



Brymbo Iron and Steelworks.

Heritage Impact Assessment relating to the
Repair + Adaptive Re-use of Brymbo Heritage Area

— March 2024

for TACP Architects, on behalf of Brymbo Heritage Trust

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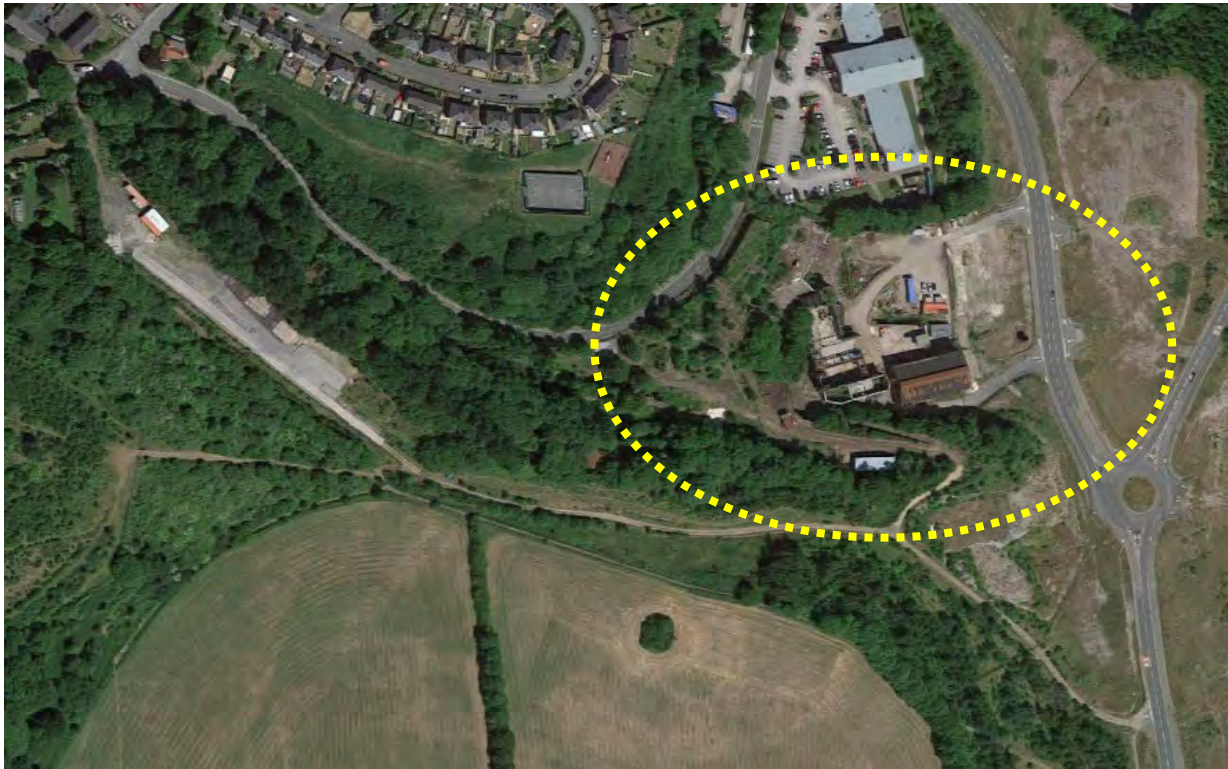


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The project has been commissioned by Brymbo Heritage Trust and the project design team is led by – TACP Architects, Pembroke House Ellice Way, Wrexham LL13 7YT.





Site Location Plan for Brymbo Ironworks and Steelworks -

© Google Maps

General Details

Site Details -

**The Former Brymbo Iron and Steelworks, Heritage Centre,
New High Street, Brymbo, Wrexham, LL11 5AX**

Conservation Designations – Brymbo Ironworks: Early Blast Furnace, Cast House and Foundry.
Ref: No DE202 **Scheduled:** 07/11/1991

Grid Reference – Easting: 329455 Northing: 353526

The Scheduled Monument Designation of The Heritage Area including Blast Furnace No1, The Foundry, the Patternmakers & Carpenters Workshop, the scheduled area comprises the remains described and areas around them within which related evidence may be expected to survive.

Former Agents House at Site of Brymbo Ironworks: **Grade II* Listed**
Cadw ID – 1731 Date of Designation 25.10.1991, amended 1.12.1995

Grid Reference – Easting 329470 Northing 353475

Brymbo Fossil Forest Geological Site of Special Scientific Interest
SSSI ID: 2961, SSSI Code: 31WTG, Type: Geological

Grid Reference – Easting 329530 Northing 353448,

The area is also included as part of a Natural Resources Wales and Wrexham County Borough Council Historic Landscape Area.

Unique ID Ref: WRXHMHL009, Area: Brymbo, Region: Wrexham,
Survey Date: 06.11.2007.

	The western end of The Brymbo Heritage Area is defined by the Ecology Area, a range of wildlife habitats around and adjacent to the site of the Blast Pit, that now include protected species and an area of woodland adjacent to the boundary with Blas Road that is covered by a Tree Preservation Order.
Site Ownership/Client -	(Client) Brymbo Heritage Trust, The Enterprise Centre, Brymbo, LL11 5BT (Site Owner) Brymbo Developments Limited, Fernhill Offices, Fernhill, Nr Sutton, Newport, TF9 2ND
Location –	The Former Brymbo Iron and Steelworks is located at the southern edge of the village of Brymbo, in the County Borough of Wrexham, historically being Denbighshire. The site runs uphill from east to west, with the lowest and most level part of the former ironworks bounding the western edge of New High Street. The lower part of the site sits within a cut into the hillside, with Blast and Charge Walls bounding this area to the north and west; the Brymbo Enterprise Centre is located above the site to the north. Blast Road bounds the site to the west and north, with the south bounded by a track, with sparse woodland and fields beyond. The Ironworks sits at an elevation of circa 330m and at NGR SJ 29454 53526 / 53°04'27.9"N 3°03'15.3"W.
Geology -	The underlying geology is formed from mudstone, siltstone, and sandstone with deposits of Carboniferous coal, and are known as the Pennine Lower Coal Measures Formation and Pennine Middle Coal Measure Formation (BGS) with no superficial deposits recorded (BGS). The local soil type is unsurveyed (UKSO), classified as unclassified(UKSO).
Brief History -	Brymbo Heritage Area, for which this Heritage Impact Assessment has been produced occupies approximately a fifth of the original Brymbo Steelworks site at the time of its closure in 1990, but retains at its core the buildings, structures and artefacts of greatest historic significance, together with a legacy of industrial innovation and opportunity that began in 1792 when John ‘Iron Mad’ Wilkinson purchased the 500-acre estate of Brymbo Hall and utilised the raw materials available locally to produce iron and steam power to provide ‘blast’ for the furnaces . During the 1840’s Henry and Charles Edward Darby, descendants of Abraham Darby of Coalbrookdale managed the works, which was under the ownership of Scotsman, Robert Roy. He in turn appointed Henry Robertson in 1842 to appraise the works and produce plans that also concluded that a railway was essential for the continuing development of the works. The Brymbo Mineral and Railway Company was established in the same year, while the North Wales Mineral Railway Act of 1844 facilitated its construction. Numerous process and product developments and efficiencies were made in subsequent years and in 1883, an experimental Open-Hearth Steel Furnace was erected before The Brymbo Steel Company was incorporated and steel production commenced in 1884 at this location. The significance of change to the topography and its impact on the setting during the last 300 years cannot be underestimated. This has been a very dynamic landscape where the buildings and structures of the site have changed because of technological innovation, the refinement to processes and directly, from the economic fluctuations relating to the National and International demand for iron and steel. Notwithstanding the heritage values associated with the wider post-industrial landscape setting the standing remains, together with the hidden evidence of human activity on the site is High and of National Significance and in many ways of International Significance. This is already reflected by the Scheduled Monument designation afforded to The Heritage Area and the Grade II* Listing that has been placed on The Agent’s House.

As the impact of the heavy industry has diminished, so nature has gradually encroached to recolonise areas of the site, to an extent that the wildlife and ecological value is also increasing in significance with **Nationally Protected Species** now occupying the ponds, woodland and open areas of vegetation vacated by previous uses. During 2005, the remains of a Fossilised Forest of **Outstanding International Geological/Palaeontological Significance** was exposed within the boundaries of the site.

The Cadw Scheduled Monument Report / Description (Ref. No. DE202 Designated 7.11.1991) States –

Brymbo Ironworks: Early Blast Furnace, Cast House & Foundry

The monument consists of the remains of an ironworks established by John Wilkinson in 1798, remaining in use through to its adaptation to a huge steelworks, all eventually abandoned in 1990. The principal scheduled remains comprise the massive rectangular sandstone stack of the early 19th century No. 1 blast furnace occupying the site of Wilkinson's original which is known from an early print to have been circular. This stands to its full height, the walls held together with steel ties, although three of its four great arches contain later blocking. Immediately adjacent to the S are the remains of a contemporary stone cast house and to the east of that the roofless but substantially intact remains of a large foundry, both of which were subject to successive later alterations and repairs in brick and other materials. The southern walls of both structures form part of a tall and massively built continuous sandstone revetment or charge wall holding back the uphill slope. Two chambers set into this contain the rusting remains of early 20th century iron furnaces, their rusting towering cupolas at the top of the revetment wall being perhaps the most prominent features on the site. Adjoining the foundry to the east is long rectangular pattern maker's shop, which occupies three split levels with the lower at the level of the foundry and the top floor entered independently from the higher ground to the S. Numerous other documented or mapped features have been lost but are likely to survive as buried features following successive episodes of massive landscaping, including at least four additional furnaces. Associated with the scheduled remains are the upstanding early 19th century Agent's House, a colliery, the impressive 20th century brick machine shop and a network of ancillary tracks, railways, retaining walls. The monument is of national importance for its potential to enhance our knowledge of the early modern ironmaking industry and its development through the 19th and 20th centuries. In addition to its well preserved structures, which retain extensive details and fixings including floors, machinery and other artefacts the whole site retains high archaeological potential, with a strong probability of the presence of buried structural remains including other documented furnaces, railway tracks and ancillary buildings, and associated archaeological features and deposits. These have high collective potential to retain evidence of the construction, development and use of the site including evolving industrial processes, machinery, construction techniques and raw materials. The scheduled remains share group value with the other upstanding and buried elements of the ironworks, later steelworks, colliery, tracks, railways and other structures. The scheduled area comprises the remains described and areas around them within which related evidence may be expected to survive.

The Cadw Listed Building Report and Description (Ref. No: 1731 Grade II* Listed Designated: 19.11.1990 and amended 01.12.1995) states –

Former Agent's House at site of Brymbo Ironworks

Location:

On the hillside to the S of the old ironworks site at Brymbo, adjacent to the rail line to Brymbo Colliery. Access by track and then steps from the main level of the ironworks.

History:

Brymbo Ironworks was established by John Wilkinson between 1795 and 1798. This domestic building was shown on the plans and sections of the works made after Wilkinson's death in 1808. It has remained unchanged in appearance since 1812, but for the loss of an extension at the W. Sale particulars in 1829 identify two houses for agents. The larger (now demolished) had gardens and two counting houses. The surviving building was probably the 'Substantial and convenient DWELLING HOUSE, and a Counting House attached, suitable for an Agent'. By the 1870's the building had become a store house with a water tank built alongside it for the use of the railway.

Exterior:

A two-storey house, one room deep with three bays to the N-facing facade. Dressed sandstone with plain stone lintels and plain matching eaves cornice and string course. Hipped slate roof. Large casement windows with clear prospect northwards to the main ironworks site. Lean-to on E end exists as shown in 1812, in the form of a separate room with fireplace and brick chimney and a small window: this may have been the counting house. Extensions at the W end have been demolished and the wall patched where it appears to have opened directly into the adjacent structure. Large double doors have been inserted facing W. The main block has been lengthened by the addition of a third bay to match the existing two, as shown by a straight-joint in the front facade (the lengthening is already shown on the 1812 section).

Interior:

Now entirely open at ground and first floor levels with the first floor removed at the western end. Large stone fireplace at E end.

Reason for Designation:

The only building which can be proved to be original to John Wilkinson's establishment of the Brymbo Ironworks; a rare survivor of an agent's house at an eighteenth-century ironworks in a relatively unaltered state. It is listed for this historical and architectural importance, and for its group value with the ironworks site.

The Coflein Description for Brymbo Iron Works offers the following information:

NPRN 34054

Description

"In 1792 John Wilkinson purchased the 500 acre estate of Brymbo Hall for the sum of £14,000, with the intention of developing an iron works using the mineral and coal deposits that were known to exist on the site. With the invention and development of the steam engine Wilkinson was able to found an iron works away from running water as steam could now provide blast for blast furnaces. In the years between 1792-1798 Wilkinson was sinking mines near to the site to provide ore for his planned iron works and by 1795 the site that remains today, excluding the fitter's workshop, was under construction. By the end of 1796 the first output of iron was recorded as 884 tonnes, which meant Brymbo's one-hundred and ninety-four year association with metalworking had begun. In 1808 Wilkinson died at the age of 83 and the works passed into a trusteeship. By 1818 John and James Thompson were renting the iron works for a yearly sum of £1,500 and in 1820 the original blast furnace was decommissioned and a new furnace was built on the same site, which is the only remaining blast furnace today. In 1842 Henry Robertson, with financial backing, acquired the iron works and in 1846 'The Brymbo Company' was formed, with William, Henry and Charles Darby, descendants of Abram Darby, taking over the sites management. In 1847 a new blowing engine was installed, taking the blast furnace output from 50 to 84 tonnes per week. Between 1856 and 1880 the iron works underwent a large amount of development with new hot air stoves to help improve the blast, bell tops were added to the furnaces, alterations to the foundry and in 1872 blast furnace number three was erected with a Haigh Blowing Engine to increase output. Communications were improved in 1877 with the installation of a Wheatstone Telegraph and by 1880 telephones had made their way to the iron works. Towards the end of the 19th century steel started becoming a production priority and in 1883 an experimental Open-Hearth steel furnace was erected, with the results being so successful that Robertson made the decision to found a steel plant. On June 4th 1884 The Brymbo Steel Company was incorporated and its operations began the following year. In 1894 Number Four blast furnace was constructed to replace Number Three, and was equipped with three Cowper stoves, a dust catcher and three Lancashire boilers blown by a Davy Engine. In the same year Old Number One blast furnace was damped down for the last time after ninety-eight years of work. By the 1930's the demand for iron had decreased sufficiently that it became a minor part of the works, with steel the focus at Brymbo. Today the site comprises largely of the original Brymbo iron works as constructed by Wilkinson in the 1790's and Thompson's in 1820, consisting of Old Number One blast furnace (NPRN: 34055), Charging Wall (NPRN: 418127), Patternmakers & Carpenters Workshop (NPRN: 418128), Cast House & Foundry (NPRN: 34056) and the Agents House (NPRN: 26839); the 1920's Fitter's Workshop (NPRN: 418933) also remains.

Historical information drawn from The Story of Brymbo, Brymbo Steel Works Limited and Cadw listings."

Ross Cook, RCAHMW. 13th December 2012

"Iron was first produced here in around 1798 just to the north of the later steelworks (NPRN 305753). In 1885 the Brymbo Company installed a basic open hearth steep furnace with a large steam hammer and a rolling mill. The early blast furnace, cast house and foundry which survive on the ironworks site are now Scheduled Ancient Monuments. The steelworks to the south closed in 1990 with a loss of 1,100 jobs and the entire site has since been cleared and reclaimed excepting the historic parts of the Ironworks."

T. Driver, RCAHMW, 17th April 2009

The Coflein Description for Brymbo Steelworks offers the following information:

NPRN 305753

Description

"Iron was first produced here in around 1798 just to the north of the later steelworks (NPRN 34054). In 1885 the Brymbo Company installed a basic open hearth steep furnace with a large steam hammer and a rolling mill. The early blast furnace, cast house and foundry which survive on the ironworks site are now Scheduled Ancient Monuments. The steelworks closed in 1990 with a loss of 1,100 jobs and the site has since been cleared and reclaimed. The working steelworks were recorded by the Royal Commission prior to closure resulting in a set of dramatic images."

DE/Industrial/SJ25SE

T. Driver, RCAHMW, 17th April 2009

The Coflein Description for Brymbo Iron Works, Charging Wall offers the following information:

NPRN 418127

Description

"A sandstone charging wall measuring c. 80 metres in length, with a number of contemporary and later buttresses. The charging wall was constructed to both retain the land behind it and to provide a platform from which the blast furnaces were charged with iron ore, coke and charcoal to produce pig iron. The initial part of the charging wall was constructed next to 'Old Number One?', the only remaining furnace on the site, and is likely to have been extended between 1856 and 1862 when Number Two blast furnace was erected. Three of the buttresses on the north wall are of red brick and were added after the two furnaces, which once stood along it, were pulled down in the 1930's (Brymbo Steel Works Limited)."

Ross Cook, RCAHMW. 12th December 2012

The Coflein Description for the Former Agent's House offers the following information:

NPRN 26839

Description

"A two-storey house with dressed sandstone walls and a hipped slate roof; the surviving one of a pair built after 1808 for agents of Brymbo Ironworks. By the 1870's the building had become a store house with a water tank built alongside it for the use of the railway. The house is one room deep with three bays to its N-facing facade. There are large casement windows looking northwards to the main ironworks site. The lean-to on the E end which houses a separate room with fireplace and chimney may have been the counting house. Extensions at the W end have been demolished. The main block has been lengthened by the addition of a third bay to match the existing two. The house is now entirely open at ground and first floor levels with the first floor removed at the western end."

Source: DE/DOM/SJ25SE, from the Cadw listed buildings database
J. Archer, RCAHMW, 1.11.2004

Section 1.0: Introduction

1.1 Background

The objective of this considerable Brymbo Heritage Trust (BHT) project with TACP : Architects as Lead Consultants is to deliver the main ‘Stori Brymbo’ project, a multi-faceted programme of capital works which will stabilise, consolidate, conserve and adaptively re-use the buildings and structures that remain within the site of the former Brymbo Iron and Steelworks. The site will become a heritage attraction, an educational resource and a place for training that will also celebrate Brymbo's rich natural, industrial and social history, a 300-million-year story, the site will become a community hub and will help make the most of the very significant spaces and facilities that it has on its doorstep.

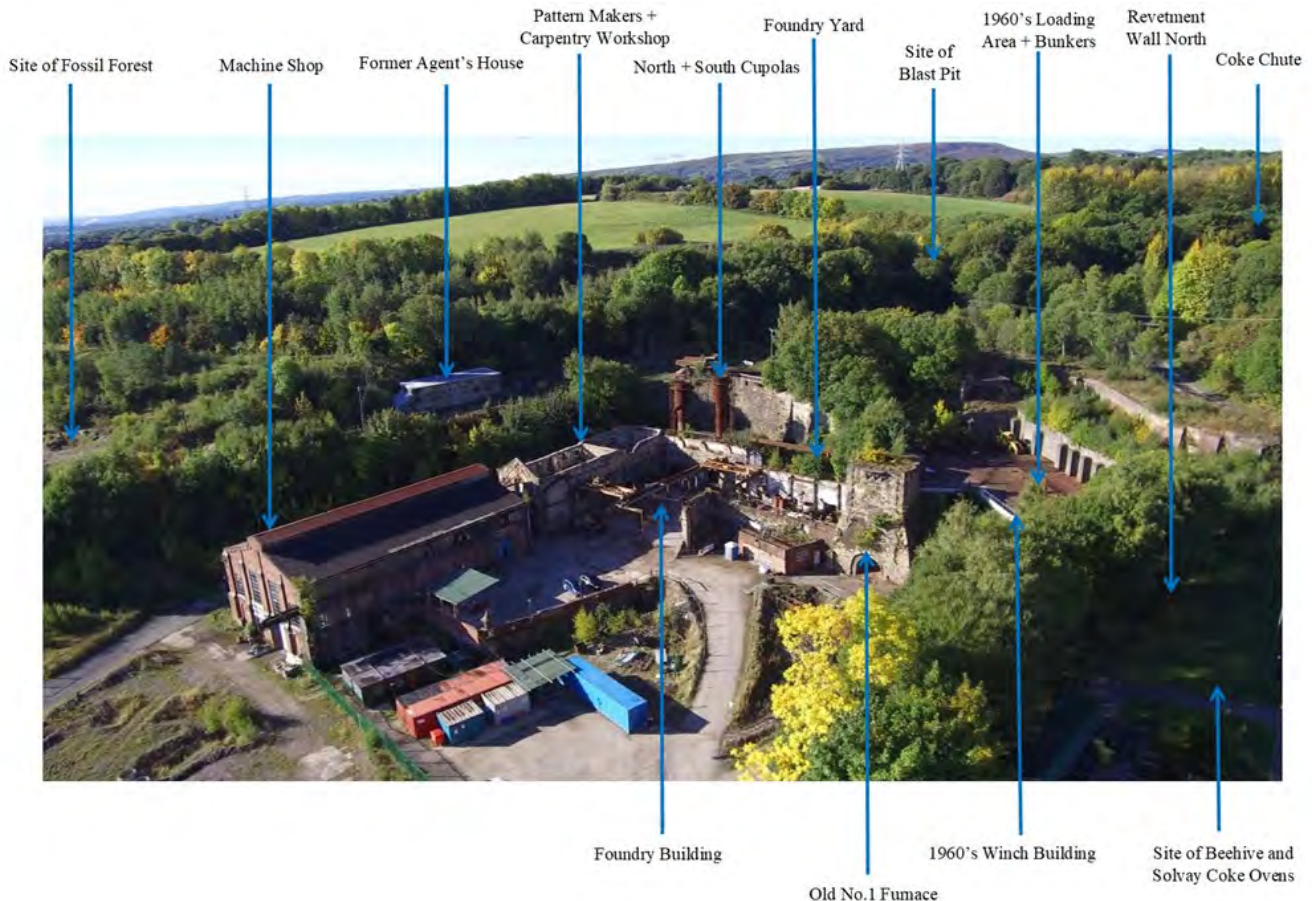
The preparation of this Heritage Impact Assessment has been undertaken to support the Full Planning Applications that are currently being considered by Wrexham County Borough Council. An earlier Listed Building Consent Approval has been secured in respect to the Grade II* Former Agents House (BRY P/2020/0031 – decision date 16.12.2020) and a Scheduled Monument Consent has been secured in respect to Brymbo Ironworks: Early Blast Furnace, Cast House and Foundry (DE202) dated 5.06.2020.

The submission seeks to describe the scope of work being proposed within key areas of the site, together with the impacts of the changes that are anticipated in some locations and the mitigation measures that are proposed to limit the extent of these impacts so as to both sustain and provide a foundation on which the heritage values of this site can be managed into the future. The scope of the works include –

- Machine Shop – The construction of two new lean-to extensions, the demolition of later office structures internally, the extensive repair and renewal of the roof covering, rainwater goods and other elements of the building envelope including window, door and brickwork repairs. The refurbishment or upgrade of below ground surface water and foul drainage installations and the installation of new MEP services throughout. The construction of internal partition walls and refurbishment to create new visitor reception and welfare provisions.
- Patternmakers Workshop – The consolidation and repair of the existing masonry structure, the reinstatement of the timber roof structure, slated covering and associated details, based on known details and by reusing original components where practicable. The repair of existing windows, doors and architectural details. Reinstatement of internal finishes and details where known. Internal layout alterations to late C20 rooms at ground floor level to accommodate new interpretation installations and the introduction of a compact kitchen and accessible WC at the upper ground floor level with new foul drainage installations and MEP services throughout.
- Former Agents House – The consolidation and repair of the existing masonry structure, the reinstatement of the hipped and lean-to timber roof structure, slated covering and associated details, based on known details and photographic record information. The repair and reinstatement of window and door details and the internal reordering of the building to provide an immersive visitor interpretation experience that tells the story of Brymbo in different ways. The installation of new rainwater drainage and MEP services throughout.
- The Core Heritage Area - masonry consolidation, structural repairs and ground/surface water drainage works within the Scheduled Area.
- Story of Steel - stage and site interpretation proposals within Robertson Square within 2No x 40-foot and 1No x 20-foot proprietary metal container
- Hard and Soft Landscape Design proposals with the site-wide drainage strategy and services distribution.

The project will endeavour to demonstrate that the conservation-led redevelopment proposals will ensure that the impact of the proposed works can be managed and that the impact on heritage values, but particularly that of the evidential value on this occasion can be kept to a minimum and that the understanding of this important post-industrial landscape can be better

understood and the buildings and structures will make more of a contribution to the character and distinctiveness of the setting than is currently the case. It is also hoped that the group value will be reinforced, that the buildings and structures will better reconnect with the much altered setting (particularly to the east) and that the proposals will reverse the current decline and deterioration of the buildings, to create an attractive and vibrant place for visitors to experience, where education, training and volunteering can be delivered where accessibility is an important consideration, and where enhanced energy efficiency measures are also being encouraged to manage its operational impact on the environment / carbon footprint.



1.2 Strategic Planning Context, Studies, Reports and WCBC Policy

When considering potential development, everyone involved in the planning process must take into account the Welsh Government's objectives to protect, conserve, promote and enhance the historic environment as a resource for the well-being of present and future generations.

The Historic Environment (Wales) Act 2016 requires Listed Building Consent and Conservation Area Consent to be accompanied by a Heritage Impact Statement (HIS). This aims to ensure that the significance of the historic asset is taken into account when developing and designing proposals. The HIS is informed by the process of undertaking a Heritage Impact Assessment (HIA), which is aimed at assisting with the design of appropriate development by assessing the impact on significance.

Every conservation decision should be based on an understanding of its likely impact on the special qualities that contribute to the significance of a listed building and its setting. A thorough understanding of the significance of a heritage asset goes a long way towards ensuring that changes do respect what's special about it. The historic environment in Wales makes a considerable contribution to the distinctive character of all our places and to the quality of Welsh life. It is also a finite, non-renewable resource that we should sustain for the benefit of our own generation and for peoples in years to come.

The Acts which currently furnish the principal primary legislation framework for the protection and management of the Welsh historic environment are, The Ancient Monuments and Archaeology Act 1979 and The Planning (Listed Buildings and Conservation Areas) Act 1990, together with Historic Environment (Wales) Act 2016. At the time of writing, The Historic Environment (Wales) Bill has been passed by Senedd Cymru on 28th March 2023 and now awaits Royal Assent.

Thereafter, Planning Policy Wales (PPW) (edition 11, 2021) sets out the Welsh Government's land use planning policies. Its primary objective is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation. Chapter 6 of Planning Policy Wales (edition 11, 2021) 'Distinctive and Natural Places', explains how the planning system must take into account the Welsh Government's objectives to protect, conserve, promote and enhance the historic environment as a resource for the general well-being of present and future generations. It also sets out the planning policies for the sustainable management of specific categories of historic assets.

To complement the provisions contained in the Historic Environment (Wales) Act 2016 and Planning Policy Wales Chapter 6: The Historic Environment, Technical Advice Note 24: (TAN 24) The Historic Environment published on 31 May 2017 offers further information and detailed planning guidance to fully reflect how the historic environment should be considered through the planning process. TAN 24 replaces Welsh Office Circulars 60/96 Planning and the Historic Environment: Archaeology, 61/96 Planning and the Historic Environment: Historic Buildings and Conservation Areas and 1/98 Planning and the Historic Environment: Directions by the Secretary of State for Wales. Similarly, all development proposals within Registered Historic Parks and Garden designations and their settings will need to consider the impact that the development would have on the historic character of these areas and the wider landscape.

A range of best-practice guidance supplement publications have also been prepared by Cadw that complement the legislative framework, planning policy and advice to support the sustainable management of the Welsh historic environment. All are informed by Cadw's Conservation Principles for the Sustainable Management of the Historic Environment in Wales (2001). Key guidance documents that should be referenced when considering a project such as the adaptive re-use and regeneration of the Former Brymbo Iron and Steelworks –

- Heritage Impact Assessment in Wales
- Historic Environment Records in Wales: Compilation and Use
- Managing Easy Access to Listed Buildings in Wales
- Managing Conservation Areas in Wales
- Managing Change to Listed Buildings
- Managing Historic Character
- Managing Listed Buildings at Risk in Wales
- Setting of Historic Assets in Wales

With specific reference to the Wrexham County Borough Council Planning Policy, key documents, that were referenced and considered include –

- Wrexham Local Development Plan 2 (LDP2) 2013 to 2028 - Adopted 20.12.2023

Specifically, reference has been made to -

Objective SO2: Support a vibrant, diverse and competitive local economy that provides a range of job opportunities to enable new and existing businesses to grow in Wrexham County Borough with strategic growth in Wrexham Town and Wrexham Industrial Estate.

Objective SO4: Promote active travel and use of public transport by locating new development in the most accessible and sustainable locations; and seek to alleviate known highway infrastructure capacity constraints on the road network within the County Borough.

Objective SO6: Promote and encourage a healthy, active and safe lifestyle.

Objective SO7: Conserve, enhance and promote the local culture, character and distinctiveness of Wrexham including the Welsh Language.

Objective SO9: Protect, manage and enhance the natural and historic environment and landscapes.

Objective SO10: Reduce carbon emissions and maximise our resilience to and mitigate and adapt to the impact of climate change.

Objective SO11: Ensure development meets the needs of society and industry, now and in the future, through ensuring adequate protection and supply of high-quality minerals.

Within Policy Areas, the following are very much applicable -

Policy SP15: Natural Environment

Development will only be supported where it protects conserves and enhances the natural environment including:

- Internationally protected Special Areas of Conservation, Special Protection Areas, and Ramsar Sites,
- Nationally protected Sites of Special Scientific Interest and National Nature Reserves;
- Protected Species and their habitat;
- The Clwydian Range and Dee Valley Area of Outstanding Natural Beauty including recognising the importance it has in contributing to the Outstanding Universal Value and setting of the Pontcysyllte Aqueduct and Canal World Heritage Site;
- Local Wildlife Sites including the strategic ecological network on Wrexham Industrial Estate and Regionally Important Geological Sites;
- Local Nature Reserves;
- Special Landscape Areas recognised for their outstanding local landscape character;
- Natural landscape features such as trees, hedges and woodland and the green networks between them which contribute to the quality and diversity of the natural environment and play an important role in mitigating the impact of climate change;
- The quality of natural services including water, air and soils
- Developing and maintaining Green Infrastructure links; and
- Habitats and species of principal importance to Wales.

