llenwi llawer o waelodion a llethrau isaf y cymoedd. Ochr yn ochr â'u cymeriad trefol a diwydiannol, ceir dir bryniog dramatig, gyda llethrau serth, gweunydd agored neu goedwigoedd. Mae rhwydweithiau o reilffyrdd a ffyrdd yn cydgysylltu pentrefi'r cymoedd. Mae natur y tir yn cyfyngu ar dramwyo rhwng y naill gwm a'r llall, ac nid oes ond ychydig fylchau uchel rhyngddynt. Mae twrw a phrysurdeb llawer o gymoedd yn gwrthgyferbynnu â chymeriad cymharol anghysbell a gwyllt y llwyfandiroedd uchel cyfagos.

Darparodd daeareg a dyddodion mwynol yr ardal yr adnoddau a sbardunodd ymlodiad cyflym datblygu diwydiannol yn y 19eg ganrif. O fedru cludo ar reilffyrdd, creodd y diwydiannau glo, dur a haearn newydd seilwaith eang o adeiladau mawrion, ffwrneisiau, tyrau, simneiau, traphontydd, tomenydd gwastraff a lefelydd. Canlyniad cartrefu'r gweithwyr yw'r rhesi hirion ac eiconig o dai teras sy'n canlyn ochrau'r bryniau: ac yn sgîl y gweithwyr, daeth capeli, siopau, ysgolion a chyfleusterau eraill, gan greu cymunedau newydd, trefol eu natur. Canlyniad arall bywyd yno, a'r amgylchedd garw, fu delwedd cymdeithas wydn, radicalaidd ei gwleidyddiaeth, a hoffai chwarae rygbi.

Canlyniad dirywiad diwydiannol ddiwedd yr 20fed ganrif fu cau, symud ymaith, gadael neu ailddatblygu llawer o safleoedd diwydiannol blaenorol. Mae'r newidiadau hyn yn parhau heddiw, fel y mae'r newidiadau cymdeithasol canlyniadol ym mywyd a hunaniaeth y cymunedau. Gwelir yr ardal, bellach, yn rhan o "ranbarth dinas" ehangach a chynyddol ôl-ddiwydiannol, y fwyaf yng Nghymru. Mae delwedd eiconig newydd yn aneglur, ar brydiau, ond y mae gweithgareddau wedi'u seilio ar yr etifeddiaeth, mewn amgylchedd tynerach a gwyrddach, yn dechrau dod i'r amlwg fel rhan o hyn.

Summary Description

Many deep, urbanised valleys dissect an extensive upland area. Combined with industrial heritage and the distinct identity of its people, the South Wales Valleys provide some of Wales' most widely known and iconic national images.

Extensive ribbon development fills many valley bottoms and lower slopes. Their urban and industrial character is juxtaposed with dramatic upland settings with steep hillsides, open moors or forests. Networks of railways and roads connect valley settlements. Topography constrains passage between valleys, and there are only a limited number of high passes between valleys. The noise and business of many valleys contrast with the relatively remote and wild qualities of adjacent hill plateaux.

Underlying geology and mineral deposits provided the resources that fuelled a rapid spread of industrial development in the C19th. Once rail transport became possible, new coal, steel and iron industries created an extensive infrastructure of large buildings, furnaces, towers, chimneys, viaducts, spoil heaps and levels. Housing for workers resulted in the extensive and iconic rows of terraced houses that run along hillsides. Their needs in turn brought chapels, shops, schools and other facilities to create new settlements with an urban character. The way of life and harsh environment resulted in the image of a tough, rugby playing and radically minded society. But the decline of industries in the late C20th resulted in the closure, removal, abandonment or redevelopment of many former industrial sites. These changes continue today, as do the consequential social changes to the way of life and community identity. The area is now seen as part of a wider, increasingly post-industrial, 'city region', the largest in Wales. A new iconic image is at times unclear, but heritage-based activities set within a softer, greener environment are emerging as part of this.

While greenness is returning to some former industrial landscapes many of the new woodlands are coniferous. Waterways are slowly welcoming back fish, and mammals such as otters. The importance of wildlife conservation being undertaken hand-in-hand with economic regeneration is being recognised as one of the keys to the sustained revitalisation of this most iconic Welsh 'bro', in the Heads of the Valleys and Valleys Regional Park initiatives.

Key Characteristics
Extensive Upland plateaux – typically wild and windswept, often with unenclosed tracts, running roughly north-south as ‘fingers’ parallel between intervening deep valleys.
Numerous steep-sided valleys - typically aligned in parallel, flowing in southerly directions, shaped by southward flowing glaciers, leaving behind distinctive corrie ('cwm') and crag features. Major rivers include the Tawe, Taff and Rhymney.
Ribbon urban and industrial areas in valleys – in places extending up valley sides and to valley heads. The area is sometimes regarded as being part of a ‘city region’. Middle and eastern valleys tend to be the most heavily and continuously developed, e.g Rhondda Valley. The uplands by comparison have little or no settlement.
Extensive remains of heavy industry – with a mix of derelict, preserved and largely redeveloped areas, notably for coal mining. Preserved as heritage (World heritage Site) at Blaenafon this typically includes old railway alignments, buildings and former tips.
Contrast of urban valley activity next to quiet uplands – e.g. busy roads, new developments, traffic noise, night lighting, verses the adjacent wilder, remoter, quieter uplands.
Large blocks of coniferous plantation and deciduous woodland fringes – covering many steep hillsides and hilltops, most notably in the middle to western portion of the area, providing a softer contemporary landscape where there was once industry.
Heather, rough grassland and steep bracken slopes – dominate many plateaux and are grazed mainly by sheep. Much is common land.
Improved pastures on some lower valley sides - grazed by sheep and some dairy cattle.
Field boundaries - dry stone walls mark the boundary of common land while fields on lower slopes are bounded by dense hawthorn hedges, interspersed with swathes of broadleaved woodland.
Transport routes restricted to valleys – the intervening topography makes valley to valley travel difficult, except at heads and bottoms of valleys. Occasionally there are roads that climb steeply over passes with dramatic views and ‘hair pin’ bends.
Iconic cultural identity – many popular images of a tough, rugby-playing, religious, radically-minded society still remain associated with the South Wales Valleys, however today’s post-industrial, internet-connected reality is somewhat different.

Visual and Sensory profile

The South Wales Valleys is one of Wales’ more widely known iconic images, combining the wilder and often inclement upland setting with the heavily industrialised and busy valleys. Active mines and industry are now generally an image of the past, however the legacy remains extensively apparent today and together with the steep topography of the valley sides, has a defining influence on landscape character. Levels and old railway alignments, the generally reclaimed but sometimes still perceptible physical footprints of mine spoil heaps, the often intensively urbanised valley floors with old industrial buildings, and lower valley sides with their distinctive long rows of workers terraces, retain the traditional image.

Yet today a new image is gradually but fundamentally changing the old one. Modern road improvements and bypasses bristle with street lighting, spreading the urban influence beyond the old settlement envelopes and altering the character experienced when travelling. In many valleys the legacy of slow travel through the ribbon development continues today, but in some places and notably along the A470 north-south corridor and along the A465 “Heads of the Valleys” east-west corridor road, travel is now much quicker.

For those with cars, the area has become far more easily accessed and the once very separate valleys are now just a few minutes drive apart. The orientation of valleys and the remaining legacy of railways and roads focus travel towards Wales's two largest cities, Cardiff and Swansea, which lie in neighbouring areas to the south, offering the combination of upland valley living and city working. The noise of industry and railways has typically changed to that of road traffic. Many former brownfield sites have been redesigned and redeveloped for new housing, industry and retail. These modern features of the mid and late C20th provide an entirely contemporary character, tending not to style their architecture or pattern of urban design using the traditions established in the C19th. The results tend to lack local distinctiveness, however a 'Valleys' sense of place still remains strong because of the enduring historic and dramatic upland landscape setting.

It is a landscape of contrasts. The valleys contain the extensive ribbon development, which snakes along the valley floors and lower valley sides, and sometimes with settlements precariously extending over intervening slopes and spurs. The windswept upland plateaux that separate the valleys could not be more different. Devoid of settlement, the uplands engender a strong sense of openness and remoteness, although in places compromised by proximity to industry and people, for example reclaimed spoil heaps, fly tipping, abandoned cars, 'horsiculture' and associated ramshackle sheds or allotments, pressure of people accessing the area for recreation in an unmanaged way, and occasional pylon lines, telecommunications masts and occasional wind turbine developments. But the open plateaux afford extensive views across the valleys, southwards to the Severn Estuary and northwards to the Brecon Beacons. At times, views from plateau to plateau conceal the intervening valleys and thus visually connect more with the wider uplands of Wales.

The middle to western valleys are dominated by the extensive coniferous plantations whereas the eastern valleys, although generally smaller, are more intimate. On many valley sides, there are distinctive 'ffridd' and 'rhos pasture' mosaics of small fields, hedgerows, boundary walls, wet flushes and marshland, interspersed with small stands of trees, copses and woodlands. It is the vestige of the former agricultural landscape that once dominated before the expansion of coal mining and the iron industries. The far western valleys, (those west of the Neath Valley) have slightly gentler intervening hills and long, unfenced lanes use the ridges as convenient routes. This affects experience of the area too, as ridgeline routes are uncommon elsewhere.

Many former spoil tips have been reclaimed, with varying degrees of integration into the intrinsic natural topography and upland setting. In some areas much new tree planting results in a landscape today that is much softer and more enclosed than that depicted in historic images. Individual valleys differ markedly in appearance: Neath and Dulais are green and broad by comparison with the cramped settlements of the Swansea and the two Rhonddas; Afan is steep and mountainous, covered in conifers, while the Taff and Ebbw Vales are convoluted in both terrain and settlement.



The new landscape: Trefforest Industrial Estate, occupying the flat land in the valley bottom, and anchored into its setting by maturing woodlands and thick hedgerows. © Luke Maggs



Blaengwynfi, with traditional hillside terraces and new forestry on mountain sides. © Luke Maggs



Urban terraced settlement along valleys and valley sides, with many houses having been individually modified with render, new windows or roofs, extensions and colour. © LUC



Ebbw Vale from the western side of the valley. Contrast of urban, ex-industrial valleys undergoing transition, with the enduring open moors on the adjacent hills. © LUC



From Mynydd Machen, looking towards a prominent hilltop spoil tip. Most spoil tips have been removed, regraded or planted over with trees. © LUC



Heavy industries that once dominated the South Wales Valleys are largely gone, however their iconic remains are now the cultural heritage that informs today's character. Here we see the remains of Ynyscedwyn Ironworks at Ystradgynlais. © Luke Maggs



Pen Pych table top. There may be industrial remains and urban settlement about, but the dramatic topography, open moors and steep wooded valley sides provide many of the kinds of appealing scenic qualities that are more widely known in upland landscapes elsewhere in Wales. © Luke Maggs



Gelli Gaer Common, one of the long, open roads that run along the gentler plateau tops of the area west of the Neath Valley. © Richard Kelly



Terraced houses and old spoil heaps amidst the upland landscape: the traditional image as now preserved at Blaenavon (World Heritage Site). © John Briggs



From near the adjacent Brecon Beacons, looking down one of the upland plateaux that separate the industrialised valleys. Nantyglo is in the valley to the left, Ebbw Vale is in the valley to the right. © John Briggs



Brynmawr, one of the 'heads of the Valleys' settlements, with much C20th housing estate expansion. © John Briggs

Geological Landscape influences

The South Wales Valleys incorporates a large part of the southern-most uplands in Wales and is framed by the Brecon Beacons and Black Mountains to the north and the lowland vale landscapes to the south, east and west. The deeply incised valleys are a distinctive feature of the landscape. In the eastern sector the area is drained by a series of south and south-eastward flowing rivers including the Ebbw, Sirhowy, Rhymney and Taff, whilst the central region about the Rhondda is drained by the Rhondda Fawr and Rhondda Fach which are confluent with the Taff at Pontypridd. In contrast, drainage in the west is dominated by south-westward flowing rivers, including the Tawe, Neath and Afan. Ground elevations in the upland areas are highly variable, but in the north-east reach up to 581m on Coity Mountain and 574m on Cefn Coch. Farther west the ground reaches a maximum altitude of 600m on Garn Fach and 568m on Werfa at the head of the Ogmore Valley.

The bedrock geology is dominated by a thick sequence of Carboniferous sedimentary rocks. They are preserved in and around the South Wales Coalfield Basin, a structurally complex, WNW-trending trough-shaped structure that extends westwards into Pembrokeshire. The Lower Carboniferous sequence is dominated by a variety of marine,

limestone-dominated formations, together with some mudstones and ironstones, which form a narrow belt around the basin between Thornhill, Rudry, Risca and Pontypool, and north of Merthyr Tydfil, where the strata dip gently towards the south. There is a succeeding Upper Carboniferous sequence including sandstones, and marine mudstones and a succeeding 'Westphalian' sequence dominated by sandstones including the Pennant sandstones. The lower part of the succession forms the South Wales Coal Measures Group, and is dominated by mudstones, siltstones and coals arranged in repeating units.

The gently southward-dipping Pennant sandstones form an erosion-resistant cap to the upland plateaux of the South Wales Valleys, as well as a spectacular escarpment along their northern limit. Within the syncline are numerous minor folds, including the Pontypridd and Maesteg anticlines. Two of the most distinctive structures of the coalfield are the Neath and Swansea Valley disturbances which comprise NE-striking zones of folded and faulted strata that trend into the area from Devonian outcrops to the north and east. Both structures have a strong topographical expression, controlling the course of both the Neath and Swansea valleys, and are believed to root into major fractures in the underlying basement. The coalfield is also transected by a dense network of steep, dominantly NNW-striking cross-faults that frequently caused major problems during the extraction of coal. Some of these faults have a strong topographical influence as, for example, in the case of the Merthyr Church Fault, which controls the orientation of the Afon Taf Fawr in the vicinity of Merthyr Tydfil.

The area has been shaped by glaciation, where ice that accumulated in the Brecon Beacons and adjacent high ground spread southwards through the Pennant Sandstone escarpment and entered the coalfield, where glaciers incised deep U-shaped valleys. This southward advance was locally impeded by topography. For example, when the ice-sheet met the escarpment at Craig-y-Llyn (SN 910 039) it broke into two major lobes, one advancing south into the coalfield through the Cynon and Taff valleys, and the other west-south-west down the Neath Valley. Recessional halt moraines were formed on the valley floors as the ice melted. For example, in the Neath Valley at Tonnau and Cline, an impounded glacial lake stretched up the valley to Cwmgwrach. Throughout the area the principal glacial deposit is till (boulder clay) and most till occurs in the northern parts of the valleys, where it can reach a thickness of up to 30m. It passes down valley into outwash sands and gravels, which formed through the action of melt waters and created important landscape components of some valleys. A good example of a kame terrace is developed in the Afon Valley at Pontrhydyfen. Between about 13,000 and 11,500 years ago, small glaciers re-occupied the upland cirques along the north-facing Pennant Sandstone escarpment. These glaciers formed concentric ridges of moraine, often backed by marshy hollows and small lakes, as in the case of Llyn Fawr and Llyn Fach beneath Craig y Llyn.

Glacial deposits left on the valley floors have been progressively re-worked and re-deposited as alluvial silts and sands. River terraces occur intermittently, for example along the Taf Fawr, Mellte, Neath and Tawe, whilst alluvial fans have formed where steeply graded tributaries enter the more gently graded main valleys. Landslips form an important component of the landscape throughout the coalfield and occur on the glacially over-steepened flanks of the valleys where thick Pennant sandstones overlie weak and impermeable mudstones and rock masses were subject to failure and collapse. Whilst most mass movement took place during deglaciation, when the support of glacier ice was removed, some major landslips are recent, for example that at Bournville (SO 207 068) was initiated in 1893 and at East Pentwyn (SO 206 075) in 1954.