Policy SP16: Historic and Cultural Environment

Development will only be supported where it conserves, protects and enhances the following cultural and heritage assets of the County Borough and, where appropriate, their settings:

- Listed Buildings and in particular those on the Buildings at Risk Register;
- Conservation Areas;
- Pontcysyllte Aqueduct and Canal World Heritage Site;
- Registered Historic Parks, Gardens and Landscapes; and
- Scheduled Ancient Monuments and Archaeological Remains

Policy SP19: Climate Change

To mitigate against the effects of climate change and adapt to its impacts, development proposals will need to demonstrate that they have taken into account the following:

- Reducing carbon emissions;
- Protecting and increasing carbon sinks
- Adapting to the implications of climate change at both a strategic and detailed design level;
- Promoting energy efficiency and increasing the supply of renewable energy; and
- Maintaining ecological resilience

- Avoiding areas susceptible to flood risk in the first instance in accordance with the sequential approach set out in national guidance; and
- Preventing development that increases flood risk

Reference is also made to a series of approved Wrexham County Borough Council Local Planning Guidance Notes which amplify the main Development Plan policy documents. Topic areas that might be of assistance as future design proposals evolve, include –

- Local Planning Guidance, Advertisements Note 02, WCBC (updated 2000)
- Local Planning Guidance, Access to and Use of Buildings Note 06, WCBC (updated 2004)
- Local Planning Guidance, Landscape and Development Note 07, WCBC (updated 2003)
- Local Planning Guidance, Cycling Note 52, WCBC (adopted 2000)
- Local Planning Guidance, Trees and Development Note 17, WCBC (updated 2012)
- Local Planning Guidance, Designing out Crime Note 24, WCBC (updated 2003)
- Local Planning Guidance, Design (formerly Sustainable Development) Note 30, WCBC (updated 2009)
- Local Planning Guidance, The Welsh Language and Welsh Communities Note 31, WCBC (adopted 2001)
- Local Planning Guidance, Biodiversity and Development Note 32, WCBC (updated 2011)

1.3 a - Statutory Designations and Records

The current project relating to the repair and to the repair and the adaptive re-use of the Former Brymbo Iron and Steelworks, but specifically the redevelopment of the Machine Shop to provide Visitor Centre facilities, training areas and a café, but also that of the wider site that includes the Former Agents House, The Scheduled Area that includes No1 Blast Furnace, the Foundry, Pattern Makers Workshop, the area to the east of No1 Blast Furnace that will be known as Robertson Square and the Visitor Car Parking area beyond the east boundary to the 'Heritage Area' incorporates multiple heritage and geological designations. The immediate designations (within 250m) that are being considered in the context of this Heritage Impact Assessment include -

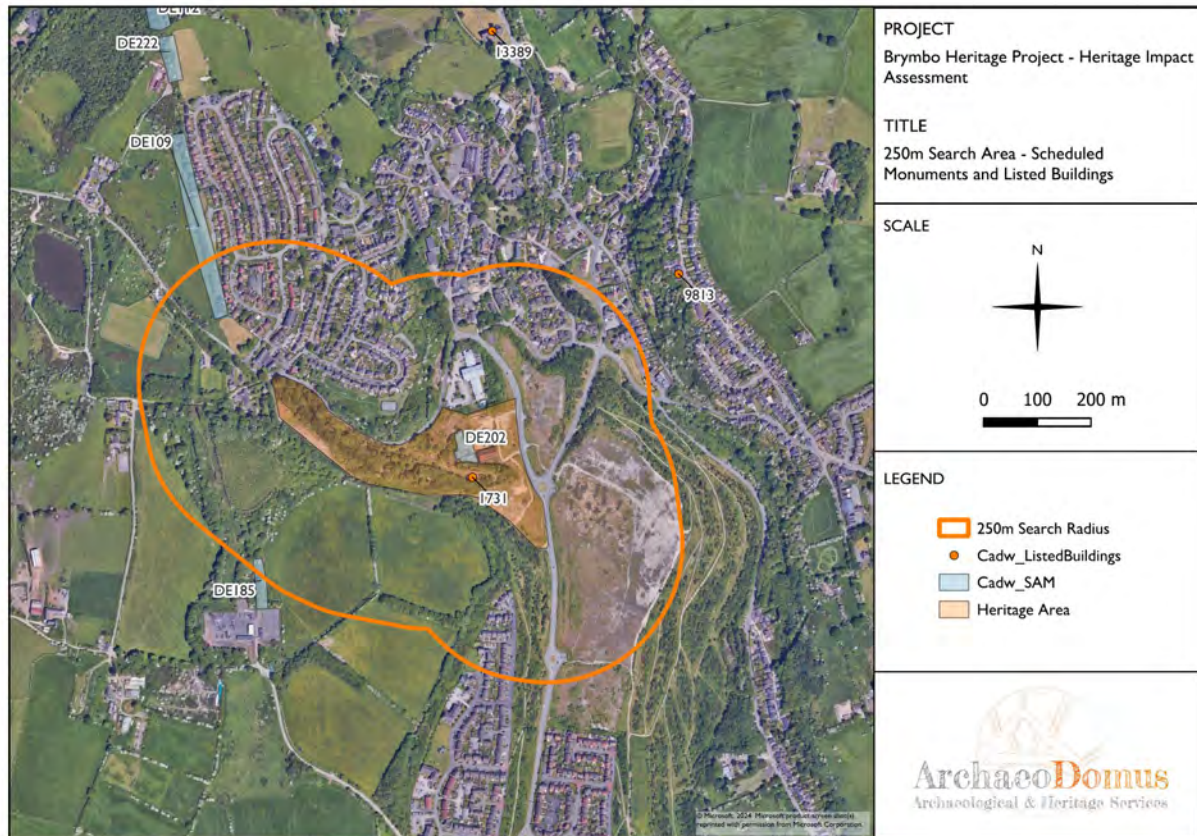
Brymbo Ironworks Early Blast Furnace, Cast House & Foundry - Scheduled Monument
Cadw Ref: DE202 Date of designation 07.11.1991

Former Agents House – Grade II*
Cadw Ref: 8483 Date of designation 16.02.1990 Amended 19.11.1990

Offa's Dyke: Brymbo Hill Section (150m NW of W Boundary) – Scheduled Monument
Cadw Ref: DE109 Date of designation (None) Location: Easting 328959 Northing 353943

Offa's Dyke: Section South of Brymbo Colliery (250m SW of W Boundary) – Scheduled Monument
Cadw Ref: DE185 Date of designation (None) Location: Easting 329074 Northing 353274

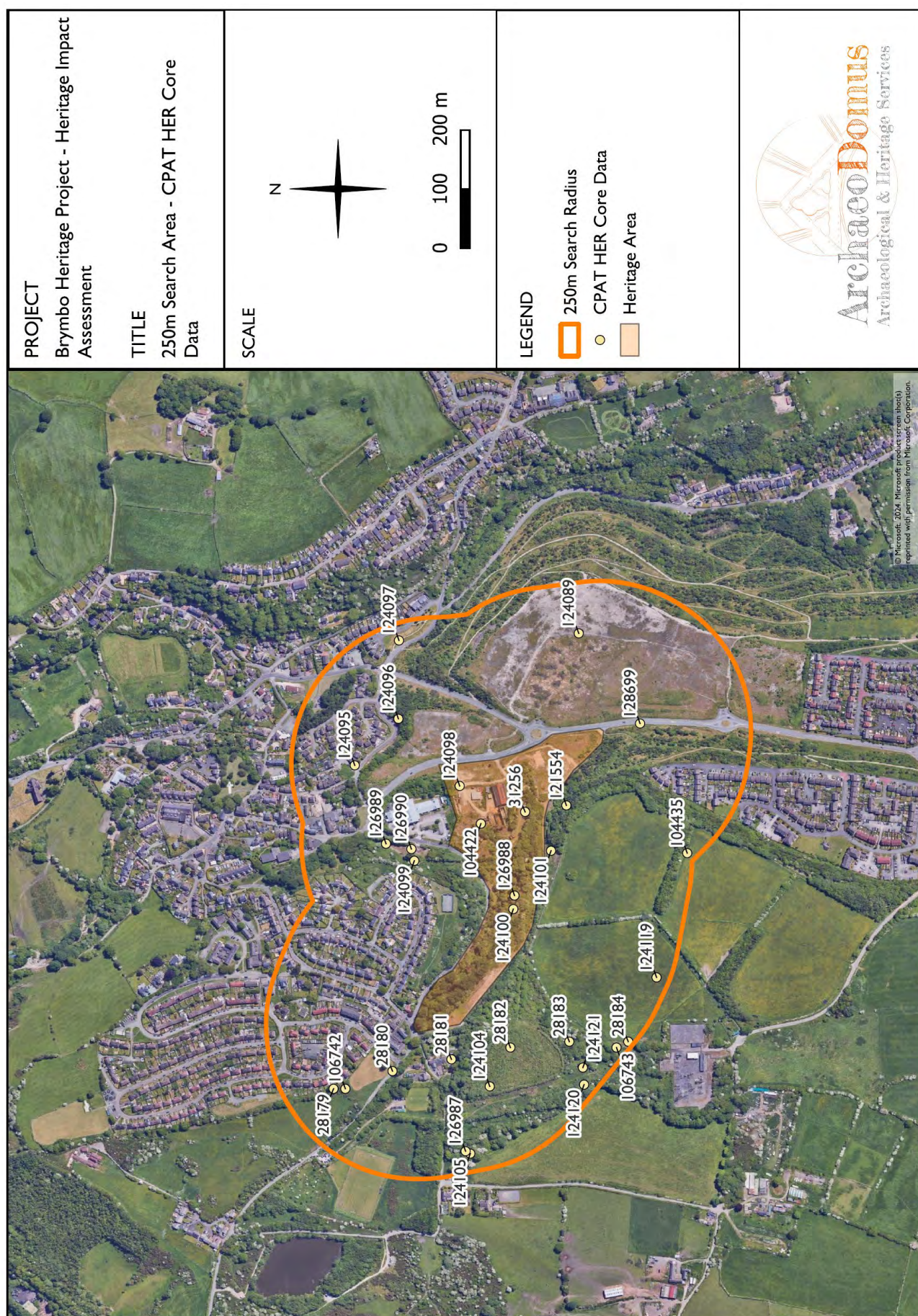




Previous Archaeological Events

The HER records 13 previous archaeological programmes of works 500m of the centre of the heritage area, which are detailed below:

Event	Type	PRN	Contractor	Completion
Beaker burial	Excavation	19310	Unnamed	1958
Prehistoric Funerary and Ritual Monuments	Flintshire and Wrexham Assessment Project	43121	CPAT	2000
Zion Farm	Photographic Survey	59006	Unnamed	1998
Prehistoric Funerary and Ritual Monuments	Flintshire and Wrexham, Desktop Study	59044	CPAT	2000
Prehistoric Funerary and Ritual Monuments	Flintshire and Wrexham, Field Survey Project	59045	CPAT	2000
Brymbo Steelworks Site	Watching Brief	112398	Castlering Archaeology	2007
Medieval and Post-Medieval Industry	Assessment Project	123124	CPAT	2011-12
Brymbo Ironworks: Early Blast Furnace, Cast House & Foundry	Grant Offer	124745	CADW	2015
Bronllys, lazy beds	Glastir HEF Report	128699	CPAT	2014
Pentre Broughton, Clayton Road, Bryn Seion Chapel	Photographic Survey	129351	Andy Evans	2010
Brymbo, Cheshire View	Watching brief	140269	CPAT	2018
Medieval and Post-Medieval Industry	DBA	141996	CPAT	2011-12
First World War Industry in East and North-east Wales	Scheduling Enhancement Programme	167136	CPAT	2017



b - Sites of Archaeological and Historical Interest

This section presents the heritage assets, both known and unknown, from within the primary and secondary study areas. The primary study area is defined by the limits of the Heritage Area, and the secondary is a 250m search area defined from the boundary of the primary study area.

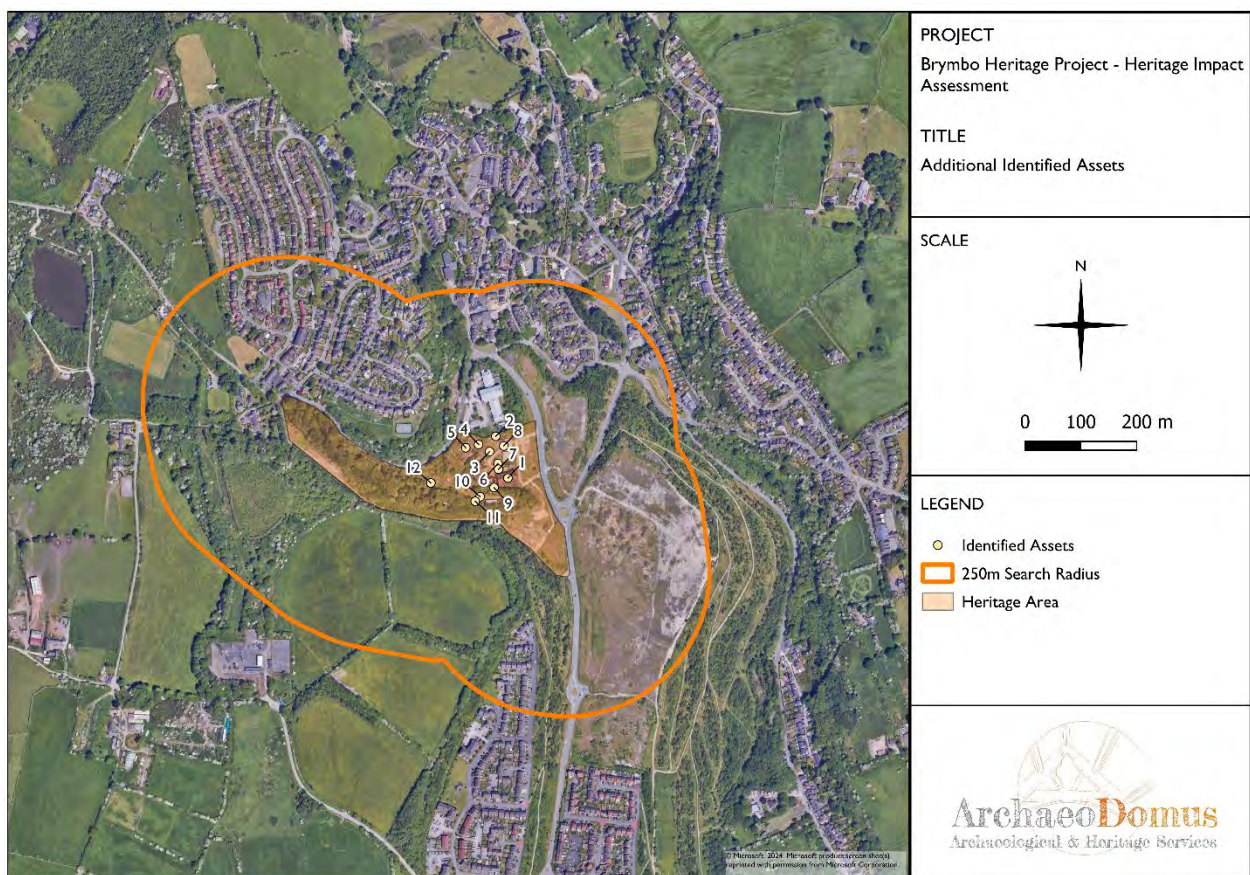
The development area comprises the lower heritage area, comprised of the Blast Furnace, Cast House, Foundry, Patter Shop, and Machine Shop, and some elements of the upper heritage area, the Agent's House, and Blast Colliery Winding House.

The search for this section has incorporated four elements:

1. Scheduled Monuments
2. Listed Buildings
3. HER Assets
4. Identified Assets

Within the primary and secondary study areas a total of 43 assets were identified. The initial assessment determined that 26 of these were either duplicate sites (13) or were outside the primary study area and no longer exist above ground (13) and have been disregarded from the study. One of these assets, Offa's Dyke, sits within 150m of the north-west and 230m of the south-west of the primary study area (DE109/DE185), and has no visual line of site to the development area.

Within the heritage area, one scheduled monument is located – Brymbo Ironworks; Early Blast Furnace, Cast House & Foundry (DE202) – and one listed building – the Grade II* Agent's House



In terms of assigning value to each heritage asset, the following method was applied. All heritage assets that either constituted Scheduled Monuments of Grade I Listed Buildings were assessed as being Value A. Heritage assets that constituted Grade II* Listed Buildings were also assessed as being Value A, as in each case they comprised historically significant structures that were essential to the character and setting the former ironworks. Grade II*. Listed Buildings within the secondary study area were also considered for impact. Buildings designated Grade II

were assessed as being Value B. Any buildings or assets of local importance, either designated or undesignated, were assessed as being Value C. Finally, all heritage assets that either do not survive as above ground features or constituted simple findspots were assessed as being Value D.

As this is a dynamic process, at each stage of research, assessment, and reporting, the assessment of each asset may change in light of their values. This has the potential to raise or lower the values of the original assessment.

ID (SM/LB/PRN)	Name	NGR	Period	Type	Designation	Grade	Value
Within Development Area							
SM DE202 / 104422	Brymbo Ironworks	SJ 2945 5355	C18 th -19 th	Iron Foundry	Scheduled Monument	-	A
LB 1731 / 31256	Agent's House	SJ 29472 53482	C18 th	Ironworks Agent's House	Listed Building	II*	A
124100	Brymbo Ironworks Coal and Iron Shafts	SJ 29305 53495	C18 th -19 th	Mining	N/A	-	A
1	Machine Shop	SJ 29500 53517	Modern (1921)	Machine Shop	N/A	-	A
2	Charging Wall	SJ 29488 53596	C19 th	Charge Wall	N/A	-	A
3	No. 5 Blast Furnace	SJ 29469 53567	C20 th	Blast Furnace	N/A	-	A
4	Winch House and Bank	SJ 29451 53577	C20 th	Ironworks Infrastructure	N/A	-	A
5	Ore Bins	SJ 29425 53575	C20 th	Ironworks Infrastructure	N/A	-	A
6	Iron Line	SJ 29484 53547	C19 th	Ironworks Infrastructure	N/A	-	A
7	Smithy	SJ 29486 53537	C20 th	Ironworks Infrastructure	N/A	-	A
8*	Puddling Furnace	SJ 29486 53537	C18 th	Furnace	N/A	-	A
9	Road	SJ 29471 53502	C18 th	Transport	N/A	-	A
10	Railway	SJ 29452 53486	C19 th	Transport	N/A	-	A
11	Railway Buildings	SJ 29448 53481	C19 th	Transport	N/A	-	A
12	Railway Siding	SJ 29361 53502	C19 th	Transport	N/A	-	A
Within Primary (250m Radius) Study Area (All Heritage Assets)							
124101	Quarry	SJ 29404 53431	C18 th	Mineral	N/A	-	B

Identified Heritage Assets – highlighted assets indicate those with the potential for direct or indirect (visual) impact.

1.4 Project Aims

The aims and vision for the project to consolidate, repair and to adaptively re-use/redevelop and represent the buildings and structures across the site of the former Iron and Steelworks at Brymbo forms part of a larger programme of capital investment to create a community hub with educational and training benefits that underpin and reinforce the opening of the site as a heritage attraction to convey the 300-million year story of Brymbo from the creation of the Fossil Forest and the mineral deposits, through the frenzy of the early industrialisation of the site with the production of Iron 225 years ago. The project will retell the history associated with the establishment of the Steel Industry at Brymbo during the later C19, and the successes, fortunes and difficulties that has confronted the industry throughout its very influential and significant history, through to the closure of the works in 1990.

Due to the nature and scale of the project, the majority of the works will be undertaken as a single delivery phase, both to address the most urgent of repair priorities to the fabric of the buildings and structures, but also to accommodate specific conditions, and outcomes of funders during this crucial period. As outlined within the project objectives (item 1.1) the key areas of works and intervention include -

The Machine Shop – Repair, Refurbishment and Extension for Visitor and Training Use

- Recovering of the metal roof and asbestos decontamination. Introduction of insulation within a new built-up roofing system with associated eaves and verge detailing.
- Brickwork repairs and structural steelwork repairs to the building envelope.
- Repairs to the existing metal windows and clerestory fenestration with part thermal upgrade with the introduction of slim, double glazed units with metal capping beads.
- Gullies and below ground drainage will be checked, repaired and overhauled (foul and rainwater). Construction of new foul and surface water drainage locally.
- Introduction of new metal windows to existing arched openings on the east elevation.
- Demolition of the late 1990's office accommodation within the Machine Shop
- Construction of two new lean-to extensions to the north and south elevations with foundation details and drainage connections.
- New external door opening and the repair of existing doors to the building.
- New underfloor heating and floor slab to the lower ground floor visitor reception area.
- Supply and installation of a new vertical platform lift and visitor staircase following the removal of the existing metal steps.
- Construction of new upper ground floor insulated floor slab, internal partition wall with slab-thickened foundation and integrated accommodation.
- Alterations to the existing internal accommodation that is being retained.
- Upgrading and reinforcing where applicable of the incoming utilities to future-proof the building and its operations.
- Complete Plumbing, Mechanical and Electrical installation required throughout, including underfloor heating, energy efficient lighting, small power and water efficient sanitaryware and to improve the energy efficiency of the building.
- Installation of data/IT, Wi-Fi, CCTV and security alarm systems to support the new functions.
- Installation of sanitaryware, fixtures and fittings throughout
- Installation of commercial Kitchen facilities and equipment.
- Installation of the new interpretation proposals at the east end of the building.

Patternmakers Workshop – Consolidation, Repair and Adaptive Re-use of the Building

- Masonry repairs to stabilise and consolidate the existing stone and brickwork walls throughout.
- Reinstatement of the existing timber roof structure using some original components, building records and photographs with the reinstatement of the slate roof covering. Existing details to include the reconstruction of roof ventilators, ridge, hip and gable/copping details. The reinstatement of a steel canopy to the west elevation is also proposed.
- Repairs to the existing metal and timber windows throughout. Some replacement windows are required due to the poor condition of the existing. Repairs or replacement windows are to be undertaken on a like for like basis.
- Repairs to existing doors, externally and internally.
- Repair and/or reinstatement of existing intermediate floor structure and floor finishes.
- Repair and/or reinstatement of internal room finishes.
- Demolition of some late C20 walls, fixtures and fittings at lower ground floor level to incorporate the new interpretation installation.
- Installation of a new accessible WC and a compact kitchen, storage and an access ramp to the upper ground floor level.
- New foul drainage connection from the accessible WC and compact kitchen.
- Upgrading and reinforcing where applicable of the incoming utilities to future-proof the building and its operations
- Complete Plumbing, Mechanical and Electrical installation required throughout, including heating, energy efficient lighting, small power and water efficient sanitaryware.

- Installation of data/IT, Wi-Fi, CCTV and security alarm systems to support the new functions.
- Installation of sanitaryware, fixtures and fittings throughout
- Installation of compact Kitchen facilities and equipment.
- Installation of the new interpretation proposals at the east end of the building.

Former Agents House - Consolidation, Repair and Adaptive Re-use of the Building

- Masonry repairs to stabilise and consolidate the existing stone walls throughout. Some rebuilding is required to the lean-to at the west end of the building.
- Reinstatement of the existing timber roof structure using some original components, building records and photographs with the reinstatement of the slate roof covering. Existing details to include the reconstruction of chimney stacks ridge and hip and details.
- Repair and reinstatement of timber windows throughout.
- Reinstatement of timber doors externally and internally.
- Introduction of new structural support to the walls of the building interior. Part reinstatement of the existing first floor structure and floor finishes.
- Removal of recent wall, floor and ceiling linings.
- Upgrading and reinforcing where applicable of the incoming utilities to future-proof the building and its operations
- Complete Plumbing, Mechanical and Electrical installation required throughout.
- Installation of data/IT, Wi-Fi, CCTV and security alarm systems to support the new functions.
- Installation of the new interpretation proposals within the building

The Core Heritage Area – Consolidation and Repair of the standing remains

- Masonry repairs to stabilise and consolidate the existing stone walls, vaulted spaces, and structures to No1 Blast Furnace, The Foundry and Cast House, the Cupola Furnaces, adjacent store areas and the Charging Wall. Plate repairs to No1 Blast Furnace.
- Structural repairs beneath the Cupola Furnaces
- Repairs to the overhead crane and structure within the Foundry area.
- Repair and re-use of C20 ancillary building to the east of the foundry as a cider brewery space.
- Drainage repairs to intercept water from the adit and lengths of new drainage to divert water from the upper terraces to the NW and W of the charging walls
- Installation of the new interpretation proposals within the Foundry and Cast House

Story of Steel – Stage and Interpretation Spaces at the NE corner of Robertson Square

- Construction of a stage in front of interpretation spaces contained within 2No x 40-foot and 1No x 20-foot metal storage containers.
- Complete Plumbing, Mechanical and Electrical installation required throughout.
- Installation of data/IT, Wi-Fi, CCTV and security alarm systems to support the new functions.
- Installation of the new interpretation proposals within the steel containers

Hard and Soft Landscape Design Proposals with Drainage – Sitewide proposals

- Construction of Hard Landscaping Proposals, surfacing, bollards, boundary fencing and railings.
- Construction of Soft Landscape design proposals.
- Construction of the drainage strategy

The purpose of the Heritage Impact Assessment is to gain an understanding of the historic environment resource in order to formulate as required:

- an assessment of the potential for heritage assets to survive within the area of study.
- an assessment of the significance of the known or predicted heritage assets considering their archaeological, historic, architectural and artistic interests.
- strategies for further evaluation (whether intrusive or not), where the nature, extent or significance of the resource is not sufficiently well defined.

- an assessment of the impact of the proposed development or other land use changes on the significance of the heritage assets and their settings.
- strategies to conserve the significance of heritage assets, and their settings.
- design strategies to ensure that the new development makes a positive contribution to the character and local distinctiveness of the historic environment and local place-shaping.
- proposals for further archaeological investigation within a programme of research, whether undertaken in response to a threat or not.

To this we can further add that the objectives of a desk-based assessment are:

- to assess the available information to determine the extent and character of heritage assets, in local, regional and national contexts.
- to assess the significance of heritage assets considering all of the cultural heritage values that people associate with it, or which prompt them to respond to it.
- to assess the impact (physical or visual) on heritage assets and their setting.
- To carefully consider and present mitigation recommendations aimed at reducing the impact of the new development on heritage assets and their settings.
- Finally, to present this information in a written report and the preparation and deposition of an archive of data generated by the assessment in line with professional standards.



Section 2.0: Historical Context

2.1 Archaeological and Historical Background

In 1792 John 'Iron Mad' Wilkinson purchased the 500-acre estate of Brymbo Hall for the sum of £14,000, with the intention of developing an iron works using the mineral and coal deposits that were known to exist on the site. With the invention and development of the steam engine Wilkinson was able to found an iron works away from running water as steam power could provide blast for blast furnaces.

Brymbo Hall became Wilkinson's primary residence, where he spends considerable money to upgrade the house, including new panelling, windows and carpets (likely referring to rugs) for the chambers and principal rooms.

A letter sent by James Watt Jr. soon after Wilkinson's acquisition of the Brymbo estate states that Wilkinson has spent £20,000 on levelling the site, constructing parapet walls and building a puddling furnace (Soldon 1998: 73). An estate map produced in 1798, though likely surveyed circa 1796-8 by T. Williams, names the site as Plasnewydd Works and demonstrates the extent of the site during this early period; the Puddling Forge can be seen at the east of the site and a blast furnace with attached Cast House, Blowing Engine House and Charge House, which post-dates Watts account, located west of the Puddling Forge he describes; whilst there appears to be several other buildings on site at this time they do not represent what remains today. By circa 1796 the core of the site; Blast Furnace (original dem.), Casting House, Blowing Engine House



(dem.), Charge House (dem.) and Coke Ovens (dem.); had been completed, with the first output of iron recorded as 884 tonnes (Riden & Owen 1995: 49), thus commencing Brymbo's one hundred- and ninety-four-year association with metalworking. The cartouche in the lower right corner of the Estate Plan shows the ironworks as it appeared when the map was completed in 1798. Within this initial development the site Wilkinson's blast furnace is depicted in both plan and cartouche form as being cylindrical.

Further development under Wilkinson's management saw the construction of the Agent's House (B05) and No.2 Blast Furnace, with associated Cast House, sometime between 1800 and 1809. The Agent's House, although not depicted on the Estate Plan of 1798, was certainly in its present form by the time it was depicted on the *Longitudinal Section of the Strata at Brymbo Colliery* of 1809.

In the years between 1792 and 1798 Wilkinson had begun sinking mines near to the site to provide coal and ironstone for his planned works, with a total 8 reported by 1808. A plan of the Brymbo Colliery, dated 1809 and produced by William Rowe, shows the expansion of mining in the Brymbo area, but importantly shows the ironworks as it is in 1809, clearly showing the addition of a second blast furnace.

During his management of the Brymbo Hall estate Wilkinson expanded it to almost 800 acres, to include new farmlands and mineral deposits.

When Wilkinson died in 1808 at the age of 83, the works passed into trusteeship for the next two decades under the guidance of Ann Lewis (his mistress and mother to his only children), William Smith of Birmingham, James Adams and Samuel Foreday of Ettingshall. To survey the wealth of coal seams at Brymbo the trustees' commissioned plans of Brymbo Colliery in 1809, then again in 1812, when a long section was also produced, all showing the contemporary ironworks.

In the period following the Battle of Waterloo in 1815, the ironworks saw a slump in its production, resulting from the declining need for weaponry and the continued disputes over Wilkinson's Will. The decision was made to lease the ironworks for a 10-year period and by 1818 John and James Thompson were renting the iron works for a yearly sum of £1,500, with the Wilkinson estate taking in a total of £9,758.16.8d from rents and lets (Brymbo Steel Works Ltd, 1975: 5). In 1820 the original blast furnace was decommissioned by the Thompson brothers and a new furnace commissioned on the same footings (S01), remaining in situ to this day. This rebuilding, recorded in the company history, is confirmed by the Estate Plan of 1798 and Colliery Plans of 1809 and 1812, all of which show the original Wilkinson furnace as cylindrical.

By the late 1827 the Ironworks was in receivership, a two-year period passing with minimal production taking place. Several years of financial instability and mounting legal costs from the disputed Will led the Chancery to insist that Wilkinson's estate should be sold in order to meet claims. In 1829 a public auction was held at the Wynnstay Arms in Wrexham over the 23rd and 24th April, with all Wilkinson's land acquisitions being sold until the Brymbo Hall estate was back at its 1792 size of 500 acres. John Wilkinson Jr. remained in residence at Brymbo Hall and in late 1829 decided to restart the works using the money gained from the sale of estate lands earlier that year. However, lacking the production and business abilities of his father, the works were again in financial trouble by 1837, when Wilkinson Jr. went overseas. The works continued under the trusteeship of William Rowe until a buyer was found in 1840, a Scotsman by the name of Robert Roy, being financially backed a Scottish bank.

In 1840 'The Brymbo Company' was formed, with William and Charles Darby, descendants of Abram Darby, taking over the site's management. Charged with managing and developing the ironworks, the Darby brothers, commissioned a new Foundry and Machine Shop (now the Carpenters and Patternmakers Workshop) in 1843, which remain today. This work made material alterations to the Cast House, removing the gabled south elevation and inserting new archways onto the east and west walls. In 1847 a new blowing engine was installed, raising the output of the blast furnace from 50 to 84 tonnes per week.

In 1842 the highly recommended Henry Robertson was appointed by Robert Roy to undertake an appraisal of the works, concluding that a railway was essential for continued development. In the same year Robertson, along with Robert Roy, Alexander Ross and William Betts formed the Brymbo Mineral and Railway Company, with the 1844 North Wales Mineral Railway Act being

passed to allow construction. Initially this section of the railway was powered by horses, but by 1850, with the desire for greater output, a locomotive was purchased.

In 1856 new hot air stoves were built to preheat the blast, with bell-tops added to the furnace to reuse the hot gasses to heat the boilers and stoves, therefore making savings on the amounts of coal required. A note in the company records states that No. 1 Blast Furnace was, at one time, in continuous blast for 32 years with the same firebrick lining. By 1880, bell tops were added to the furnaces, alterations were undertaken to the foundry and in 1872 No. 3 blast furnace was erected with a Haigh Blowing Engine to increase iron output.

Continued expansion from the mid-19th century, saw the requirement for expansion of the Machine Shop to supply parts to and maintain the new steel plant. A new brick extension was added to the south-east corner of the Machine Shop commissioned by the Darby brothers in 1843.

On 13th April 1880, the fuel consumption No. 1 Blast Furnace (S01) is recorded as 10.22 cwts (hundredweight) of coal and 26.6 cwts of coal per ton of iron, making a weekly consumption of 134 tons. The same month, on 30th April, the proportions of materials used to charge the furnace were recorded as: Coal 10.22%, Coke 26.60%, Native Mine (ore) 27.84%, Northampton (ore) 0%, Desada (ore) 9.34%, Guton (Spanish) (ore) 4.60%, Bilbao (ore) 4.60%, Irish (ore) 0%, and Limestone (flux) 16.80%. A month later, on 28th May 1880, the blast temperatures at the tuyeres were recorded as North 1020°F, East 1110°F, South 980°F, and West 1080°F.

Communications were improved in 1877 with the installation of a Wheatstone Telegraph and by 1880 telephones had made their way to the iron works.

In the last decades of the 19th century, steel started becoming a production priority and in 1883 an experimental Open-Hearth steel furnace was erected, the results being so successful that Robertson made the decision to found a steel plant. On June 4th, 1884, The Brymbo Steel Company was incorporated and its operations began the following year.

In 1894, No. 4 blast furnace was constructed to replace No. 3, and was equipped with three Cowper stoves, a dust catcher and three Lancashire boilers blown by a Davy Engine. It was at this time that the large Charging Wall to the north of the site was built, to help enable the development of No. 4 by providing a new level area of ground for the placement of a charging house. In the same year, No. 1 blast furnace was damped down for the last time after 74 years of work and retained as a sand hopper for the Cast House.

In the late 19th century, the Foundry was upgraded, with the addition of two cupola furnace, although not at same time.

April 1902 saw the commissioning of the new Power House, which brought 3 phase electric generation to Brymbo. Power was produced by an electric alternator powered by a 125hp Westinghouse Gas Engine. In the following year, 1903, a Theissen Gas Washer was installed to wash the blast furnace gas, which in turn was used to drive turbines in the Power House.

In 1908, No. 5 Blast Furnace was commissioned, which would be the last of the iron furnaces built at Brymbo. In October 1908, the new furnace was lit by Peter Williams, the recently appointed General Manager of the works, who had taken over from J. H. Darby earlier that same year. With the construction of No.5 a new, sunken iron line was built to carry molten iron from the furnace to the Casting Shop to the east.

In 1910 bosh tuyeres were used for the first time at Brymbo in an attempt to increase output from No. 5 by starting reduction of ore higher up the furnace. However, the results proved this not to be the case. In the same year refrigeration units were installed for the testing of 'dry blast' in an attempt to improve the iron to a grade containing less than 1% silicon, which could be used in basic open-hearth steel furnaces. After 2 years of trials, this was also abandoned. From 1912, No. 5 will be the only operational blast furnace at the plant.

With increased steel production and the requirement for constant maintenance and upgrades, combined with continued investment in the plant since the WWI, a new machine shop was commissioned and built in 1921. Integral to the build was the installation of the large overhead Travelling Crane by the Vaughan Crane Co. It has SWL (safe working load) of 7½ Tons and was electronically driven and operated, which was usual for new machinery and tools at the works during this period.

In the post-war period the steelworks were upgraded from gas to electric furnaces, with demand driving the increased production of silicon steel for transformer cores. For part of the 1920s, silicone steel becomes a major output from the plant during a time of national electrification.

By the 1930's the demand for iron had decreased sufficiently that it became a minor part of the works at Brymbo, which were now focused on the production of steel.

Little is recorded of the earliest part of the site from 1912, with steel being the primary concern. The only noted development in the first half of the 20th century, since the development of No. 5, was the refitting of the Foundry. This came at the height of WWII, when in 1943 new overhead travelling cranes from Joseph Adamson & Co. Ltd. were installed to carry crucibles for heavier pours from the cupolas.

The next period of major development in the production of iron comes in November 1964, when the decision was taken to modernise No. 5. At this time the furnace was still being charged by hand, using a system of barrows. This upgrade introduced a winched mechanism for loading the furnace, with the Winch House built for this purpose. A new double bell top, fume emission system, gas cleaning was introduced to No. 5, with the replacement of the old Blast Engine of 1894 for a turbo-blower unit installed to increase efficiency. In February 1965, the furnace was relit by Mrs. E Davies, wife of the Managing Director of the plant. In 1966, a gas cleaning installation was completed, with a scrubbing tower to remove dust from the gas, a thickening plant to settle the dust in water, and a cooling tower to enable the waste water to be reused. On 28th June 1967, No. 5 set a new weekly record with an output of 2,123 tons produced. In 1969, further upgrades were made to No. 5, with new hot blast stoves, gas cleaning plant, new boiler and new turbo-blower. These additions increased the output to 3,000 tons per week. 1970 saw the decommissioning and removal of the Davy Blowing Engine, which had been operational at the site for the last 70 years. On 15th July 1971, No. 5 was blown out for relining and was relit on 15th September the same year. Four years later, No. 5 was blown out at the end of May 1975 for relining and general maintenance works, being relit by the wife of the Technical Director, Mrs. O. Harris, on 3rd May 1976. The record weekly output for a blast furnace at Brymbo was held by No. 5, which produced 3,349 tons during the week of 1st December 1973.

In the 1970s, new cupola furnaces were installed to the Foundry, in conjunction with the fabrication of a new façade and roof in steel frame. The new furnaces were designed by Walter Salisbury and a colleague and were then manufactured at the works. When in operation, each furnace was producing 2 tonnes per week.

In 1973, Brymbo Hall was demolished to make way for an open cast mining operation.

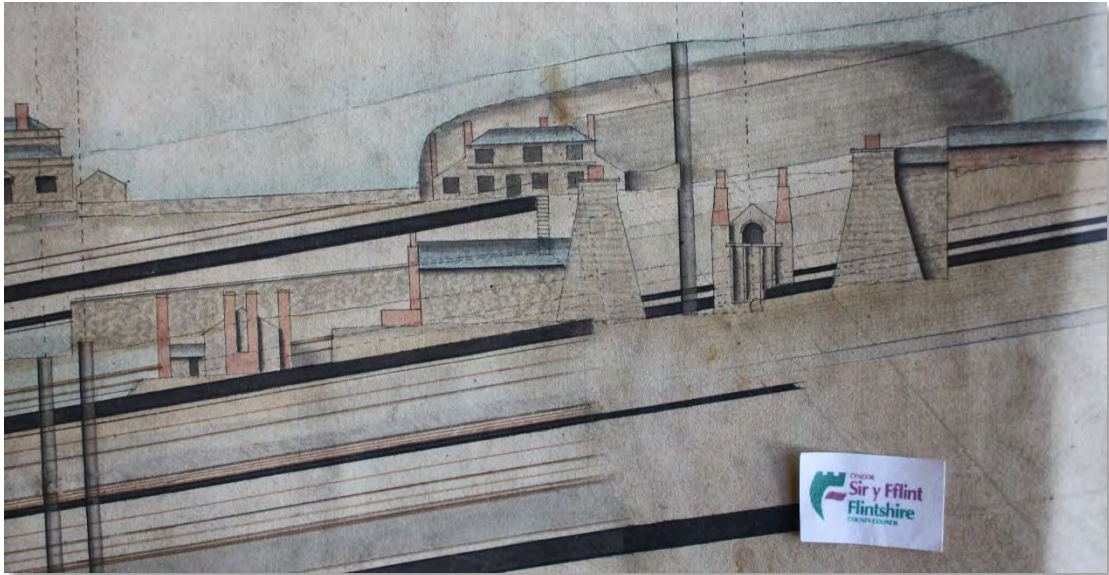
The works closed in 1990, with the loss of all jobs and a rich industrial heritage.

2.2 Cartographic Sources

One of the most significant pieces of evidence for the early development of the Brymbo Ironworks is the Brymbo Estate Plan of 1798 (*Error! Reference source not found.*). The plan was commissioned by Wilkinson and produced by T. Williams. The plan is likely to have been surveyed sometime between 1796-8, as it shows the works complete with blast furnace with the blast engine house, charging house and cast house. At this time the ironworks are labelled as the 'Plasnewydd Works'. Latterly, the estate plan was updated to reflect the addition of No. 2 Blast

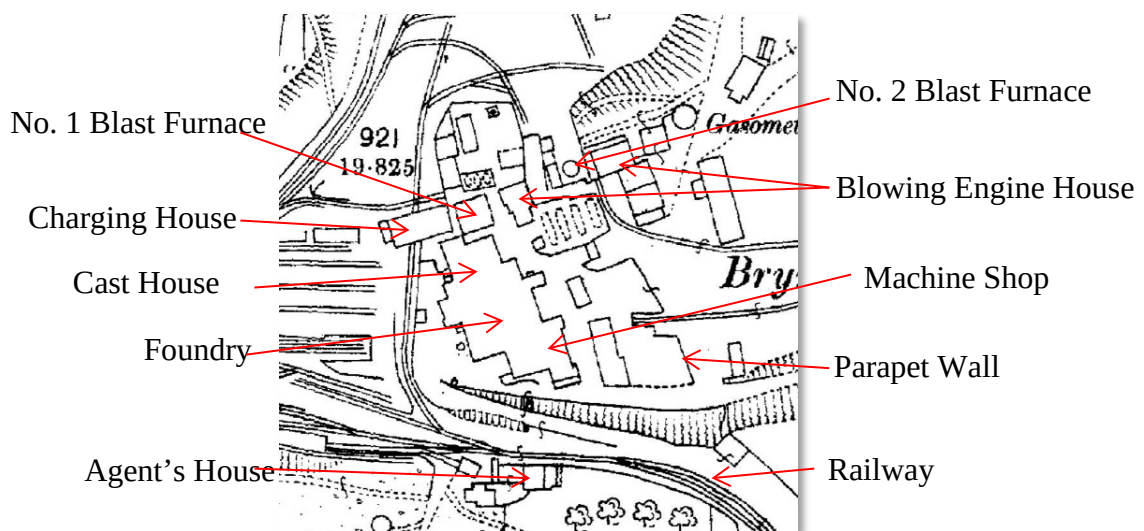
Furnace. This has been drawn onto the map in black ink, with hatching to the new buildings, which is unlike the pink shading to the original.

Colliery plans made in 1809 and 1812, commissioned by the executors and trustees of the Wilkinson estate, show the ironworks at the same level of development as those shown on the 1798 Estate Plan. It may be at this time that the earlier estate plan was updated to reflect the addition of No. 2 Blast Furnace. Importantly, a section of the coal strata (**Map 1**), shows the works in section, with clear depictions of the blast furnaces, puddling furnaces and the Agent's House.



Longitudinal Section of the Strata at the Brymbo Colliery. Dec. 1812. Flint Archives. (Map 1)

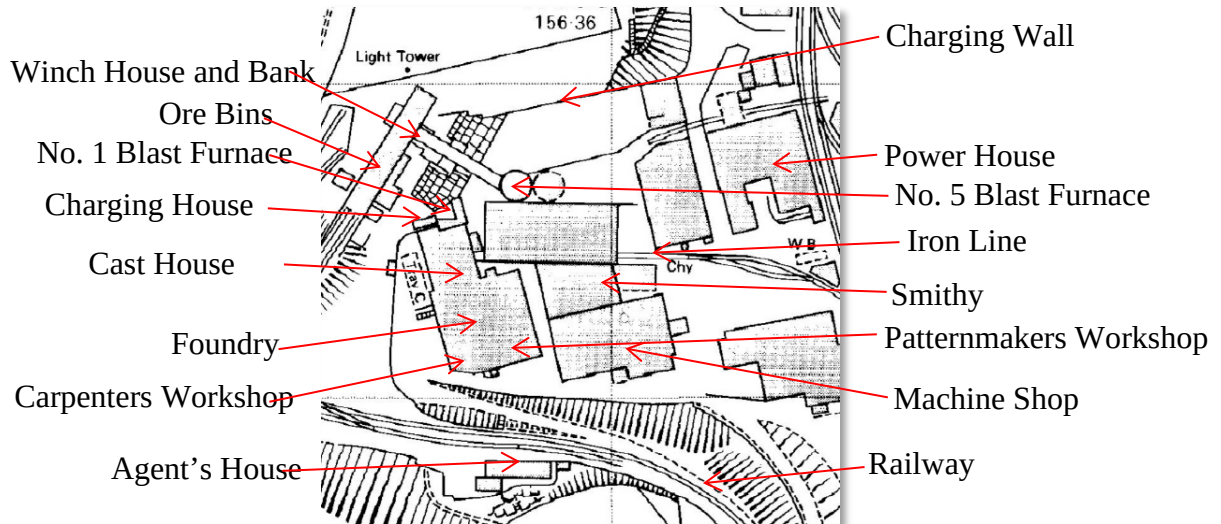
The later Tithe Map of 1845 shows the ironworks at the same level of development as the updated 1798 Estate Plan, with the ironworks again labelled 'Plasnewydd Works'. At this date the Agent's House is labelled as 'Field Number 210; 'Agents Office', owned by 'Robert Roy Esquire and Others', in use by 'Self and Others'. The Tithe Map does not show the Foundry and Machine Shop (Carpenters and Patternmakers Workshop), which are known to have been built in 1843, which gives two possibilities; 1) the Tithe Map was surveyed before 1843; or 2) it has been based on the earlier Estate Plan of 1798.



1873 25 Inch to One Mile, OS

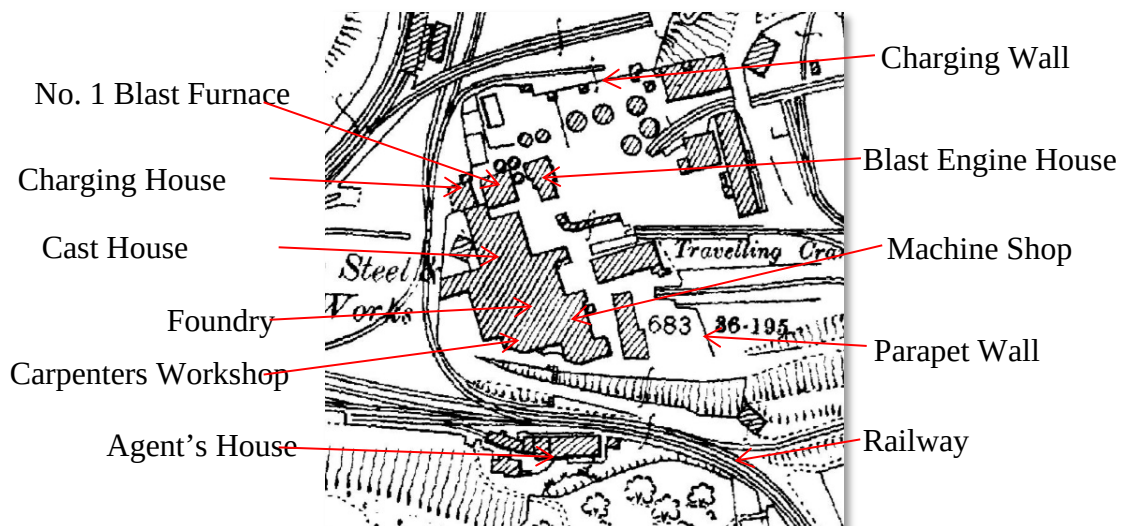
© Landmark Information Group Limited 2024. (Map 2)

The First Edition 25 Inch to One Mile Map of Brymbo was published in 1873 (**Map 2.**) (Denbighshire XXVIII.2). By this time, the works had undergone large amounts of development under the Darby brothers' management. It is also the first time we see a formal plan of the plant's railway infrastructure, largely developed thanks to Robertson and the 'North Wales Mineral Railway Act' of 1844. It is also the last time that the ironworks are depicted as being focused around the blast furnace bank and before the foundation of the steelworks at Brymbo. The map demonstrates the existence of buildings within the modern footprint of the 1921 Machine Shop and within the yard to its north, and the extent of workings to the north of the works. To the immediate south-west of the Agent's House, a small quarry to its south is shown in work.



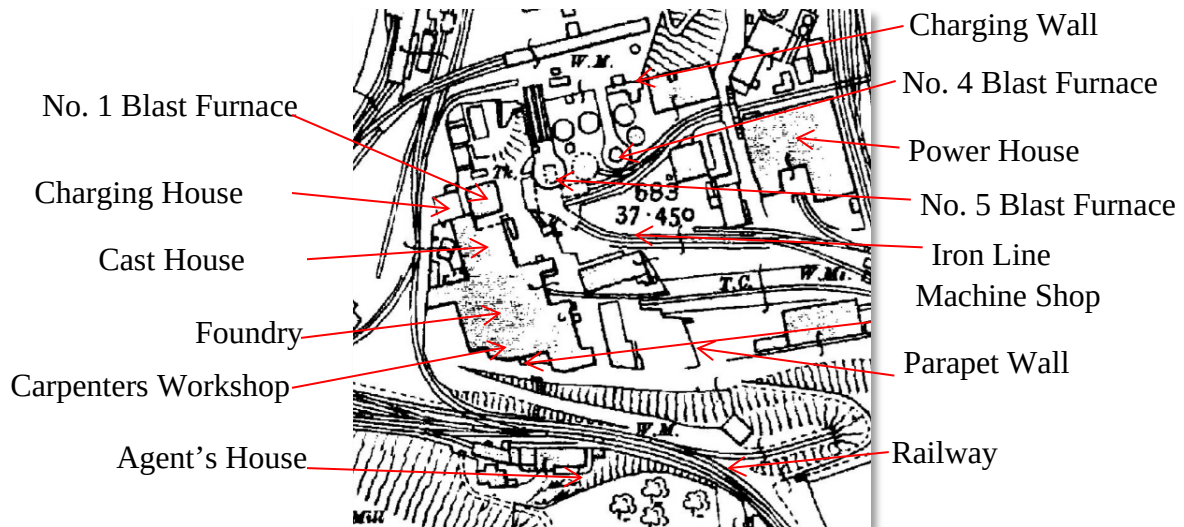
1984 1:2,500 map, OS. © Landmark Information Group Limited 2019. (Map 3)

By 1899 (**Map 3+4**), the second edition map shows Brymbo Steelworks, incorporated in 1884, with its new mill developed on a large slag mound to the east of the ironworks. The map clearly demonstrates the addition of No. 4 Blast Furnace and the construction of the Charging Wall, which had been built just four years before its publication. The map is a little unclear, but shows the development of new stacks and buildings associated with the development of No. 4 Blast Furnace. No. 2 Blast Furnace survived this development and remains to the west of No. 4. Between the first and second editions, the railway had also expanded significantly with the addition of third and fourth lines to the northern and western approaches. The map also demonstrates that the Agent's House becomes linked with the railway at this time. At some point between the first and second editions the Carpenters Workshop was added to the rear of the Patternmakers Workshop (Machine Shop of 1843). The quarry shown on the First Edition map to the south-west of the Agent's House was already out of use by this time.



1899 25 Inch to One Mile, OS. © Landmark Information Group Limited 2024. (Map 4)

The 1912 (**Map. 5**) map demonstrates the continued expansion of the works, most notable being the demolition of No. 2 Blast Furnace and the building of No. 5 and its infrastructure. This included the new sunken iron lines, which took molten iron direct to the Casting Shop via rail. The charging bridges are shown for the and span from the Charging Wall to the tops of No. 4 and 5 blast furnaces, something omitted from the 1899 map. The Power House also appears drawn for the first time. The railway is altered with the new works, with the Agent's House



1912 25 Inch to One Mile, OS. © Landmark Information Group Limited 2024. (Map 5)

becoming further developed with additions of extensions to its western end.

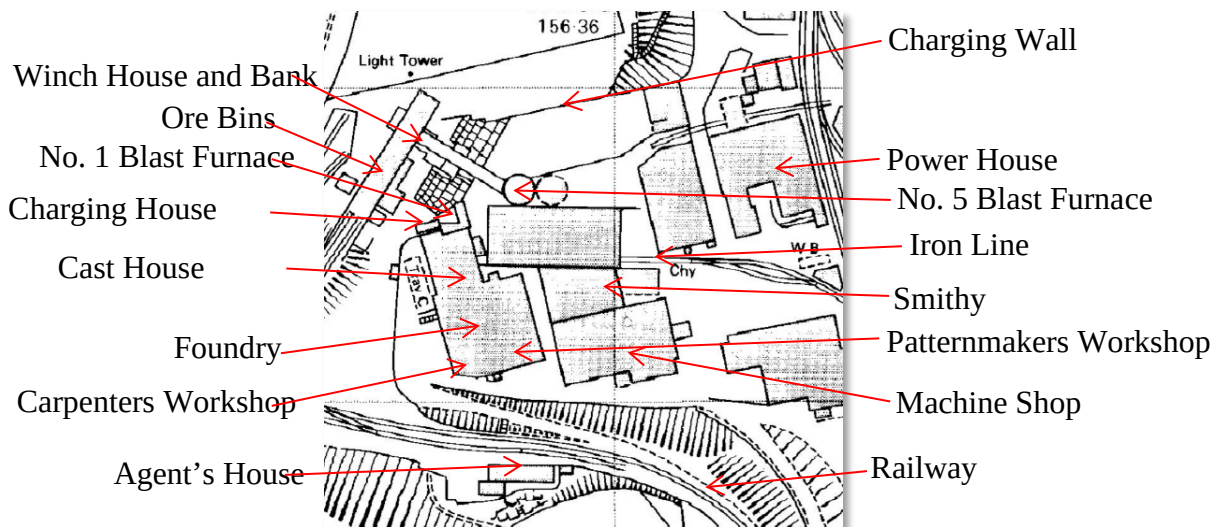
The next edition of the 25 Inch to One Mile, by now referred to as the 1:2,500 scale, is produced in 1963 (**Map. 6**). This map shows large developments within the historic ironworks site including the demolition of No. 4 Blast Furnace, the covering of the sunken iron line with a cast house, construction of the 1921 Machine Shop, the Smithy to its immediate north, and tanks and chimneys to the face of the Charging Wall. By this time, the additions to the Agent's House have been demolished, returning the property to the size shown on the section of 1812. A range of new, small buildings are built to the immediate west of the Power House, likely incorporating some elements of the buildings shown on the 1912 map.



1963 1:2,500 map, OS. © Landmark Information Group Limited 2024. (Map 6)

The map of 1984 (**Map 7**) was the last to be produced before the closure of the works in 1990. As such, the map shows the plant in its most developed state. The most obvious changes are the upgrade works to No. 5 Blast Furnace, which came in the 1960s and 1970s, when the charging of the furnace was mechanised. This is clearly shown with a new charging ramp from the top of the Winch House to its north-west, with the associate ore bins. The small range of buildings to

the west of the Power House have been demolished to make way for a new works building. The tanks and chimneys seen to the south of the Charging wall have also gone.



1984 1:2,500 map, OS. © Landmark Information Group Limited 2019. (Map 7)

2.3 Aerial Photographic Sources

This section will be concentrated on the heritage area and not the wider steel plant. Aerial photographs for this section can be found in **Appendix C**.

1946 – The aerial photographs of 1946 were taken vertically and show the heritage area and wider steel plant, albeit partially obscured by smoke. The image provides some evidence for the development of overall steel plant since the OS map of 1912. However, within the heritage area the image shows little discernible change over the previous 34 years.

1947 – The aerial photograph of 1947 is also obscured but appears to show a similar plan as that of 1946.

1948 – The image of 1948 is taken at an oblique angle and does not show the heritage area.

1951 – 62 – The aerial photographs of this period are taken at a higher altitude and are, therefore, not as clear as some earlier images. Despite this, they appear to broadly show the same plan as that of 1946, with the Powerhouse now visible.

1966 – The aerial photograph of 1966 shows the impacts of the development to upgrade No. 5 Blast Furnace with the area to the north of Old Number One filled with the construction for the new Winch House.

1971 – The aerial photograph of 1971, taken vertically shows the Steelworks office has been constructed on the site of a previous building, a little to the east of the Machine Shop.

1974 – The near vertical image of 1974 shows development on the site. One of the row chimneys seen in previous images has been removed. The Ore bins, and Winch House and bank have been constructed, and reconstruction of some ancillary buildings into a single structure East of the Iron Rail shed.

1987-92 – The 1987-92 images, taken vertically, correlate with the 1984 plan, demolished chimney bases can be seen along the north Charging Wall.

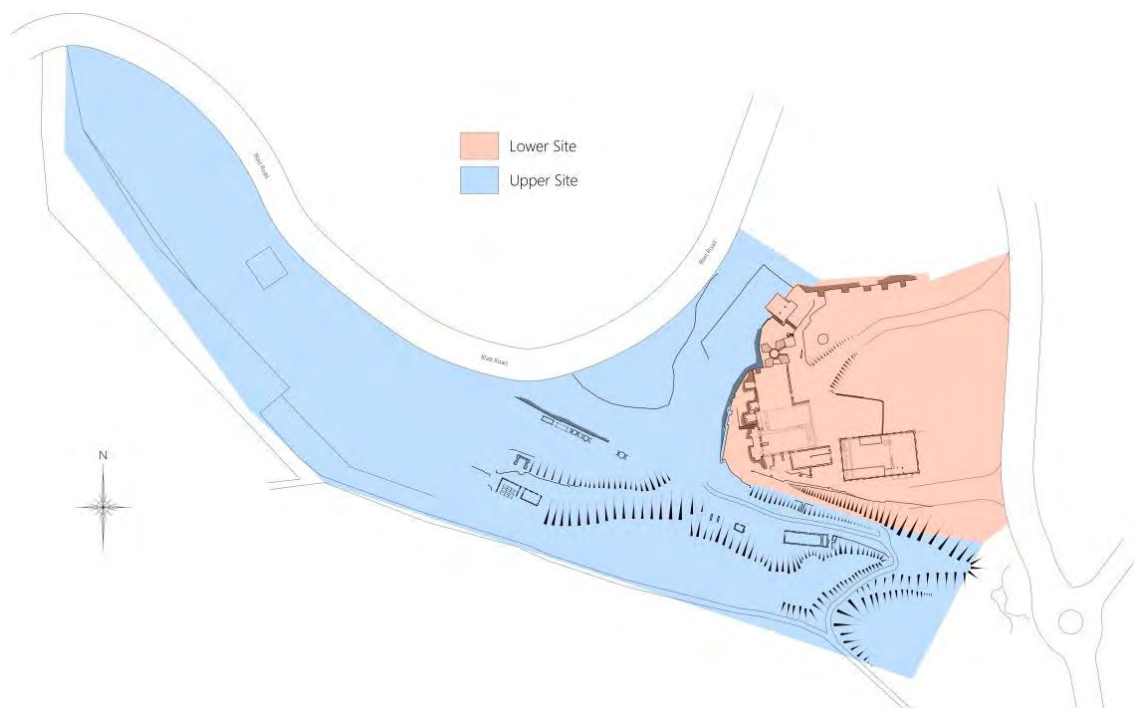
1995-9 – The 1995-9 images show change on the site with the Iron Line shed, Ore bins, Winch house and bank and ancillary buildings demolished. Most of the Steelwork's sheds and railway have been removed as well.

2002 – The 2002 image of the heritage area was taken at an oblique angle, and shows the No. 1 Blast Furnace, Machine Shop, Iron Line and Powerhouse remaining. The roofs of the Foundry and Casting House can also be seen.

2.4 Landscape Development

The landscape of the Brymbo iron and later steel works has seen a complicated development, having been transformed by heavy industry and the waste it produces. At Brymbo, as with any other large-scale metal producing operation, these changes can be attributed to two main elements. The first is the tipping of slag and spoil from the industries of Brymbo, namely iron, steel and coal. The production of iron slag and coal spoil from industrial activity was disposed of by tipping in unutilised areas of the site, typically in locations that were quickly and easily accessible from the main works. This deposition of material, in time, supported the second which utilised waste material to level and landscape the site to enable the development and expansion of the late 19th century steelworks.

The earliest area of landscaping was that undertaken by Wilkinson between 1792-3, when part of the site was levelled an area for the siting of his new ironworks. Reference is given to this levelling, with the construction of a parapet wall, by James Watt Jr. in a letter to his father, where he notes Wilkinson has spent £20,000 on this landscaping (Soldon, 73). Today, this area forms the lower part of the site around the Scheduled Area. Importantly, some of this early landscaping works survive, including the parapet wall within the Machine Shop of 1921, elements of the Charging Wall to the rear of No. 1 Blast Furnace, and the retaining wall to the south of the site road (bounding the Machine Shop and Carpenters and Patternmakers Workshop).



From the beginning of industrial activity, waste from the ironworks and coal mining began the transformation of the site. Waste is known to have been deposited into the valley to the east and within a small vale to the west, with cartographic evidence and reclamation work by Brymbo Developments Ltd confirming this (pers. comms. Andrew Foster 2014). Waste to the east filled the valley, with enough deposited by the 1880s that the Brymbo steel plant was constructed newly levelled ground (1872-1899, Denbigh XXVIII). To the west, waste subsumed the original road through the site, causing the rear of the lower site to be filled (behind the Cast House, Foundry and Carpenters and Patternmakers Workshop) and a new roadway formed in the bank

to the north of the Agent's House. This landscaping enables the laying of railway tracks to transport materials around upper site and for export.

With subsequent development and redevelopment of site infrastructure and buildings, it is probable that demolition material has been used as fill associated with landscaping. As such, the waste deposits and infill across the site may contain deposits and materials relating to the development of the site.

As a result of historic activity, the site has been subject to a complex landscape development and is likely to preserve historic land surfaces associated with the works early development, with potential for the survival of land surfaces, structures, and buildings.

On May 14th 1990, the complete closure of the steelworks was announced. 1,125 employees lost their jobs in addition to those who worked for suppliers and contractors. The last steel was produced at Brymbo on the 27th of September 1990, marking the end of approximately 200 years of iron and steel manufacture. Within the first few years of the closure, most of the main buildings were demolished and by 2003 little remained above ground, except for areas within and adjacent to the Heritage Area.



Since 1992, when Brymbo Developments Limited purchased the site a very extensive programme of opencast coal extraction, decontamination and land reclamation has taken place across most of the 87 hectares of industrial land that constituted the site of the former Steelworks, and area that is over 1Km north to south and is greater than 0.4Km wide in most locations. Brymbo Developments Limited were granted planning permission by Wrexham County Borough Council in November 1997 and by September 2003, the works had commenced. A record of the excavations is offered by Castlering Archaeology and their Watching Brief Report (No246) that was dated 2007.