Landscape Habitats influences

The Valleys are characterised by upland areas incised by a number of valleys, with contrasting habitat to match. The bedrock geology has given rise to a variety of soil types. Basinal and blanket peats developed throughout the South Wales Valleys and provide an important record of post-glacial vegetation and climatic conditions. Loamy soils with a wet peaty surface characterise the sandstone uplands; well drained loamy soils are found on valley sides; while coarse loams subject to seasonal waterlogging are located on lower slopes and on valley floors.

Each valley has both unique and common features, such as broadly southerly flowing rivers fed by a myriad of smaller, faster flowing tributaries from the surrounding uplands. On the lower slopes of the valleys livestock-grazed, improved grassland bounded by hawthorn rich hedgerows is prevalent, together with linear stands of deciduous woodland – some of considerable ecological value, for example, Cwm Du Woods in the Llynfi Valley and Merddog Woods in the Ebbw Valley, which are SSSIs.

Further up the valley slopes, “fridd” habitat occurs, in which there is a distinctive mosaic of rough grazed fields, bracken, rhos pasture, scattered scrub and small pockets of woodland characterising the transition between the lower slopes and upland areas and important for a considerable number of species. At the tops of the valley slopes there is a gradation to more upland habitats, such as moorland with acid grassland and heath. There is also some contrast along the length of the valleys with their more southerly ends being more lowland in character and the heads of the valleys to the north displaying glacial features such as cirques (cymoedd) and crags, which support valuable communities. Particularly important examples are found in the Rhondda, for example, the rare arctic-alpine habitats at Craig-y-Llyn SSSI.

In between the valleys, areas of extensive plateaux are dominated by moorland vegetation of heather, blanket bog and acidic grassland formed on the wet peaty surface that overlies the generally loamy soils in the area. These moorland areas are largely grassy in nature and are generally grazed by sheep. Large areas of heath-dominated moorland are relatively scarce, but one such area of particular ecological value is The Bloreng, a mountain near Blaenafon.

Also present within the open moorland and hillsides are considerable blocks of coniferous plantation, particularly noticeable and extensive in the uplands to the north of Bridgend and Port Talbot, often of lower ecological importance and much has been planted in the C20th, some over reclaimed industrial workings.

Along the southern edge of the area, the land is lower lying with less steep and deep valleys, with the areas between the valleys being largely dominated by improved grassland. Deciduous woodland areas scattered throughout the area provide some ecological interest, as do the hedgerows that bound the fields. The two most notable woodland areas are associated with the more lowland valley slopes, being the oak woodlands at Park Mill and the beech woodlands just north of Cardiff, both of which are SAC and SSSIs. Some areas of semi-improved and marshy grassland are also present between the valleys, some of which are of considerable ecological value, most notably Llantrisant Common and Aberbargoed Grasslands

Historic Landscape influences

The Valleys reflect their coal mining and iron extraction and smelting heritage. The iron industry provided the spur for the rapid industrialisation of the whole area from c.1800. The foundation for all of this is the particular geology and land-form that provided all the materials needed for iron making in relatively accessible form. The linked exploitation of these materials and the transport systems leading to and from major works structures shaped the industrial landscape.

Long rows of former 19th century miners' terraces of stone, brick and coloured render are particularly distinctive, extending in some areas up very steep slopes and seen against a backdrop of bracken or conifers higher up the valley sides. Although the terraced house is identified as the most distinctive ingredient of settlement, in practice there is considerable variety in settlement type, including informal 'squatter' developments, planned company settlements, expanded early nuclei (Pontypool) and the developed industrial town built by many agencies but acquiring a coherent social landscape nonetheless (Blaenavon). Settlements developed either directly associated with particular industrial enterprises, or as service towns for a wider hinterland (Pontypridd). These varied histories contribute to considerable variety in present character both between and within valleys.

An often overlooked feature of the enormous manpower and economic energy of 200 years of toil are the canals dug to carry iron ore and coal from inland workings. The most prominent in terms of survival and landscape influence in this area are the Glamorgan from Merthyr to Cardiff, the Neath and Tennant Canals and that in the Swansea Valley.

Blaenavon is designated as a World Heritage Site as being one of the best surviving examples in the region of a valley head industrial community, with features from the C18th iron industry as well as the extensive coal mining activity that took place in the 19th century.

The upland plateaux are largely free from modern development aside from minor roads which cross the open commons. As a result, archaeological evidence of ancient human occupation and activity is often well preserved. Notable examples are Gelli-gaer Common near Ystrad Mynach, and Margam Mountain. The former area contains a rich diversity of archaeological sites, including Bronze Age burial and ritual monuments, a Roman road and military installations, and Capel Gwladys – an early church site. Later features include Mediaeval deserted settlements, an earthwork castle (Twyn Castle), field systems and platform houses. Margam Mountain stands above the east-west Roman road, and is distinguished by not only possessing extensive prehistoric and Mediaeval archaeological remains over a very large area of high hillside and moorland, but also as having been grazing land for the livestock of Margam Abbey.

Cultural Landscape influences

The Valleys, are internationally recognised for the rich industrial heritage of the C19th. Massive development followed the discovery of steam coal in 1855. This stimulated a so-called 'coal rush' which, for example, turned the Rhondda into the most productive coal mining area in Britain. The population exploded from a sparse agrarian society into a teeming mass of immigrant workers from rural areas, from Ireland, West Wales, Somerset, Gwynedd and the Midlands. From under 1000 in 1851, the population rose to nearly

163,000 by 1921, occupying an almost continuous conurbation for miles – albeit with jealously guarded identities in individually named settlements.

Elsewhere, every valley from the eastern Lwyd and Ebbw Vale to the far west Gwendraeth there sprang up the characteristic images of rows of terraced company houses. The iconic headframes and coal mine winding gear, public buildings, chapels and Working Men's Institutes and other infrastructure, all squeezed into the previously rural landscape of the valleys to house the massive in-migration of workers. This continued through the C20th with extensive post-war council housing estates, and latterly private estates. The Valleys and their Working Men's Institutes produced many radical, self-educated politicians, for example Aneurin Bevan, visionary founder of the National Health Service, and Neil Kinnock of Islwyn. Their radicalism was largely founded on the appalling conditions they had to work and live in.

But the industrial decline of the 1980s, the loss of 'macho' employment, and the psychological devastation of the failure of the year-long Miners' Strike in 1984 have, for many, led to cultural changes that previously would have been hard to imagine by their once-proud communities. The Strike was followed by wholesale unemployment, and although regenerative efforts continue to abound, not all are successful, and not all touch all the people. The iconic coal tips have been systematically flattened following the tragedy of Aberfan, and the once ever-present pithead winding gears have mostly gone. Those that survive best tend to form features of tourist sites, notably with Blaenavon regenerating itself as a World Heritage Site. Despite efforts to find new uses for old buildings, some of which are architecturally magnificent, the majority continue to decay. The same applies to the proliferation of multi-denominational chapels, and the Institutes, originally the social and educational as well as spiritual heart of Valleys communities.

Regeneration and more recent estates, along with new small and large-scale commercial and industrial development tend to be linked to the modern road network. Although there is still an extensive passenger railway branch line network, with plans to improve, regeneration tends to be based around car use and opportunities for much longer distance travel than traditionally. The employment opportunities elsewhere, notably in Cardiff, result in crowded trains and commuting residents clogging up M4 interchanges twice each day.

In recent years, telecommunication masts, pylons and wind turbines have appeared across the plateaux in an upland landscape otherwise devoid of development. A remarkable feature in what are recognized as deprived communities, is the incidence of satellite dishes on the roof tops and gable ends of individual dwellings in workers' terraced housing. A prominent but temporary regeneration event was the Ebbw Vale National Garden Festival in 1992, one of a series across Britain. The site has now become a popular retail centre and in recent times. The derelict Ebbw Vale Steelworks was demolished in late 2005 for the development of socially and economically mixed housing and infrastructure. The Cynon Valley is notable for the plan to create a long, linear riverside park, while much of the historic heart of Merthyr Tydfil has been lost to residential estates of non-vernacular design and materials. Similarly, vacant lots in the linear conurbations of the Ogwr and Rhondda valleys have now been transformed into low-cost housing estates for those who descend the valley roads to the ribbon-development of business and light industrial parks situated close to junctions on the M4. In the mid-west, the dead-end, and once economically and administratively important, valley of Glyncoed is enjoying an economic renaissance as a leisure destination for mountain biking and fishing, with a newly built visitor centre and 'extreme' trails.

The linking of these new ventures with the rich synthesis of history and culture that permeates the area's landscapes and the promotion of much that remains untouched and attractive, is an important aspect in the regeneration this large and remarkable area.



Blaenavon, traditional terraces. © John Briggs

SURVEY DETAILS FOR MRTHRVS876 - 2020-07-17

Area Unique ID: MRTHRVS876

Aspect: Visual and Sensory

Area: Merthyr East Flank

Region: Merthyr Tydfil

Survey Date: 2003-11-24

- Level 1: Development
- Level 2: Developed Unbuilt Land
- Level 3: Derelict/Waste Ground

Monitoring

Q1 - Date of monitoring?

- 2013-01-01

Q1a - Monitoring undertaken by

- Bronwen Thomas Landscape Architect, plus White Consultants at initial change detection stage, in consultation with LPA. Based on 2011/12 change detection.

Q1b - Has this record been updated following monitoring work?

- This record has been updated following monitoring work, there was a real change in the aspect area

Q1c - Change indicated by

- OS Data, Aerial Photographs
- Satellite Imagery Interpretation
- Policies, plans & information resources
- Fieldwork

Q1d - What has changed?

- Description
- Boundaries

Q1e - Has the information ever been verified in the field?

- Yes
 - 1:10000/1:25000

Q2 - Does this area have a special or functional link with an adjacent area?

- Yes
 - disturbed margin between open moorland, coal workings (Ffos-y-fran) and settlement

Q2a - During which season(s) was fieldwork carried out?

- Winter

Description

Q3 - Summary Description

- The area is primarily defined by the degree of disturbance of the landform and the lack of diversity in vegetation cover... Almost all the area has clearly been disturbed and is apparently currently unused or reclaimed... The slopes form a stark and unattractive backdrop to this side of the town... Large areas of reclaimed land are open covered in pasture for sheep grazing with some fencing against the road edge e...g... the slopes to the west of former Trecatti landfill site and the plateau on each side of the realigned A4060... These form a bleak and apparently sterile landscape... Planting may help to integrate some areas in time... Trecatti landfill now reclaimed to reduction in noise, blowing litter and gulls. Recent development has reduced area around Incline Top. There are also examples of reclamation which much more successfully create new landscapes which add to the visual quality of the area e...g... the western edge of Incline Top where small blocks of woodland and stone wall detailing create a semi-rural character... Some open cast is being carried out and also landfill which is just visible on the exposed ridge... To the south, upland pastures mix with the disturbed landscape to form a more intimate mosaic which is more akin to areas on the western flank (Character Area 11)...

Q4 - Physical Form And Elements: Topographic Form?

- Disturbed

Q5 - Physical Form And Elements: Landcover Pattern?

- Open Land

Q6 - Physical form and elements: Settlement pattern

- No settlements

Q7 - Physical form and elements: Boundary type

- Fences

Q8 - Aesthetic Qualities: Scale?

- Large

Q9 - Aesthetic Qualities: Sense of Enclosure?

- Open

Q10 - Aesthetic Qualities: Diversity?

- Diverse

Q11 - Aesthetic Qualities: Texture?

- Medium

Q12 - Aesthetic Qualities: Lines?

- Straight

Q13 - Aesthetic Qualities: Colour?

- Muted

Q14 - Aesthetic Qualities: Balance?

- Discordant

Q15 - Aesthetic Qualities: Unity?

- Neutral

Q16 - Aesthetic Qualities: Pattern?

- Organised

Q17 - Aesthetic Qualities: Seasonal Interest?

- None

Q18 - Other Factors: Level of Human Access?

- Frequent

Q19 - Other Factors: Night Time Light Pollution?

- Moderate

Q20 - Other Factors: Use of Construction Materials?

- Generally Inappropriate

Q21 - What materials? Give Details:

- light and brightly coloured profile steel- too prominent

Q22 - There are attractive views...

-out
 - to brecon beacons

Q23 - There are detractive views...

- ...both in and out
 - into areas above A4060 and towards Merthyr,in particular the commercial area at Dowlais Top...To adjacent Ffos-y-fran coal workings

Q24 - Perceptual and Other Sensory Qualities

- Exposed
- Unattractive
- Noisy

Q25 - What is the sense of place/local distinctiveness

- Weak
 - reclaimed areas have yet to mature to give a sense of place

Evaluation

Q26 - Value:

- Low

Q27 - Condition:

- Fair

Q28 - Trend:

- Improving

Recommendations

Q29 - Existing management

- No Answer

Q30 - Existing management remarks:

- over grazing has limited range of vegetation types

Q31 - Principal management recommendation:

- create new landscape structure to integrate slopes into wider landscape

Q32 - Guideline

- Immediate
 - create new structure - wooded landscapes close to development rising to open moorland ridge
- Immediate
 - improve vegetation cover on existing reclaimed areas
- Medium Term
 - design new landscapes and development to integrate better into valley side- design guidelines

Q33 - Define the key qualities that should be conserved:

- enclosure of vegetated areas

Q34 - Define the key qualities that should be enhanced:

- Empty value

Q35 - Define the key qualities that should be changed:

- openness and exposure of grazed slopes

Q36 - Define the key elements that should be conserved:

- woody vegetation, diverse swards

Q37 - Define the key elements that should be enhanced:

- Empty value

Q38 - Define the key elements that should be changed:

- reclaimed pastures

Tolerance To Change

Q39 - Are there any significant threats to the current integrity and condition of the visual & sensory features of the area?

- No Answer

Aspect Area Boundary

Q40 - To what level was this information site-surveyed?

- Level 3

Q41 - At 1:10,000, how much of the Aspect Area boundary is precise?

- Most

Q42 - What baseline information source was used for Aspect Area boundary mapping?

- OS Raster

Q43 - If OS Data was used, what was the scale?

- 1:10,000 and 1:25,000

Q44 - What is the justification for the Aspect Area boundaries?

- town to the north and west, open moorland to east, Ffos-y-fran coal workings area to the east, pastoral farmland of Taf Vale to south and east...Boundary altered at change detection monitoring to exclude recent developments around Incline Top and part of Ffos-y-fran workings in north east.

Bibliography

Q45 - List the key sources used for this assessment

- Empty value

Evaluation Matrix

Q46 - Evaluation Criteria: Scenic quality

- Low

Q47 - Evaluation Criteria: Integrity

- Low

Q48 - Evaluation Criteria: Character

- Low

Q49 - Evaluation Criteria: Rarity

- Low

Q50 - Evaluation Criteria: Overall Evaluation

- Low

Q51 - Justification of overall evaluation

- The area is still a raw landscape, prominent on the valley sides above Merthyr... While some areas are establishing a landscape infrastructure there are extensive areas which are open and lacking diversity of texture and cover... There remain a few detractors...

Assessment

Q52 - Additional Assessments

- Empty value

Q53 - Additional Comments

- Empty value

LMP 14 & 09

Q54 - LANDMAP derived landscape types (LMP14)

- Industry and infrastructure

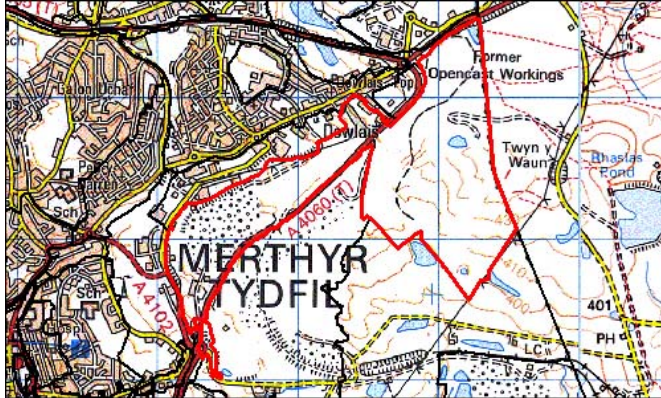
Q55 - LANDMAP derived landscape types (LMP09)

- Built Land

Nodweddion Tirwedd Hanesyddol
Historic Landscape Characterisation
Merthyr Tydfil: *Merthyr Tudful*

HLCA 078

Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun:
Tomen Fawr Dowlais, Trecati, Trehir a Thwyn-y-Waun



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Historic Landscape Characterisation

Merthyr Tydfil

078 Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun

HLCA 78 Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun Reclaimed industrial landscape; an area, formerly similar to HLCAs 031 and 039, since subject to reclamation, opencast and landfill, or combinations thereof former site of multi-period extractive and drainage features associated with the Dowlais Ironworks; former site of industrial and post-medieval upland settlements; former site of a regionally important Medieval Fair/market.



(Photo: GGAT Merthyr 078)

Dowlais Great Tip, Trecatti, Trehir and Twyn-Y-Waun
character area: reclaimed industrial landscape.

[Click here for a character area map](#)

([Back to map](#))

Summary

A reclaimed industrial landscape typified by open-cast and landfill operations. It contains nothing of historic interest above ground.

Historical background

The historic landscape area of **Dowlais Great Tip, Trecatti, Trehir and Twyn-y-Waun** comprises an extensive area of reclaimed industrial land, part of which has been subjected to opencast operations. The area encompasses the sites of Longtown (Trehir), Trecatti and Twyn-y-waun, the latter being the former site of a medieval market mentioned in numerous documentary sources.

The area formed part of the extensive coal and ironstone workings associated with Dowlais Ironworks, part of which survives within the adjacent HLCA 039. The workings of the area spanned from the latter half of the 18th century, through the heydays of iron production associated with railway construction during the 1840s, and the conversion of Dowlais to steel production during the 1860s. With conversion to steel production the area's mineral workings declined, being all but abandoned by the early 1870s; a result of coal and iron ore imports from northern Spain, the local ore, rich in phosphorous and sulphur being unsuitable for steel production. By 1879, most if not all the pits and levels within the area, were probably already defunct.

[Sources](#)

For further information please contact the Glamorgan-Gwent Archaeological Trust at [this address](#). Link to the Countryside Council for Wales website at www.ccw.gov.uk or Cadw at www.cadw.wales.gov.uk

Historic Landscape Characterisation

Merthyr Tydfil

Merthyr Tydfil Historical Processes, Themes and Background

- **The natural landscape and geological background**

The historic landscape area of Merthyr Tydfil is located within the dissected plateau of the upland region of Glamorgan, the Blaenau Morgannwg. Merthyr Tydfil and the historic landscape occupies the natural basin at the head of the Taff valley, at the confluence of the Taff Fawr and the Taff Fechan rivers and extends southwards down the confines of the upper Taff valley as far south as Troed-y-rhiw.

The northern boundary of the Merthyr Tydfil historic landscape generally follows the valley of the Afon Taff Fechan with its large tracts of Ancient Woodland; now a Site of Special Scientific Interest (area 027). The boundary of the area follows that of the northern limits of the County Borough, diverting slightly north of the Taff Fechan to include the Vaynor Quarry and Cefn-Coed-y-Cymmer at the confluence of the Taff Fawr and the Taff Fechan and extending along Nant Ffrwd.

To the west are the open slopes of Mynydd Aberdare (457m), including Bryn-y-Badell at its northern edge extensively altered by 18th and 19th century extraction. Mynydd Aberdare forms the ridge of Mynydd Merthyr with the now extensively forested summits of Twyn Gwersyllfa (420m) and Twyn Ddisgwylfa Fawr (471m) and the eminence of Mynydd Gethin (491m), the latter includes the spur of Pen-y-lan Hill. The summits and upper slopes here are cloaked in forestry plantation, while the middle and lower slopes retain pockets of Ancient Woodland and extensive areas of natural regeneration; the area now forms the Gethin Woodland Park.

The eastern side the historic landscape takes in the open-mountain, and moorland ridge of Merthyr Common, again extensively altered by industrial extraction, including opencast and reclamation. At the north are the opencast and reclaimed slopes of Twyn-y-Waun and Trecatti, rising to c. 450m. This area includes a small portion of Gelli-Gaer Common, west of Blaen-carno. The ridge of Merthyr Common continues south at altitudes in excess of 376m with its highest point of Mynydd Cilfach-yr-encil, 445m. The actual eastern limits of the historic landscape take in Cwm Golau and Cwm Bargoed to the east, the head of the Bargod Taf River valley, which retains remnants of Ancient Woodland. The Bargod Taf River flows south to eventually join the River Taff (Afon Taft) south of Treharris.

The sources of both the Taff Fawr and Taff Fechan lie north of the historic landscape within the south-facing slopes of the Brecon Beacons; the Taff Fawr emerging below Corn-du, south west of Pen-y-Fan, while that of the Taff Fechan originating below the south east face of Pen-y-Fan. Both rivers are now harnessed by reservoirs, north of the historic landscape boundary: Beacons, Cantref and Llwyn-on reservoirs on the Tall Fawr and the Upper Neuadd, Pentwyn and Pontsticill reservoirs on the Tall Fechan.

Upon entering the historic landscapes, that of the Taff Fechan valley is more deeply entrenched, than the Tall Fawr. South of river confluence at Cefn-Coed-y-Cymmer, the Taff valley the landscape broadens out with the confluence of the Nant Morlais tributary to form a basin; south of Upper Abercanaid the valley narrows once again.

The landscape of the area was altered during the Pleistocene period, approximately 18,000 years ago, by glaciation to create the landscape we know today. The principal glacial collecting point in South Wales was the Carmarthenshire Fans and the Brecon Beacons, the northern face of which was the source of numerous corrie glaciers.

The geology of the study area comprises deposits of the Upper (Pennant), Lower and Middle Coal Measures, which include Shales, Sandstone and reserves of coal and ironstone; partially overlain in places by deposits of Boulder Clay. Overlying the solid geology are generally poor, shallow, and in the main acidic "gley soils" and blanket peat, creating poorly drained moorland conditions (Gillham 1981). The deposits of the Lower Coal Measures were particularly important to the industrial development of the area, these comprise grey silty mudstones with a few sandstones predominate (Barclay 1988). Also contained within the Lower Coal Measures are ironstone deposits comprising bands of ironstone nodules (Blandford 1981).

While limited pollen analysis has been carried out on archaeological sites in the area, these have concentrated on the analysis of material associated with the Bronze Age, and later periods. As a result, local evidence of the earlier environmental conditions and indeed during the immediate post-glacial period is limited. It is assumed that as climatic conditions gradually ameliorated following the last glaciation, dense native woodland gradually extended over the area, which included species such as hazel-hazelnuts were recovered from Neolithic contexts at Mynydd Cil-Sanws. The effects of man on this woodland is fairly dramatic; with progressive felling implied at least from the Neolithic, supported by finds of axes of the period from the region. Pollen analysis from the Bronze Age sites to the west of the historic landscape indicates a contemporary environment of heathland, with an open tree cover dominated by oak. Evidence suggests that by the end of the Bronze Age, the upland areas of the Merthyr were typically covered by extensive blanket peat (Casledine 1990).

It is evident that, despite the effects of man, the area retained its extensively forested nature throughout the medieval and early post medieval period, until at least the beginning of the 18th century. The Ordnance Survey maps of 1812 and Colby's map of 1833, demonstrate the luxuriously wooded nature of the Merthyr area at the time, corroborated by the contemporary descriptions of English visitors to the area, from John Leland to Thomas Roscoe. Further indication of the wooded appearance of the landscape survives in its place-names; many 'coed' (wood) names, such as Coed Meurig, and Cefn Coed-y-Cymmer; 'coedcae' (woodpark) names, such as Pen-coedcae, Coedcae together with numerous 'coed cae' field names, bordering the open uplands and commons of the area.

However, with the opening up of the area to the iron industry during the 18th century, the wooded nature of the Merthyr landscape was altered. The valley bottom and sides were rapidly denuded of their forests to produce charcoal for smelting purposes and for the production of pit props, leaving only the small remnants visible today, now substantially added to by 20th century Forestry Commission plantations.

- **The agricultural landscape**

The present day landscape is largely a product of the late 18th and the early-to-mid 19th centuries. The direct affect of rapid industrialization during the period, evidenced by extensive extractive and urban settlement landscapes is only part of the process of landscape formation activity. Another important factor was agriculture or more specifically related improvements in agriculture often instigated by the leading industrialists of the area such as the Crawshays and the Earls of Plymouth; the latter necessitated by increased demand from the area's industrial towns.

Piecemeal remnants of the agricultural landscape survive in areas away from the valley bottom, primarily on the steeper slopes, where industrial incursion has been less intense. While the traditional agriculture of the Merthyr area was based on a system of mixed farming, it is the pastoral element, the rearing of livestock, which has always been predominant and the archaeological record reflects this.

The earliest direct evidence for the area's pre-industrial agricultural base dates to the late prehistoric period and includes settlement and related agricultural features. Examples are the hillfort of Gwersyll, just beyond the bounds of the historic landscape, the potential hillfort site on Morlais Hill (obscured by the medieval castle), with its associated extensive relict field system, and the enclosures and hut circles on Garn Ddu. It is quite likely that upland settlement and associated agricultural enclosure during the late prehistoric period was far more extensive within the area than the distribution of known surviving sites would suggest, with much of the landscape irrevocably masked and altered during the post-medieval and modern period. The majority of settlements of the late prehistoric period in the area were associated with a pastoral cattle-based economy. The settlement site of Garth Fawr (PRN 043 1 3m) provides an interesting example of a late prehistoric agricultural settlement. This site comprises above ground remains of at least three hut circles, a number of scoops, platforms, a hollow way, associated enclosures and wandering walls.

Earlier evidence for agriculture is sparse for the area and is based primarily on finds indicative of general human activity. These include a flint scatter (PRN 00880m), of Mesolithic date found south of Abercanaid, and the find of a 'thin butted axe-head of siliceous ash' (PRN 00478m; GCH 1984, 438) from near Twynyrodyn, Merthyr, which indicates continued activity into the Neolithic period.

Whilst the margins and boundaries of the unenclosed moorland (i.e. the northern extent of Merthyr Common), which rises from 320m-430m, have to an extent shifted over time, the general character of the area would appear to have originated during the Late Neolithic (2,500 BC). It is during this period that inroads into the extensive tree cover of the region were first made, and, by the end of the Late Bronze Age (1,300 BC), the now familiar open landscape of the open common or mountain with its generally poor degraded soils, would have been established. The character of this moorland remains recognisable despite wholesale transformation during the industrial period.

The effect of human activity on the natural vegetation of the area is clear from pollen analysis carried out in the locality; this is at its height at the end of the Bronze Age. It is unsurprising that the first major impact of human settlement on the physical environment of the area dates to the late prehistoric period.

The evidence for Roman agricultural activity in the area is again slight. Almost all evidence is for military activity (the fort at Penydarren) or related work (the road from Gelligaer to Brecon), though presumably, settlement and associated agriculture was continuous with occupation spanning both the Iron Age and the Roman period. A cattle-based pastoral economy, which probably dictated a dispersed and mobile settlement pattern is considered, by analogy, to have been characteristic of the period.

The extent of early medieval settlement in the area is unknown; however, it is likely that some measure of continuity of native settlement carried over from the late prehistoric/Roman period. The only definite indication of early medieval occupation comes from the early medieval dedication of the church of St. Tydfil at Merthyr and place-name evidence indicating early Christian church/monastic settlement (Cil or Church of Sanos, the sister of St Tydfil), in the area of Cil-Sanws. The industrialised and urbanised nature of the valley floor throughout the area of outstanding historic landscape has probably resulted in the significant loss of earlier settlement features.

It is likely that continuity rather than change would have been true of agriculture during the prehistoric-medieval period. The unenclosed moorland of the area, such as Merthyr Common (on average between 340m OD and 450m OD) would have provided upland grazing, in which cattle, rather than sheep, was the dominant economic base.

By the medieval period, this pattern had begun to change, with the enclosure of the valley bottom and lower slopes to form enclosed fields around isolated farms; the upland areas remained an important resource, however, for use as summer pasture for the stock, based on the 'hendre-hafod' system of agricultural transhumance. The common areas are dotted with Deserted Rural Settlements (platform houses), probably seasonally occupied for the most part, as part of this pattern of transhumance.

The cartographic record and place-name evidence affords some indication of the location of medieval settlement along the valley floor, as on the higher ground, ie hendre and hafod place-names, eg Hendre-Fawr. The surviving settlement features of the period are exclusively known from the higher upland areas. The settlement features would have been predominantly platform houses, longhuts, typically in set out pairs; these upland dwellings or hafodau appear to have been occupied on a seasonal basis and were associated with pastoral agriculture, chiefly based on the rearing of cattle. The platform house sites are typically situated at the upper break of slope of the valley side along the periphery of the extensive upland pasture, the location frequently reflects the upper extent of the post-medieval enclosure and encroachment. Further study of the

topographic evidence may allow a correlation to be made between the distribution of known upland settlement with that of valley bottom settlement. The scheduled 'pillow mound' at Bryn-y-Gwyddel, an artificial rabbit warren is also thought to date to the period.

During the early post-medieval period, it is thought that the 'hendre-hafod' system was gradually superseded through a change in pastoral practice. The main aspect is a transition away from the seasonal movement of kinship groups with the cattle to communally organised individual shepherds. It is considered that lluest sites belong to the latter system (Locock 2000). The Welsh clan system with its particular customs, legal system, land tenure and inheritance survived longer in Uwch Caeach, than the areas further south, which had been subject to early Norman domination; the effect this had on the development of post-medieval agriculture and the agricultural holdings themselves is of interest. Most of the freehold farms within the Merthyr area had been established by the 16th century; though the processes behind their development and the date at which this occurred are as yet not fully understood, and require further detailed study.

The settlement of Garth Fawr (area 043) was the site of Castell Madoc, a fortified manor known to have been abandoned by the 14th century; the site is associated with remnants of possible medieval strip fields, or quillets, fossilised within the later enclosed landscape. An unlocated monastic grange associated with Cistercian Abbey of Margam, that of Gardino, or Garth has been tentatively placed at Laleston, near Bridgend (Williams 1990); place name evidence (Garth, Pant Cerddinen), however, makes the settlement at Garth a possible contender among several other potential locations.

The majority of field enclosures of the area are not closely dateable, but were probably established by the late medieval/early post-medieval period. Irregular, evolved patterns of enclosed fields, chiefly drystone banks or cloddiau, and embanked hedges, such as those which survive on the upper reaches of the Taff, Cwm Golau and Nant Gyrawd and the northern side of the upper reaches of the Bargoed Taf, above Cwm Bargoed Farm, are likely to have been in part established during the period.