Whilst no excavation took place in what was described as Brymbo Heritage Area, by September 2003, excavations were taking place in the vicinity of the 1970's Offices and the 1903 Power House, both now demolished and which stood just beyond the eastern boundary of the current

site. The text from the Castlering Archaeology Watching Brief report states that in the area of the 1970's Offices and the 1903 Power House,

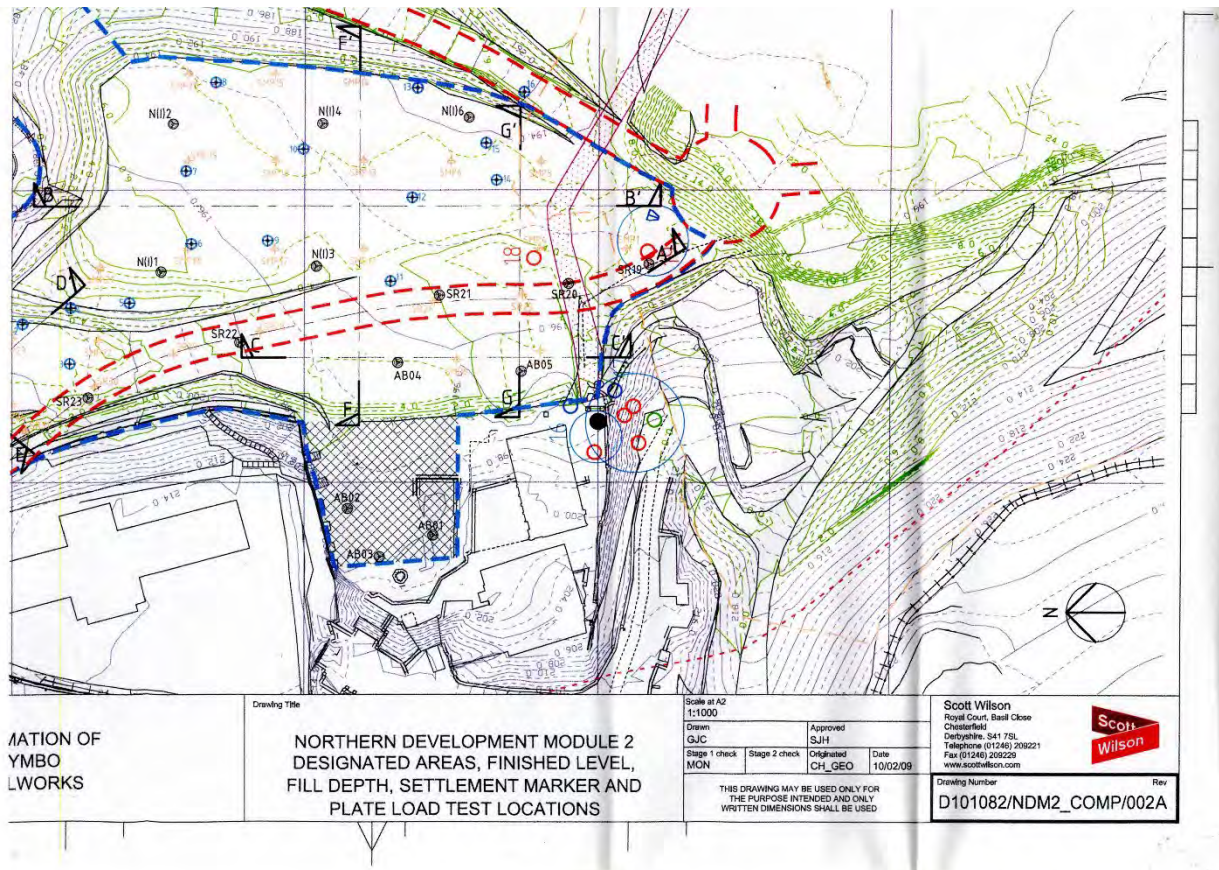
“Excavation to an average depth of 3-4m in front of the 1970s Offices revealed that the slags and burnt ash material had been cut through in the late 1960s period for modern services and telephone cable ducting (Plates 88-90). Excavation work progressed towards the boundary with the Heritage Area, exposing brick flues that would have served coal fired boilers (Plate 91). By November 2005, the four-storey office and canteen complex had been demolished.

Demolition of the Power House was undertaken in July 2005. The substantial brick building with pilasters was constructed in 1903 to provide electricity to the works. Subsequent additions were made to the south side. The building had housed a GANTZ alternator with 225hp Westinghouse vertical gas engine which provided 3 phase electricity. In 1906 the Powerhouse was extended to house a 900hp twin cylinder Nuremburg gas engine, replaced in 1914 by a Siemens generator driven by a 2500 steam turbine with two new Bettington steam boilers”. (Jones 1991, Plates 35 & 36).

Frost, P (2007) Former Brymbo Steelworks Site, Brymbo Wrexham – Archaeological Watching Brief by Castlering Archaeology; (unpublished report) p.9

Brymbo Developments Limited records (drawings and photographs) suggest that excavations/reclamation also took place in the area that will be known as Robertson Square. The scope of the ground disturbance was considerable, as can be seen on the attached survey drawings and supporting photographs. The average depth to these excavations was approximately 3 metres.

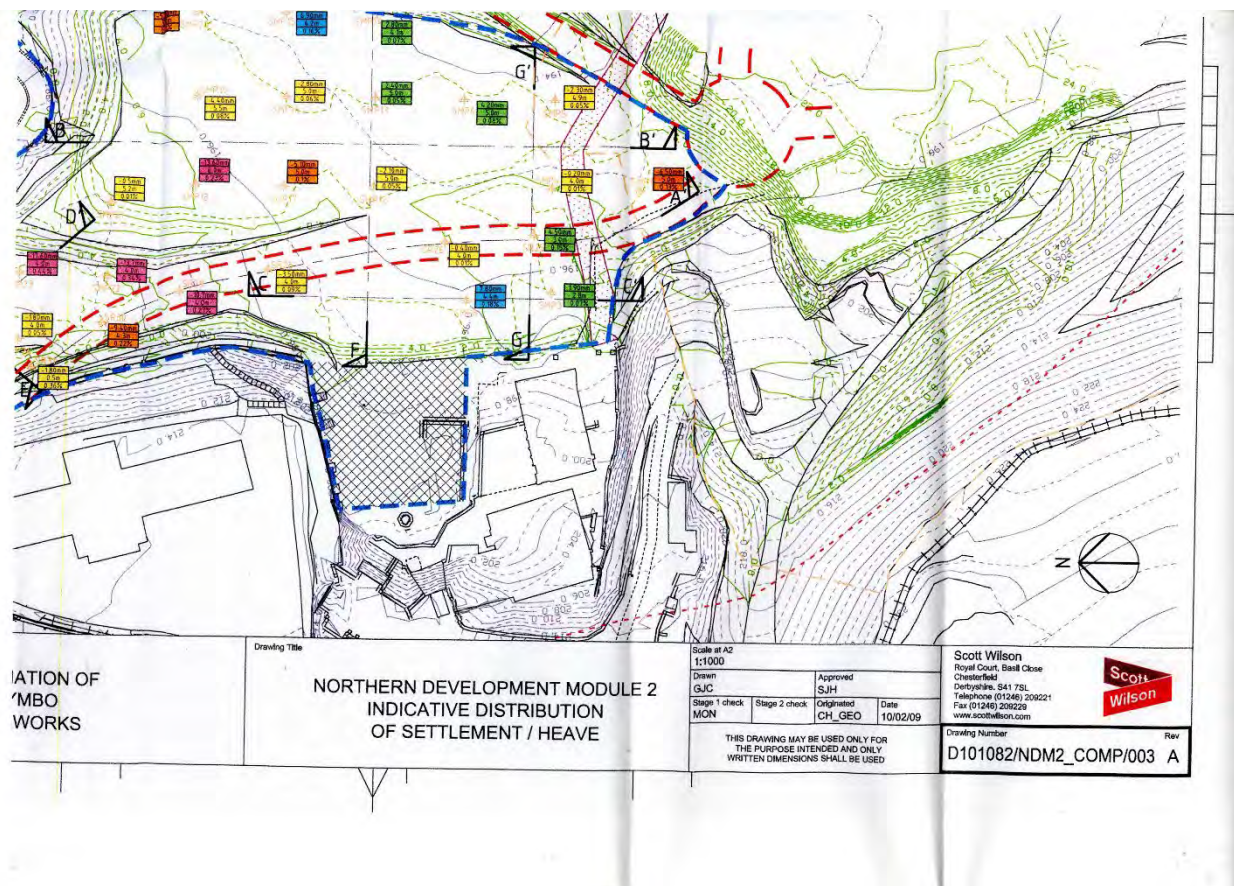


**Table 1: NDM2 Plate Bearing Tests' Results (Summary)**

Test number	N(I) 1	N(I) 2	N(I) 3	N(I) 4	N(I)6	N(I)7
Date	06/10/06	06/10/06	10/10/06	05/10/06	13/10/06	25/09/06
Max. settlement (mm) at applied bearing pressure of 240 kN/m ²	1.35	2.68	5.05	2.27	2.19	2.25
Approx. settlement (mm) at applied bearing pressure of 80 kN/m ²	0.6	1.4	2.5	0.7	1.0	0.9
Equivalent CBR value (%) at 1.25 mm settlement	55	9	4	12	17	25

Test number	SR19	SR20	SR21	SR22	SR23	AB01	AB02	AB03	AB04	AB05
Date	14/12/05	11/11/05	14/11/05	08/12/05	07/12/05	01/04/07	01/04/07	01/04/07	30/03/07	30/03/07
Max. settlement (mm) at applied bearing pressure of 240 kN/m ²	3.73	4.03	2.66	3.05	3.86	1.10	0.89	2.20	6.88	3.98
Approx. settlement (mm) at applied bearing pressure of 80 kN/m ²	1.7	1.5	1.1	0.9	1.0	0.4	0.5	0.95	1.75	1.7
Equivalent CBR value (%) at 1.25 mm settlement	4	9	13	15	13	>63	>60	17	6	5

Tests undertaken in
Apartment Car Park Area



2.5 Conservation Approach and Heritage Values

TACP with the Design Team, on behalf of Brymbo Heritage Trust are seeking to develop and apply an approach to the project and to conservation that will adhere to the structured approach that has been set out in the Cadw, Welsh Government Historic Environment Service published document 'Conservation Principles for the sustainable management of the historic environment in Wales' (2011)

<http://cadw.wales.gov.uk/historicenvironment/conservation/conservationprinciples>

where conservation is defined as – “the process of managing change to an historic asset in its setting in ways that will best sustain its heritage values, while recognising opportunities to reveal or reinforce those values for present and future generations” (2011. P35).

Key to this is the need for all actions and decisions to be justified and for them also to be consistent. Sustainable management begins with a clear understanding of cultural and natural heritage values to ultimately define the ‘heritage significance’ of an asset. ‘Informed understanding’ is a term that is often used to best describe this end position and the series of steps that are necessary to ensure the often difficult management decisions relating to change remain balanced and justifiable.

The measure as to whether the decisions are appropriate and proportional to their circumstances or context should always relate back to and be appraised against the six principles for the sustainable management of the historic environment in Wales. They are:

- Historic assets will be managed to sustain their values.
- Understanding the significance of historic assets is vital.
- The historic environment is a shared resource.
- Everyone will be able to participate in sustaining the historic environment.
- Decisions about change must be reasonable, transparent, and consistent.
- Documenting and learning from decisions are essential.

Managing change to historic assets successfully and applying the Conservation Principles means taking decisions based on both a sound understanding of what is important and special about them and the impact of the proposed change. When thinking about any change, we need to begin by gaining a good understanding of the significance of our historic assets, and the meaning and value that they hold for us.

To help reach a shared understanding of the special qualities of our historic assets, we can also consider significance as a family of four heritage values.

- **Evidential value:** every historic asset has a unique story to tell. The surviving historic fabric and detail — whether above or below ground — helps us to understand when and how each historic asset was made, how it was used and how it has changed over time. Pictorial and documentary sources may also increase our understanding.
- **Historical value:** historic assets may illuminate particular aspects of the past. They can help us to understand how people lived and worked, and the beliefs and values they cherished. They may be associated with notable people or events. Through evocation and association, historic assets can connect past people, aspects of life and events with the present.
- **Aesthetic value:** we may value historic assets for their visual qualities, whether they result from conscious design and craftsmanship, or from the fortuitous effect of change over time. Tastes alter and so do historic assets: earlier records and careful analysis of what survives may help in appreciating aesthetic value.
- **Communal value:** historic assets may be cherished by the people and communities who relate to them, and they may play an important part in collective experience or memory. Historic assets can have economic as well as social value with the capacity to provide a valuable source of income or employment.

These concepts have evolved from internationally recognised Conservation Charters, manifestoes and principles that are then underpinned by the World Heritage Convention and National Historic Building Legislation or alternatively are championed by Amenity Societies such as The Society for The Protection of Ancient Buildings, The Victorian Society, The Society of Industrial Archaeology and The Ancient Monuments Society. In Wales the primary legislative framework for the care of historically significant buildings, structures, sites and assets has evolved by the Historic Environment (Wales) Act 2016, with Technical Advice Note 24: The Historic Environment. With reference to this Heritage Impact Assessment, the reasoning and justification for change will be set out where the integration of conservation with other interests that relate to regeneration and the benefits to the heritage asset itself and/or the sustainability of the wider community, in this urban setting.

The significance of the effect of change on the heritage asset is set out within the document, but specifically the Summary Heritage Impact Assessment on the basis of the principles that are set out in the ICOMOS Guidance of Heritage Impact Assessments for Cultural World Heritage properties (January 2011) and within BS7913:2013 Guide to the conservation of historic buildings, where the magnitude of the impact or change can be considered against the value of the asset. A clear range of descriptors whether negative or positive by which scale or severity of the impacts or changes can be judged, taking into account their direct and indirect effects and whether they are temporary or permanent, reversible or irreversible will be ranked on the following basis –

- | | |
|---|---|
| Whether the change is Beneficial or Adverse | <ul style="list-style-type: none"> - No Change (Neutral Impact) - Negligible Change - Minor Change - Moderate Change - Major Change |
|---|---|

2.6 Statement of Significance and Heritage Values

Much of the documentary information available to describe the development of 'The Heritage Area' at Brymbo has been from the review of secondary source material, maps, diagrams, paintings and photographs. The review has been reinforced by the preparation of a gazetteer of the key assets by Archaeo Domus, and in doing so a range of new references and interpretations have been compiled for the first time.

'The Heritage Area' is the location on which the Former Brymbo Ironworks previously stood and includes No.1 Blast Furnace, the Cast house, Foundry and Carpenters and Patternmakers Workshop, amongst many other features and artefacts of significance that stand at the lower site level. This area is designated a Scheduled Monument. To the west and south of this location is a raised terrace level that includes the former Agents House, The Blast Colliery and a number of other railway and transport infrastructure assets/artefacts.

Notwithstanding the heritage values associated with the wider post-industrial landscape setting to the heritage area, the standing remains, together with the hidden evidence of human activity on the site is **High** and of **National and in many ways of International Significance**. This is already reflected by the Scheduled Monument designation afforded to The Heritage Area and the Grade II* Listing that is placed on The Agent's House. In future years, and as the findings of further research and investigation becomes available, the understanding of the setting and the Industrial Activities that took place will be better understood and it is possible that a review of the heritage designations will take place.

The **Evidential Value** of Brymbo Heritage Area is **High**, both in regard to the remains of the standing structures, buildings and objects, but also because of the Archaeological Potential that remains in this area, by contrast with the wider site and context of the Steelworks that closed in 1990 because of the disturbance and displacement of material that occurred with the open cast mining and then the environmental remediation of the land that subsequently took place. The condition and vulnerability of the standing remains is of concern and the need for emergency dismantling of some building elements temporarily on Health and Safety grounds, primarily roofs and roof structures during the last decade has broken to a degree, the evidential continuity of the assets, since the closure of the works in 1990. Similar vulnerabilities persist to safeguard and retain key details, fixtures and artefacts in context across the site and which relate to the industrial processes that took place during the numerous periods of site development and change.

The **Historical Value** of Brymbo Heritage Area is **High**, and of **National Significance**, with the potential of it being **Very High**, and of **Outstanding Universal Value** because of its documented association with key individuals associated with the Industrial Revolution and because of the effect that these initiatives, discoveries and processes have had on the development of society from that moment to the present day.

The **Aesthetic Value** of Brymbo Heritage Area and the way in which people draw sensory and intellectual stimulation from this site is currently evaluated to be **Medium** and of **Regional to National Significance**. The interpretation will vary, subject to the audience and because of the changes that have taken place to the standing remains in recent decades. The site has been a result of continuous change, its appearance being determined by the requirements of evolving industrial processes. Further input will be sought and the views of others with differing knowledge and appreciations of the site, together with its external appearance within the setting will be considered. For example, the Aesthetic Value of the products produced from the iron and steel produced at Brymbo may be of National and International Significance in their location of use and the pictorial records and written descriptions will be more powerful and influential to the cultural heritage of those audiences.

The **Communal Value** of Brymbo Heritage Area is very strong indeed for the communities locally and regionally who have flourished or who have encountered incredible changes and hardship due to the changing fortunes of the iron and more recently the steel industry in this locality. The collective experience, memories and identity of these values remains strong and

the evidence that supports these social values can be evidenced through the commemorative structures, memorial and archival records. The heritage value is currently evaluated to be **Medium** and of **Regional to National Significance** and as outlined above further input will be sought and the views of others with differing knowledge and appreciations of the site, will be obtained as the search for and the use of raw materials. As an example, the fluctuating fortunes of Brymbo through the sourcing of ironstone and coal from other places Nationally and Countries internationally has had a direct impact on the economy and social history of those communities over generations and centuries.

Geological/Palaeontological, Wildlife and Habitat Designations

Whilst situated immediately to the south east of the main Brymbo Heritage Area, the discovery and research that has taken place more recently to confirm the International geological and Palaeontological Significance of The Fossil Forest is considerable. Brymbo Fossil Forest Site has been designated as a Site of Special Scientific Interest (SSSI) for the unique, upright preservation of fossilised carboniferous plants including club mosses and horsetails. Please refer to Appendix B for further information.

Brymbo steelworks closed in 1990, and during the late 1990s plans were agreed to reclaim and redevelop approximately 85% of its surface area for housing, a new school, retail, employment and health centre, known as the 'the commercial development site'. The remaining 15% was identified as being of significant heritage value and was earmarked for longer term restoration and re-use as a visitor attraction, known as Brymbo Heritage Area (BHA). BHA includes the Brymbo Fossil Forest, Brymbo Ironworks, remains of the 19th century Blast Colliery and several 20th century steelworks buildings. The colliery area was designated as an informal ecology area, where any restoration work would be light touch and hard landscaping would be limited to pathways, fencing and so on.

In 2004, a Welsh Government great crested newt derogation licence was obtained, and great crested newts were translocated from the commercial development site to enable open cast coal recovery before its subsequent making good and reclamation for future built development. Permanent newt fencing was erected in the colliery ecology area and mitigation ponds created for the newts. Unfortunately, no detailed results from the translocation have been found, however, it is thought that approx. 5000 individuals (including eggs) were translocated. Since the translocation no formal monitoring of the mitigation has been carried out.

The Brymbo Heritage Area Project is seen as a flagship community-led regeneration scheme for NE Wales. The project supports several key Welsh Government policies including those covering rural regeneration, tourism, heritage and culture, and the Wellbeing of Future Generations (Wales) Act 2015. Great crested newt surveys have been taking place since spring 2018 by Enfys Ecology with Brymbo staff. This will enable an assessment of the population to be undertaken. Following these surveys, further habitat surveys of the site will take place and a management plan produced to ensure that management is put in place for protected species and the habitats on site. This will involve habitat creation (pond creation, refugia and hibernacula creation) as well as habitat management.

The Brymbo Heritage Area also contains species which in themselves are of National and European designation significance. The species include badgers, bats, birds and other invertebrates such as butterflies. The broadleaved woodland and ponds to the west of The Brymbo Heritage area are also listed under Section 7 of the Environment (Wales) Act, 2016. At present the licence is being submitted to enable site management and safety. No works requiring planning permission are to take place on site, however in the future, there will be works relating to planning applications which will need to be assessed. Please also refer to the Brymbo Steelworks Heritage Area Ecological Management Plan, prepared by Enfys Ecology.

The Geological/Palaeontological significance of Brymbo Fossil Forest is **High** and of **National Significance** since its discovery in 2005, but as more investigations take place, The Fossil Forest is increasingly becoming recognised as a Site of **Outstanding Significance** and therefore a Site of **Outstanding Universal Value**.

The Statutory Protection of a number of species that live within or immediately adjacent to Brymbo Heritage Area demonstrate that the Natural Significance of the area is **High**, particularly in respect to the continuing presence of Great Crested Newts and Bats and is of **Regional and National Significance**.

Summary Assessment of Significance: Heritage Values

The basis on which the summaries have been developed for Brymbo Heritage Area and specifically the four key heritage values will change as the understanding about a place evolves and becomes more detailed. A document such as this will remain 'active' and the Statement of Significance will change with time as new evidence emerges, or perceptions of the historical context in which the Brymbo Heritage Area stands will also change –

Evidential Value

- The standing remains within the 'core' of the site reflect the organisational structure, sequential development and aspect to the operation of the Former Brymbo Ironworks and later as ancillary functions to the Steelworks until its closure. With the exception of The Agent's House (prior to 1809) and walls associated with the Puddling Process, the remains are post-1820 and include the No.1 Blast Furnace, the Cast House, the Foundry, The Carpenters and Patternmakers Workshop, the associated charging walls. Beyond these immediate locations, the evidential value would also include The Blast Colliery with its associated infrastructure, together with the Machine Shop (though note part of the Wilkinson era retaining wall through the building)
- As a post-industrial site that has undergone considerable change, during its period of use, the main locations of key processes at different times are understood as is its functional relationship with the larger steelworks site to the east and to the south of the current Heritage Area that is associated with the original Plasnewydd Ironworks.
- There is a high probability that Archaeological remains will be present within the site that better informs/confirms the sequence of development, construction and use of Brymbo Ironworks and its ancillary functions. There is a high probability that earlier casting floors and pits will exist at key locations together with chemical information from the process waste/slag which could be chemically assessed to better inform about the processes and the composition of the raw materials used. Valuable information of past activity is held in the waste, or bi-products within the site which will/may be of significant benefit to our understanding of place, particularly as the analysis techniques continue to develop and evolve and where deposits could be found in context.
- The machinery, large objects, tools and remaining text/graffiti on walls that record the way that the site was used or operated towards the last years of production is important both as an industrial and social record of the times.
- The collection of timber patterns on site are important and should be stored in appropriately controlled environmental conditions.
- Additional evidential values can be gained from the strong documentary sources, pictorial records and library/museum/records office collection information that is held about Brymbo and its significant industrial heritage. Locations include - by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW), the National Library of Wales, the Records Offices of Wrexham, Flintshire and Denbighshire and the collection of images and artefacts at Wrexham Museum. Birmingham Reference Library holds The Boulton and Watt Collection 'and agreement relating to Brymbo', Cheshire Records Office which contains the Grosvenor Papers and the Birch Collimore deposits. Ironbridge Gorge Museum Library hold the W H Chaloner papers and manuscripts. Locally, the personal collection that has been accumulated by Colin Davies that includes map, plans and photographs of Brymbo is significant and includes a copy of the 1958 Luther Griffiths manuscript and material not surviving elsewhere.
- A significant corpus of published books, research publications, patents, periodicals, trade literature and leaflets are available that relate to the history of Brymbo, the ironworks and the steelworks and the respective industries in the UK and worldwide. The subject matter includes the history and development of The Iron and Steel Industries, Industrial Process, Materials Science, the history of Mining and Quarrying in the locality and advancements in the Railway/Transport of history, locally, regionally and nationally.

- Changes to the topography and to the composition of the communities that surrounded the works. The profile, buildings and communications links through the landscape has changed regularly throughout the history of Brymbo Ironworks and Steelworks. As an example, much of the settlement of Lodge was lost from 1959 onwards, when it was covered by the plateau that was extended to the east of the current Heritage Area to accommodate the construction of the new Electric Melting Shop
- The effect and impact on communities and regions from the distribution and export of iron and steel products manufactured at Brymbo whether locally, nationally or internationally. Reference is made to the impact that cannon produced at Brymbo have had on wars and conflicts such as the Franco-British Wars and the Peninsula War or in connection with the Russo-Turkish War on both sides. The early water supply infrastructure installations with cast iron pipework in Paris and/or more locally, within the Severn Valley, the bridges that were designed by Thomas Penson are very significant and include those that are still in use at Caerhowel, Abermule and Llandinam. Significant engineering advancements have utilised iron and steel products that have been developed and made in Brymbo. Further research is required to collate lists and locations worldwide, where Brymbo iron and steel has been used.
- The geological and palaeontological evidence of The Fossil Forrest, its future potential to be site of worldwide significance that may surpass all other values of significance.

Historical Value

- The remaining buildings, structures, large and small objects of Brymbo Heritage Area hold a significant group value that catalogues the impacts and advancements of the Industrial Revolution in Wales and tell the tale of consecutive ownerships of the works, the mixed fortunes of many and of production process and material advancements that has shaped and influenced our lives.
- The varied way by which the industrial and socio-economic history of Brymbo Iron and Steel Works has shaped the built development/structure of Brymbo, Lodge and numerous other surrounding settlements and has influenced the fortunes and the well-being (both positive and negative) of its populations cyclically since the first iron was tapped.
- The influence of Henry Robertson to pursue the passing by Parliament in 1844 of 'The North Wales Mineral Railway Act' is considerable to expand access regionally to materials and new markets across the country and worldwide. The links thereafter to the midlands and beyond is also significant to provide access to ironstone in Oxfordshire, together with the links with those communities.
- The links, associations and influences that iron and later, steel products have had on national and world events is considerable and include the cast iron pipework that built the Paris water infrastructure, cannon that was used on both sides of the Franco-British Wars, the Peninsula War or in connection with the Russo-Turkish War. Structures such as the bridges and structures of Thomas Penson, numerous engineering advancement such as Boulton & Watt steam engines, materials in specialist fields of industry, product design and manufacturing.
- Connections with influential individuals and groups of people throughout the history of Brymbo Ironworks and later the Steelworks. The impact and influence that those people have had on the technical enhancement or production of metals and their other works politically, socially, philanthropically or commercially or commercially across society.
- The development of new process such as the first use of 'the Basic Open Hearth' process of steel production in the UK, the introduction of quality control and laboratory procedures to significantly improve the quality and consistency of the product (specifically steel). Advancements in the re-use and recirculation of gasses and methods of making the process more energy efficient are considerable and of some significance.
- The interconnected histories of the supply chain and industries associate with Brymbo Ironworks and Steelworks, such as the Blast Colliery, the Caello Brickworks and the fortunes of other iron and steel producers across Britain or worldwide.
- Singular events, whether positive or negative have occurred throughout the history of Brymbo Iron and Steel Works. Accidents and incidents have occurred periodically which have seen life changing impacts and the loss of life, but also celebrations or 'one-off' moments such as the 15 tonne lump of coal that was extracted from the Brymbo Collieries

and transported for display at the Crystal Palace during the 1851 Great Exhibition. The exhibit won a bronze medal for its producers.

- The health and well-being of Welsh communities in North East Wales. The movement of people and families into and away from the area during the fluctuating fortunes of the metal producing industries of the area.

Aesthetic Value

- The artistic representations of Brymbo, the Ironworks and Steelworks have been noted within the earlier section relating to the documentary evidential value of the site, but the representations should also be appreciated for their aesthetic value in their own right, from the Cartouche of the Plan of the Brymbo Estate, 1798 or the Longitudinal Section of the Strata at the Brymbo Colliery, December 1812, and more recently the photographs of events or as a documentary record of life at Brymbo. Photographs were taken regularly, and this resource is very strong.
- Collections of photographs are held by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW), the National Library of Wales, the Records Offices of Wrexham, Flintshire and Denbighshire and the collection of images and artefacts at Wrexham Museum. There is a strong tradition of photographing the works and of documenting the lives and processes that constituted the production of either iron or steel. The library of documents and photographs held by ex-employees and locals about the history of the works is substantial, and the aesthetic value in this context is as important as the evidential values and/or the communal value collectively to the local community and the wider context of the British steel industry.
- The sublime qualities and sense of scale or overwhelming awe conveyed by the dominant presence of the iron and steel industry at Brymbo has been lost within the current post-industrial landscape. The aesthetic qualities and understanding of how the works framed, shaped and dominated the views from all directions cannot be underestimated. The remaining buildings to be found in the Brymbo Heritage Area have developed in an ad-hoc manner, and as such the compositions have related to the pressures or economic viability or technical advancement alone.

Communal Value

- The fortunes of the communities around Brymbo (and much further afield in respect to the supply of raw materials or the supply of product) were intrinsically linked. For example, Iron ore was supplied from various locations in the UK such as from Oxfordshire, but in later years from was quarries in northern Spain.
- The collective memory associated with the iron, steel and mineral ore industries is very significant and remains the case through to the present day. The memories and impact of the industry on the population of Brymbo and the wider Wrexham catchment is considerable. The memories are both individual and collective and are both positive and emotionally difficult or uncomfortable to recall.
- Accidents and on occasion loss of life impacted on families and the wider community. For example, in 1869, two men and a boy lost their lives due to an explosion at No2 Blast Furnace in 1869 and in 1886 a throttle jammed causing an engine in the mill to explode. The incident killed 3 persons and injured a further three.
- William Darby established Brymbo Institute and Reading Room and in 1887 'Brymbo Institute and Cocio Room Society Ltd' reorganised as 'Brymbo Workman's Institute'. Improvements to develop workers' rights, health and well-being practices is considerable
- Changes were considerable within the communities that surrounded the works. Much of the settlement of Lodge was lost from 1959 onwards, when it was covered by the plateau that was extended to the east of the current Heritage Area to accommodate the construction of the new Electric Melting Shop.
- Brymbo Sports Ground also played an important part of the social life of the steelworks and the local community. The sport ground disappeared in 1977 under the £4
- Social History and communal value of Brymbo Silver Band during 20th Century
- The Brymbo Sports and Social Club was at the heart of community activity during 20th Century both in terms of entertainment and the arts as well as sports of all types.

Section 3.0 The Proposals

3.1 Design Proposals

The historic environment is a resource that we need to cherish and protect for future generations. Protection, however, need not prevent change. Positive change can increase the long-term sustainability and economic viability of historic assets. It can also bring improvements to our understanding and appreciation of the historic environment as well as social and economic benefits through increased regeneration and tourism.

Cadw website (2023) - Cadw's Role in Planning

The ambition of this project is to consolidate, repair and to redevelop the site of the Former Brymbo Iron and Steelworks and to adaptively re-use the buildings and the site as a heritage site, a community hub and place for education and training. The conservation-led development will encourage the participation of the community and volunteers to manage Brymbo Heritage Area and the Fossil Forest as a sustainable tourism and education business that will reinforce a circular economy locally and a network of businesses regionally.

It is proposed that the delivery of the project and the majority of both the most urgent repair priorities and the repurposing and adaptive re-use of the key buildings will be undertaken during a single phase of capital works to accommodate the specific requirements, conditions, and outcomes of funders and other partner agencies and stakeholders to the project.

The procurement/delivery of the works on a building by building and area by area basis will include the following key tasks and operations and the Assessment of Heritage Impact will also consider the Direct Impact of the developments, but also that of the Indirect (Visual) Impacts and in this regard, the indirect effects of the proposed developments was assessed via field observations. It takes into consideration the indirect (visual) impacts both to and from the development area.

a. The Machine Shop – Repair, Refurbishment and Extension for Visitor and Training Use

1. Recovering of the metal roof and asbestos decontamination. Introduction of insulation within a new built-up roofing system with associated eaves and verge detailing.
2. Brickwork repairs and structural steelwork repairs to the building envelope.
3. Repairs to the existing metal windows and clerestory fenestration with part thermal upgrade with the introduction of slim, double glazed units with metal capping beads.
4. Gullies and below ground drainage will be checked, repaired and overhauled (foul and rainwater). Construction of new foul and surface water drainage locally.
5. Introduction of new metal windows to existing arched openings on the east elevation.
6. Demolition of the late 1990's office accommodation within the Machine Shop
7. Construction of two new lean-to extensions to the north and south elevations with foundation details and drainage connections.
8. New external door opening and the repair of existing doors to the building.
9. New underfloor heating and floor slab to the lower ground floor visitor reception area.
10. Supply and installation of a new vertical platform lift and visitor staircase following the removal of the existing metal steps.
11. Construction of new upper ground floor insulated floor slab, internal partition wall with slab-thickened foundation and integrated accommodation.
12. Alterations to the existing internal accommodation that is being retained.
13. Upgrading and reinforcing where applicable of the incoming utilities to future-proof the building and its operations.
14. Complete Plumbing, Mechanical and Electrical installation required throughout, including underfloor heating, energy efficient lighting, small power and water efficient sanitaryware and to improve the energy efficiency of the building.
15. Installation of data/IT, Wi-Fi, CCTV and security alarm systems to support the new functions.
16. Installation of sanitaryware, fixtures and fittings throughout
17. Installation of commercial Kitchen facilities and equipment.

18. Installation of the new interpretation proposals at the east end of the building.

b. Patternmakers Workshop – Consolidation, Repair and Adaptive Re-use of the Building

1. Masonry repairs to stabilise and consolidate the existing stone and brickwork walls throughout.
2. Reinstatement of the existing timber roof structure using some original components, building records and photographs with the reinstatement of the slate roof covering. Existing details to include the reconstruction of roof ventilators, ridge, hip and gable/copping details. The reinstatement of a steel canopy to the west elevation is also proposed.
3. Repairs to the existing metal and timber windows throughout. Some replacement windows are required due to the poor condition of the existing. Repairs or replacement windows are to be undertaken on a like for like basis.
4. Repairs to existing doors, externally and internally.
5. Repair and/or reinstatement of existing intermediate floor structure and floor finishes.
6. Repair and/or reinstatement of internal room finishes.
7. Demolition of some late C20 walls, fixtures and fittings at lower ground floor level to incorporate the new interpretation installation.
8. Installation of a new accessible WC and a compact kitchen, storage and an access ramp to the upper ground floor level.
9. New foul drainage connection from the accessible WC and compact kitchen.
10. Upgrading and reinforcing where applicable of the incoming utilities to future-proof the building and its operations
11. Complete Plumbing, Mechanical and Electrical installation required throughout, including heating, energy efficient lighting, small power and water efficient sanitaryware.
12. Installation of data/IT, Wi-Fi, CCTV and security alarm systems to support the new functions.
13. Installation of sanitaryware, fixtures and fittings throughout
14. Installation of compact Kitchen facilities and equipment.
15. Installation of the new interpretation proposals at the east end of the building.

c. Former Agents House - Consolidation, Repair and Adaptive Re-use of the Building

1. Masonry repairs to stabilise and consolidate the existing stone walls throughout. Some rebuilding is required to the lean-to at the west end of the building.
2. Reinstatement of the existing timber roof structure using some original components, building records and photographs with the reinstatement of the slate roof covering. Existing details to include the reconstruction of chimney stacks ridge and hip and details.
3. Repair and reinstatement of timber windows throughout.
4. Reinstatement of timber doors externally and internally.
5. Introduction of new structural support to the walls of the building interior. Part reinstatement of the existing first floor structure and floor finishes.
6. Removal of recent wall, floor and ceiling linings.
7. Upgrading and reinforcing where applicable of the incoming utilities to future-proof the building and its operations
8. Complete Plumbing, Mechanical and Electrical installation required throughout.
9. Installation of data/IT, Wi-Fi, CCTV and security alarm systems to support the new functions.
10. Installation of the new interpretation proposals within the building

d. The Core Heritage Area – Consolidation and Repair of the standing remains.

1. Masonry repairs to stabilise and consolidate the existing stone walls, vaulted spaces, and structures to No1 Blast Furnace, The Foundry and Cast House, the Cupola Furnaces, adjacent store areas and the Charging Wall. Plate repairs to No1 Blast Furnace.
2. Structural repairs beneath the Cupola Furnaces
3. Repairs to the overhead crane and structure within the Foundry area.
4. Repair and re-use of C20 ancillary building to the east of the foundry as a cider brewery space.
5. Drainage repairs to intercept water from the adit and lengths of new drainage to divert water from the upper terraces to the NW and W of the charging walls
6. Installation of the new interpretation proposals within the Foundry and Cast House

e. Story of Steel – Stage and Interpretation Spaces at the NE corner of Robertson Square

1. Construction of a stage in front of interpretation spaces contained within 2No x 40-foot and 1No x 20-foot metal storage containers.

2. Complete Plumbing, Mechanical and Electrical installation required throughout.
3. Installation of data/IT, Wi-Fi, CCTV and security alarm systems to support the new functions.
4. Installation of the new interpretation proposals within the steel containers

f. Hard and Soft Landscape Design Proposals with Drainage – Sitewide proposals

1. Construction of Hard Landscaping Proposals, surfacing, bollards, boundary fencing and railings.
2. Construction of Soft Landscape design proposals.
3. Construction of the drainage strategy

The range and nature of the works associated with this project, will involve change and in numerous instances the interventions are not reversible in the sense that some of the original building fabric is being altered or removed. However, where change is being proposed its impact is carefully considered and reviewed in the context of its heritage values and the current understanding of its significance. Where practicable, interventions will be offset by attempting to reinstate lost or missing details. Where building fabric will be lost or where localised loss of evidential value will take place, these measures will again be offset or mitigated by a programme of archaeological and/or building recording to a specification and level of detail that is acceptable to the LA and Planning Archaeologist. It is anticipated that all excavations undertaken will be managed by the oversight of an Archaeological 'Watching Brief' and where features of finds of potential heritage value, interest and significance are identified, the Project Archaeologist will have a 'Stop Order' authority to coordinate and manage the widening of excavations and/or to initiate the continuation of the excavation Archaeologically with the application of the approved Written Scheme of Investigation / Archaeological Specification.

The project proposals are also considered in respect to the viability, vibrancy, and commercial sustainability of the 'Stori Brymbo' project in the future. The recommendations of all the proceeding project development work have demonstrated that change is needed to realise a sustainable business model that will return the buildings and structures of the Former Iron and Steelworks into beneficial use create a new Community Hub and Visitor Attraction in this historic setting. The programme of work for the duration of the project will seek to future-proof the buildings and structures where practicable by providing energy efficiency measures and utilising technologies where appropriate that will reduce the carbon footprint and the environmental impact of the change. Adaptations to climate change are also proposed at every opportunity where the impact on significance permits to help protect the buildings from the worst of the changes that are likely to be experienced and that are likely to become more extreme when endeavouring to manage the ongoing upkeep and conservation of the former Brymbo Iron and Steelworks in the future.

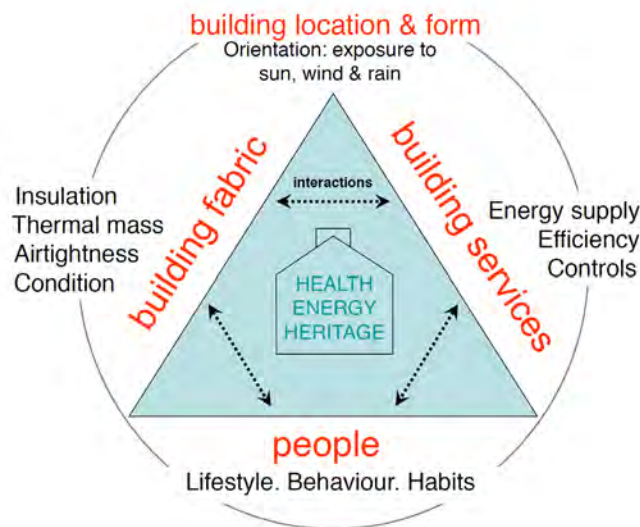
3.2 Energy Efficiency and Environmental Considerations

A crucial component to the project is the building services strategy that has been developed to improve/optimize the energy and carbon emissions performance of the buildings and structures across the site, to improve comfort and to proportionately manage the impact/reduce fuel bills. The need to consider the impact of sustainably managing and maintaining the buildings and structures on the environment is a high priority and a whole building energy planning approach is being proposed. More broadly, improving energy efficiency forms part of the wider objective to achieve a sustainable environment as set out in the Welsh Government's Well-being of Future Generations (Wales) Act 2015. A further document that is crucial to the assessment of this building is the "Historic Environment and Climate Change in Wales' Sector Adaptation Plan, (2020) where strategies are outlined that seek to raise the awareness of the risks and opportunities ahead. There is also an urgent need for the historic environment to be more resilient from the impacts of climate change whilst also reducing greenhouse gas emissions at every opportunity.

"How to Improve Energy Efficiency in Historic Buildings" (2022) is guidance aimed at owners and managers of historic buildings. It describes a 'whole building approach' to devising and implementing energy efficiency improvements that:

- avoid harming the significance of the building.
- are effective, cost efficient, proportionate and sustainable.
- ensure a healthy and comfortable environment for occupants, and
- minimise the risk of unintended consequences.

In addition, this approach provides an effective framework for communication and understanding between the various parties involved in the process. These include assessors, designers, installers and the people who occupy and manage the building. The four most important factors affecting a building's energy use in operation are



1. **Building location and orientation:** The performance of a building envelope will be affected by regional variations in climate and its exposure to wind, rain and sun.
2. **The Building Fabric:** The form and design of the building envelope and the physical properties (and condition) of the construction materials and components also affect performance.
3. **Building Services and Equipment:** Heating, cooling, lighting and ventilating a building all use energy. Energy is also consumed by equipment and appliances employed for business, cooking and entertainment.
4. **People:** Occupants use their buildings in different ways. The amount of energy they use varies too. The number of people in a building, the levels of comfort they expect, and the technical services and equipment they require all have a significant effect on how much energy is consumed.

Typically, the strategy has been developed for The Former Iron and Steelworks site approximates aspects of the 'mean, lean, green' philosophy (minimise the demand for energy, materials, water and other resources ('mean'). The design, management and control of its services and systems to ensure they operate as efficiently as possible ('lean'). Supplying energy and other resources from renewable or sustainable sources ('green').)

Where constraints may impact negatively on heritage values and the significance of the building/heritage asset, a more nuanced approach is taken to offer cost-efficient and less risky measures that have less impact on the building fabric, the way a building or structure is occupied, used or managed. A whole-life approach to the specification, supply and installation of ethically sourced products and materials has also been considered to ensure that low impact solutions are implemented that will not impact negatively on the condition, durability and integrity of the building fabric in the future.

3.3 Habitat / Wildlife

Please refer to the accompanying Brymbo Heritage Site Ecological Surveys, Roost Assessments, Bat Emergence, Bird, Reptile and Amphibian Surveys undertaken by Enfy's Ecology Limited dated 2.08.2023. The general survey conclusions for the Heritage Area, including The Machine Shop were –

- The surrounding area, particularly to the southern and western edges of
- the site, has 'highly suitable' habitat for commuting and foraging bats
- with good connectivity to further suitable habitat areas.
- No potential roosting features were identified within the Machine Shop
- and therefore was found to be of negligible suitability for bats (Collins, J.,
- 2016).
- The Foundry Area was found to be a day roost for a small number of
- lesser horseshoe bats.
- The small building in the north-western corner was being used by an
- individual brown long-eared bat
- It is highly likely that an individual/low number of common pipistrelles are
- roosting in crevices in the exterior wall of the Pattern Shop.
- It is likely that an unknown number of lesser horseshoe bats are using the
- mine adit as a hibernation roost.
- All buildings and walls within the site provide opportunities for nesting
- birds.

The Recommendations broadly outlined that –

- As bats have been found to be using a minimum of two recesses within the Foundry Area, the blast furnace, and the small building in the northwestern corner of the site, a licence will be needed before works can commence in these areas.
- Bats are highly likely to be using the exterior wall of the Pattern Shop, and a licence will also be needed before works can commence in these areas.
- As it has been shown that the mine adit is used as a hibernation roost by lesser horseshoe bats, any form of potential disturbance during the
- months of hibernation (October to April) or changes to the mine adit entrance will require a licence from NRW.
- The recess where the lesser horseshoe was observed will be retained and enhanced as a bat mitigation feature.
- There is potential for birds to be nesting throughout the site, therefore if works were to be conducted within bird nesting season (from March to September inclusive) then a thorough search for any nesting birds should take place immediately prior to the commencement of works. Any nesting/nest-building birds should be allowed to fledge before works commence.
- General mitigation measures and enhancement recommendations are to be made.

3.4 Access Statement

The aims and objectives of this project are to consolidate, repair and to redevelop the buildings and structures across the site in such a way that access and accessibility to services can be realised in a manner that manages the challenging topography, but that is also proportionate to the impact on the fabric of the structures, their heritage values and therefore their significance. A key component of the project is for as many locations to unlock both the physical and intellectual access of the site in such a way that it will align in as many locations as is possible, The Equality Act 2010 and with Part M of the current Building Regulations Approved Documents. Consideration is also given to the Cadw Technical Guidance Document 'Managing Easy Access to Listed Buildings in Wales' (2022). 'Reasonable adjustment' will be considered and implemented at all locations, where the benefit to all visitors/users is perceived not to outweigh the damage/impact caused to the historic fabric, the heritage values or the significance of the assets should the interventions become too invasive.

The current proposals have sought to provide ‘barrier free’, equitable access to most locations and services and with the further development of the interpretation design proposals, it is anticipated that other means of conveying information and the experience of exploring the site will be explored. Early consideration and the integration of these measures into the design proposals will ensure that the impact on the heritage values can be managed and that the established Conservation Principles can be respected.

The integration of accessible facilities in the form of level access, adequate space for circulation and the provision of fully equipped accessible welfare facilities and a lift within The Machine Shop will assist visitors accessing the lower areas of the site, whilst management measures to assist visitors to experience the upper terrace areas will be provided by Brymbo Heritage Trust. It is also intended that the design of the lighting and the careful specification of material finishes and colours will simplify and enhance wayfinding and movement through the key buildings and structures.

It is proposed that online visitor information will be developed to offer prior details/instructions about the site, its topography, site safety, access routes, welfare facilities and/or constraints that may remain in advance of visits being made. The design and location of graphics will consider visual impairment and audio information would also be offered to assist, or to facilitate improved access. In all cases, any public information or signage will be offered on a bi-lingual Welsh/English basis.

Section 4.0 Assessment and Summary of Heritage Impact

4.1 Assessment of Heritage Impact

The challenge of this project is to manage the process of change that is inevitable and the decisions that need to be made on an informed basis and to introduce many who are very familiar with the recent history/social history to the site of the Former Ironworks and Steelworks to the adjustments that are now needed to revitalise and to adaptively-reuse the buildings, structures and standing remains for a new purpose. The proposed redevelopment works will retell the history of this very significant, historic location to visitors who wish to learn more about the Iron and Steel-making Industry in Brymbo and across NE Wales.

The current proposals seek to unlock areas of the site and key buildings that have remained functionally obsolete and therefore redundant and underutilised since the last steel was produced in 1990. The changes will have a localised impact on the evidential, historical, aesthetic and communal values; however, efforts have been made in each case to evaluate, manage and most cases mitigate against any negative impacts. The benefits of the proposals will be considerable, not only in terms of returning the currently dilapidated buildings and structures into beneficial use but also to reinforce and enhance the group value of the site as well as each constituent part in such a way that a new sustainable chapter in the history of the site can be created that will become a catalyst for new experiences, and memories for future generations to appreciate. In time, the positive impact of these works should enhance the communal and aesthetic values of the site and the immediate setting, whilst being able to return the buildings and structures to a state of good repair.

Observations and specific responses to the proposals are set out in the Summary of Heritage Impact (see table to follow).

The programme of work that is proposed will enable the existing buildings and structures to be revealed incrementally. Sufficient time is available for remaining ‘unknowns’ or new discoveries to be investigated as the works progress and for an appropriate strategy to be developed that will enable ongoing conservation decisions to be made on an ‘informed basis’.

The building repair strategy, together with the design proposals for the new heritage attraction and community hub has been proposed in such a way that the overall Heritage Impact of the project will be beneficial / positive to both the sustainability of the place and these significant heritage assets of high heritage value. Where a localised, negative impact on the evidential value is necessary, it is hoped that these interventions will be offset by the programme of building

recording to be undertaken prior to commencement and archaeological excavation as works progress. There are numerous opportunities to reinforce and to reintroduce lost architectural details and artefact that relate to the history of the site and these will only benefit the evidential and historical values of the place, but in time, the sustainable revitalisation of the former Ironworks and Steelworks to the Community and for Visitors will bring benefits, new experiences, and memories for future generations to appreciate.

In time, the positive impact of these works should enhance the communal and aesthetic values of the place, whilst being able to return the buildings, structures and standing remains to a state of good repair that will hopefully unlock a new chapter in the history and evolution of the Former ironworks and Steelworks in Brymbo.

4.2 Summary Statement

The assessment has considered the potential impact of the development on the setting and significance of the identified heritage assets. It has concluded that the buildings and structures of the Former Ironworks and Steelworks at Brymbo will be subject to a Moderate Beneficial Change (when also considering the loss of evidential value to some building elements as a result of the poor, and dilapidated condition of the assets at present) and there will on balance a Moderate Beneficial Change to significance as the buildings and structures are brought back into a state of good repair and where roofs and other large building elements are reinstated from records. Where change is proposed, a programme of building recording will be undertaken prior to commencement with a record also produced at completion. To mitigate any negative impact from the need to undertake excavations at locations with high archaeological potential, a 'watching brief' and clear methodology will be agreed with all parties prior to commencement to ensue that these risks are mitigated to the satisfaction of all key statutory and advisory stakeholders.