Parts of the main outer boundary bank, the boundary between the upland moor, or common, and the lower enclosed pasture (the upper limits usually demarcated by the Coedcae, defining the outer tier of enclosure survive. These enclosures are not closely dateable, but they were probably established in the early post-medieval period; the Coedcae name-element appears elsewhere in marginal enclosures of the 15th-16th centuries. This outer boundary bank is thought to reflect pre-existing, if slightly less rigid agricultural (pastoral) arrangements between lower winter pasture and higher summer pasture established during the medieval if not earlier periods. Boundaries, marking the extent of late medieval and early post-medieval encroachment and enclosure on the slopes, are mainly of dry stone construction, though cloddiau and hedged banks are also evident.

The boundary between the upland unenclosed mountain or common and the enclosed land of the valley bottom is known elsewhere to be a feature associated with the change-over to sheep farming, frequently associated with the establishment of landed estates during the 15th-17th centuries. The latter appears to have remained static thereafter, despite minor squatter incursions during the 18th and 19th centuries, such as at Ochry-Mynydd, Winch Fawr, Heolgerrig and Ffos-y-fran. Agriculture remained the main industry in the parish of Merthyr Tydfil during the 16th century with sheep and cattle farming predominating. Over half of the tithe for the Parish of Merthyr Tydfil in 1535 was derived from livestock, with corn accounting for less than a quarter (GCH 1974. 3); the presence of a fulling mill, Melin-ganaid, is again indicative of the importance of the woollen industry to the area. Physical reminders of post-medieval agriculture include sheepfolds, sheep shelters, beast-houses and lluest sites. The latter were upland shelters probably used by individual shepherds on a seasonal basis; and indeed a tradition exists which supports this. Although cattle production continued during the post-medieval period, sheep farming became the mainstay of agriculture, in Merthyr as elsewhere in the Blaenau region.

Industrial and urban expansion has removed many of the area's former post-medieval agricultural settlement. An exception is the early 18th century farmhouse at Garth, which belongs to the hearth passage group of sub-medieval houses, and is of the three-unit chimney backing on entry type with hall between heated outer and narrow inner rooms, typical of the Blaenau. The building also retains a characteristic lateral stone stairs built within an out-shut. Other early post-medieval farmsteads, once more characteristic of the locality displaying vernacular features include Graweth a long house of chimney-backing-on-to-entry type, with outside cross passage and fireplace stair, and Blaencanaid Farm.

The vernacular style was described in 1848 (Clarke 1894. 16) as: "The custom of whitewashing cottages, villages, and farms, and extending even to stables, barns, and walls of yards and gardens, has prevailed here from very remote ages". It is notable that the evidence for whitewashing of buildings today is minimal; most farmhouses are stone-built, often with a catslide extension at the rear, probably of 19th century date, although a few longhouses do occur.

Prior to the arrival of the powerful ironmasters, several of whom migrated from Sussex as early as the 17th century (Thomas 1981, 275), the other major industries of the area were all closely related to agriculture, such as lime burning, corn-milling and leather tanning. The reliance on dairy farming continued into the 17th and 18th centuries; it is known for instance that during the period 1688-1725 farmers in the Merthyr area each on average owned 15 cows (GCH 1974, 323). In 1696. Merthyr is described as 'a village of about 40 houses' and a population of 110 inhabitants has been conjectured; by 1801, the population of Merthyr had increased to 7,700, making it at that time the largest town in Wales.

Post-medieval farming continued to exploit the range of resources, including woodland, arable and enclosed pasture, but the industrial possibilities also became recognised, initially through the combination of water power, iron ore and wood for charcoal-fired iron smelting on the valley sides in the 16th and 17th centuries. In the late 18th century, the change to the use of coal led to a different distribution of iron working, further up

the valley to Merthyr itself, where the limestone, ironstone and coal could be obtained from exposures on or near the surface

From the last quarter of the 18th century, agriculture itself became heavily influenced by the industrial and urban development affecting the Merthyr region. This is evidenced by large-scale industrial agricultural reorganisation by the dominant industrial landowners, ie the Crawshay family, and the Plymouth Estate. Gurnos Farm, for example, is remodelled between 1814 and 1826 to form an industrial agricultural landscape of large regular enclosures and stands of trees associated with a 'model' farm; remodelling included the removal of the former settlement of Pantton (which survives as a relict agricultural landscape). The form of the later industrial Castle Farm (Plymouth Estate) was also developed during the same period.

• **Military and defensive landscapes**

The medieval stronghold of Morlais Castle (SAM Gm 28) within the historic landscape area of Morlais Hill and Castle (area 045), provides the most visibly impressive military and defensive element in the Merthyr Historic Landscape. The dominant hill top site of Morlais Castle was a natural choice from its strength of position overlooking the river valleys of both the Taff Fechan and Taff Fawr, and controlling traditional north-south and east-west communication routes. It was initially a stronghold of the native lords of Senghennydd, and later reconstructed by Gilbert de Clare in c. 1270. Despite being reduced largely to rubble the site is of considerable archaeological, architectural and historical interest and the remains comprise two baileys surrounded by a curtain wall with five or six round towers (the bases of which survive), all set within a bank and ditch (LM 10 RCAHMW 2000). The Welsh chieftain, Ifor ap Meurig, particularly known for holding William Fitzcount, the Earl of Gloucester and his family hostage over a land dispute, held sway over Senghennydd during the mid 12th century. The descendants of Ifor ap Meurig retained power in the area until the last quarter of the 13th century. Subsequently the area became part of the demesne lands of Gilbert de Clare, the Earl of Gloucester and Lord of Glamorgan (Watkins 1981, 172-7).

The other major visible defensive site to be found within area 045, ie Castell Morlais, is a univallate hillfort of Iron Age date, comprising an almost rectangular enclosure of c. 1.6 ha, partly obscured by the later medieval castle. The area also contains an associated relict field system, and prehistoric enclosure.

The Roman fort at Penydarren, which lies in the vicinity of Penydarren Football ground (area 003) was established in c. 75 AD and abandoned during the 2nd century AD. A civilian extramural settlement or *vicus* has been located by excavation and traces of a cemetery have been uncovered extending to the northeast. The fort provided a link between the fort at Cardiff and that at Brecon Gaer (GCH 1984, 438; Jarrett 1969, 106; RCAHMW 1976,84-6; Haywood 1991). Due to their buried condition, however, the fort and its associated vicus and cemetery have no discernable influence on the character of the current landscape.

Other defensive/military sites include 19th century firing ranges at Penygarnddu and Mynydd Cilsanws and the site of the Dowlais Barracks, now Barrack Row.

• **Funerary and ritual landscapes**

The main funerary and ritual landscape element within the historic landscape is provided by Bronze Age cairns or burial mounds; these range along the high ground to the west, north and east of the Taff basin at Merthyr, and indicate the importance of the area as a place of settlement during the Bronze Age. Area 077, along the eastern side of the Taff valley, contains the largest concentration of these features and is characterised accordingly as an important relict pre-historic funerary and ritual landscape. Over ten cairns or burial mounds (primarily ring cairns and round harrows), six of which are Scheduled Ancient Monuments (SAM Gm222), are located within area 077. The location of large numbers of cairns along the ridges of Mynydd Cilfach-yr-encil and Cefn Merthyr in particular might also indicate some claim to cleared land, perhaps focused on a settlement within Cwmcothi to the east during Bronze Age.

The other notable concentration is along the ridge of Mynydd Aberdare-Mynydd Merthyr (area 073 and area 074) to the west; here the funerary monuments are ranged along the crest of the high ground along the western boundary of the historic landscape area, perhaps indicating a traditional boundary of some antiquity. Sites here include the scheduled Bronze Age round cairn of Cam Tyle Hir (SAM 402b; area 073), and currently sited within dense forestry plantation (area 074), the scheduled site of Gain Las (SAM Gm236) on Twyn Gwersyllfa and Cam Castellymeibion (SAM Gm586) to the south, a good example of a ring cairn.

To the north of the historic landscape area at the head of the Taff basin closing the gap between the western and eastern groups is the Morlais Hill Ring Cairn; a circular bank of limestone rubble with a possible entrance to the south (SAM Gm563; area 045).

• **Parkland and picturesque landscapes**

The main surviving examples of parkland or picturesque landscape in the Merthyr Historic Landscape are those associated with the 19th century residences of local ironmasters. These included: Penydarren House (area 003) built by Samuel Homfray in 1786, later housing the Merthyr Proprietary School (1876-1888), and demolished in 1966; nearby Gwaelod-y-Garth, surviving, used temporarily by the Crawshays before the construction of Cyfarthfa Castle; Dowlais House (area 008) re-built in 1818 for 3 J Guest (1785-1852), demolished c. 1960; Pentrebach House (listed grade II; area 020) and Lodge, built for Anthony Hill owner of the Plymouth Ironworks; and Cyfarthfa Castle.

The historic landscape area of Cyfarthfa Castle and Park (area 013) is a nationally important 19th century historic park and garden, representing a mature designed landscape, graded as II* (Cadw/ICOMOS UK 1999, 95). The castle is an important example of an ironmaster's seat (a Grade I Listed Building) within its parkland setting, with important historic and artistic associations. The house was commissioned by William Crawshay in 1825, and was designed by Robert Lugar as a mock castle.

The area is also characterised by its historical connectivity with the adjacent Cyfarthfa Ironworks and the wider extractive landscapes beyond, strongly demonstrated by the paintings of Penry Williams and photographs of the mid 19th century. The house overlooks grounds dropping to the southwest with views over the Fish Pond Reservoir, and Cyfarthfa Ironworks on the far side of the River Taff

Initially, the surrounding parkland was Romantic and informal, but by the late 19th century a more formal layout as a landscape park had developed. There were two entrances, the southwest entrance originally had lodges but these had gone by 1873. The areas behind the house, to the east and north, have developed as mixed woodland. The 1875 6-inch OS map indicated an Ice House adjacent to the boundary wall of Castle Wood, north of the house.

More recently, following the sale of the park to Merthyr Tydfil Council in 1910, the area has been developed for a range of later recreational and educational uses; including tennis courts, and a bowling green; while the eastern part of the park has been converted to school playing fields. Cyfarthfa Castle now performs the dual function of school and museum.

- **Industrial landscapes**

Iron Industry General

The present appearance of the landscape within the historic landscape area is largely due to the rapid growth of the iron and coal industries in the region during the 19th century. Most of the sites are directly associated with coal and ironstone extraction and the transport system which developed alongside it. While there is significant evidence of earlier industrial activity from the surrounding region dating back to the Middle Ages, such evidence appears to have been largely removed or obscured by the later intensive industrial land use. As manorial accounts elsewhere indicate, rights to mineral extraction on the commons were not a general liberty in the later middle ages, but a valued manorial preserve, from which the Lord of Senghennydd would expect to derive a profit. By the 17th century, parts of the outcrop in the Merthyr area may have been leased out, on a yearly or longer-term basis. Certainly, by the later 18th century, when ironstone extraction came to be undertaken on a larger scale for the furnaces of Dowlais, Cyfarthfa, Penydarren and Plymouth, the locations of the most accessible portions of the outcropping seams must have been fairly well established, and represented in the landscape by bands of early workings.

The economy of the study area, although basically rural in outlook until the mid 18th century, was already partly based on the extraction industries of coal and ironstone and it is likely that the extraction of coal and ironstone during the 17th and 18th centuries was far more extensive along the upper reaches of the River Taff than hitherto thought. It is known that the early iron industry flourished on the west side of the Taff during the 17th century; while a grant of 1619, giving a certain Phillip Williams 'the right to dig coal and quarry stone in all the common lands or forests in Senghennydd Supra...' (Richards 1981, 218-9). A lease of 1696 granted William Edwards of Eglwysilan "all coal veins" in the parishes of Merthyr and Gelligaer from "Dowlais to Nantybwhch and the heath market (Marchnad-y-Waun) to the village of Kelligare", suggests that small-scale workings were commonplace at the time. The latter lease, which included the house known as Marchnad-y-Waun, was transferred in 1748 to Thomas Morgan of Ruperra.

The development of the coal and ironstone workings within the historic landscape is associated with the resurgence in the iron industry seen during the latter half of the 18th century, a direct result of the technical innovation the Cort puddling process, which enabled coke to be used in iron smelting, in place of the traditional charcoal.

Dowlais (PRN 1615m, area 008) was the first ironworks using the new puddling process to be established in the Merthyr region; initially set up after 1757, when Thomas Lewis acquired the mineral rights at Dowlais. In 1759 John Guest, a Staffordshire ironmaster took over the management of the Dowlais Works (later called the Old Works). Iron production increased under the Guest family and Dowlais remained at the forefront of technical innovation within the industry. The Dowlais Iron Works was the first to adopt the Bessemer process and steel making at Dowlais commenced in 1865. Dowlais was to become the biggest ironworks in the world and at its peak it employed 9,000 people. The Ivor Iron Works (area 029) begun in 1839 as an extension of the Dowlais Iron Works, initially with four blast furnaces, was operating to capacity by 1842 (Thomas 1981, 284). This works survived into the second half of the 20th operated as a foundry by British Steel; its closure in 1987 ended Merthyr's association with the iron industry; an association which had lasted more than 200 years. In 1901, the company merged with the Patent Nut and Bolt Company of Birmingham, and in 1902 became Guest, Keen and Nettlefold (later GKN).

The second ironworks to be established in the area was that at Cyfarthfa (PRN 01 169m area 012), constructed by Anthony Bacon in 1765. The works at Cyfarthfa traditionally drew its raw materials from the coal and ironstone workings on land leased from the Dynevor estate. Belonging to the early period of Cyfarthfa is the Cyfarthfa Canal, of which some remains survive (PRNs 02412m/02413m, area 014), built in the late 1770s to transport coal direct from levels to the ironworks. The ironworks at Cyfarthfa, together with the coal and ironstone workings, began a rapid period of expansion under Richard Crawshay, who leased the works in 1786; this early success was in part due to the construction in 1794 of the Glamorganshire Canal (area 014). The Ynys Fach Iron Works (area 010) opened as an extension to Crawshay's Cyfarthfa works in 1801 and despite being the second in the area to employ steam-blowing engines, after Dowlais, it generally played a secondary role to Cyfarthfa. When steel production started at neighbouring Cyfarthfa in 1884, the four blast furnaces at Ynys Fach were relined and kept in reserve, though probably never put back in blast.

The Plymouth Iron Works (within areas 019 and area 15) were founded in 1763 by Isaac Wilkinson and John Guest on land leased from the Earl of Plymouth and two years later sold to Anthony Bacon following an initial lack of progress. Control of the works fell to Richard Hill (d. 1806) following Bacon's retirement in 1783. The works remained in the Hill family until the death of Anthony Hill in 1862, when bought by Messers Fothergill, Hankey and Bateman. The Plymouth Works relied on water power, long after it had

become obsolescent elsewhere, and in order to re-use the water supply the works was forced to expand into three separate plants, the Pentrebach Forge and Dyffryn furnaces (see area 015A) being added. Steam power was finally introduced, leading to a dramatic increase in output, following the dry summers of 1843 and 1844. During the second half of the 19th century, obsolete technology and economics combined to the disadvantage of the Plymouth Iron Works. The lack of capital to convert to steel production finally led to closure in 1880; though the company continued to mine its vast reserves of coal.

The other major ironworks within the historic landscape was the Penyarden Ironworks established on the banks of the Morlais Brook. Relatively late for the area, this works was established by Francis Homfray and his three sons, Jeremiah, Thomas and Samuel from 1784. The location was far from ideal and the works also experienced difficulties with water supply, a direct result of the control already exercised by the Dowlais Ironworks over the area's water catchment; indeed, to resolve the problem, an arrangement had to be made between Homfray and John Guest, allowing alterations to be made to a watercourse. Similarly, Dowlais held the coal rights to the Pwll-yr-Hwyaid area and Homfray was forced to negotiate rights to mine coal from John Guest. Despite these difficulties, the company had far-reaching influence and succeeded in securing large and profitable contracts; by 1796, the works were producing 2,000 more tons of iron than Dowlais. The ironworks at Penyarden closed in 1859, following boom-bust years of the first half of the 19th century and the death of William Thompson, the company's most influential partner. The company's works and mineral holdings were bought by neighbouring Dowlais.

Ironworks-specific mineral extraction

Mineral extraction before the latter half of the 18th century is considered to have taken the form of small-scale levels and patch workings; it is, however, unlikely that these features will have survived in a recognisable form, given the intensive exploitation of the later 18th and 19th centuries. A will of 1697 mentions the existence of 'coale-works, pitts, and veins of coale, together with limekilns and quarries of stone situated within a place called Tule Dowlais'; the area, south of Pen-y-waun Fawr, saw intensive later reworking and tipping. Other potential *foci* of early extraction are the small valley or cwm at Ffos-y-Fran on the western slopes of Merthyr Common and that Nant Ffrwd beyond Ty'n-y-Coedcae farm; where natural stream courses crossed the outcrop. Such mineral outcrops of coal and iron ore would have been exposed and easily accessible; the exposed minerals might have been processed by a form of semi-natural scouring.

Coal and ironstone workings in the area from the latter half of the 18th century came under the direct control of the major iron producing companies of the region; the owners holding the mineral leases. The mineral leases of the ironworks, cartographic, and other documentary evidence, enable the identification of the individual mineral holdings associated with the various the ironworks.

The mineral holdings of the Dowlais Iron Company were located along the west facing slopes of Merthyr Common to the north and east of Dowlais's two ironworks. These mineral holdings lay chiefly within two of the present historic character areas, area 039 and the reclaimed area of area 078 which included the Dowlais Great Tip, and the extensive workings around Pwll-yr-hwyaid, Trecatti, Trehir and Twyn-Y-Waun. The following historic landscape areas encompass the remainder of the Dowlais workings: area 031; area 032; area 035; and area 041. Limestone for the works at Dowlais was supplied largely from three associated quarries to the north and northeast at Twynau Gwynion (area 042), Morlais Castle (area 044), and Bryniau (area 046).

Cyfarthfa was associated with coal and ironstone workings, 'the Cyfarthfa mines', on land leased from the Dynevor estate, which were ranged along the western side of the historic landscape area along the eastern slopes of Mynydd Aberdare. These workings provide dominant characteristics for several historic landscape character areas, including: area 064 Winch Fawr, Pen-Yr-Heolgerrig, Cwm Du, and Upper Cwm Glo Workings; area 066 Waun-Y-Nant Goy Tips; area 067 Pencoedcae and Brynteg; area 070 Cwm Glo: Tramroad, Plateway and Incline Corridor and to a lesser extent area 069 Cwm Glo, North. The lower workings of Cyfarthfa also extended into area 014 River Taff Canal and Railway Corridor, to include the workings at Gethin, and area 011 Llwyn-Celyn and Ynys Fach, and workings adjacent to Ynys Fach Ironworks. Limestone for the works at Cyfarthfa was provided initially by the Gurnos Quarry (area 012 Cyfarthfa Iron Works) and later during the 1870s from Vaynor Quarry (area 051).

The mineral holdings of the Penyarden Iron Company were small by comparison and were located close to the works (area 004 Penyarden Iron Works Area) at Incline Top and Penyard (HLCAs 040 and 036 respectively). Limestone for the works came from the western quarry at Morlais Castle (area 044).

The Plymouth Iron Works (area 019 and area 015) obtained its raw material from ironstone and coal workings located along the east facing slopes of Mynydd Cilfach-yr-encil from Cwm Blacks southwards including Clyn-Mil, Pencoedcae and Trebeddau and workings at Bwllfa, while the workings at Gethin and Graig, which straddled both sides of the Taff Valley were also part of Plymouth mineral holdings.

Though the early period of mining (ie pre-1850) in the area is poorly documented, extraction techniques of the time largely depended on surface workings using a mixture of patching (a process which scours the land of its topsoil), small pits, including bell-pits, and where the topography allowed levels driven into the hillsides (Osborne 1976, 41). Although deep pits had been sunk during the 1820s and 1830s at the Cyfarthfa Mines (eg Robbins Pit, Glyndyr's Pit, and Colliers' Row Pit) levels continued to provide the main means of coal and ironstone extraction in Merthyr until around 1850. At the Dowlais workings, for example, levels accounted for 75 per cent of coal output; though the Dowlais Iron Company had sunk 19 pits between 1837 and 1857, including Cwmbargoed Colliery and the Penyarden New Pit. Other ironstone and coal pits within the Dowlais mineral field sunk prior to 1860 included Buxton's Pit, No.1, No.2, No.4 Pits, No.6, and No.7 Pits, Penyarden Old Pit, Pen-y-Waun Fawr Pit, the Soap Pit, and Tyle Dowlais Pit, among many others. All attest to the continued exploitation of mineral reserves to satisfy the demand of the neighbouring ironworks.

The main means of haulage within the shafts was the water balance system, which depended on a plentiful and constant supply of water (Thomas 1981, 306-308); several of the reservoirs in the study area are likely to be relict features associated with this system.

The development of the landscapes of the mineral holdings is complex and lengthy, and varies slightly between the various ironworks, however a general sequence can be recognised and phases of industrial landscape development have been established as a result. The four identified major industrial phases are:

Phase 1: early period: late 18th to early 19th century
Phase 2: mid 19th century: 1820s to 1880s
Phase 3: late 19th to early 20th century
Phase 4: mid 20th century to present day

The proposed industrial landscape development model is based on the lay-out and morphology of the surviving surface remains, together with the late 19th and early 20th century OS map evidence; no attempt is made here to examine the parallel development of the extensive underground workings, though these are of comparable interest.

Phase 1: early period: late 18th to early 19th century

Given the accessibility of the outcrop, particularly the ironstone, it is likely that some mining activity was carried out during this period. Most outcrop mining was still undertaken on a contract basis at the time (indeed, throughout much of the 19th century), with individual miners taking out a sub-lease on a section of the seam, organising and paying for all the works involved and selling the coal or ironstone to the Company. This process is very apparent in the names of individual levels in the archival mining records (William Morgan's Level; J Morgan's Level; JL Jones' Level; Baynon's Level; Jenkin's Level and D Rees' Level), which reflect the miners concerned (GCRO DD/HSE 1/1 1). What we see today is not simply an agglomeration of stereotypical levels and tips undertaken by the Iron Companies, but the remains of a series of individual family ventures, in which boys (and sometimes girls) as young as seven or eight would work alongside their fathers and elder brothers.

The initial stage of working appears to have been by quarrying or patch working, small levels and pits, which for example at Dowlais produced the scarped face along the crest of the north west west-facing slopes north of Ffos-y-fran, possibly on the line of an existing erosion bench. Further patch working or open ore quarrying continued south towards the iron ore miners' settlement at Ffos-y-fran; this area also contains surviving examples of contemporary 'crown pit type workings' (area 039). Workings of this type were formerly more in evidence, and much has been lost to late 20th century reclamation including extensive linear patch workings in the area between Longtown Cottages (Tre-hir), and Twyn-y-Waun; (1st edition OS map of 1879; area 078). The intensive late 18th/early 19th century ironstone workings associated with Anthony Hill and the Plymouth Iron Company situated at Cwmblocks and Pencoeadae (OS surveyor's drawing 1813) were also largely of this type.

Overburden removal for the patch working may have been cleared by a process known as scouring although surviving evidence in the area is now inconclusive. Scouring on the coalfield, though well documented in the 18th century, seems not to have continued much beyond the early 19th century. The operation of the system is rather less certain, and there seem to be several modes of using water. The basic idea is that a substantial dammed-up body of water is released and allowed to flow over a section of the exposed outcrop, stripping away the clay/shale overburden and revealing the ore or seam. In some cases, this appears to have been undertaken partly by quarrying (i.e. patch working), so that the hydraulic action scoured the exposed surface and removed the waste. Elsewhere, the ore was first won from adjacent sources (levels or open patches), deposited within the scouring course, and then washed of its lighter shales and clays (Osborne 1976).

Workings of this period are characterised by evidence in selected areas of scouring, (b) by evidence of initial working by shallow patching (surface quarrying) and (c) by clusters of distinctive small conical tips immediately downslope of the patch. In practice, the early patching, scouring and level workings were probably undertaken simultaneously, but it is difficult to identify contemporary associated features. Evidence for all of these operations is to be found among the surviving extractive remains associated with Cyfarthfa, where scouring operations were directed to the ironstones of the Lower Coal measures, between the Garw and Five Foot coal seams (predominantly within area 064). Further examples of patching and shallow pits of the crown-pit type remain at Ffos-y-fran (area 039) associated with Dowlais, and at Clyn-Mil within area 023 associated with the Plymouth Ironworks.

Very similar features can be found at other locations on the coalfield outcrop (Bick 1994), including an extensive group to the north of Blaenavon, where deep linear channels are associated with ponds and leats (Wakelin 1996). At Blaenavon and Abersychan/Pontypool, the system had become disused by about 1814, and, in general, scouring on the coalfield, though well-documented in the 18th century, seems not to have continued much beyond the early 19th century. The operation of the system is rather less certain, and there seem to be several modes of using water. The basic idea is that a substantial dammed-up body of water is released and allowed to flow over a section of the exposed outcrop, stripping away the clay/shale overburden and revealing the ore or seam. In some cases, this appears to have been undertaken partly by quarrying (ie patch working), so that the hydraulic action scoured the exposed surface and removed the waste. Elsewhere, the ore was first won from adjacent sources (levels or open patches), deposited within the scouring course, and then washed of its lighter shales and clays (Osborne 1976).

Not all these features are unique to the early 19th century; patch working continued, on a rather larger scale, into late Victorian times. There is, however, a clear distinction between the remains of this mode of shallow outcrop working and the extensive ironstone levels of the mid 19th century with their well-defined lobed tramming tips, which became the dominant extraction method in the application area, probably by the 1820s.

The development of the coal and ironstone workings of the area closely parallels the fortunes and developments affecting the ironworks that they supplied. For example, during the 1830s, the Dowlais Iron Company began to benefit from the growth of the railways; under the management of Josiah John Guest the Big Mill was opened in 1830 and in 1839, a new works, the Ifor Works was started and brought into production. In 1842 both works were operating to capacity and by 1845, Dowlais with a workforce of over 7,000 and with an annual production of 88,400 tons of pig iron could claim to be the greatest ironworks in the world. It is to this period that the majority of workings belong.

Again, the initial stage of working would have been the continuation of open ore quarrying or patch working, small levels and pits, with additional levels driven into the worked faces. The main feature of the middle period of outcrop working was the considerable expansion of level and shaft activity, which replaced the older methods of shallow surface workings at slightly differing rates.

At Cyfarthfa's ironstone workings on the Upper Yard Seam and the Upper Black Pins (area 064) surface working continued later than elsewhere, being eventually succeeded by levels driven into the worked face. The main expansion of ironstone workings at Cyfarthfa occurred between about 1806, when Cyfarthfa with its six blast furnaces was the largest ironworks in the world, and the 1850s, when the ironworks, in decline, was importing iron ore from elsewhere.

At Dowlais, in addition to numerous levels, later, extraction appears to have concentrated on a number of pits (shafts) set on the lower slopes west of the outcrop area, such as Dowlais Pits 1, 2, 4, 6, and 7, and the Pen-y-Waun Fawr and Tyle Dowlais Pits (area 039 and formerly area 078), while a haulage Tramroad (the Dowlais Iron Company Railway) skirted the line of the outcrop, connecting the various levels and pits (shafts) with the main routes to the stockyards via a system of inclines.

Relatively early examples of lobed-tips survive at Cwm-glo and Bryn-y-gwyddel within area 064 and also to the southeast of the Tre-hir Pond within area 041 associated with ironstone workings, specifically shaft 85558 and the Soap Pit Ironstone Level 85986. More extensive versions of 'finger' or 'fan-tips' were frequently associated with shaft workings, at Dowlais examples of these dominant and highly visual features survive within area 039 and include No. 1 Pit, No. 2 Pit, No. 4 Pit, and No. 6 Pit. Dowlais.

The workings associated with the Plymouth ironworks, specifically those in the area between Cwmblacks and Clyn-Mil (HLCAs 021, 022, 023 and 048), also developed along similar lines progressing from predominant patchworking to levels and pits. By 1826 a network of tramroads and inclines, including the main Coedcae Incline, had been established throughout the area connecting the Plymouth Iron Works with various workings; these included ironstone levels and patch workings throughout the area around Cwmblacks (area 021, area 022 and 023 and area 048. The Clyn Mil Pond, serving the Iron Works is also a feature of the period.

Cartographic evidence indicated that an upsurge in mining activity had occurred by the period 1850-1875, if not before on the Plymouth mineral holdings. Here (ie area 021), like elsewhere, the pits were in operation before 1860 and included Clyn-Mil Pit (No. 1; coal and ironstone), its associated water balance reservoir, Graig Pit (Wern-las No. 1), Wern-las Pit, Ellis Pit, Clyn Mil Pit (No. 2). The area had been intensively worked by the publication of the 1875 6-inch OS map, which indicated ironstone and coal levels, shafts, various small 'lobed' and linear tips, and other surface workings, such as quarries, or 'patch workings', and reservoirs and leats arranged along the eastern bank of Nant Cwmblacks. The Plymouth workings on Mynydd Cilfach-yr-encil, with their impressive inclines to the Dyffryn furnace date to the period (1850-1875), as do the Bwllfa Levels.

By 1879, the current form of tipping was by parallel tramlines in close-set blocks, which had the effect of producing smooth, level surfaces; the contrast between the old and new forms of tipping is clearly shown on the surface of the tip. The first edition OS map shows this method in practice in the area north and south of No. 1 Pit and at the pits of Pen-y-Waun Fawr and Tyle Dowlais at Dowlais (area 039); the tips at the latter two were extensively remodelled during the latter part of the 20th century.

While many of the levels and pits associated with Dowlais (including the former Penydarren workings) and Cyfarthfa were still named on both the 1873 and 1879 OS surveys, the vast majority appear to have become disused soon after.

Coal was probably being worked from both the Garw and the Upper Yard seams, from a relatively early stage. Pwll-y-mynydd pit at Winch Fawr, one of the earliest of the Cyfarthfa Company's shaft mines along the northern edge of the mineral lease, was sunk for coal in 1828 (Thomas 1981). When ironstone workings were generally abandoned during the 1870s, coal continued to be extracted, in particular from the extensive Plymouth mineral holdings for the domestic and lucrative steam coal markets (see below)

Haulage was a central concern for the practicalities of level working on this scale, particularly given the remoteness of the ironworks from the ore workings. The increasing distances of the underground became an inevitable drain on human and animal labour (and in the mid 19th century, the levels were still essentially private undertakings). Although most of the waste material remained underground, the substantial surface tips represent a considerable proportion of unpaid effort in driving new headings; the form of the tips, with individual lobes marking each tip line, were becoming as efficient as possible. The main horse-drawn haulage tramroads, which had become common feature of the Merthyr outcrop landscape by the early 19th century, were an important element of the workings, allowing increasing volumes of ironstone and coal to be moved to the stockyards of Cyfarthfa, Dowlais, Penydarren (part of the Dowlais concern from 1859), and the Plymouth ironworks.

By the end of the 19th century, the outcrop workings throughout Merthyr were clearly in decline. This was a direct result of the conversion to steel production of the main associated ironworks at Dowlais, and Cyfarthfa. Coal was also being won in far greater quantities elsewhere from mid 19th century and later deep shaft mines.