March 2024



Aerial Photograph of the Former Ironworks and Steelworks site in 1975

Summary of Heritage Impact for The Former Brymbo Ironworks and Steelworks

Summary of Heritage Impact for The Former Ironworks and Steelworks at Brymbo.						
Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
a. The Machine Shop - Repair, Refurbishment and Extension for Visitor and Training Use						
a.1	Recovering of the metal roof covering and asbestos decontamination. Introduction of insulation within a new built-up roofing system with associated eaves and verge detailing.	To consolidate and to repair the building fabric and to stabilise the deteriorating condition of the envelope. To remove asbestos containing materials from the roof lining. To undertake thermal upgrade insulation works with the new built-up roof covering. To integrate the ridge ventilator detail into the new MEP strategy. To ensure that the visual changes externally by raising the height at the verges is minimal and appropriate for the setting. To ensure that these periodic renewal measure and the decision to initiate change will better safeguard the running cost and management of the building into the future and therefor to better protect the Evidential Value and Historical values of the remaining building.	The Former Machine Shop is currently not designated but is likely to become part of an extended Scheduled Area that is currently under review by Cadw and Stakeholders. Whilst the Machine Shop is one of the later buildings that remain standing, (1921) it is now the most prominent structure that stands on the east boundary and makes a large contribution to the visual cohesion and group value of the whole. The building fabric is of high heritage value with much containing the original building materials and details that underpin the Evidential and Historic Values together with outward expression of the Aesthetic Value. Of greater heritage significance is the archaeological potential that comes in the possible deposits that exist below the shop floor, as the area over which it has been built was once a storage and processing yard, with a workshop of unknown use. It is therefore likely that archaeological deposits associated with the areas previous use will remain beneath the floor of the Machine Shop, together with the fill material behind a length of the earliest John Wilkinson retaining wall.	The programme of repairs will halt the current rate of deterioration, decay and disrepair, together with the risk of further undermining established heritage values, particularly the Evidential Value and Aesthetic Value. The removal of asbestos containing materials will ensure that the building can be brought back into beneficial use as a visitor and education/training hub. It will also be an opportunity to better protect the building against the effects of climate change and to initiate a programme of thermal upgrade with the introduction of an insulated built-up roof system. This will ensure that providing thermal comfort will be more manageable and sustainable. The choice of a built-up roof specification in this location will ensure that the interior appearance will remain largely unaltered as the sheeting will sit on top of the existing roof structure.	The presence of asbestos containing materials will mean that 100% replacement of the original roof covering is necessary with associated loss of the Evidential Value. It is not known as to whether the roof covering is original. External louvre details at high level to be retained. The sources of some material specifications and components cannot be matched exactly or replicated which has been a consideration to also initiating the decision for change with the thermal upgrade to the new roof covering. Visual change externally with raising the level of the lower roof covering. The change will be visible from the grade II* listed Agents House (Cadw ref:1731) (the west facing gable) but the impact will be small and would not detract from its heritage vales and significance. The Machine Shop is also visible from the grade II listed Bryn Seion Chapel, (Cadw ref: 9813) some 500m to the NE. Whilst holding a direct line of sight into and away from the Heritage Area, the visual change will be negligible. Consideration of impact on the Adjacent Scheduled Area (Cadw ref: DE202) direct and indirect visual impact has been considered, particularly that of the verge detail. The selection of materials and formation of a ‘shadow gap detail’ are proposed to minimise the impact of change so that it will not alter the heritage values and significance of the designation.	It is not possible to mitigate against the loss of the original roof covering due to the corroded condition of the existing sheets and the presence of asbestos containing materials. Where changes of this nature are proposed. A programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 3 scope and specification prior to the commencement of works to The Machine Shop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. No further action is proposed in respect to the direct and indirect impact of the proposal on adjacent or more distant heritage assets.
a.2	Brickwork repairs and structural steelwork repairs to the building envelope	To implement the programme of structural recommendations outlined by the Consultant Structural Engineer report and to stabilise the condition of the brickwork and the steel frame within the building envelope. To initiate repairs to prevent water ingress. To reinforce the existing Evidential Value and the overall Significance of the building into the future.	As above The building fabric is of high heritage value and the areas of repair involve the reconstruction or replacement of the original building materials and details, particularly the Evidential Value.	The programme of repairs will halt the current rate of deterioration, decay and disrepair, together with the risk of further undermining established heritage values, particularly the Evidential Value and Aesthetic Value. Manage the condition and structural integrity of the building for future custodians or owners and to extend the service life of key architectural details and therefore the integrity of the Evidential Value in most locations. Existing brickwork from demolitions will be reused from elsewhere in the building for a material match.	It will be necessary for some masonry to be carefully dismantled. Before rebuilding takes place. This will impact upon the integrity of the Evidential Value. Some cutting out of steelwork and rewelding new in-situ will also be necessary. There is also a need to provide a safe H&S working methodology to reduce the risk of injury to contractor personnel. These considerations are informing the repair choices as is the proposal to introduce new panels of masonry.	As previously where evidential material is being lost, this damage will be offset by a programme of building recording and the depositing of these records with the Historic Environment Record (HER) on completion. Existing brickwork from demolitions will be reused from elsewhere in the building for a material match. No visual impact to mitigate. Will enhance the conservation vales of the building in the longer-term.
a.3	Repairs to the existing metal windows and clerestory fenestration with part thermal upgrade with the introduction of slim, double glazed units with metal capping beads. The reinstatement of missing architectural details.	To consolidate and to repair the building fabric and to stabilise the deteriorating condition of these building elements, particularly from water ingress, vandalism and the resultant issues associated with corrosion. The temporary solution for the clerestory windows at the rear of the building (west end) will be introduce, clear polycarbonate glazing. Thermal upgrade to the east end of the building to enhance thermal comfort and to better manage heating costs, environmental impacts and the sustainability of the building into the future. To reinforce the existing Evidential Value and Historic Value and Aesthetic Value	As above The building fabric is of high heritage value with much containing the original building materials and details that underpin the Evidential and Historic Values together with outward expression of the Aesthetic Value. Retention of key existing details, fixtures and fittings that do much to define the architectural character of The Machine Shop.	The programme of repairs will halt the current rate of deterioration, decay and disrepair, together with the risk of further undermining established heritage values, particularly the Evidential Value and Aesthetic Value. To reinstate lost architectural details and to ensure that the best of the existing can be retained for the future. To improve thermal performance, energy efficiency and therefore to manage the future running costs in a sustainable way with the introduction of slim double-glazed units with chamfered metal beads to offer the impression/profile of a putty finish at the east end of the building.	The windows will be repaired as far as it is practicable to do so on a ‘like for like’ basis. Windows/fenestration which cannot be repaired will be replaced as facsimiles of the original. Issues and risks relating to the retention of historical details, fixtures and fittings will be low as measures will be established to accommodate the details within the design proposals. Slight visual change to the appearance of the windows with the introduction of the double-glazed units. Impact would be negligible from distance. There will be dome visual change, but no loss of historic material will be experienced with the introduction of double glazing to improve thermal performance. Need to introduce polycarbonate panels temporarily to resist water ingress to the rear of the building.	There is a low risk of losing further building materials and details of significant heritage value, however this will be kept to a minimum. Improvements to thermal and environmental performance will mean that running costs are likely to be more sustainable, with monies available to continue with programmes of regular cyclical maintenance in the future. Should any circumstances materialise where evidential material is being lost, this damage will be offset by a programme of building recording and the depositing of these records with the Historic Environment Record (HER) on completion.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
a. The Machine Shop - Repair, Refurbishment and Extension for Visitor and Training Use Continued. ...						
a.4	Gullies and below ground drainage will be checked, repaired and overhauled (foul and rainwater). Construction of new foul and surface water drainage locally.	To ensure that rainwater can be moved away from the base of walls and to ensure that the risk of structural movement is reduced. To ensure that foul drainage connections can be made to the new visitor facilities and training accommodation.	As above (see item a.1)	To avoid any deterioration or the risk of movement to the building structure, concentrations of water and moisture ingress or poor environmental conditions within the building. To primarily manage and maintain the Evidential Value, but in doing so all other Conservation Values.	The basic maintenance investigations and checks will not involve any harmful impact. Should the excavation of existing drainage runs be necessary, the dig will follow the line of the original drainage runs i.e. it is assumed post-1921 disturbance. Should the excavation of the new drainage runs be necessary, there is a risk that archaeological deposits of interest/significance might be disturbed or damaged. There is a risk that the Archaeological Potential will be diminished, and its Evidential Value or Historic Value might be consequently lessened.	An Archaeological Evaluation exercise has been undertaken at the east end of the building where two new lean-to extensions are proposed. These are location where the new WCs, and kitchen facilities are to be situated. The findings have only identified mid/late C20 construction activity and concrete to date. Preliminary discussions between the LA Planning Archaeologist, LA Building Conservation Officer Cadw and the Project Archaeologist have provisionally agreed a working methodology that will be formalised within a future, Written Scheme of Investigation to describe the ‘Watching Brief’ procedures of any excavation works across the site. It is proposed that where excavations are required, a wider toothless, excavator bucket will be used to afford more of an insight into the stratigraphy, possible features etc. A ‘Stop Order’ process will also be established so that excavations can be dug archaeologically, should any remain, or deposits of interest be identified. This will mitigate the risk of not identifying and capturing evidence of earlier phases of ironmaking on the site, and therefore enhance our understanding of the historic development and manufacturing processes undertaken historically. Records to be provided on completion and deposited with the Historic Environment Record
a.5	Introduction of new metal windows to existing arched openings on the east elevation.	To replace brickwork in later, ‘bricked up’ openings to the east elevation. To complete the design of the Visitor Reception Facilities and new Entrance to the site.	As above (see item a.1)	To provide daylight, ventilation and new visitor access to the lower ground floor of the Machine Shop To offer an architectural aesthetic that creates an inviting/welcoming approach and to enhance wayfinding.	The permanent loss of building materials from these locations (though assumed to be infilled post 1921). Loss of Evidential Value from these locations. Whether the visual change is considered proportionate to the benefit of opening the site of the former iron and steelworks as a heritage destination.	Where changes of this nature are proposed. A programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 3 scope and specification prior to the commencement of works to The Machine Shop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. Existing brickwork from demolitions will not be lost but reused from repair purposes elsewhere in the building for a material match.
a.6	Demolition of the late 1990’s office accommodation within the Machine Shop	To remove the last structures/accommodation constructed within The Machine Shop, following the closure of the works in 1990. To prepare the upper ground floor space at the west end of The Machine Shop to accommodate the new educational and training facilities.	As above (see item a.1)	To prepare the space to accommodate the new educational and training facilities that will enable the offering to be used for its identified future use. To remove recent building interventions that served a purpose but are of no heritage value. They conceal the reading and experience of the original workshop space by their encroachment and loss of direct daylight and ventilation at low level.	As long as the original surfaces are protected, including fixtures and fittings as the works progress, there are no negative impacts to this intervention.	As above.
a.7	Construction of two new lean-to extensions to the north and south elevations with foundation details and new drainage connections.	To provide new visitor welfare facilities that include WC’s, a kitchen and interpretation space that does not impact on the character or the volume of the internal lower ground floor Machine Shop space. To support the redevelopment initiatives for the adaptive re-use of the building and a sustainable future, that will better safeguard the conservation values and therefore the significance of the building for future generations to enjoy and appreciate.	As above (see item a.1)	The beneficial impacts of providing new build lean-to extensions in these locations include – - o There is a precedent to having a lean-to building on the south side of the Machine Shop and various buildings/structures through time on the north side. See supporting photographs. - o The interventions are modest in scale, relative to the existing Machine Shop building and will remain visually subservient and ancillary in character to that of the existing. - o Will prevent the ancillary accommodation from encroaching into the main hall space of the	The proposals will involve change to the appearance of the Machine Shop that has been most familiar to the community during the last 30 years. Whether it might be considered that the construction of the extension on the north side of the Machine Shop obscures a clear view of what is thought to be the Wilkinson retaining wall in a detrimental way. Whether the new extensions might pose a risk to damaging the Archaeological Potential of the site.	Where changes of this nature are proposed. A programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 3 scope and specification prior to the commencement of works to The Machine Shop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
a. The Machine Shop – Repair, Refurbishment and Extension for Visitor and Training Use Continued. ...						
a.7 continued...		To retain and preserve more of the heritage values associated with the Machine Shop interior whilst discreetly managing change through the process of adaptive re-use and conversion for access by the public. To ensure that the presence of the John Wilkinson era retaining wall remains visible within the Machine Shop for visitors to clearly see and interpret.		Machine Shop and visually obscuring the remains of the large retaining wall which is thought to be a survival from the earliest phases of development, during the time of John Wilkinson. - o The construction of the new on top of existing reinforced concrete floor slabs of earlier phases of building on the north side of the Machine Shop will ensure that the Archaeological Potential/risk from disturbance, adjacent to the Wilkinson retaining wall will remain unaltered. - o Will ensure that a design layout and new use can be implemented and is sustainable to reinforce the strong business case that ‘fits with the overall strategy’ and does not impose itself upon the existing heritage values in a negative fashion. - o The final design decisions and proposed location of the new extensions, their form and design have a low visual impact on the setting of the Machine Shop, but also on the setting of adjacent designations, by being partially concealed by site features and landscape planting within the future car park.	Visual change externally with the construction of the two lean-to extensions will necessitate change, but they will not be visible from the grade II* listed Agents House (Cadw ref:1731) and will not detract from its heritage vales and significance within its setting. The Machine Shop is also visible from the grade II listed Bryn Seion Chapel, (Cadw ref: 9813) some 500m to the NE. Whilst holding a direct line of sight into and away from the Heritage Area, the visual change will be relatively small as the extensions will only be visible against the backdrop of the existing building or the vegetated bank and raised ground to the south. The limited fenestration and selection of materials that are similar to those of the existing will ensure that the new structures will read as being visually distinct or separate from the Machine Shop itself. Consideration of impact on the Adjacent Scheduled Area (Cadw ref: DE202) direct and indirect visual impact is important. The selection of materials has been made to ensure that the new does not contrast with the existing on this occasion. The line of sight and the difference in level between the core Heritage Area and that of the lower ground floor area of the Machine Shop ensures that the direct line of sight is very limited and as such, the presence/impact of the new will have only a small amount of on the setting and will therefore not alter or pose a risk to the currently recognised heritage values and significance of the designation. As a consequence of the design options considered and the simple / clean detailing and material choices proposed for the external finishes to the new building, the visual impact will be small or not discernible at all from some adjacent locations, views and routes through, into or away from the site of proposed adaptive re-use. It is not considered that the qualities of the views and impact on heritage value will be diminished or harmed by this development. It is not known as to whether the remains of earlier phases of building might exist beneath the proposed footprint of the extensions. The heritage value of these structures or remains might not be currently understood (though Archaeological Evaluation work has been undertaken). Whilst the risk of damage to the Evidential and Historic Value of any remains is possible, the input of a consultant Archaeologist to support the project would provide the mitigation necessary to remove the risk of harm to current or future deposits/features as they might be interpreted.	An Archaeological Evaluation exercise has been undertaken at the east end of the building where two new lean-to extensions are proposed. These are location where the new WCs, and kitchen facilities are to be situated. The findings have only identified mid/later C20 construction activity and concrete to date. A design strategy to minimise site excavations for the formation of the foundations is proposed, by utilising the existing reinforced concrete slab of an earlier C20 building on the site. With reference to new foul drainage and rainwater drainage connections from location adjacent to the existing slabs. Measures to minimise or to mitigate the risk from damaging the ground which may still retain a high archaeological potential is proposed after holding preliminary discussions between the LA Planning Archaeologist, LA Building Conservation Officer Cadw and the Project Archaeologist have provisionally agreed a working methodology that will be formalised within a future, Written Scheme of Investigation to describe the ‘Watching Brief’ procedures of any excavation works across the site. It is proposed that where excavations are required, a wider toothless, excavator bucket will be used to afford more of an insight into the stratigraphy, possible features etc. A ‘Stop Order’ process will also be established so that excavations can be dug archaeologically, should any remains, or deposits of interest be identified. This will mitigate the risk of not identifying and capturing evidence of earlier phases of ironmaking on the site, and therefore enhance our understanding of the historic development and manufacturing processes undertaken historically. Records to be provided on completion that will be deposited with the Historic Environment Record (HER). Alternative foundation design strategies could also be considered if necessary (after the Evaluation process has been undertaken) so as to avoid disturbing any archaeology of significance, should it be discovered on the north and the south sides of the building.
a. 8	New external door opening in the north elevation and the repair and overhaul of existing doors to the building.	To consolidate and to repair the building fabric and to stabilise the deteriorating condition of these building elements, particularly from water ingress, vandalism. To provide a ‘barrier free’ entrance for the visitor on returning to the Machine Shop after a site visit.	As above (see item a.1)	The programme of repairs will halt the current rate of deterioration, decay and disrepair, together with the risk of further undermining established heritage values, particularly the Evidential Value and Aesthetic Value. To reinstate lost architectural details and to ensure that the best of the existing can be retained for the future. To provide barrier free access and access to and from the new platform lift within the building via a new door opening in the north elevation.	The permanent loss of building materials from the location of the new pedestrian door opening. Loss of Evidential Value from this location. Whether the visual change is considered proportionate to the benefit of opening the site of the former iron and steelworks as a heritage destination.	Where changes of this nature are proposed. A programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 3 scope and specification prior to the commencement of works to The Machine Shop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. Existing brickwork from demolitions will not be lost but reused from repair purposes elsewhere in the building for a material match.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
a. The Machine Shop - Repair, Refurbishment and Extension for Visitor and Training Use Continued. ...						
a.9	New underfloor heating and floor slab to the lower ground floor visitor reception area.	To introduce heating to support the need for thermal comfort for visitors and the new use of The Machine Shop as a visitor reception space. To ensure that a strategy is adopted that will not require excavations to extend through and below the level of the existing reinforced concrete slab and into layers which may hold considerably greater archaeological potential.	As above (see item a.1)	The strategy of insulating and of casting a new reinforced concrete slab above the level of the existing slab will mitigate the risk from disturbing ground levels with a high Archaeological Potential. The ground beneath the slab will remain undisturbed and the circulation/distribution of services can happen without needing to excavate beneath the substrate. The retention of the existing slab will ensure that no below slab excavation is required.	As the existing finished floor level has been raised by nom. 300mm, a corresponding amount of visibility has been lost of the Wilkinson retaining wall. Whilst the Evidential Value has not altered significantly, a proportion of the masonry has been obscured. As floor-to-floor heights are considerable within the building, the impact is likely to be relatively small.	A programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 3 scope and specification prior to the commencement of works to The Machine Shop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. No further action is required.
a. 10	Supply and installation of a new vertical platform lift and visitor staircase following the removal of the existing metal steps.	Provide visitor circulation between lower and upper ground floor location with the existing Machine Shop. The circulation will be ‘barrier free’ and will comply with Part M of the current Building Regulations and BS8300.	As above (see item a.1)	Barrier free access will be offered to visitors to better explore, understand and interpret the site of the former Brymbo Ironworks and Steelworks. The strategy adopted is that the existing reinforced concrete floor slab will be used to support and secure the new lift and staircase installations, without the need for cutting out and excavating beneath the slab. Any Archaeology beneath the existing reinforced concrete slab will remain intact and will not be disturbed.	The proposal will require the existing metal staircase to be removed from its current location. The Evidential Value will be altered, though it is proposed that it will be stored on site and will not be disposed. Whether the proposals obscure the existing John Wilkinson retaining wall to a degree that is detrimental to its conservation values.	A programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 3 scope and specification prior to the commencement of works to The Machine Shop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. The design proposals have been developed to ensure that they are aesthetically and materially of a scale and character that will not detract from the mass and scale of the historically significant qualities of the retaining wall. The strategy to build on top of the existing slab is sufficient to avoid excavations and the lift pit of the specified lift can be accommodated within these constraints. Similarly building services can also be coordinated along routes that will not impact on the Evidential and Historical values of the existing.
a. 11	Construction of a new upper ground floor insulated floor slab, internal partition wall with slab-thickened foundation and integrated accommodation.	To provide a thermally improved base/slab that is raised above the existing and on which the new visitor, educational and training accommodation can be constructed at a later date. To manage any ground contamination risks associated with the previous use as a workshop. To provide a vertical division between two functionally different and distinct areas of the brief, both visually, acoustically and as part of the future fire strategy. The distinctive areas and functions are important to deliver the business and training objectives of the project.	As above (see item a.1)	To realise the different functional components of the project brief and to deliver the business plan objectives that will support the sustainable redevelopment of the site, its heritage assets and therefore its significance into the future. The structural and construction strategy adopted will minimise impact on the Archaeological Potential of the ground beneath the current end-grain timber block and concrete floor finish to the Machine Shop, by minimising the extent of the dig that is required (subject to any contamination risk). The nature of the steel frame and pad construction proposed will reduce the extent of the additional structure and bracing that is required at roof level to restrain the head of the new partition wall. The structure at low level and at the level of the first floor and ceiling will assist to conceal the intermediate restraint required to limit deflection and transferring unnecessary forces in the existing building fabric.	The proposals will necessitate the need to lift the end-grain timber block floor and to infill with concrete as a means of managing and encapsulating the risk of contamination with the specification of suitable membrane. The removal of the end-grain block floor will not be reversible in this location. There is a negative impact on heritage value in this instance. There is a low risk that earlier floor surfaces and features might be exposed where the pad foundations for the new accommodation are to be constructed. Whether the sub-division of the Machine Shop space into two distinct areas is acceptable in the context of the redevelopment proposals.	As previously a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 3 scope and specification prior to the commencement of works to The Machine Shop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. The strategy to build on top of the existing slab is sufficient to reduce the risk from the excavations associated with the construction of the dividing wall and new accommodation from extending down into layers which might have an increased probability of disturbing ground that might be of high Archaeological potential. In all cases, the proposals are being developed to reduce the extent of any impact on the Evidential and Historical values of the existing. The introduction of the new partition wall and framing for the rooms and accommodation is substantial but is strategically reversible or retreatable at a future date, without impacting on the original shell of greatest significance in respect of the Machine Shop. Visually, considerable change is anticipated, though the visual impact and scale will be adjusted by the repositioning of the large, overhead crane to a position in front of the new division wall.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
a. The Machine Shop - Repair, Refurbishment and Extension for Visitor and Training Use Continued. ...						
a.11 Continued...						Where excavation is required for the construction of the pad foundations and foul drainage, it is proposed that in addition to the building recording strategy, measures to minimise or to mitigate the risk from damaging archaeology has been provisionally established after discussions between the LA Planning Archaeologist, LA Building Conservation Officer Cadw and the Project Archaeologist, who have provisionally agreed a working methodology that will be formalised within a future, Written Scheme of Investigation to describe the ‘Watching Brief’ procedures of any excavation works across the site. It is proposed that where excavations are required, a wider toothless, excavator bucket will be used to afford more of an insight into the stratigraphy, possible features etc. A ‘Stop Order’ process will also be established so that excavations can be dug archaeologically, should any remains, or deposits of interest be identified. This will mitigate the risk of not identifying and capturing evidence of earlier phases of ironmaking on the site, and therefore enhance our understanding of the historic development and manufacturing processes undertaken historically.
a. 12	Alterations to the existing internal accommodation that is being retained.	To ensure that existing accommodation against the south elevation that is accessed from the upper ground level can be retained and repurposed. To realise the needs, and function of the new brief with the programme of adaptive re-use to accommodate the visitor facilities. To provide a function and beneficial use whilst retaining most of the existing building fabric with is associated detailing. To manage the process of change where a localised negative impact on significance is anticipated. The greatest concentration of work and ultimately of change is to the west end of the rooms and because of raising the ground levels by 300mm in adjacent locations.	As above (see item a.1)	Level, ‘barrier free’ access can be provided to extend the interpretation spaces whilst returning the accommodation into beneficial use.	The loss of some original material and the formation of a new door opening between spaces will result in the loss of some materials of higher Evidential Value. The raising of the floor level within and adjacent to the rooms to be retained will alter the proportions, reading and appreciation of the spaces. Without careful detailing the change in level between the new and the existing might clash. Resolution of details are necessary to manage these risks that might otherwise mean that ramped access between transitions in level would be required.	As previously A programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 3 scope and specification prior to the commencement of works to The Machine Shop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion.
a.13	Upgrading and reinforcing where applicable of the incoming utilities to future-proof the building and its operations.	To introduce new incoming utilities that will support the new design proposals and the adaptive re-use of the building to create new visitor reception facilities, education, training and interpretation facilities. To introduce the new services in a discreet and coordinated way that will not impact on the heritage values of the building and the immediate setting.	As above (see item a.1)	To ensure that Heritage values are not diminished in any way the routing and location of any new, incoming utilities. To limit the extent of the excavations and to coordinate installations in one location to reduce risk of damaging recognised heritage values.	There is a possibility that the routing of services may impact adjacent designations, particularly the existing scheduled area and locations adjacent to the John Wilkinson retaining wall should excavations beneath, be necessary. It is unknown as to whether excavations would expose or potentially damage archaeological features or the remains of earlier structures. The heritage value of these remains is not currently understood. Whilst the risk of damage to the Evidential and Historic Value of any remains is possible, the input of a consultant Archaeologist to support the project would provide the experience and knowledge necessary to mitigate the risk of harm to current or future heritage values.	Where practicable, to route incoming services overhead, rather than to place the services in ducts below ground. As previously, where excavation is required it is proposed that in addition to the building recording strategy, measures to minimise or to mitigate the risk from damaging archaeology has been provisionally established after discussions between the LA Planning Archaeologist, LA Building Conservation Officer Cadw and the Project Archaeologist, who have provisionally agreed a working methodology that will be formalised within a future, Written Scheme of Investigation to describe the ‘Watching Brief’ procedures of any excavation works across the site. It is proposed that where excavations are required, a wider toothless, excavator bucket will be used to afford more of an insight into the stratigraphy, possible features etc. A ‘Stop Order’ process will also be established so that excavations can be dug archaeologically, should any remains, or deposits of interest be identified.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
a. The Machine Shop - Repair, Refurbishment and Extension for Visitor and Training Use Continued. ...						
a.14 Continued	Complete Plumbing, Mechanical and Electrical installation required throughout, including underfloor heating, energy efficient lighting, small power and water efficient sanitaryware and to improve the energy efficiency of the building.	To introduce a new MEP installation throughout that are sustainable and cost/energy efficient, that renewables are provided where appropriate and where new systems/installations within the building can be resilient or alternatively flexible to change as technologies advance quickly during e.g. the next decade. To limit the extent of change in the future that might impact on the building fabric and its Evidential Value.	As above (see item a.1)	The locations of the main MEP distribution/containment routes are being carefully selected to minimise the loss of Evidential Value in connection with builder’s work. The careful coordination of services should declutter the internal appearance of the building so that the architectural, evidential and aesthetic qualities of the spaces can be appreciated by more people. To ensure that the proposed adaptive re-use of the building is sustainable and meets the needs of 21st Century user expectations and is sustainable. The work to introduce the MEP services will enable the adaptive re-use of the building to be realised, which in turn will enable a credible business opportunity to be managed in such a way that some income would be reinvested annually to maintain the upkeep of the building and in doing so its heritage values and significance.	To ensure that all builders work in connection with the installation of the services is clearly defined and agreed beforehand so to avoid alterations or loss to the existing building fabric. To ensure that all support structures and fixings associated with the installations are defined and agreed beforehand and to ensure that they will not be visually intrusive, nor detrimental to the condition and integrity of the building fabric, particularly in areas of high evidential value. Without prior coordination of installations there is a risk that some damage could ultimately diminish the integrity of all heritage values and ultimately the significance of the building. Whether the services are exposed or concealed within the building.	To ensure that the MEP proposals are fully designed pre-contract in terms of routing, supports or fixings and builders works associated with the installations. Where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 3 scope and specification prior to the commencement of works to The Machine Shop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion.
a.15	Installation of data/IT, Wi-Fi, CCTV and security alarm systems to support the new functions.	As above	As above (see item a.1)	As above	As above	As above
a.16	Installation of sanitaryware, fixtures and fittings throughout	To provide new WC’s, throughout, including accessible facilities for visitors and staff. To provide a ‘barrier free’ setting and an inclusive range of accommodation.	As above (see item a.1)	To provide an inclusive and non-discriminatory access to welfare facilities that can be used by a wide range of visitors. The range of facilities will enable a larger number of people to use the building in the future. Access to better equipped welfare facilities may strengthen the business case and provide accommodation that is not as readily available elsewhere in the locality.	Careful detailing will need to ensure that the environmental conditions are managed carefully, that high levels of R/H will not have a harmful impact on the building fabric and therefore the elements of greatest Evidential Value. As item a.14, the coordination of MEP services will be crucial, particularly ventilation/extract.	As above
a.17	Installation of commercial Kitchen facilities and equipment.	To provide an offer for the preparation of food and refreshments within the new visitor reception facilities that will strengthen the business case and the offer/experience that would be available to visitors.	As above (see item a.1)	To ensure that the design proposals and the business offer can provide a range of facilities that meet the needs of the visitor market at Brymbo Iron and Steelworks and regionally. To ensure that the design proposals are resilient and can adaptively and sustainably respond to future trends or fashions in the market.	As above	As above
a.18	Installation of the new interpretation proposals at the east end of the building.	To introduce and to describe the history and development of the site over 300 million years as part of the Stori Brymbo experience which includes the formation of the site geology, including the Fossil Forest and then the development of the Ironworks and the Steelworks during the last 230 years and 150 years respectively. To provide access and wayfinding information that will inform visitors about the site, its topography, site safety, access routes, welfare facilities and/or constraints that may remain in advance of visits being made. The design and location of graphics will consider visual impairment and audio information would also be offered to assist, or to facilitate improved access. In all cases, any public information or signage will be offered on a bi-lingual Welsh/English basis.	As above (see item a.1)	To enhance the knowledge, understanding an appreciation of visitors who visit the former Brymbo Ironworks and Steelworks. To ensure that installations are reversible and will not diminish the appreciation of the conservation values and will not remove Evidential Value.	To ensure that all builders work in connection with the interpretation installations are clearly defined and agreed beforehand so to avoid alterations or loss to the existing building fabric. To ensure that all support structures and fixings associated with the installations are defined and agreed beforehand and to ensure that they will not be aesthetically, nor visually intrusive, nor detrimental to the condition and integrity of the building fabric, particularly in areas of high evidential value. Without prior coordination of installations there is a risk that some damage could ultimately diminish the integrity of all heritage values and ultimately the significance of the building. To ensure that the information can be updated and expanded as more information and knowledge becomes available. To ensure that it is possible to review and update much of the information dynamically in order that it is current, inclusive and addresses the history and development of the site from multiple perspectives.	To ensure that the Interpretation proposals are fully designed pre-contract in terms of content, materials selections and the coordination of supports or fixings and associated builders works. Where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 3 scope and specification prior to the commencement of works to The Machine Shop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. To ensure that flexibility and adaptability of information and content can be changed and adjusted without need to alter the conservation values and possibly the significance of the asset.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
b. Patternmakers Workshop – Consolidation, Repair and Adaptive Re-use of the Building						
b.1	Masonry repairs to stabilise and consolidate the existing stone and brickwork walls throughout	To implement a programme of structural recommendations outlined by the Consultant Structural Engineer report and to stabilise consolidate and repair the existing stonework walls and small panels of brickwork. To reinstate panels of masonry that were dismantled for H&S stability reasons when the roof of the Patternmakers Workshop was removed in 2015. To prepare for the reinstatement of the roof structure and coverings. To reinforce the existing Evidential Value and the overall Significance of the building into the future.	The Carpenters and Patternmakers Workshop is a key historic building that stands on the southern side of the Scheduled Area at the Heritage Core of the Former Brymbo Ironworks site. The building fabric is of high heritage value, is of National Significance and retains in-situ, or as part of the building record, sufficient information for the reinstatement of the dismantled fabric and details objectively to ensure that the Evidential and Historic Values together with outward expression of the Aesthetic Value remains strong.	The programme of repairs will halt the current rate of deterioration, decay and disrepair, together with the risk of further undermining established heritage values, particularly the Evidential Value and Aesthetic Value. Manage the condition and structural integrity of the building for future custodians or owners and to extend the service life of key architectural details and therefore the integrity of the Evidential Value in most locations. These elements of work seek to represent the building with details of a known nature, which are not conjectural. They will improve the future understanding of this historical area of the site	It will be necessary for some masonry to be carefully dismantled. Before rebuilding takes place. This will further impact upon the integrity of the Evidential Value and the availability of materials removed from the building in 2015. There is also a need to provide a safe H&S working methodology to reduce the risk of injury to contractor personnel. These considerations are informing the repair choices as is the proposal to introduce new panels of masonry. There would be no harmful impact to the fabric of the building nor to its Heritage Values from the reinstatement of the existing masonry and the consolidation/strengthening of the wall heads, gables and intermediate wall.	Where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 4 scope and specification prior to the commencement of works to The Carpenters and Patternmakers Workshop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. Access strategy and working methodology to be developed by the main contractor that will need to demonstrate that the retention of the original materials and therefore the Evidential value will remain a priority, but that a safe working environment in which the repairs can be executed is agreed with all stakeholders, including Cadw prior to completion. No visual impact to mitigate. The consolidation and repair of the masonry will enhance the conservation vales of the building in the longer-term.
b.2	Reinstatement of the existing timber roof structure using some original components, building records and photographs with the reinstatement of the slate roof covering. Existing details to include the reconstruction of roof ventilators, ridge, hip and gable/copping details. The reinstatement of a steel canopy to the west elevation is also proposed.	To reinstate the existing building form, materials and details that were dismantled in 2015 because of safety issues resulting from the poor condition, vulnerability and fragility of the structure at the time. To consolidate and to repair the building fabric and to stabilise the deteriorating condition of the building, particularly from water and the elements and the resultant issues associated with timber decay. To reinforce the existing Evidential Value and to correct inappropriate repairs. For joinery repairs to be undertaken on a ‘like for like’ basis and to avoid detail changes.	As above	The work will have a positive impact to reinstate known evidential value, to safeguard and stabilise the structural performance of the masonry and to improve the aesthetic and communal values that will enable visitors to better understand the original form and material finish of the building. The Conservation values will be reestablished or recalibrated in part through the reconstruction processes though the true Evidential Value will differ from that of the building in 2015, prior to being dismantled.	There would be no harmful impact to the fabric of the building nor to its Heritage Values from the reinstatement of the existing roof structure and covering.	No solutions required in respect to the construction process as it is based on record information before sections and components of the building were dismantled. As previously, where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 4 scope and specification prior to the commencement of works to The Carpenters and Patternmakers Workshop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion.
b.3	Repairs to the existing metal and timber windows throughout. Some replacement windows are required due to the poor condition of the existing. Repairs or replacement windows are otherwise to be undertaken on a like for like basis.	To consolidate and to repair the building fabric and to stabilise the deteriorating condition of these building elements, particularly from water ingress, vandalism and the resultant issues associated with corrosion or timber decay as applicable. To reinforce the existing Evidential Value and Historic Value and Aesthetic Value with ‘like for like’ repairs only within the Scheduled Area	As above (see item b.1)	The programme of repairs will halt the current rate of deterioration, decay and disrepair, together with the risk of further undermining established heritage values, particularly the Evidential Value and Aesthetic Value. To reinstate lost architectural details and to ensure that the best of the existing can be retained for the future.	The windows will be repaired on a ‘like for like’ basis. Windows/fenestration which cannot be repaired will be replaced as facsimiles of the original. Issues and risks relating to the retention of historical details, fixtures and fittings will be low as measures will be established to accommodate the details within the schedule of repairs.	There is a low risk of losing further building materials and details of significant heritage value, however this will be kept to a minimum. Should any circumstances materialise where evidential material is being lost, this damage will be offset by a programme of building recording and the depositing of these records with the Historic Environment Record (HER) on completion. HE Level 4 record will be undertaken.
b.4	Repairs to existing doors, externally and internally.	To consolidate and to repair the building fabric and to stabilise the deteriorating condition of these building elements, particularly from water ingress, vandalism and timber decay. To provide means of escape and to complete the representation of The Patternmaker’s and Carpenters Workshop as a means of reinforcing the Aesthetic value and Cultural understanding of the building. The reinstatement of original fittings will improve the Evidential and Historical value and understanding.	As above (see item b.1)	The programme of repairs will halt the current rate of deterioration, decay and disrepair, together with the risk of further undermining established heritage values, particularly the Evidential Value and Aesthetic Value. To reinstate lost architectural details and to ensure that the best of the existing can be retained for the future.	The repairs are proposed on a ‘like for like’ basis. There would be no harmful impact to the fabric of the building nor to its Heritage Values	Where changes of this nature are proposed. A programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 4 scope and specification prior to the commencement of works to The Carpenters and Pattern Makers Workshop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. No further measures required. All interventions will remain reversible.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
b. Patternmakers Workshop – Consolidation, Repair and Adaptive Re-use of the Building Continued. ...						
b.5	Repair and/or reinstatement of existing intermediate floor structure and floor finishes.	To consolidate and to repair the building fabric and to stabilise the deteriorating condition of these building elements, particularly from water and from being open to the elements since prior to 2015 when the roof structure was finally removed for H&S reasons. To implement the programme of structural recommendations outlined by the Consultant Structural Engineer report and to stabilise and secure the structural difficulties identified. To reinforce the existing Evidential Value and Historic Value and Aesthetic Value with ‘like for like’ repairs only within the Scheduled Area	As above (see item b.1)	The programme of repairs will halt the current rate of deterioration, decay and disrepair, together with the risk of further undermining established heritage values, particularly the Evidential Value and Aesthetic Value. Manage the condition and structural integrity of the building for future custodians or owners and to extend the service life of key architectural details and therefore the integrity of the Evidential Value in most locations.	It will be necessary for structural timbers within the intermediate to be carefully dismantled and removed before rebuilding takes place. This will continue to impact upon the integrity of the Evidential Value but is necessary due to the very poor and decayed condition of the existing elements. The introduction of the tie rods and plates between the north and south walls at the upper (west) end of the building will require sub-floor excavation. With the correct management procedures in place to address archaeological concerns, the interventions will necessitate the loss of some deposits (expanding slag material) but will be of low impact on the existing building, the repairs will be concealed in the main and would enable more significant evidential value of the standing remains to remain undisturbed and intact. It is necessary that the existing end grain block floor finish to be temporarily removed. There is a possibility that deposits or finds of Archaeological Value might be exposed and identified. to facilitate the repairs and should anything of significance be identified during the excavation then an alternative position or configuration of the ties could be developed, leaving the item of significance in-situ.	Archaeological input at design stage and understanding of the building in its context to be developed further. Programme of building recording to be included as outlined above. Where excavation is required within the deposits of expanding fill it is proposed that in addition to the building recording strategy, measures to minimise or to mitigate the risk from damaging archaeology has been provisionally established after discussions between the LA Planning Archaeologist, LA Building Conservation Officer Cadw and the Project Archaeologist, who have provisionally agreed a working methodology that will be formalised within a future, Written Scheme of Investigation to describe the ‘Watching Brief’ procedures of any excavation works across the site. It is proposed that where excavations are required, a wider toothless, excavator bucket or hand dig within this building will be used. A ‘Stop Order’ process will also be established so that excavations can be dug archaeologically, should any remains, or deposits of interest be identified. Where applicable, fixings will be made into the mortar joints of the existing fabric and the interventions will either be concealed so that the visual impact is reduced and the Aesthetic, communal values are not diminished.
b.6	Repair and/or reinstatement of internal room finishes.	To provide finishes that are similar to those of the existing, are vapour permeable are generally natural materials, are durable and products that have a low risk of trapping moisture within the overall wall construction. To reinforce the existing Evidential Value and Historic Value and Aesthetic Value with ‘like for like’ repairs only within the Scheduled Area	As above (see item b.1)	For the decorative finishes to be ‘soft’ breathable products with low environmental impact. For the Evidential and Aesthetic Values to be reinforced with the specification of natural products and products that match or are similar to those of the existing.	No adverse impact is anticipated in connection with the proposed wall finishes and decorative finishes.	No further action is necessary. Good records of the internal finishes are available therefore it is possible to repair the key details on a ‘like for like’ basis.
b.7	Demolition of some late C20 walls, fixtures and fittings at lower ground floor level to incorporate the new interpretation installation.	To realise the design proposals for this area of the building as a key hub for the interpretation of the lower site and as a store for the timber patterns.	As above (see item b.1)	To prepare the space to accommodate the new educational and training facilities that will enable the offering to be used for its identified future use. To remove recent building interventions that served a purpose but are of low heritage value. They conceal the reading and experience of the earlier building functions/purposes by their encroachment.	There will be a loss of materials from the Scheduled Structure and therefore of localised Evidential Value. It is suggested that the WC, Shower area was installed during the late C20 and in this instance, the works are considered to be of low heritage value.	Where the loss of the original building fabric is anticipated (though of low heritage value and constructed during the late C20), the area will be included as part of the programme of building recording that has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 4 scope and specification prior to the commencement of works to The Carpenters and Pattern Makers Workshop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion.
b.8	Installation of a new accessible WC and a compact kitchen, storage and an access ramp to the upper ground floor level of the Patternmakers Workshop.	To provide new welfare facilities that include WC’s, a compact kitchen and an access ramp to allow ‘barrier free’ access to be provided between spaces. To support the redevelopment initiatives for the adaptive re-use of the building and a sustainable future, that will better safeguard the conservation values and therefore the significance of the building for future generations to enjoy and appreciate.	As above (see item b.1)	The introduction of the new facilities as a ‘pod’ configuration that is reversible in nature will ‘unlock’ the potential of returning this building into use as a function/meeting room and will align with the business plan proposals of the current redevelopment. The provision of accessible WC facilities within this building and this area of the site. (the WC previously proposed between the Cupola Furnaces is not being pursued and implemented) Barrier free access will be offered to visitors to better utilise the reprovision of usable accommodation within the Patternmakers Workshop.	The proposals are being designed to be reversible in a ‘Pod’ configuration and to sit independently within the space and will have a visual impact on the interior of the building. The new facilities are proposed to support the use of the adjacent space as a meeting/function room for events and gatherings.	A programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 4 scope and specification prior to the commencement of works to The Patternmakers Workshop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. The design proposals have been developed to ensure that they are aesthetically and materially of a scale and character that will not detract from the mass and scale of the historically significant qualities of the existing interior.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
b. Patternmakers Workshop – Consolidation, Repair and Adaptive Re-use of the Building Continued. ...						
b.9	New foul drainage connection from the accessible WC and compact kitchen through the sub-floor and externally	To ensure that a new foul drainage connection can be made from the new accessible WC and compact kitchen to an existing foul drainage connection that runs within the access road to the south of this location. A combination of below ground and above ground connections are required to accommodate the change in level.	As above (see item b.1)	To unlock a new function and use for the building will align with the business plan proposals of the current redevelopment and to avoid the need for a WC to be introduced at a location externally and between the position of the two cupola furnaces. To be able to offer accessible facilities within the building and a barrier free environment after accessing the Patternmakers Workshop.	Where the excavation of the new drainage run is required beneath the existing timber end grain block floor, there is a risk that archaeological deposits of interest/significance might be disturbed or damaged. It should be noted that a proportion of the existing subfloor fill material consists of an expandable slag material will need to be removed, due to the presence of water and the high risk that it will continue to expand and cause problems with the line and level of any new flooring material and finishes. There is a risk that the Archaeological Potential will be diminished, and its Evidential Value or Historic Value might be consequently lessened. Whether the visual impact of a short length of cast iron waste pipework is considered acceptable in this location externally before it enters an adjacent I.C.	Preliminary discussions between the LA Planning Archaeologist, LA Building Conservation Officer Cadw and the Project Archaeologist have provisionally agreed a working methodology that will be formalised within a future, Written Scheme of Investigation to describe the ‘Watching Brief’ procedures of any excavation works across the site. It is proposed that where excavations are required, a wider toothless, excavator bucket will be used to afford more of an insight into the stratigraphy, possible features etc. A ‘Stop Order’ process will also be established so that excavations can be dug archaeologically, should any remains, or deposits of interest be identified. Records to be provided on completion and deposited with the Historic Environment Record
b.10	Upgrading and reinforcing where applicable of the incoming utilities to future-proof the building and its operations.	To introduce new incoming utilities that will support the new design proposals and the adaptive re-use of the building to create new interpretation and visitor facilities, To introduce the new services in a discreet and coordinated way that will not impact on the heritage values of the building and the immediate setting.	As above (see item b.1)	To ensure that Heritage values are not diminished in any way the routing and location of any new, incoming utilities. To limit the extent of the excavations and to coordinate installations in one location to reduce risk of damaging recognised heritage values.	There is a possibility that the routing of services may impact adjacent designations. It is unknown as to whether excavations would expose or potentially damage archaeological features or the remains of earlier structures. The heritage value of these remains is not currently understood. Whilst the risk of damage to the Evidential and Historic Value of any remains is possible, the input of a consultant Archaeologist to support the project would provide the experience and knowledge necessary to mitigate the risk of harm to current or future heritage values.	Where practicable, to route incoming services overhead, rather than to place the services in ducts below ground. As previously, where excavation is required it is proposed that in addition to the building recording strategy, measures to minimise or to mitigate the risk from damaging archaeology has been provisionally established after discussions between the LA Planning Archaeologist, LA Building Conservation Officer Cadw and the Project Archaeologist, who have provisionally agreed a working methodology that will be formalised within a future, Written Scheme of Investigation to describe the ‘Watching Brief’ procedures of any excavation works across the site. It is proposed that where excavations are required, a wider toothless, excavator bucket will be used to afford more of an insight into the stratigraphy, possible features etc. A ‘Stop Order’ process will also be established so that excavations can be dug archaeologically, should any remains, or deposits of interest be identified.
b.11	Complete Plumbing, Mechanical and Electrical installation required throughout, including, heating, energy efficient lighting, small power.	To introduce a new MEP installation throughout that are sustainable and cost/energy efficient, that renewables are provided where appropriate and where new systems/installations within the building can be resilient or alternatively flexible to change as technologies advance quickly during e.g. the next decade. To limit the extent of change in the future that might impact on the building fabric and its Evidential Value.	As above (see item b.1)	The locations of the main MEP distribution/containment routes are being carefully selected to minimise the loss of Evidential Value in connection with builder’s work. The careful coordination of services should declutter the internal appearance of the building so that the architectural, evidential and aesthetic qualities of the spaces can be appreciated by more people. To ensure that the proposed adaptive re-use of the building is sustainable and meets the needs of 21st Century user expectations and is sustainable. The work to introduce the MEP services will enable the adaptive re-use of the building to be realised, which in turn will enable a credible business opportunity to be managed in such a way that some income would be reinvested annually to maintain the upkeep of the building and in doing so its heritage values and significance.	To ensure that all builders work in connection with the installation of the services is clearly defined and agreed beforehand so to avoid alterations or loss to the existing building fabric. To ensure that all support structures and fixings associated with the installations are defined and agreed beforehand and to ensure that they will not be visually intrusive, nor detrimental to the condition and integrity of the building fabric, particularly in areas of high evidential value. Without prior coordination of installations there is a risk that some damage could ultimately diminish the integrity of all heritage values and ultimately the significance of the building. Whether the services are exposed or concealed within the building.	To ensure that the MEP proposals are fully designed pre-contract in terms of routing, supports or fixings and builders works associated with the installations. Where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 4 scope and specification prior to the commencement of works to The Patternmakers Workshop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion.
b.12	Installation of data/IT, Wi-Fi, CCTV and security alarm systems to support the new functions.	As above	As above (see item b.1)	As above	As above	As above