Under the management of William Menelaus during the 1850s, the Dowlais Works (HLCAs 008 and 039) underwent reconstruction and conversion to the production of steel. Bessemer produced steel was first rolled at the works in June 1865 and by 1880 the works had switched entirely to steel production using a combination of acid Bessemer converters and Siemens-Martin open hearth furnaces. Similarly, Cyfarthfa converted to steel production in 1884. Iron ore was being increasingly sourced from northern Spain during the second half of the 19th century, the local ore, rich in phosphorous and sulphur being no longer suitable for the new processes introduced. As a result, local ore production declined rapidly to such an extent that it had ceased altogether by the early 1870s. Most if not all the pits and levels within the historic landscape character areas containing workings associated with Dowlais and Cyfarthfa, in particular, were for the most part already defunct (first edition of the OS 25" map, surveyed in 1879). However, limited level activity of apparent short duration is a feature of the late 19th/early 20th century for example at Cyfarthfa on the Five Foot and Seven Foot, and Nine Foot seams. Few levels, though, appear to have been intensively worked during the period (2nd and 3rd edition OS 25" maps, published in 1905 and 1918).

At Dowlais, a similar picture emerges with the majority of the coal and iron ore workings disused by this date (eg Pits 1, 2, 4, 6, and 7, Dowlais); limited level activity may have continued at Pen-y-Waun Fawr and Tyle Dowlais pits (area 039).

The cartographic evidence indicates that mining activity at Cwmblacks and Clyn-Mil, the intensive mineral extractive area of the Plymouth Ironworks, changes radically in the area between 1875 and 1905, probably with the closure of the Plymouth Ironworks in 1880. By 1901 the levels of the area were disused and the associated inclines are described as 'old': a new incline has been constructed, directly serving the South Dyffryn Pits. The main aspect of the period leading up to 1915 was a renewal of coal extraction brought on by World War One. This included the construction of a new incline between one of the Bwllfa levels and the mineral railway serving the Graig (No. 2) and the South Dyffryn Pits. Apart from later reworking, there is continued coal extraction elsewhere on the extensive Plymouth mineral holdings, ie at Graig and at the Bwllfa Levels where coal was worked, chiefly for the steam-coal trade. During the following period the Bwllfa levels were expanded with the creation of substantial tips, dominant visual characteristics features above Pentrebach. A coal level to the south of the Troed-y-rhiw, periodically worked from at least the mid 1870s, showed evidence of being reworked during the period; again connected by incline to the mineral line of the South Dyffryn Pits.

The decline of the area's workings is reflected in the state of the area's industrial haulage system. By 1906, most of the minor haulage Tramroads associated with the Dowlais workings had already been removed. The main Dowlais Iron Company Tramroad connecting the works at Dowlais with Cwm Bargoed Pits and the incline to Pen-y-darren Pits remained intact until the outbreak of the 1st World War in 1914; the latter in partial use as a mineral railway line between Pen-y-Darren Incline Cwm Bargoed pit until the 1920s (OS provisional edition, 19 14-15). Elsewhere, such as at Cyfarthfa most of the haulage tramroads had already been removed by this date.

Later development continued at a few select colliery sites such as that of Cwm Bargoed Pits (area 032), which closed in 1923/24. By the end of the 1920s, the workings of the Merthyr area were largely derelict (Thomas 1981, 330), though there appears to have been a brief period of mining activity during the Second World War.

Phase 4: mid 20th century to present day

Between the early 1950s and the 1980s, opencast mining operations and reclamation schemes altered large areas of the industrial landscape of Merthyr. Casualties included the extensive area encompassing Longtown, and Trecatti (area 078) subjected to opencast and reclamation, while the Dowlas Great Tip (area 078) was removed in advance of the construction of the A4060(T) by-pass. Landfill and domestic waste tipping has again altered the character of the landscape, in particular within the western part of the north Merthyr Common (area 078 and small areas within area 039). While the extensive workings associated with the Plymouth Ironworks were subject to opencast and reclamation schemes during the 1970s (area 015, area 019, area 021), the workings associated with Cyfarthfa (mainly area 064) survive better than elsewhere, despite limited opencast at Bryn-y-Gwyddel (early 1950s), and road construction (area 079), which has removed the lower colliery sites associated with Cyfarthfa (Gethin No.2 Pit, and Castle Pit site).

Coal washing activities have buried and removed early to mid-19th century mining and transport remains associated with Cwm Bargoed Pit (area 032).

Non-ironwork-specific extraction

The early development of the trade in 'steam coal', coal specific to the needs of the steamship and navigation companies, began in the Merthyr area in 1828 with the sinking of Robert Thomas's level at Waunwyllt (area 072), and later the workings of Lucy Thomas at Graig pit near-by (area 017). These exploited the 'steam' coal of the Four Foot seam. The main ironworks also tapped into this lucrative market exploiting their workings south of Abercanaid area. Cyfarthfa had workings at Gethin opened in the 1850s, and Castle Pit, Troed-y-rhiw, sunk in 1866-1869 (area 079 and area 014). The Plymouth Iron Company later expanded the workings at Graig, and Cyfarthfa developed the workings at Gethin during the 1860s to take advantage of the increasing demand for steam coal. Further expansion would appear to date to close of the 19th century when workings along Nant Graig to the South of Pen-y-lan and Waunwyllt Colliery (area 072) were further developed. Coal extraction in the area to the south of Merthyr survives longer here than on the ore fields to the north, east and west; the collieries of Gethin and Castle Pit saw further activity during World War II, though were finally closed in 1947, the year of nationalisation.

Water Supply

Water supply was fundamental to the industrial processes carried out at the ironworks and their associated workings, for example for water balance haulage within the pits and for powering inclines. Merthyr boasted a number of industrial waterpower systems associated with the ironworks of the area, usually operating on the principal of gravity-fed free drainage; preservation of the systems and their individual elements is extremely varied. The problems of water supply that affected the ironworks is well recorded, for example at Dowlais "There were difficulties with establishing a consistent water supply to power the 'air engines' ... overcome in 1798 when Dowlais became the first works in Wales to install a Boulton and Watt double acting steam engine to supply air for the furnaces" (Thomas 1981, 282-3). "Penydarren ironworks experienced difficulty with its water supply. This resulted from the fact that the Dowlais works was sited nearby on higher ground and was able to control many local streams at will" (Thomas 1981, 295). The Plymouth Iron Works, which relied on water power, long after it had become obsolescent elsewhere, was forced to expand into three separate plants, Plymouth (area 019), the Pentrebach Forge and Dyffryn Furnaces (area 015A) to maximise its water supply's efficiency. Steam power was finally introduced following the dry summers of 1843 and 1844.

Perhaps the most extensive and well preserved of the area's industrial drainage is that associated with Dowlais, despite large sections having been removed by 20th century opencast and reclamation. The 'Dowlais Free Drainage System', dating in part to c. 1818, was constructed and embellished over a period of time to supply water to ironworks of Dowlais, and also appears to have supplied the associated coal and ironstone mines. The supply of water to the Dowlais ironworks was provided by an elaborate network of reservoirs, ponds, leats and culverts; this 'free drainage system' (relying on gravity rather than pumping) extended well to the north, south and east of the ironworks. Surviving drainage features are particularly characteristic of area 031 Merthyr Common, Central, including the scheduled Sam Howell Pond and Water Course (SAM Gm494); area 035 Pengarnddu; area 039 Ffos-Y-Fran; and area 041 Merthyr Common, North; while buried culverts are known to survive within area 008 Dowlais Iron Works Area. The Dowlais system was first identified as an entity by John A Owen in his 1973 book *The History of the Dowlais Iron Works, 1759-1970* (pp. 67-68) (1st edition; 2nd edition 1977). There has been no detailed account, though limited field survey has been undertaken by the RCAHMW in 1993, which identified many surviving drainage features, including those feeding into the ironworks and those draining to the south (Malaws and Wakelin, unpublished).

The technology involved was not particularly complex or radical: ponds, sluices and leats had been mastered for milling purposes in the medieval period, and were widely employed elsewhere for similar industrial purposes. The scale of the enterprise is exceptional, however. The construction of the culverts is perhaps the single most notable feature, although the elaborate construction of aqueducts to maintain the water flow through the leat system as new roads, tramways and railways were built also reflects clear-sighted design. The system, fed by gravity, employed an extensive above-ground network of leats and reservoirs and underground U-shaped channels, built to the 'Dowlais pattern' within various levels, such as the Brew House Level, and Buxton's or the Purple Level, the latter still extant and in good condition as late as the 1960s. The system acted to drain a variety of coal seams including the Lower Four Feet seams of the Cwm-Bargoed, Trecatty and Trehir area and the Upper, and Lower Four Feet, Big Coal, Red, Blue and Spotted Vein in the Pantywaun, Rhaslas, and South Tunnel areas. It eventually drained into a water pit at Tyle Dowlais Pit, from where water could either be pumped back to the surface system or allowed to drain to the charging levels of the Penydarren furnaces (Owen 1977, 67-8). The lists of mains and culverts of Dowlais Works (1920) gives an idea of the extent of the undertaking which totalled 12.7 km of mains (the longest being the Rhaslas Main, just over 2 km in length), while the total length of culverts amounted to 11.3 km. The list of 'Reservoirs and Watercourses at Dowlais Works' mentions approximately 28 mile of watercourse (42 kin), presumably referring to the open leats connecting the various ponds.

While Owen describes 'the Dowlais "Free" drainage system' as a single system, one that had been "perfected by the year 1868" (Owen 1977, 67), this assertion has been questioned by further examination of documentary and cartographic evidence. It is not clear from the documents whether the drainage features of the area were conceived as a single system, or were considered as a group of related features. It is also ambiguous as to whether its purpose was solely to provide water to the ironworks, or whether the removal of unwanted water and the supply of water to mines for balance pits were part of its function (Malaws and Wakelin, unpublished). The supply of water was critical to the operation of an ironworks: the supremacy of Dowlais and the Cyfarthfa works (on a riverside site) over the rival Plymouth and Penydarren complexes is largely explained by this factor. A recent examination of documentary and cartographic sources concludes that the documentary evidence for drainage activities of the Dowlais Iron Company is poor and no single account of a 'system' is evident. Documentary evidence reflects continuing modification; from a few isolated ponds in 1847, to an integrated complex in 1868, with further additions in 1870, and numerous later changes, over a period of more than 70 years (Locock, pers comm.). The examination of cartographic sources and map regression undertaken for the present study supports this analysis.

Water management associated with Cyfarthfa (area 012) is also of great interest; the works at Cyfarthfa drew its water supply directly from the Taff Fechan via a leat fed from a weir (possibly that built in 1766-77). Surviving features include Pont-y-Cafnau Iron Bridge c. 1793, which conveyed water to the plant across the River Taff via a culvert and high level launder (depicted in painting of c. 1819/20 by Penry Williams) from the surviving Cyfarthfa Feeder Canal and the Fish Pond Reservoir within the grounds of Cyfarthfa Castle (area 013). The need for both water and limestone at the Cyfarthfa Ironworks had necessitated the construction of a combined packhorse or plateway bridge and aqueduct, Pont-y-Cafnau. During the 1770s, this would have been of wood; sketches by JMW Turner in 1797 depict the elevated wooden aqueduct, which formerly fed a massive Æolus water wheel (1793-96) driving the blast for the Cyfarthfa Furnaces. The present Pont-y-Cafnau (Pont-y-Cafnau Iron Bridge SAM Gm 424) was re-built in cast-iron c. 1793 almost certainly to designs of local engineering prodigy Watkin George to carry the newly constructed Gurnos Tramroad. The structure is important as the first recorded iron Railway Bridge and viaduct (Hughes 1990).

an extensive network of interrelated leats and reservoirs existed in the area of the workings, the 'Cyfarthfa Mines' to the west and south of the ironworks, (ie HLCAs 014, 064, 066, 067, 069, and 070). In this area, the water management features also supplied the canal systems of the Cyfarthfa and Glamorgan canals (eg Glyndyrys Pond), and the water balance systems of the area's numerous pits.

Little apparently survives of the water management features associated with Plymouth and Penydarren ironworks, beyond the Plymouth Feeder Canals (HLCAs 006, 015 and 020).

- **Transport and communications**

There is comparatively little evidence for transport routes pre-dating the post-medieval period. The Roman road between the fort of Brecon Gaer and that at Penydarren is known to have passed through the area; it is thought likely that it crossed the Taff Fechan at Pont Sam (area 027) and continued south to Penydarren via one of two possible routes. One possibility is that it followed a route now used by the lane to Gwaelod-y-garth, the other that it took a route via Pantton (deserted rural settlement), and Gurnos farm to skirt the south-facing slopes below Cyfarthfa Castle. The Roman Road between the forts of Gelligaer and Penydarren is thought to pass along the western edge of the historic landscape area, on the line of an existing minor road (NL152 and PRN A62: Wilkins 1900, 70-73; Margary 1965; RCAHMW 1982, 152).

Late 17th and 18th century maps depict a number of ancient routes through the area (John Ogilby's map of 1675 and Emanuel Bowen's map of South Wales, 1729). These included the ancient ridgeway route that ran along the west bank of the Taff Fechan, crossing at Pont Stickel (Pontsticell), to pass east of Morlais Castle and Garth Farm. This route followed the ridge of Merthyr Common thereafter, continuing via a crossroads with the track to the medieval Marchnad-y-Waun fair site, and following the crest with its numerous Bronze Age cairns (area 077) south towards Llancaiach. A low-level north-south valley route followed the east banks of the Taff Fawr and the Afon Taff south from Pont-y-Capel to Pont-y-Gwaith and beyond. Other traditional routes included an east west route via Pont-y-Capel (Cefn Coed-y-cymmer) to the head of the Rymney (Rhymini) Valley, and the old road from Merthyr Tydfil to Aberdare via the village of Pen yr heol (Penyrheolgerrig).

Road bridges of the pre-19th century period are scarce given the history of flooding, exemplified by Pont-y-Capel, Cefn Coed-y-cymmer, built in wood in 1650, rebuilt in stone between 1775-1780, and rebuilt again in 1858, following its destruction in the flood of 1853 (Davies 1992). The 18th century Pont -y-Cefn (1775-1781; listed grade II; area 055), again with an earlier wooden precursor, survives though was superseded in 1909 by the current bridge of reinforced concrete, repaired 1949 and 1989.

Late 18th century cartographic sources indicate a dramatic alteration and upgrading of the transport network of the area. Additions included the Cyfarthfa Canal (late 1770s) and the Glamorganshire (or Cardiff) Canal (c. 1794), while the Dowlais Tramroad to the canal head of the Glamorganshire Canal, and the Turnpike Road from Brecon, via Merthyr Tydfil also appear on late 18th century maps (Dadford's map of the Glamorganshire Canal, 1790; and Yates' Map of the County of Glamorgan, 1799).

Road improvements followed the Turnpike Acts of 1767 and 1787, first the Turnpike Road from Cefn to Cwm Taff in c. 1802 (HLCAs 055 and 061), and the Plymouth Toll Road, (eg area 006) created under the auspices of the Glamorganshire Turnpike Act of 1771 and instigated by Anthony Bacon. Later, in 1831, the Merthyr to Brecon Turnpike was made; much improving transport links (Lewis 1958; Bowen 1992).