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
b. Patternmakers Workshop – Consolidation, Repair and Adaptive Re-use of the Building Continued. ...						
b.13	Installation of sanitaryware, fixtures and fittings within the new accessible WC	To provide a new accessible WC, within the Pattern Makers workshop for visitors and building users that will support the adjacent function of the building. To provide a ‘barrier free’ setting and an inclusive range of accommodation.	As above (see item b.1)	To provide an inclusive and non-discriminatory access to welfare facilities that can be used by a wide range of visitors. The range of facilities will enable a larger number of people to use the building in the future. Access to better equipped welfare facilities may strengthen the business case and provide accommodation that is not as readily available elsewhere in the locality.	Careful detailing will need to ensure that the environmental conditions are managed carefully, that high levels of R/H will not have a harmful impact on the building fabric and therefore the elements of greatest Evidential Value. As item b.11, the coordination of MEP services will be crucial, particularly ventilation/extract.	As above
b.14	Installation of a compact Kitchen, storage and equipment.	To provide an offer for the preparation of food and refreshments within the new facilities that will strengthen the business case and the offer available to visitors.	As above (see item b.1)	To ensure that the design proposals and the business offer can provide a range of facilities that meet the needs of the visitor market at Brymbo Iron and Steelworks and regionally. To ensure that the design proposals are resilient and can adaptively and sustainably respond to future trends or fashions in the market.	As above	As above
b.15	Installation of the new interpretation proposals at the lower ground floor level and the east end of the building.	To introduce and to describe the history and development of the core Heritage Area and the of the Ironworks and the Steelworks during the last 230 years and 150 years respectively. To provide access and wayfinding information that will inform visitors about the site, its topography, site safety, access routes, welfare facilities and/or constraints that may remain in advance of visits being made. The design and location of graphics will consider visual impairment and audio information would also be offered to assist, or to facilitate improved access. In all cases, any public information or signage will be offered on a bi-lingual Welsh/English basis.	As above (see item b.1)	To enhance the knowledge, understanding an appreciation of visitors who visit the former Brymbo Ironworks and Steelworks. To ensure that installations are reversible and will not diminish the appreciation of the conservation values and will not remove Evidential Value.	To ensure that all builders work in connection with the interpretation installations are clearly defined and agreed beforehand so to avoid alterations or loss to the existing building fabric. To ensure that all support structures and fixings associated with the installations are defined and agreed beforehand and to ensure that they will not be aesthetically, nor visually intrusive, nor detrimental to the condition and integrity of the building fabric, particularly in areas of high evidential value. Without prior coordination of installations there is a risk that some damage could ultimately diminish the integrity of all heritage values and ultimately the significance of the building. To ensure that the information can be updated and expanded as more information and knowledge becomes available. To ensure that it is possible to review and update much of the information dynamically in order that it is current, inclusive and addresses the history and development of the site from multiple perspectives.	To ensure that the Interpretation proposals are fully designed pre-contract in terms of content, materials selections and the coordination of supports or fixings and associated builders works. Where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 4 scope and specification prior to the commencement of works to The Patternmakers Workshop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. To ensure that flexibility and adaptability of information and content can be changed and adjusted without need to alter the conservation values and possibly the significance of the asset.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
c. Former Agents House - Consolidation, Repair and Adaptive Re-use of the Building						
c.1	Masonry repairs to stabilise, consolidate and repair the existing stone walls throughout	To implement a programme of structural recommendations outlined by the Consultant Structural Engineer report and to stabilise consolidate and repair the existing stonework walls, particularly the wall and chimney to the lean-to at the east end of the building. To reinstate panels of masonry that were dismantled for H&S stability reasons when the roof to the Former Agents House was removed in 2017. To undertake structural lintel repairs at window and door openings, particularly to the front elevation. To prepare for the reinstatement of the roof structure, coverings and chimneys. To reinforce the existing Evidential Value and the overall Significance of the building into the future.	The Former Agents House is designated Grade II* The designation is of National Importance. The building fabric is of high heritage value with much containing the original building materials and details that underpin the Evidential and Historic Values together with outward expression of the Aesthetic Value. Retention in-situ of key existing details will be a priority.	The programme of repairs will halt the current rate of deterioration, together with the risk of further undermining established heritage values, particularly the Evidential Value and Aesthetic Value. Manage the condition and structural integrity of the building for future custodians or owners and to extend the service life of key architectural details and therefore the integrity of the Evidential Value in most locations. The work will have a positive impact to reinstate known evidential value, to safeguard and stabilise the structural performance of the masonry and to improve the aesthetic and communal values that will enable visitors to better understand the original form and material finish of the building.	It will be necessary for some masonry to be carefully dismantled. Before rebuilding takes place. This will further impact upon the integrity of the Evidential Value and the availability of materials removed from the building in 2017. There is also a need to provide a safe H&S working methodology to reduce the risk of injury to contractor personnel. These considerations are informing the repair choices as is the proposal to introduce new panels of masonry. There would be no harmful impact to the fabric of the building nor to its Heritage Values from the reinstatement of the existing masonry and the consolidation/strengthening of the wall heads.	Where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 2 scope and specification prior to the commencement of works to The Former Agents House and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. Access strategy and working methodology to be developed by the main contractor that will need to demonstrate that the retention of the original materials and therefore the Evidential value will remain a priority, but that a safe working environment in which the repairs can be executed is agreed with all stakeholders, including Cadw prior to completion. No visual impact to mitigate. The consolidation and repair of the masonry will enhance the conservation vales of the building in the longer-term.
c.2	Reinstatement of the existing timber roof structure using some original components, building records and photographs with the reinstatement of the slate roof covering. Existing details to include the reconstruction of, hip, ridge and chimney details.	To reinstate the existing building form, materials and details that were dismantled in 2017 because of safety issues resulting from the poor condition, vulnerability and fragility of the structure at the time. The removal of the temporary mono-pitch roof covering and reinstatement of the pitched roof structure with hips and brick chimneys to a known configuration and range of details,	As above	The work will have a positive impact to reinstate known evidential value, to safeguard and stabilise the structural performance of the masonry and to improve the aesthetic and communal values that will enable visitors to better understand the original form and material finish of the building. The positive beneficial value to the visual impact on the setting and those of the adjacent Scheduled designation will be considerable as will enhancements to the group value, appreciation and understanding of the historical development of this complex site.	There would be no harmful impact to the fabric of the building nor to its Heritage Values from the reinstatement of the existing roof structure and covering. There will be a visual change from the temporary roof covering that has been in place during the last 7-8 years. The changes would be visible from the Scheduled, Core Heritage Area of the Former Ironworks and from the Grade II listed Bryn Seion Chapel that is situated on the opposite side of the valley. The change would ultimately be considered to be a positive beneficial impact on the setting and the group value of all buildings and structures on the site of Brymbo Ironworks and Steelworks.	No solutions required in respect to the construction process as it is based on record information before the original roof was removed and the temporary covering was installed. As previously, where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 2 scope and specification prior to the commencement of works to The Former Agents House and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion.
c.3	Repair and reinstatement of timber windows throughout.	To provide a window design solution that is deemed suitable for the representation of The Agents House as a means of reinforcing the Aesthetic value and Cultural understanding of the building. To reinforce the existing Evidential Value and Historic Value and Aesthetic Value.	As above (see item c.1)	The element of work seeks to represent the building with details that a more likely to align with earlier phases of development and use. The design is taken from earlier detailing found in the remaining window components on the south elevation and from a photographic record of other properties in Brymbo. To reinstate lost architectural details and to ensure that the best of the existing can be retained for the future. Windows/openings on the north elevation will be repaired on a ‘like for like’ basis.	There will not be a loss of existing evidential value to the masonry window openings. The current metal windows will be removed, therefore there will be a loss of existing material from the time of building listing in this regard, but the existing frames will be put into storage. The reinstatement is conjectural and represents an element of restoration but seeks to do so will not materially harm the values of the asset but seeks to add value in the re-presentation of the building to visitors.	No further measures required. But a clear location to be identified and a record made of the storage location of the windows currently fitted into the openings. All interventions will remain reversible. Should any circumstances materialise where evidential material is being lost, this damage will be offset by a programme of building recording and the depositing of these records with the Historic Environment Record (HER) on completion. HE Level 2 record will be undertaken.
c.4	Reinstatement of timber doors externally and internally.	As above	As above (see item c.1)	As above.	As above. Older door details, whether door leaves or frames have been lost/removed and as such, the works will be a restoration of these building elements.	Where changes of this nature are proposed. A programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 2 scope and specification prior to the commencement of works to The Former Agents House and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. No further measures required. All interventions will remain reversible.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
c. Former Agents House - Consolidation, Repair and Adaptive Re-use of the Building – Continued. ...						
c.5	Introduction of new structural support to the walls of the building interior Part reinstatement of the existing first floor structure and floor finishes. Reduction of levels to the building perimeter and the installation of a French drain together with rainwater drainage provisions from downpipes.	To stabilise the external masonry walls and provide sufficient volume internally for the interpretation and AV installations to the accommodated. To improve the interpretation proposals and to assist visitors with their understanding of the building, its original form and function. To facilitate level access to the north and east sides of the building, to reduce the risk of damp and moisture ingress to the interior as the new interpretation use of the asset is developed.	As above (see item c.1)	As the first-floor structure is not being reinstated, the works will ensure that the existing masonry and a significant proportion of the remaining evidential value can be retained. Will have the potential to provide barrier free access will improve the aesthetic value of the setting and will ensure that the risk from water ingress and being able to provide a stable internal environment in the future is achievable.	The internal strengthening and bracing of the external walls will have a visual impact and may have a negative impact on the aesthetic value of the interior. Fixings are required into the external walls, but there will not be a further loss of original building materials. Internally, the additional structure will be concealed by the future Interpretation installations that are proposed. The risk to a loss of evidential value is small, because of the implementation of an archaeological ‘watching brief’ and an agreed archaeological specification regarding all invasive excavations across the site.	Fixings will be made into the mortar joints of the existing fabric and the interventions will either be concealed by a new first floor ceiling or will be integrated into the final interpretation design proposals so that the visual impact is reduced and the Aesthetic, communal values are not diminished to visitors. The works are reversible, should the first-floor construction be reinstated at a later date. This is not proposed at present, because of the proposed use of the asset for projecting AV information. Should assets or artefacts and structures of high evidential values and significance be identified, there remain options for alternative approaches and solutions to be implemented that would not further diminish the heritage value of the asset.
c.6	Removal of recent wall, floor and ceiling linings.	To gradually reinstate the interior details, fittings and finishes that is taken from evidence gathered on site, or which is still concealed by the temporary linings that were constructed in 2017. To improve the interpretation proposals and to assist visitors with their understanding of the building, its original form and function.	As above (see item c.1)	To improve the internal appearance of the interior and where practicable (in the context of the Interpretation proposals) the reinstatement of interior finishes that align with the evidence collated on site. Manage the condition and structural integrity of the building for future custodians or owners and to extend the service life of key architectural details and therefore the integrity of the remaining Evidential Value in most locations.	The linings were installed as a temporary measure and as such there are no harmful impacts to their removal.	There are no specific risks that need to be mitigated other than to manage the temporary support/restraint of the external walls as item c.5 is implemented.
c.7	Upgrading and reinforcing where applicable of the incoming utilities to future-proof the building and its operations.	To introduce new incoming utilities that will support the new design proposals and the adaptive re-use of the building to create new interpretation and visitor facilities, To introduce the new services in a discreet and coordinated way that will not impact on the heritage values of the building and the immediate setting.	As above (see item b.1)	To ensure that Heritage values are not diminished in any way the routing and location of any new, incoming utilities. To limit the extent of the excavations and to coordinate installations in one location to reduce risk of damaging recognised heritage values.	There is a possibility that the routing of services may impact adjacent designations. It is unknown as to whether excavations would expose or potentially damage archaeological features or the remains of earlier structures. The heritage value of these remains is not currently understood. Whilst the risk of damage to the Evidential and Historic Value of any remains is possible, the input of a consultant Archaeologist to support the project would provide the experience and knowledge necessary to mitigate the risk of harm to current or future heritage values.	Where practicable, to route incoming services overhead, rather than to place the services in ducts below ground. Where excavation is required it is proposed that in addition to the building recording strategy, measures to minimise or to mitigate the risk from damaging archaeology has been provisionally established after discussions between the LA Planning Archaeologist, LA Building Conservation Officer Cadw and the Project Archaeologist, who have provisionally agreed a working methodology that will be formalised within a future, Written Scheme of Investigation to describe the ‘Watching Brief’ procedures of any excavation works across the site. It is proposed that where excavations are required, a wider toothless, excavator bucket will be used to afford more of an insight into the stratigraphy, possible features etc. A ‘Stop Order’ process will also be established so that excavations can be dug archaeologically, should any remains, or deposits of interest be identified.
c.8	Complete Plumbing, Mechanical and Electrical installation required throughout, including small power and lighting to improve the energy efficiency of the building.	To introduce a new MEP installation throughout that are sustainable and cost/energy efficient, that renewables are provided where appropriate and where new systems/installations within the building can be resilient or alternatively flexible to change as technologies advance quickly during e.g. the next decade. To limit the extent of change in the future that might impact on the building fabric and its Evidential Value.	As above (see item b.1)	The locations of the main MEP distribution/containment routes are being carefully selected to minimise the loss of Evidential Value in connection with builder’s work. The careful coordination of services should declutter the internal appearance of the building so that the architectural, evidential and aesthetic qualities of the spaces can be appreciated by more people. To ensure that the proposed adaptive re-use of the building is sustainable and meets the needs of 21st Century user expectations and is sustainable.	To ensure that all builders work in connection with the installation of the services is clearly defined and agreed beforehand so to avoid alterations or loss to the existing building fabric. To ensure that all support structures and fixings associated with the installations are defined and agreed beforehand and to ensure that they will not be visually intrusive, nor detrimental to the condition and integrity of the building fabric, particularly in areas of high evidential value.	To ensure that the MEP proposals are fully designed pre-contract in terms of routing, supports or fixings and builders works associated with the installations. Where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 2 scope and specification prior to the

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
c. Former Agents House - Consolidation, Repair and Adaptive Re-use of the Building – Continued. ...						
c.8 continued...	Complete Plumbing, Mechanical and Electrical installation required throughout, including small power and lighting to improve the energy efficiency of the building. Continued. ...			The work to introduce the MEP services will enable the adaptive re-use of the building to be realised, which in turn will enable a credible business opportunity to be managed in such a way that some income would be reinvested annually to maintain the upkeep of the building and in doing so its heritage values and significance.	Without prior coordination of installations there is a risk that some damage could ultimately diminish the integrity of all heritage values and ultimately the significance of the building. Whether the services are exposed or concealed within the building.	commencement of works to The Patternmakers Workshop and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion.
c.9	Installation of data/IT, Wi-Fi, CCTV and security alarm systems to support the new functions.	As above	As above (see item c.1)	As above	As above	As above
c.10	Installation of the new interpretation proposals at the east end of the building.	To introduce and to describe the history and development of the core Heritage Area and the of the Ironworks and the Steelworks during the last 230 years and 150 years respectively. To provide access and wayfinding information that will inform visitors about the site, its topography, site safety, access routes, welfare facilities and/or constraints that may remain in advance of visits being made. The design and location of graphics will consider visual impairment and audio information would also be offered to assist, or to facilitate improved access. In all cases, any public information or signage will be offered on a bi-lingual Welsh/English basis.	As above (see item c.1)	To enhance the knowledge, understanding an appreciation of visitors who visit the former Brymbo Ironworks and Steelworks. To ensure that installations are reversible and will not diminish the appreciation of the conservation values and will not remove Evidential Value.	To ensure that all builders work in connection with the interpretation installations are clearly defined and agreed beforehand so to avoid alterations or loss to the existing building fabric. To ensure that all support structures and fixings associated with the installations are defined and agreed beforehand and to ensure that they will not be aesthetically, nor visually intrusive, nor detrimental to the condition and integrity of the building fabric, particularly in areas of high evidential value. Without prior coordination of installations there is a risk that some damage could ultimately diminish the integrity of all heritage values and ultimately the significance of the building. To ensure that the information can be updated and expanded as more information and knowledge becomes available. To ensure that it is possible to review and update much of the information dynamically in order that it is current, inclusive and addresses the history and development of the site from multiple perspectives.	To ensure that the Interpretation proposals are fully designed pre-contract in terms of content, materials selections and the coordination of supports or fixings and associated builders works. Where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 2 scope and specification prior to the commencement of works to The Former Agents House and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. To ensure that flexibility and adaptability of information and content can be changed and adjusted without need to alter the conservation values and possibly the significance of the asset.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
d. The Core Heritage Area – Consolidation and Repair of the standing remains.						
d.1	Masonry repairs to stabilise and consolidate the existing stone walls, vaulted spaces, and structures to No1 Blast Furnace, The Foundry and Cast House, the Cupola Furnaces, adjacent store areas and the Charging Wall. Iron tie plate repairs to No1 Blast Furnace.	To implement a programme of structural recommendations outlined by the Consultant Structural Engineer report and to stabilise consolidate and repair the existing stonework and brickwork walls and structures from various periods during the development of the Ironworks. To stabilise and repair the cast iron tie plates, to No1 Blas Furnace. To ensure that they are not lost or damaged and that they are retained with the most historically significant structure on the site. To reinforce the existing Evidential Value and the overall Significance of the buildings and structures into the future.	The Core Heritage Area of the Former Brymbo Ironworks has been Scheduled (DE202) and is therefore considered to be of National Significance as outlined in the high heritage values that are assigned to the structures and standing remains of No1 Blast Furnace, The Cast House, The Foundry and the Patternmakers Workshop located at the southern end of the designated area.	The roof covering and structure over the Cast House and Foundry collapsed and was removed in approximately 2015. The spaces had been exposed to the elements for approximately the last 10 year. The current programme of repairs will stabilise and reduce the rate of deterioration, decay to the masonry structures, fixtures and equipment, together with the risk of further undermining established heritage values, particularly the Evidential Value and Aesthetic Value. It is possible to refix missing fittings and architectural details that fell or were removed from the structures and temporarily placed into storage. Manage the condition and structural integrity of the standing remains and associated H&S risks for future custodians or owners and to extend the service life of key architectural details and therefore the integrity of the Evidential Value in most locations.	Repairs will be undertaken on a ‘like for like’ basis and where localised dismantling of masonry is necessary; a survey record will be produced prior to commencement to ensure that the key stones and brickwork details are rebuilt in the same position. There is also a need to provide a safe H&S working methodology to reduce the risk of injury to contractor personnel. These considerations are informing the repair choices. There would be no harmful impact to the fabric of the standing remains/structures nor to its Heritage Values from the reinstatement of the stabilisation, consolidation and repair of the existing masonry.	Where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 4 scope and specification prior to the commencement of works to The Core Heritage Area of the Ironworks and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. Access strategy and working methodology to be developed by the main contractor that will need to demonstrate that the retention of the original materials and therefore the Evidential value will remain a priority, but that a safe working environment in which the repairs can be executed is agreed with all stakeholders, including Cadw prior to completion. The consolidation and repair of the masonry will enhance the conservation vales of the building in the longer-term.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
d. The Core Heritage Area – Consolidation and Repair of the standing remains – Continued. ...						
d.2	Structural repairs beneath the Cupola Furnaces	To implement a programme of structural recommendations outlined by the Consultant Structural Engineer report and to stabilise and repair the existing steelwork and concrete supports at the lower ground level to the Cupola Furnace supports. To reinforce the existing Evidential Value and the overall Significance of the structures into the future, particularly the Communal and Aesthetic Values.	As above (see item d.1)	The current programme of repairs will stabilise and reduce the rate of deterioration and decay to the steelwork and reinforced concrete structure which supports the Cupola Furnaces. To ensure that the established heritage values, particularly the Evidential Value and Aesthetic Values are not diminished.	The introduction of the new steelwork to support the cupolas will be invasive and some existing masonry will need to be moved to create a beading for the new structure. The works are of an essential nature and the proposals do consider the visual impact of the repairs and seek to mitigate where practicable. In the context of the actual location of the repairs, the visual impact on heritage values in adjacent locations will be negligible.	No further actions are necessary at this time. Where impacts on the evidential values might be encountered and as an offset to the changes that are proposed, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 4 scope and specification prior to the commencement of works to The Core Heritage Area of the Ironworks and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion.
d.3	Repairs to the overhead crane and structure within the Foundry area.	To stabilise the decay and corrosion to the large objects and equipment within the area of the Foundry. To reduce H&S risks and to reduce the rate of deterioration to the structure and to the individual component parts. To reinforce the existing Evidential Value and the overall Significance of the structure and components into the future, particularly the Communal and Aesthetic Values in this area of the site.	As above (see item d.1)	To manage any H&S risks and the decay of the components and details associated with the overhead crane. To ensure that the established heritage values, particularly the Evidential Value and Aesthetic Values are not diminished.	There are no harmful impacts associated with the undertaking of these repairs within the Core Heritage Area.	No further actions are necessary at this time and as above in regard to the programme of building recording.
d.4	Repair and re-use of C20 ancillary building to the east of the foundry as a cider brewery space.	To undertake maintenance and building fabric repairs to the existing building which stands on the east side (external face) of the Cast House and Foundry Walls. The heritage value of this building is low, relative to immediate locations, but shares walls that form part of the historic fabric. The building also stands on a location which is of high Archaeological potential. The works are to reinforce the Evidential Value and the overall Significance of the associated conservation values.	As above (see item d.1)	The current programme of repairs will stabilise and reduce the rate of deterioration and offer repair solutions that will ensure that the established heritage values are not diminished.	There are no harmful impacts associated with the undertaking of these repairs within the Core Heritage Area.	No further actions are necessary at this time.
d.5	Drainage repairs to intercept water from the adit and lengths of new drainage to divert water from the upper terraces to the NW and W of the charging walls	To ensure that rainwater can be moved away from the core Heritage are that is Associated with the original/early development of the Ironworks and to ensure that the Archaeological Potential of the stratigraphy and deposits in these central areas of High Significance are not lessened or lost because of the maintenance works necessary to the existing infrastructure. The works are also proposed to prevent further damage and decay to some of the masonry structures of highest heritage value e.g. the masonry base on which the Charging House for No1 Blast Furnace once stood which is deteriorating due to the flow of surface water in damaged drainage from the upper terrace level. The works are proposed to reinforce the Evidential Value and the overall Significance of the associated conservation values.	As above (see item d.1)	To avoid any deterioration or the risk of movement to the building structure, concentrations of water and moisture ingress or poor environmental conditions within the building. To primarily manage and maintain the Evidential Value, but in doing so all other Conservation Values.	The basic maintenance investigations and checks will not involve any harmful impact. Should the excavation of existing drainage runs be necessary, the dig will follow the line of the original (particularly in the area of the casting pits within the foundry) Should the excavation of the new drainage runs be necessary, there is a high probability/risk that archaeological deposits of interest/significance might be disturbed or damaged without the input and oversight of the Project Archaeologist and an agreed working methodology within the approved WSI. There is a risk that the Archaeological Potential will be diminished, and its Evidential Value or Historic Value might be consequently lessened.	Preliminary discussions between the LA Planning Archaeologist, LA Building Conservation Officer Cadw and the Project Archaeologist have provisionally agreed a working methodology that will be formalised within a future, Written Scheme of Investigation to describe the ‘Watching Brief’ procedures of any excavation works across the site. It is proposed that where excavations are required, a wider toothless, excavator bucket will be used to afford more of an insight into the stratigraphy, possible features etc. A ‘Stop Order’ process will also be established so that excavations can be dug archaeologically, should any remains, or deposits of interest be identified. This will mitigate the risk of not identifying and capturing evidence of earlier phases of ironmaking on the site, and therefore enhance our understanding of the historic development and manufacturing processes undertaken historically. Records to be provided on completion and deposited with the Historic Environment Record

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
d. The Core Heritage Area – Consolidation and Repair of the standing remains – Continued. ...						
d.6	Installation of the new interpretation proposals within the Foundry, Cast House and adjacent locations.	To convey the history and development of the core Heritage Area, the Ironworks and the Steelworks during the last 230 years and 150 years respectively. To provide access and wayfinding information that will inform visitors about the site, its topography, site safety, access routes, welfare facilities and/or constraints that may remain in advance of visits being made. The design and location of graphics will consider visual impairment and audio information would also be offered to assist, or to facilitate improved access. In all cases, any public information or signage will be offered on a bi-lingual Welsh/English basis.	As above (see item d.1)	To enhance the knowledge, understanding an appreciation of visitors who visit the former Brymbo Ironworks and Steelworks. To ensure that installations are reversible and will not diminish the appreciation of the conservation values and will not remove Evidential Value. NOTE – It is proposed that no excavation within the external Scheduled Area will be necessary for the installation of each component to the interpretation design strategy. Any MEP installation will be attached to the existing steelwork of the overhead crane etc or will be a ‘standalone’ installation that will not require any further connections.	To ensure that all builders work in connection with the interpretation installations are clearly defined and agreed beforehand so to avoid alterations or loss to the existing building fabric. To ensure that all support structures and fixings associated with the installations are defined and agreed beforehand and to ensure that they will not be aesthetically, nor visually intrusive, nor detrimental to the condition and integrity of the building fabric, particularly in areas of high evidential value. To ensure that the information can be updated and expanded as more information and knowledge becomes available. To ensure that it is possible to review and update much of the information dynamically in order that it is current, inclusive and addresses the history and development of the site from multiple perspectives.	To ensure that the Interpretation proposals are fully designed pre-contract in terms of content, materials selections and the coordination of supports or fixings and associated builders works. Where change is to occur within the area of the Schedule designation (directly or indirectly) from a visual impact perspective, a programme of building recording has provisionally been agreed with LA Planning Archaeologist, LA Building Conservation Officer, Cadw and the Project Archaeologist to undertake a HE Level 4 scope and specification prior to the commencement of works to The Core Heritage Area and for an ‘as built’ record also to be provided that will be deposited with the Historic Environment Record (HER) on completion. To ensure that flexibility and adaptability of information and content can be changed and adjusted without need to alter the conservation values and possibly the significance of the asset.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
e. Story of Steel – Stage and Interpretation Spaces at the NE corner of Robertson Square						
e.1	Construction of a stage in front of interpretation spaces contained within 2No x 40-foot and 1No x 20-foot metal storage containers.	As part of the business plan, to provide a performance space for events that das the dual purpose of housing the interpretation for the later history of the site and the production of steel. To provide a space and the infrastructure to hold events that will support the business case and provide the seasonal revenue to assist with the ongoing care, maintenance and continuing redevelopment of the site.	The installation of the 3No metal storage containers and stage is proposed within a currently undesignated area of the site but is likely to become part of an extended Scheduled Area that is currently under review by Cadw and Stakeholders. The containers also stand on ground that is known to have been remediated to a depth of approximately 3 metres during the early 2000’s before being filled with imported material to the level that is seen today. Please refer to section 2.4. However, of greater heritage significance is the archaeological potential that comes in the possible deposits that exist within peripheral locations, and within a strip of ground (beneath the current east boundary and access track that has remained unaltered). Whilst not being impacted by these works directly, it is likely that archaeological deposits associated with any undisturbed ground will natural hold greater archaeological potential.	Will provide new facilities that will support the redevelopment and adaptive re-use business case and objectives of the Former Brymbo Ironworks and Steelworks. The proposals are reversible and will not impact adversely on the Evidential Values of the site as it is proposed in a location that has been remediated and the Archaeological potential is likely to be low.	Whilst the choice of using storage containers is relatively industrial in its aesthetic, there will be a direct and indirect visual impact that will alter the setting and immediate context of the adjacent Scheduled Area (Cadw ref: DE202). On balance, the scale of the proposal within the setting is considered to be proportionate and would not dominate the adjacent standing remains and structures, particularly the charging walls. The information being conveyed and the function of this reversible design intervention, does provide benefits to the project that are positive and will support the scheme as a whole. The proposals are not considered to have an impact that would have a negative impact on key conservation values, and therefore the significance of the scheduled assets. Visual change externally will be visible from the grade II* listed Agents House (Cadw ref:1731) (the west facing gable) but the impact will be modest in nature and partly obscured by adjacent buildings and landscape features. For this reason, it is not considered that the proposal would adversely detract from its heritage vales and significance. The new stage and interpretation facilities would also be visible from the grade II listed Bryn Seion Chapel, (Cadw ref: 9813) some 500m to the NE. Whilst holding a direct line of sight into and away from the Heritage Area, the visual change will be negligible as it would also be partially obscured by the east end of the charging wall and adjacent vegetation. The proposals are not likely to have an adverse impact on this heritage asset.	No further action is proposed in respect to the direct and indirect impact of the proposal on adjacent or more distant heritage assets. Some screening to be provided with the soft landscaping proposals and the detailing of the east boundary to the site to reduce some visual impact, but to ensure that No1 Blast Furnace will remain visible from the highway. Colour of the containers to be proposed and agreed with the LA so that it will complement the setting and/or further lessen the visual impact when viewed from adjacent locations or from heritage assets.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
e. Story of Steel – Stage and Interpretation Spaces at the NE corner of Robertson Square – Continued. ...						
e.2	Complete Mechanical and Electrical installation required throughout, including small power and lighting to support the objectives of the brief.	To introduce a new MEP installation that will support the construction and installation of the performance area and interpretation spaces within Robertson Square.	As above (see item e.1)	The proposals are reversible, and this area of the site has been selected as it is likely not to hold a high archaeological potential due to the remediation and reinstatement of the ground on which the contains will sit. To ensure that the proposed adaptive re-use of the site is sustainable, meets the needs of 21st Century user expectations and will make a positive contribution to the business case of the project so that it will support the longer-term maintenance, repair and building conservation objectives of the project.	To ensure that all builders work in connection with the installation of the services is clearly defined and agreed beforehand so to avoid any possibility of having a negative impact on recognised conservation values. To ensure that all support structures and fixings associated with the installations are defined and agreed beforehand and to ensure that they will not be visually intrusive, nor detrimental to the setting and to this area of the site, when viewed from adjacent locations.	No specific actions are necessary. Some services will be run overhead to ensure that the potential of disturbing areas of ground with a high archaeological potential is mitigated.
e.3	Installation of data/IT, Wi-Fi, CCTV etc to support the new functions.	As above	As above (see item e.1)	As above	As above	As above
e.4	Installation of the new interpretation proposals within the new metal storage containers.	To introduce and to describe the history and development of the core Heritage Area and the of the Ironworks and the Steelworks during the last 230 years and 150 years respectively, but particularly the history of steel manufacture in this location. To provide access and wayfinding information that will inform visitors about the site, its topography, site safety, access routes, welfare facilities and/or constraints that may remain in advance of visits being made. The design and location of graphics will consider visual impairment and audio information would also be offered to assist, or to facilitate improved access. In all cases, any public information or signage will be offered on a bi-lingual Welsh/English basis.	As above (see item e.1)	To enhance the knowledge, understanding an appreciation of visitors who visit the former Brymbo Ironworks and Steelworks. To ensure that installations are reversible and will not diminish the appreciation of the conservation values and will not remove Evidential Value.	To ensure that all builders work in connection with the interpretation installations are clearly defined and agreed beforehand. To ensure that all support structures and fixings associated with the installations are defined and agreed beforehand and to ensure that they will not be aesthetically, nor visually intrusive, nor detrimental to the setting in any way. To ensure that the information can be updated and expanded as more information and knowledge becomes available. To ensure that it is possible to review and update much of the information dynamically in order that it is current, inclusive and addresses the history and development of the site from multiple perspectives.	To ensure that the Interpretation proposals are fully designed pre-contract in terms of content, materials selections and the coordination of supports or fixings and associated builders works. To ensure that flexibility and adaptability of information and content can be changed and adjusted without need to alter the conservation values and possibly the significance of the setting and adjacent assets of high heritage value and of National Significance.