The Cyfarthfa Canal and Glamorganshire Canal are two nationally and internationally important canals; remains include embankments, cuttings, bridges and other features. These features survive in area 014 and represent the earliest industrial transport landscape within the Merthyr Tydfil Historic Landscape. The earlier, Cyfarthfa Canal (SAM Gm467), built in the late 1770s, allowed the transportation of coal direct from the levels to the Cyfarthfa ironworks using small iron boats or 'buckets' which entered the adit mouth. The main impulse to the industrial expansion of the area was the construction in 1794 of the Glamorganshire Canal, which enabled the rapid expansion of the Cyfarthfa ironworks and its associated coal and ironstone workings under Richard Crawshay, who leased Cyfarthfa in 1786. A good surviving portion of the Glamorganshire Canal is the canal head at Chapel Row (listed grade II; birth Place of Dr. Joseph Parry; area 014), George Town and the site of the re-erected iron canal bridge from Rhydydar (Gm486).

Perhaps the most well known and justly celebrated of Merthyr's early tramroads is the Penydarren (Merthyr) Tramroad (area 019); constructed 1799-1802 between Penydarren and Abercynon by the renowned early railway and mining engineer George Overton, who was also responsible for the first survey of the Stockton and Darlington Railway. The impetus behind the tramroad was disagreements over the high tariffs charged on the Glamorganshire Canal between Richard Crawshay of Cyfarthfa, and the other ironmasters of the area. The Penydarren Tramroad is of international importance as the site of the first ever-recorded journey on rails made by a steam locomotive (one of Richard Trevithick's steam engines), undertaken in February 1804.

The Plymouth Works' Tunnel (or Trevithick's Tunnel) survives under the site of the charging bank of the Plymouth Iron Works Furnaces; this was likewise the first recorded railway tunnel used by a locomotive.

By about 1800 the development of a complex transport network was well under way; horse-drawn haulage was in use by the late 18th century, with cartographic evidence (Yates 1799). for "waggon ways" such as that in area 039 (area 004, and 039). Other notable early tramroads include the Gurnos Tramroad (SAM Gm478; area 012C), constructed in 1793 and retaining stone sleeper blocks; the Gurnos Tramroad crossed the River Taff to the Cyfarthfa works via the nationally and internationally important Pont-y-Cafnau (SAM Gm 424).

The Morlais Tramroad of the Penydarren, Dowlais and Plymouth Iron Works was constructed 1793 to serve the Morlais Castle Limestone Quarries (area 044), while a Tramroad of c. 1805 connected Dowlais with the Twynau Gwynion Limestone Quarries

(area 042) and passed through area 035. The Rhymney Mineral (Limestone) Railway replaced the latter in c. 1864, when the quarry became associated with the Guests' Ironworks at Rhymney.

The industrial transport network of the Merthyr Tydfil area was largely established by the first quarter of the 19th century, as can be seen on surveyor's drawings of 1814, and 1826. One example is the industrial tramroad networks of Cyfarthfa (areas 063, 064, 066, 067, 068, 070), which served the extensive workings along the east facing slopes of Mynydd Aberdare. The main Cyfarthfa Tramroad ran north-south from Cyfarthfa Ironworks via Coedcae and Cwm-glo pits to the quarries and level at Upper Black Pins Level (south), and the east-west Cwm-glo-Upper Wern Incline to the Cwm Pit Railway. Other tramroads of the area include the Mynydd Aberdare - Cyfarthfa Tramroad, a scheduled section (SAM Gm 495, area 067), the Cwm-glo-Cyfarthfa Tramroad, the Pen-yr-heolgerrig Tramroad and the Cyfarthfa - Clwyd-y-Fagwyr Tramway. A similar picture is visible at Dowlais, Plymouth and Penydarren where further industrial tramroads were in existence by the same period, such as the Dowlais Iron Company Railway, which connected various levels and pits (shafts) with the main routes to the stockyards via a system of inclines.

In 1821 the rails for the Stockton and Darlington Railway were produced at the Dowlais works heralding the rewards to come of the railway boom years. From about 1840 a complex network of railways was developed, first transporting coal and iron ore and later serving wider markets; remnants of industrial railways include the Gethin (Castle Pit Railway; 1850s), Cwm Pit, and Ynys-fach Railways, remnants of which survive within HLCAs 014, and the Dowlais Railway incline (1851; area 040).

The first major rail development within the Merthyr area occurred in 1841 with the opening of a branch of the Taff Vale Railway (area 028); engineered by IK Brunel; the TVR was the first public locomotive railway to serve Merthyr. Increased profits to be won from transportation of coal and iron had stimulated increasing interest in the area from a number of railway companies. Between 1853 and 1886 four major railways companies had constructed lines to the Merthyr area: Vale of Neath 1853 (see area 028), Brecon & Merthyr (Dowlais 1863, Merthyr 1868), LNWR (Dowlais 1873, Merthyr 1879), and the Great Western & Rhymney Joint (Dowlais 1876, Merthyr 1886). The extension of the Brecon & Merthyr Railway from Dowlais to Bargoed in c. 1860 allowed the mines of the Fochriw area to be developed and expanded. The Great Western & Rhymney Railways' Taff Bargoed Joint Line, a prominent feature of areas 031, 039, was projected eastwards (c. 1876), to sidings at Fochriw Junction and westwards to the Dowlais Zigzag Lines Junction. It then divided, one line proceeding to Ivor Works, the other, leading via two reversing junctions (Furnace Tops and Ffos-y-fran; area 039) to the Dowlais Works. In 1877, the Great Western Railway opened the branch line known as the 'Merthyr Curve' in co-operation with the Taff Vale Railway, giving the GWR access to the Taff Vale Terminus in Merthyr. Later development included the LNWR's mineral branch to the Cwmbargoed Pits (opened 1881, closed 1937) from Cwmbargoed Junction, while in 1884/85 the GWR and Rhymney Joint Line (Merthyr & Quaker's Yard Branch) was constructed along the western side of the Taff Valley (largely removed by the construction of the A470(T)).

Important landscape features are associated with the later public railways such as the impressive and nationally important viaducts carrying the B&M and L & NWR Joint Line: Cefn Coed-y-Cymmer Viaduct (listed grade II; area 055); and the Glais Viaduct at Pontsarn (area 027), both by Savin and Ward 1866. Other distinctive features are the ventilation towers of the Morlais Tunnel. Further north, northeast of Pant Junction, the line of the Brecon and Merthyr Railway is partly re-used by the current Brecon Mountain Railway.

The only surviving operational main line railway to Merthyr is the former Taff Vale line; this now terminates at the former Vale of Neath Terminus.

Other well documented transport features, no longer visible in the landscape, were the area's electric tramways, such as the Merthyr Tydfil Light Railway's electric tram, which ran along the High Sweet, Cefn-Coed-y-Cymmer (area 055, area 002, etc); it was constructed in 1899 and opened in 1901.

More recent transport development includes the construction of the A465 (T) Heads of the Valleys Road (area 056), the east-west road link constructed in 1964. Important features include the three contemporary road bridges, one of which has been subsequently altered. These were built by Rendel, Palmer and Tritton (consultant architects Alex Gordon & Partners), of contrasting design in reinforced concrete, two with twin parabolic arched ribs and one of three spans cantilevered from two piers, these won civic awards in 1968. Road improvements have been continued with the construction of the A470(T), area 079, and the dualling of the A4060(T) Road (see area 079).

- **Industrial urban landscapes**

Background and development

The industrial and urban growth of Merthyr Tydfil is, in many respects, unique; and given the speed at which it developed, perhaps unequalled elsewhere. This dramatic growth is most apparent in the population figures for the parish of Merthyr Tydfil. Following the industrial revolution, c. 1765, the population figures had increased dramatically, reaching 7,700 in 1801, and by 1851 the population had swollen to 46,000. During the corresponding period, meanwhile, the number of dwellings in the area had increased from 1404 to 8354. The industrial urban element of Merthyr Tydfil was more or less complete by 1860 (Gross 1989; Bowen 1992).

Before the Industrial Revolution Merthyr Tydfil comprised a small nucleus (area 001 A) of a church, a few inns and the cottages of rural artisans; this settlement served the agricultural hinterland of the Taff Valley (Gross 1989). The two main houses in the village of the period were the Maerdy (cartographic references; the residence of the medieval reeve) and the Court House, or Neuadd. By the end of the 19th century a school had replaced the former; the area, subsequently cleared, is currently in use as a car park. The Court House on the other hand survives. The latter is reputed to date originally to 1150, and is known to have been one of Edward Lewis's possessions in

Merthyr Tydfil, though by this date his main residence was at Y Fan, Bedwas. The earliest structural remains comprise a northern unit of a rectangular two-storey block of 16th century date with a lateral chimney on the east and a possibly cross-passage to the south, under an open roof of four bays. Reused 17th century roof timbers in a four-bay unit added to the south indicate re-building during the early 18th century. Victorian additions included a cross-wing (RCAHMMW, MH33; Gross 1989).

Industrial settlement in the area probably began on a small scale from at least the mid 18th century. This was initially confined to the area of the former village of Merthyr Tydfil centred on the medieval parish church (area 001) with dispersed outlying agricultural/industrial 'squatter' hamlets, for example at Gellideg (area 063), Cefn Coed-y-Cymmer (area 055), Heolgerrig (area 068) and also at Pencoed Ivor (Pant; area 030). The latter settlement is known to have been largely associated with neighbouring limestone quarries. From its location along the track to the mountain, it is possible that the settlement at Pentrebach (areas 015A and 020) may also have originated as a squatter settlement. These outlying settlements expanded as the numbers of incoming, initially migrant, workers and the corresponding demand for housing increased.

The location of the early 'squatter' hamlets along the marginal agricultural fringes is no accident. During the early stages of industrial settlement expansion, agricultural land would still have been productive and at a premium; while the emerging population of workers would have been partly involved in agriculture as well as industry. Indeed there had been a traditional seasonal relationship between agricultural and industrial employment, especially concerning early coal and stone extraction, not to mention charcoal burning. It is likely that initially at least the marginal fringes, with their preponderance of Coedcae field names, were well-wooded, and prior to the conversion of the ironworks to the use of coke these areas supplied much of the ironworks demand for fuel. For example, demand for charcoal for smelting purposes from Anthony Bacon's first furnace at Cyfarthfa is thought to have led to the denudation of the area around Cefn Coed-y-Cymmer (area 055) of trees, the squatter settlement initially developing in the cleared area, as scatters of temporary 'tai-un-nos' (Bowen 1992).

The main development occurs following the establishment of the main four ironworks of the area (Dowlais from 1759, area 008; Plymouth from 1763, areas 015 and 019; Cyfarthfa from 1765, area 012; and Pen-y-darren from 1784, area 004) during the second half of the 18th century. Between the mid 18th and mid-19th century, Merthyr developed as a composite iron town with urban clusters based around the ironworks of the area, and an urban commercial and business nucleus centred around the original village (area 001) and the parish church (Hilling 1973, Gross 1989). Further development was largely in the form of infilling between these initial settlement cores. Merthyr's development was largely unplanned; Malkin who visited the town in 1803 commented on the 'scattered confusion, without any order or plan' of the settlement layout of the period (Malkin 1804).

Similar haphazard layouts are still visible in part at Cefn Coed-y-Cymmer (area 055); Clwyd-y-Fagwyr, Gellideg and Pen-llwyn-Deri (area 063); Ochr-y-Mynydd, Winch Fawr (area 065) and Heolgerrig and Pen-yr-Heolgerrig (area 068), where squatter settlements were established at the junction of the open mountain and the enclosed agricultural land. The early parts of these settlements retain a semi-agricultural character, similar to those squatter settlements of disposed agricultural labourers, and probably sharing similar origins. These early 'village' settlements evolved along the fringes of the mineral fields of the iron companies; common characteristic were haphazard layouts, usually single or semi-detached dwellings within their own close, indicating a certain level of self-sufficiency, typical of early industrial settlement. Cartographic evidence indicates that the dispersed almost chaotic character of the early settlements of Cefn Coed-y-Cymmer (area 055); Clwyd-y-Fagwyr, Gellideg and Pen-llwyn-Deri (area 063); Ochr-y-Mynydd, Winch Fawr (area 065) and Heolgerrig and Pen-yr-Heolgerrig (area 068), established during the 18th century, has had a strong influence on later development on these areas.

Most of the early housing were typically small houses, probably similar to the cottages of the rural peasantry; as suggested by Malkin's description of 1803 'the first houses that were built were only very small and simple cottages for furnace-men, forge-men, miners and such tradesmen as were necessary to construct the required buildings' (Malkin 1804; Bowen 1992).

By 1806 a major urban redevelopment of part of the area had occurred; wide, straight streets were now characteristic, and a regular layout had been imposed on the development of Merthyr Tydfil's core area (area 001A), notably the Glebeland area, 'many new streets have been built, which are sufficiently straight and wide, and more have been laid out. The new houses are in general good, and some older streets have been rebuilt on an improved plan. Nearly the whole of the Glebe has been laid out in regular streets for building...' (Malkin 1807). Cartographic evidence supports this development; by 1813-14 development of the core area (area 001A) included buildings to either side of High Street, particularly in the area of Pontmorlais, the laying out of Castle Street, Cross Street, Glebeland Street, Glebeland Place and Ynysgau Street. This development also caused a shift in the central focus away from the medieval church to the high street and market.

Despite improvements to the urban core, the settlements of Merthyr retain an overall amorphous urban form or plan, a characteristic of early iron towns within the heads of the valleys area. There are striking differences in the layout and general character, however, between the various satellite settlements, which evolved to serve the ironworks, and later collieries of the area.

The nature of the land where the settlements were constructed also had a strong influence on their layout, Cae-Pant-Twyll (part of area 002; now largely redeveloped) was confined by steeply sloping terrain and had an irregular layout. George Town (areas 009, 014), constructed on a more open site, developed an axial layout with comparatively wide streets, which according to Hilling gave it a 'Classical' appearance (Hilling 1973). The latter settlement saw wholesale redevelopment during the late 20th century, and the vast majority of the area's early industrial housing has been lost; a lone survivor is Chapel Row (grade II listed) within the adjacent area 014.

lines of communication were not only instrumental in initiating and facilitating the urban expansion of Merthyr Tydfil, but also to determined the manner in which the settlement later grew. It is noticeable that initial ribbon development frequently extends along the early roads, and toll roads (eg Plymouth Toll Road c. 1771, area 006), and later along the tramroad and rail networks. Examples of the later include development along the route of the Penydarren (Merthyr) Tramroad (1802 area 019) and along the Taff Vale Railway (1841, area 028) and the Vale of Neath Railway (1853, within area 028). Linear road-side or 'ribbon' development is a common feature of the main early iron industrial settlements of Merthyr, examples are along Twyn-yr-Odyn (area 001 B), along Brecon Road (area 002), both Dowlais and Penydarren (areas 007 and 005 respectively) and along Plymouth Road (area 006) towards the Plymouth ironworks site. It is only during the 1820s and 1830s with the increase in population that other forms of settlement layout become more common. The layout of Dowlais (area 007) is both irregular and regular, corresponding to land ownership, housing provision, and the date at which the development occurred. The settlement emerges during the latter half of the 18th century and develops as a loosely dispersed scatter of cottages, essentially ribbon development along the road to the Dowlais Iron Works furnaces and a core cluster immediately north of the furnaces, at the junction of the road from Upper Garth with Nantmorlais (the Cae-Harris area). It is only from the 1820s the characteristic grid system had been imposed on the settlement, with the Dowlais stables (1820) as its focal point, a visible indication of the influence of the Iron Company on town planning. Between 1832 and 1850 the settlement underwent major expansion. By the end of the period, the southern and eastern parts of the town were characterised by a grid layout and ribbon additions. The northwestern area (ie Cwm-Rhyd-y-Bedd) had developed along different lines and had developed in a more constricted fashion with a less regular grid street pattern; notably the layout here was characterised by a scatter of short rows and individual cottages. A fragmented pattern of landownership was a feature of the north western part of Dowlais during the mid 19th century, with several small landowners, including owner occupiers; this perhaps varying housing provision lead to the variation in layout and house type across the settlement the south part of Dowlais.

An early attempt at planning, at least in terms of layout, provision of wider streets, is visible at Dowlais. Buildings, such as the Dowlais Stables erected in 1820 by Sir John Guest for company horses, the upper storey utilised as classrooms for Merthyr's first school. Public buildings also serve as a visible reminder of the philanthropic, if paternal, control exerted by the iron company over the development of Dowlais. Prominent Public buildings at Dowlais included Edward Haycock's market hall (1844; demolished), the Dowlais Central School erected in 1855 at the expense of Lady Charlotte Guest as a memorial to her late husband Sir John Guest, and the Guest Memorial Library (Charles Barry', 1863).

A large proportion of houses were provided by the ironmasters for their workers; these were often of a higher standard than the majority of housing erected by private builders and property speculators (Gross 1989), for example are Chapel Row, George Town (area 014), and Cyfarthfa Row, Brecon Road (area 002).

The village of Pentrebach (area 01 5A; now sadly demolished), was an example of a model village, an estate planned and developed for local ironworkers by the Plymouth Iron Company. Pentrebach Square ('The Triangle') consisted a group of five two-storey terraces built over a period of 40 years starting in 1814. The layout was essentially that of a triangular court, surrounded by terraces, and included Church Street and Long Row, the latter partly in existence by 1814 (Hilling 1973).

Another company developed settlement is that of Abercannaid (area 018), here the settlement is again laid out in gridiron fashion with four parallel terraces between the canal and the river and three further terraces at right angles to these stepped down the hillside. Where rows of terraces were arranged parallel to the slope, as at Abercannaid, and formerly at George Town (eg Lower Nant-y-Gwenith Street, demolished), a common characteristic was pedestrian access between the houses and their front gardens.

Company houses were generally graded to reflect social standing of the occupants. Social grading is a feature of the housing at Abercannaid; represented by a terrace of larger houses (north of the Abercannaid estate), and, within their own grounds, two substantial detached houses, probably built for the foreman and manager. A similar arrangement is found at Upper Abercannaid (area 016), an interesting example of a pre-1814 colliery pit head settlement, centred on Upper Abercannaid House, potentially the colliery manager's house.

Housing styles and building materials

A large portion of Merthyr's early industrial housing has now been removed by slum clearance. This began in the 1960s, reaching a peak in the 1970s; 1,650 houses in total were demolished between 1971-1981. By 1981, some 400 houses had been demolished at Dowlais (area 007), 280 at Penydarren (area 005), 440 at George Town (area 009), 150 at Ynys Fach (HLCAs 010, 011 and 014), and 140 at Caepantwyll (area 002). The result has been to increase the historical, archaeological, architectural and social significance of the surviving remnants, though the effect has been to drastically alter the urban character of many areas.

Building styles and materials, while not necessarily, providing the only basis on which one urban character area is differentiated from another, does contribute to the general character of the urban landscape. Throughout the first half of the 19th century, terraces were built predominantly from locally available rubble pennant sandstone with floors of flagstones and slate roofs; materials therefore could be seen to have provided a uniformity of character across the urban landscape and harmony with the general landscape itself.

Much of the early housing stock, in particular those built by private speculators, was built without any regard to the disposition of neighbouring property, let alone regard to sanitation and health. In order to save space, close courts and narrow alleys predominated and many houses were constructed back-to-back without space between and without sufficient ventilation. Many people lived in cellars; 1,500 alone were reputed to have been living in such dwellings at Pont Storehouse, Dowlais. Lowe describes such cellar dwellings at Plymouth Street, Merthyr, with basements below

street level constituting a separate dwelling, surmounted by a second dwelling consisting of two rooms one above the other (Lowe 1977, Gross 1989).

A common type of early terrace house was a two-storey, single-aspect design with short roof trusses, narrow window openings and wide double frontages (two-up, two-down); the surviving company housing at Abercannaid represents an important group of such houses, typically having exceptionally small roof spans of between 4m and 5m. Short roof spans is thought indicative of the houses' having been constructed by masons rather than carpenters, as it is a direct result of keeping timberwork and jointing to an absolute minimum. Indeed, the stonework was usually of high quality (Hilling 1973, Bowen 1992).

These early terraces frequently display strong vernacular influences; visible for example in the asymmetrical arrangement of the central door, which was produced by the larger main chimney breast and circular stone stairs set within the thickness of the party 'gable' walls. Good examples of vernacular influenced two-storey four-room terraced worker's housing survive at High Street and Holford Street, Cefn Coed-y-Cymmer (area 055), which, by virtue of being part of Brecknockshire until relatively recently, has largely escaped the wholesale 20th century clearance and redevelopment typical of Merthyr itself.

Two-storey double-fronted houses built of the local Pennant Sandstone, such as those surviving at Cefn Coed-y-Cymmer (area 055), Cyfarthfa Row and along Brecon Road (area 002) and at Abercannaid (HLCAs 017 and 018), are the most common early house type surviving in Merthyr. Cefn Coed-y-Cymmer (area 055), however, retains the largest variety of early worker's houses to survive in the Merthyr Tydfil area. These include lean-to or back-to-back housing, such as the late 18th century single storey dwelling at 83 High Street. Also evident were two-roomed cottages, such as that at 46 High Street, a two-storey 19th century house with a kitchen below, fireplace with bread oven, and, accessed by ladder, a small undivided upstairs room with a fireplace, and similarly 82 High Street, with traditional fireplace and oven, 'cwts dan star' and spiral stair giving access to a heated upper room.

Three-roomed cottages were once a common feature of Cefn Coed-y-Cymmer, with until 1935 examples on High Street, and elsewhere in Merthyr. The addition of later back-kitchens, frequently as catslide additions, lead to the creation of three-roomed cottages; the usual arrangement is however, retained, a stone stair set in the thickness of the wall next to the fire in the front room, gives access to a bedroom on the first floor (Lowe 1977; Gross 1989; Bowen 1992). Another three-roomed type, found in the locality, was typified by a ground floor plan of kitchen, larder and small bedroom with access via a stone staircase at the side of the fire to an undivided room above. Similar to rural dwellings, many of these early buildings had oak roof structures, which would have originally been covered by stone slabs. Examples remain at Gellideg (area 063) and Upper Collier's Row (area 071), and formerly at Rhydyar (area 014). Another variation of three-roomed dwelling is found at Pond Street, Dowlais (area 007), where two small bedrooms were placed over the combined kitchen/living space. An interesting feature of both Dowlais and Penydarren were corner houses with rounded walls at the corner (Gross 1989; Bowen 1992).

Most four-roomed houses have conventional plans with two rooms to each floor, the ground floor containing the kitchen, parlour and larder; the kitchen often providing the sole means of heat. Construction remains traditional with stone walls, oak beams and partitions. Plans also continuing traditional vernacular forms similar to agricultural dwellings of the area; partition walls between the houses between four and five feet thick to allow for the stone stair found on opposite sides of the chimney. The front entrance was usually to the kitchen, with rear exit made via the larder or through the rear wall adjacent to it. Additions that are more recent include back-kitchens built behind the kitchen and the building of a small bedroom with bathroom above the kitchen addition (Bowen 1992).

Another form of housing, which developed initially from a need to deal with steep valley-side locations, was that of the 'house upon house' or basement dwelling; usually three storeys with a lower single-storey dwelling fronting the downhill side and a two storey dwelling fronting the uphill side. Such dwellings were once more common; most have now been converted by the insertion of internal stairs. Cefn Coed-y-Cymmer had numerous examples of the type at Well Street and Lower High Street and at Pontycapel Road; many of which have subsequently been altered or demolished (Bowen 1992). A good surviving example exists at Pond Row, Abercannaid (area 017).

Terraces of single-storey cottages are rare; examples include Alfonso Terrace, Dowlais (area 007), were built at the end of the 19th century to house immigrant, Spanish labour.

A large proportion of Merthyr's housing dates to the period 1830-1860, when the town experienced an enormous population increase. To this period belonged some of the most distinguished residential areas, in the centre of the town near the site of the former Market Hall (arcaded Neo-Classical structure by TH Wyatt, 1838) and in the area east of the High Street, Thomas Town (area 34). The area immediately in front of the market comprised an open square flanked by tasteful terraced houses; the market hall has been demolished and the square built over and the houses converted to shops or re-built. The area of Thomas Town (Church Street, Thomas Street, Union Street and New Castle Street), on the other hand, survives as an intact group with a unity of detail and stucco frontages to its two-storey terraces. The area is characterised by polite architectural design and unity of conception. To ensure the continuity of the street frontage, for example, architectural details such as window mouldings and individual arched porches are carried across the front of Capel Salem (1855) at New Castle Street. Church Street has a strong unified appearance; here arches provide access to back lanes, thus allowing the first floor of the street façade to be carried across as part of an un-interrupted design (Gross 1989; Hilling 1973; Bowen 1989).

Gross, Sullivan, Green, and others document the developments in Merthyr's housing, placing it in its social and historical context. The visit of Commissioner of the Health of Town Commission, Sir Henry de la Beche to Merthyr and the ensuing enquiry of 1844, the Public Health Act of 1848, and the establishment of the Merthyr Local Board of Health in 1850, eventually led to improvements in sanitation. Merthyr finally gained a reliable water supply in 1861, while a system of sewers was developed by 1871.

Building plans were first submitted to the Board of Health in 1860 for approval and in 1866, the first housing survey of Merthyr was carried out under the supervision of the Medical Officer of Health. The introduction of further social legislation during the 1870s, notably the Public Health Act of 1875, came too late for much of the housing in Merthyr; the effect however was to impose a strong uniformity of character, regardless of tenure or agency, on later urban development in the area.

The agencies of housing provision in the South Wales Coalfield comprised the iron and colliery companies, speculative property investors, and building clubs of iron and colliery workers, and to a lesser extent, owner-occupiers, the land-owning estates. Later, especially in the period following the First World War Local Authorities became the main agencies of housing provision in the area.

Gross (Gross 1989) identifies a noticeable upsurge in the activities of building clubs during the latter half of the 19th century. These included the Dowlais Mutual Benefit Society, which in 1867 proposed to erect 15 dwellings in Margaret Street Dowlais; No. 3 Dowlais Building Society, which in 1874 applied for gas lamps to be erected for 33 houses in Glandover Street; and the Gellifaelog Building Club, which in 1876 put forward proposals to build 18 houses in Upper Elim Street. Other building clubs identified in 1895 included Tydfils Well, and the Avenue Building Club (Gwaelodygarth).

Private house-building by speculators, building clubs and individuals continued until the First World War. Large sections of the extensive Penydarren Park (area 003) were given over to urban development during the period 1870-1905. By 1919 the area had developed into Merthyr Tydfil's premier middle-class suburb with new streets built on a grid iron pattern to the north of Brecon Road. These ranging from the modest terraces of Dane Street and Terrace, Hanover Street and Norman Terrace, to the imposing Park Terrace and more substantial detached and semi-detached houses in the Walk, the Grove and West Grove. Development of the period included a school and general hospital, the Roman Catholic Church of St. Mary's (1893-4, JS Hansom, Early English style) and the imposing Edwardian public building such as the Baroque influenced YMCA (1909-1911, Ivor Jones & Percy Thomas) and the Classically influenced Masonic Temple (1910, CM. Davies of Merthyr Tydfil).

As stated above social legislation had the effect of generally imposing a strong sense of uniformity on housing constructed from at least the last quarter of the 19th century. By this date a style of worker's housing, seen through out the South Wales had become established. Housing styles include two-storey terraced properties, both single and double fronted, and the less frequent single-storey terraces, during the later period characterised by brick-detailing, and later the use of brick and even concrete (examples were 5 concrete cottages built at Rocky Road, now demolished) in house construction itself. Good examples of late 19th and early 20th century housing are found throughout Merthyr, especially at Penydarren (area 005), Dowlais (007), Penydarren Park (003), Cae'racca, at Pant (area 030) and Dyffryn Road, Pentrebach (area 020).

In 1895, the Merthyr Tydfil District Council was established; the Housing of the Working Classes Act had been previously passed in 1890 with the result that in 1896 the council considered the construction of 100 houses at Penydarren. The council had adopted the mantle formerly held by the iron companies, that of main provider of workers' housing; and by 1902, the earliest examples of council housing had been constructed at Urban and Council Streets, Penydarren (area 005).

Perhaps the most significant recent impact on the urban landscape is the construction of the vast housing estates. These effectively begin with council houses in Penydarren, but it is perhaps the social ideals embedded in the semi-detached estates of Garden City Village at Penydarren (area 050), which left the greatest legacy. A little-known private development of 14 houses, Garden City, was started in 1913; interrupted by the First World War, it was subsequently adopted by the Council, and the estate was completed in 1920 to the original design. The Merthyr Tydfil Garden City Association had based its project on Ebenezer Howard's concepts of the ideal family home with gardens at front and back. Other similar schemes had been undertaken at Letchworth, Welwyn and Hampstead. Another 54 houses had been added by 1923 and another 36 followed by 1924, designed by Thackeray, the Borough Architect. The council developed five new sites under the auspices of the 1919 Housing Act, at Pant (area 030), Heolgerrig (area 063), Gellifaelog (area 007), Pentrebach (area 020) and Aberfan to the south of the historic landscape, some 350 houses in all. Council housing at Heol-y-Bryniau, Heol-y-Castell and Rhodfa'r at Pant (area 030), at Galon Uchaf (area 050), and at Brondeg, Heolygerrig (area 063) was also designed by Thackeray. By 1939, some 1,300 council houses had been constructed at Merthyr (Green 1978; Gross 1989 and Sullivan 1984).

Following the passing of the Housing Act of 1946, council house building steadily increased to include immediately after the war a 44 house-extension (the Apprentice Scheme) to the Galon Uchaf site (area 050).

An important example of social engineering is the Trefechan Estate (area 057), designed in 1947 by Arthur J Hayes & Gordon H Griffiths. This council estate was designed as an independent community with its own shopping centre. The development displays a formal road layout, and the houses, though homogeneous in design as semi-detached pairs angled to the contours, are built of variety of materials: brick exposed or roughcast, pre-cast slabs, and timber clad.

Later the Gellideg Estate and Gregory Flats, Swansea Road (area 063) were built; and during the 1960s the Gurnos Estate (area 050), then the largest council estate in Europe, with its own shopping centre and church (cf Trefechan). Dominating the Gurnos are the formal modern structures of the Prince Charles Hospital, built 1965-75 by Sir Percy Thomas and Partners. High rise flats were also constructed on land made available by the clearance of earlier 'sub-standard' housing at Caedraw, Merthyr (area 001A) and at Dowlais (area 005), the latter now threatened with demolition, itself.

It was only in the 1970s that the larger private developments once more became typical, with development at Shirley Gardens in Heolgerrig (area 068); Brecon Rise in Pant (area 030); and Castle Park on Swansea Road (area 063). More recent still is the spacious estate of large villas, Lakeside Gardens, built during the 1980s (area 054) and

the recently constructed executive development at Beacon Heights, Swansea Road (area 063).

In addition to housing estates, the provision of modern highways and bypasses, and the construction of industrial estates, factories, schools has had the effect of modifying the historic character of the urban landscape, enough, however, remains to distinguish the various settlement areas and allow an understanding their development.

For further information please contact the Glamorgan-Gwent Archaeological Trust at [this address](#). Link to the Countryside Council for Wales website at www.ccw.gov.uk or Cadw at www.cadw.wales.gov.uk