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
f. Hard and Soft Landscape Design Proposals with Drainage – Sitewide proposals						
f.1	Construction of Hard Landscaping Proposals, surfacing, bollards, boundary fencing and railings.	To realise design proposals that are appropriate, contextual and will complement the objectives of the redevelopment project to create a heritage destination for visitors and community hub with educational and training facilities. To provide a safe and secure environment that will reduce the risk of damage to the heritage assets and to ensure that heritage values are not diminished further, but gradually reinforced and improved. To create an environment that is as accessible as possible and where ‘reasonable adjustment’ has been undertaken to offer equitable and ‘barrier free’ access on what is a challenging, terraced site.	The proposals are spread across all areas and will have an impact (to a greater or lesser extent) on most locations, both designated and undesignated. A limited amount of work is proposed within the Core Heritage Area of the Former Brymbo Ironworks which is Scheduled (DE202) and is a location of National Significance as outlined in the high heritage values that are assigned to the structures and standing remains of No1 Blast Furnace, The Cast House, The Foundry and the Patternmakers Workshop located at the southern end of the designated area. The Former Agents House positioned on the upper terrace is designated Grade II* and is also of National Significance. Landscape proposals are also being considered in undesignated locations, but it is likely to become part of an extended Scheduled Area, currently under review by Cadw and Stakeholders.	The design proposals should provide a coherence to the representation of the site as a heritage destination for visitors. The works will enhance the security of the site and may reduce the risk of unauthorised access and in turn the risk of damage to buildings, structures and standing remains of considerable heritage value and significance is reduced.	To ensure that the character of the site remains industrial in nature and does not become domestic in scale and detail at any point. Whilst the design proposals have been developed to reuse most existing surfaces and/or to raise levels as opposed to excavating and reducing levels which may have a greater chance of impacting on the archaeology of the site, there are locations where there is a high probability/risk that archaeological deposits of interest/significance might be disturbed or damaged without the input and oversight of the Project Archaeologist and an agreed working methodology within the approved WSI There is a risk that the Archaeological Potential will be diminished, and its Evidential Value or Historic Value might be consequently lessened.	Preliminary discussions between the LA Planning Archaeologist, LA Building Conservation Officer Cadw and the Project Archaeologist have provisionally agreed a working methodology that will be formalised within a future, Written Scheme of Investigation to describe the ‘Watching Brief’ procedures of any excavation works across the site. It is proposed that where excavations are required, a wider toothless, excavator bucket will be used to afford more of an insight into the stratigraphy, possible features etc. A ‘Stop Order’ process will also be established so that excavations can be dug archaeologically, should any remain, or deposits of interest be identified. This will mitigate the risk of not identifying and capturing evidence of earlier phases of ironmaking on the site, and therefore enhance our understanding of the historic development and manufacturing processes undertaken historically. Records to be provided on completion and deposited with the Historic Environment Record

Ref.	Location of the Works	Your Objective	Significance of the affected building element, component, or detail	Assessing Beneficial Impact	Assessing Harmful Impact	Proposed Solution
f. Hard and Soft Landscape Design Proposals with Drainage – Sitewide proposals – Continued. ...						
f.2	Construction of Soft Landscape design proposals.	To realise design proposals that are appropriate, contextual and will complement the objectives of the redevelopment project to create a heritage destination for visitors and community hub with educational and training facilities. To enhance the character and the qualities of the setting, to frame views into and away from the site of the former ironworks and steelworks. To enhance biodiversity and ecological value across the site.	As above (see item f.1)	The design proposals should provide a coherence to the representation of the site as a heritage destination for visitors. The soft landscaping proposals should frame views into and away from the site. The soft landscaping proposals should enhance biodiversity and ecological values across the site.	When matured, the soft landscaping proposals should not screen nor obstruct views into and away from the Core Heritage Area and the buildings, standing remains and structures of significance. The presence of the soft landscaping should not increase the maintenance risks in the future nor the cost of managing and maintaining the heritage assets. The roots of the plants and trees should not have a detrimental/negative impact on the archaeological potential of the site.	The location of the soft landscape proposals should be considered carefully to avoid having a negative impact on the archaeological potential of the site. An archaeological deposit plan could be developed to inform these decisions. The specification/selection of plants and trees should be considered carefully, to ensure that they will not have a negative impact on the potential archaeology of the site.
f.3	Construction of the drainage strategy where not already described and considered.	To develop design proposals that will accommodate the SAB (Sustainable Urban Drainage) requirements of the site in such a way that the risk of damaging archaeological deposits and/or areas of high archaeological potential are minimised. To ensure that the Archaeological Potential in areas of High Significance are not lessened or lost because of the sitewide drainage strategy which utilises both existing and new pieces of infrastructure. To ensure that the rainwater, surface water and ground water from the adit can be properly managed, including outflow rates that will not pressurise the capacity of the existing infrastructure.	As above (see item f.1) but including the car parking area beyond the east boundary, an undesignated location where the ground has been excavated and remediated to a depth of approximately 3 metres.	To manage the flow of water and waste from the site and to avoid any deterioration or the risk to the heritage and heritage values across the site. To primarily manage and maintain the Evidential Value, but in doing so all other Conservation Values. The line of existing drainage runs will be used and/or locations of known ground disturbance to mitigate as far as is practicable the risk of damaging deposits or features of archaeological significance. The option to utilise the ground beneath the new car park on the east boundary (an area of excavated and remediated ground) will reduce the risk from damaging locations of greater archaeological potential and/or to ensure that more areas of the site remain undisturbed.	Should the excavation of existing drainage runs be necessary, the dig will follow the line of the original Should the excavation of the new drainage runs be necessary, there is a high probability/risk that archaeological deposits of interest/significance might be disturbed or damaged without the input and oversight of the Project Archaeologist and an agreed working methodology within the approved WSI. There is a risk that the Archaeological Potential will be diminished, and its Evidential Value or Historic Value might be consequently lessened.	Preliminary discussions between the LA Planning Archaeologist, LA Building Conservation Officer Cadw and the Project Archaeologist have provisionally agreed a working methodology that will be formalised within a future, Written Scheme of Investigation to describe the ‘Watching Brief’ procedures of any excavation works across the site. It is proposed that where excavations are required, a wider toothless, excavator bucket will be used to afford more of an insight into the stratigraphy, possible features etc. A ‘Stop Order’ process will also be established so that excavations can be dug archaeologically, should any remain, or deposits of interest be identified. This will mitigate the risk of not identifying and capturing evidence of earlier phases of ironmaking on the site, and therefore enhance our understanding of the historic development and manufacturing processes undertaken historically. Records to be provided on completion and deposited with the Historic Environment Record

References

- Brymbo Developments Ltd. (n.d.) [c. 2001]; *The Development of the Brymbo Steelworks – an Historical Review*; (unpublished typescript)
- Charles, G., Charles, H. (1997); *The Golden Age of Brymbo Steam*; Llanrwst, Gwasg Carreg Gwalch
- Clark, K. (2001); *Informed Conservation: Understanding Historic Buildings and their Landscapes for Conservation English*; London: English Heritage
- Cranstone, D., Fitzgerald, R. (2001) *Brymbo Steelworks – Archaeological Assessment (Draft)*; (unpublished typescript)
- Donald Insall Associates (2001); *Brymbo Steelworks – Heritage Development Plan Project: Appendix*; (unpublished report)
- Frost, P. (2007); *Former Brymbo Steelworks Site, Brymbo Wrexham – Archaeological Watching Brief by Castlery Archaeology*; (unpublished report)
- Lerry, G. G. (1946); *The Collieries of Denbighshire*; Woodall, Minshall, Thomas & Co Ltd, Principality Press, Wrexham & Oswestry
- Jones, E. (1987); *A History of GKN – Volume 1: Innovation & Enterprise 1759-1918*; MacMillan Press Ltd
- Jones, I.D. (1991); *Brymbo Steelworks – A Collection of Pictures*; Wrexham, Bridge Books
- Rogers, G. (1991); *Brymbo and its Neighbourhood*; Wrexham
- Waring, W. A., Roberts, T., Griffiths L. (1959); *The Story of Brymbo – Brymbo Steelworks Ltd*, Birmingham, John Goodman & Sons

Useful Links

- www.archwilio.org.uk The online Historic Environment Record of Wales
- www.coflein.gov.uk The RCAHMW National Monuments Record
- www.historicwales.gov.uk Online Scheduled Monument and Listed Building Records in Wales
- <http://calmview.flintshire.gov.uk/CalmView/> Flintshire Records Office online catalogue
- http://www.wrexham.gov.uk/english/heritage/brymbo_steelworks/index.htm

Documents and guidance referenced during the preparation of this assessment include –

- The Historic Environment (Wales) Act 2023
- Historic Environment (Wales) Act 2016
- Ancient Monuments and Archaeological Areas Act 1974
- Heritage Impact Assessment in Wales – Welsh Government, Cadw 2017
- Guidance on Heritage Impact Assessments for Cultural World Heritage Properties – ICOMOS 2011
- Conservation Principles for the Sustainable Management of the Historic Environment in Wales - Welsh Assembly Government, Cadw 2011
- Technical Advice Note 24: The Historic Environment – Welsh Government, Cadw 2017
- How to Improve Energy Efficiency in Historic Buildings in Wales, Welsh Government, Cadw 2022
- Informed Conservation – English Heritage 2001
- Managing Conservation Areas in Wales, Welsh Government, Cadw 2017
- Managing Change to Listed Buildings in Wales, Welsh Government Cadw 2017
- Managing Listed Buildings at Risk in Wales, Welsh Government, Cadw 2017
- Planning Policy Wales, 12th Edition, Welsh Government, 2024
- The Unitary Development Plan 1996 – 2011 adopted on the 14th February 2005.
- The emerging Local Development Plan 2 (LDP2) (2013-2028)
- Local Policy - Our Wrexham Plan (LSB; 2013-2024)

Appendix A – Selection of Existing and Proposed Drawings





DATE	NAME	REMARKS	BY

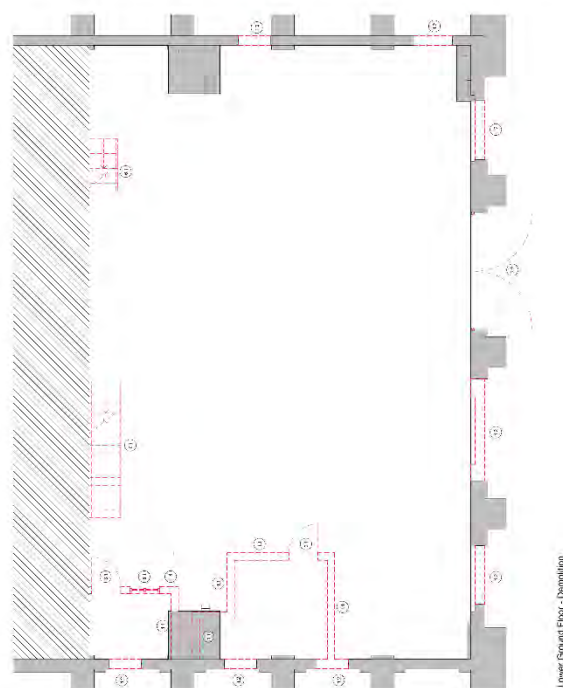
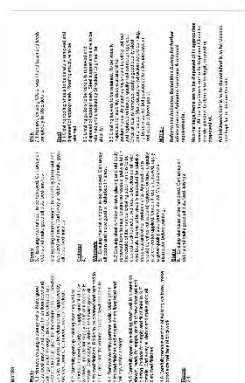
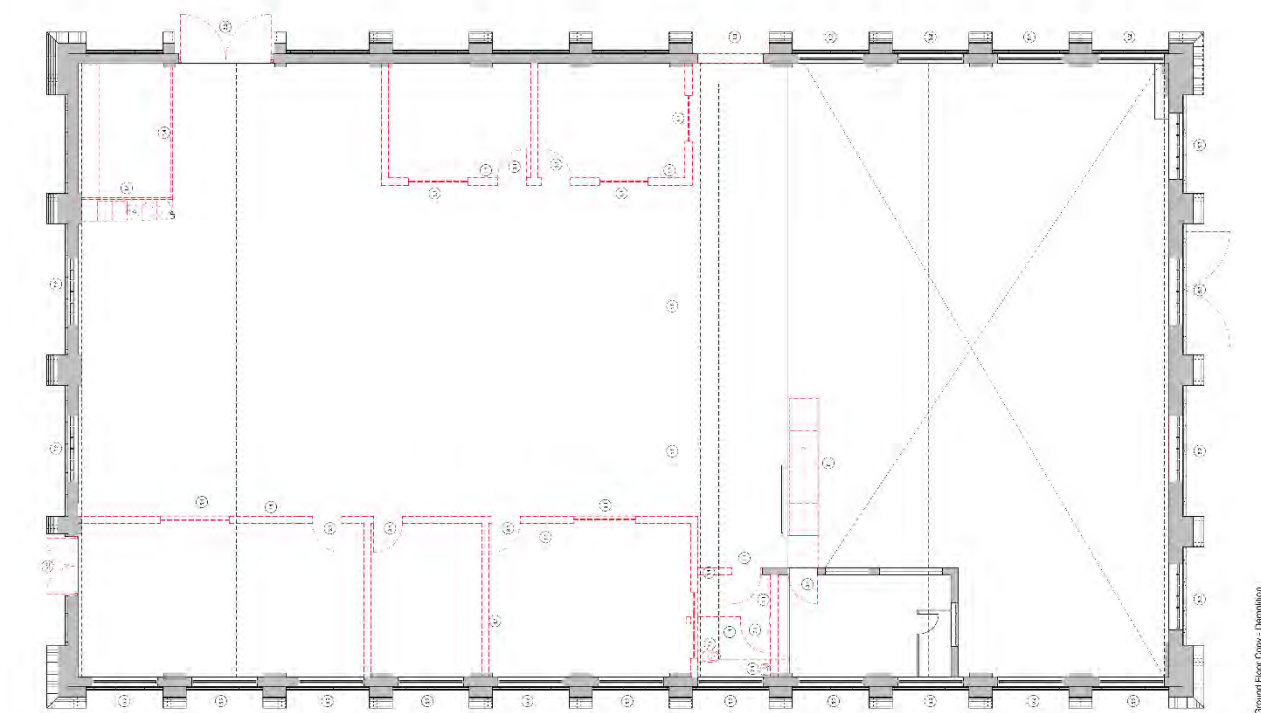
Brymbo Heritage Trust

Bryumbo Machine Shop

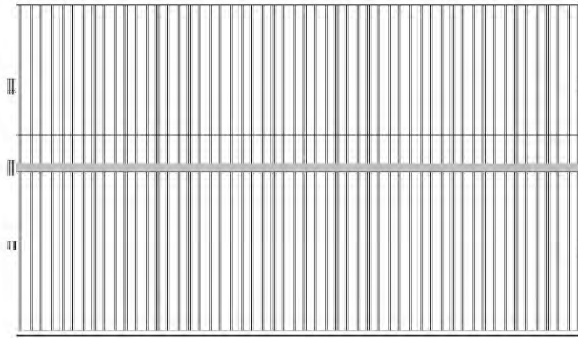
Existing Elevations & Sections	DATE 20/04/23	DRAWN BY JG	CHECKED BY JG	SPEC. WSP/2018
PROJECT NO.	DRS-TCR-M6-ZZ-DP-002			
REVISED	11			

TACP Italia s.p.a. tel. 06-8971
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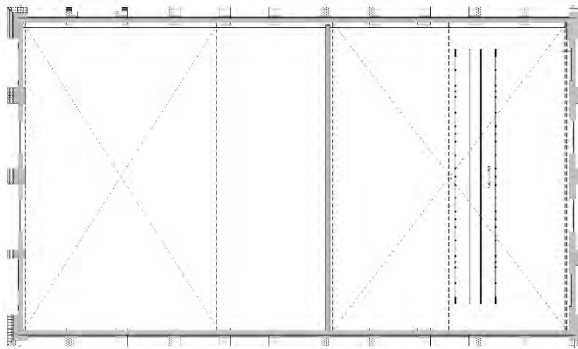
TACP



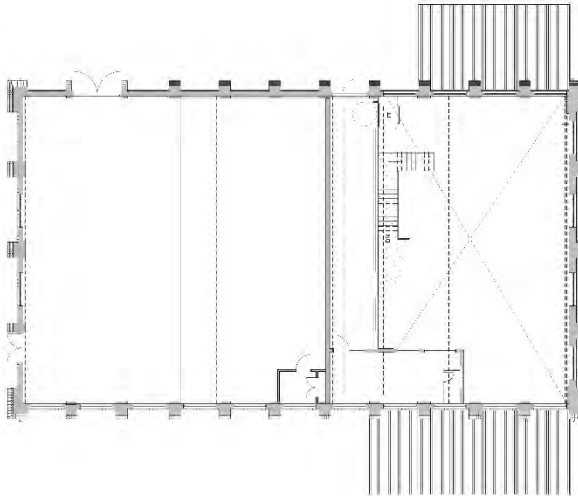
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1. All dimensions are in millimetres unless otherwise stated.
2. All dimensions are to the centre of the member unless otherwise stated.
3. All dimensions are to the face of the member unless otherwise stated.
4. All dimensions are to the face of the member unless otherwise stated.
5. All dimensions are to the face of the member unless otherwise stated.
6. All dimensions are to the face of the member unless otherwise stated.
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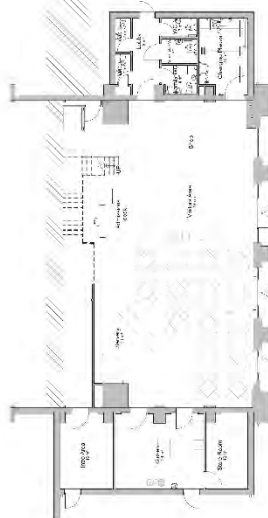
Proposed Roof
1:100



Proposed First Floor
1:100



Proposed Ground Floor
1:100



Proposed Lower Ground Floor
1:100

Rev	Description	Date
1	Issue for tender	10/10/2023
2	Issue for construction	10/10/2023

Notes:

Prepared by:
Brymbo Heritage Trust

Drawn by:
Brymbo Machine Shop

Checked by:
GA Plans - Proposed

Scale:
1:100

Project:
Brymbo Machine Shop

Client:
Brymbo Heritage Trust

Location:
Brymbo, North Wales

Date:
10/10/2023

Drawn by:
Brymbo Machine Shop

Checked by:
GA Plans - Proposed

Scale:
1:100

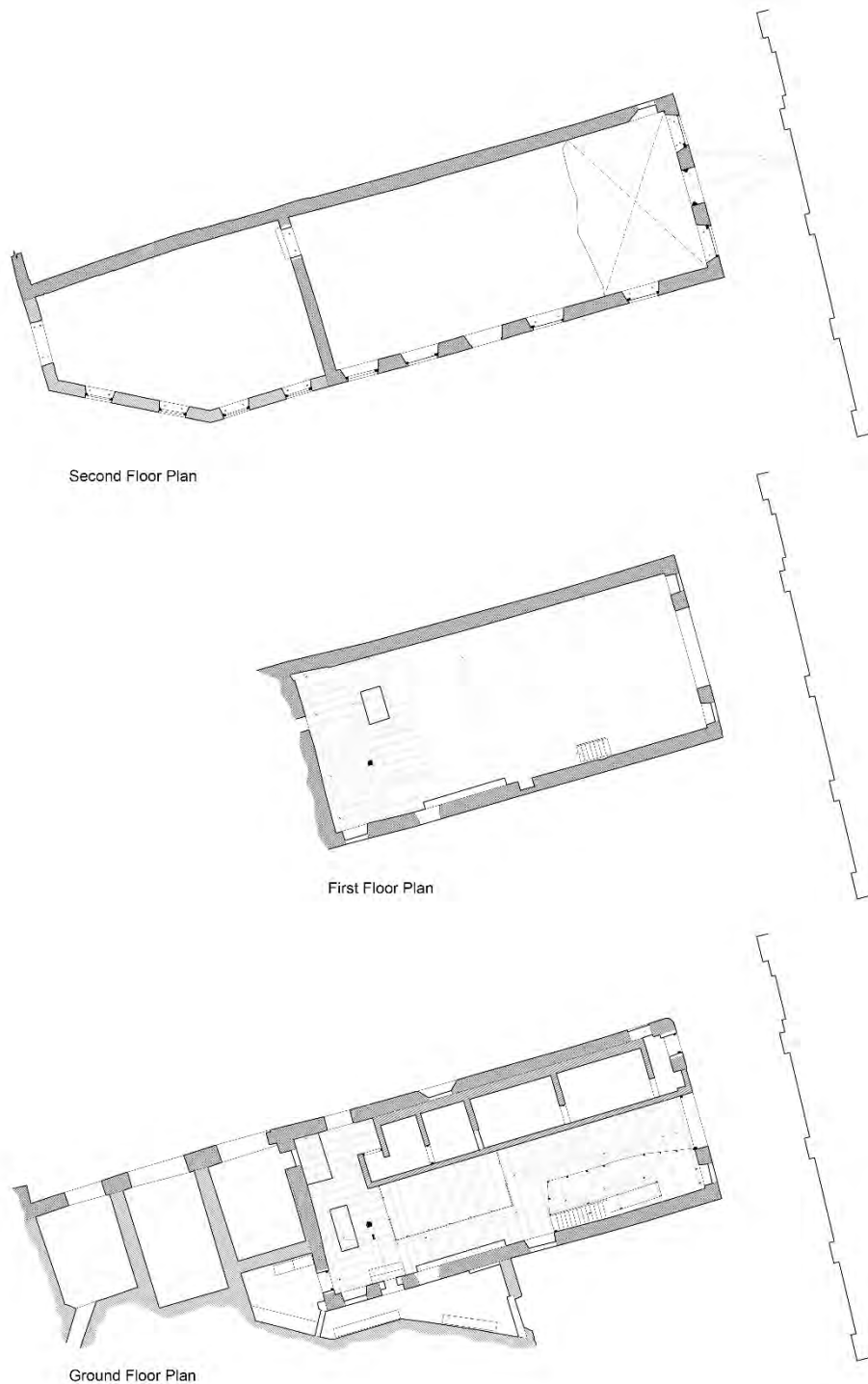
Project:
Brymbo Machine Shop

Client:
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[illegible]



Existing Floor Plans
1 : 100

General Notes

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Rev	Date	Description	By	Check
01	10/11/23	Final Issue	JJ	JB

Consultant

Client:
Brymbo Heritage Trust

Project Title

Pattern Shop

Drawing Title

Existing Plans

Scale	Date	Drawn By	Checked By	Office
1:100@A1	02/10/19	LJ	JB	Wrexham
Job Number	Project/Originator/Client/Level/Type/Size/Number	Revision		
17003-3	BMS-TACP-PS-ZZ-DR-A-001	T1		

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Existing base drawings produced by
Ross Cook, Archaeo Domus

Revisions				
Rev	Date	Description	By	Check
T1	10/11/23	Tender Issue	LU	JB

Consultants

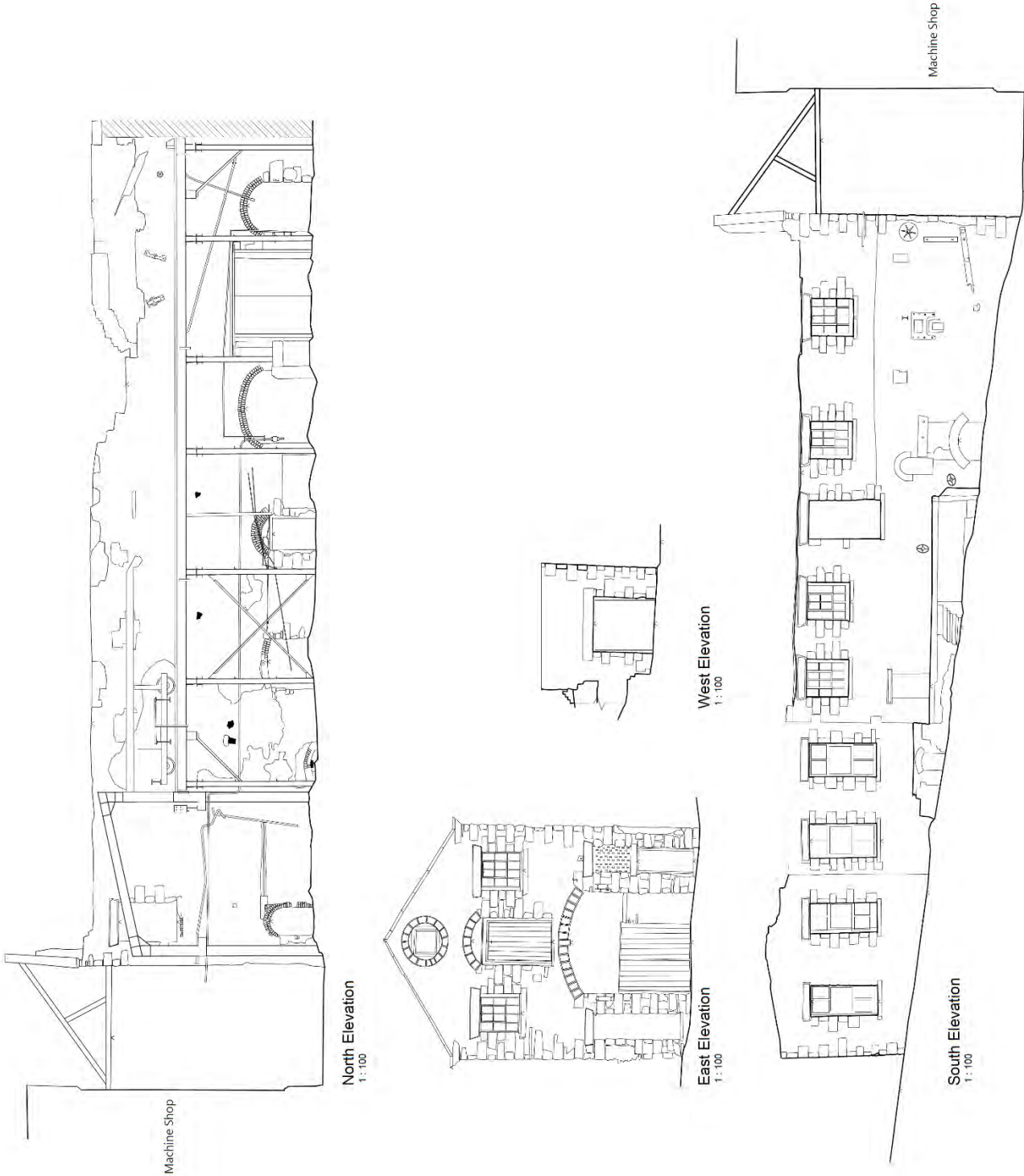
Client
Brymbo Heritage Trust

Project Title
Pattern Shop
Drawing Title
Existing Elevations

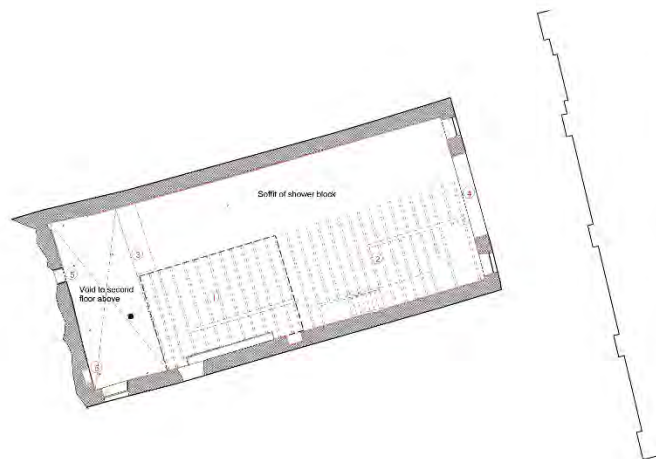
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Job Number				
17003-3	BMS-TACP-PS-ZZ-DR-A-003	T1		

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- 1. Carefully rub down stone work of loose and flaking material. Prepare and decorate stone walls with lime wash finish
- 2. Carefully rub down and clean existing bare brickwork



First Floor Plan

1. Retain existing floor to area as shown above metal cabin. Allow for 50% replacement of timber floor boards (13sqm) with new to match existing
2. Remove existing timber floor structure to first floor and existing timber stair
3. Existing galvanneal metal water tank to be drained and cleaned
4. Replace timber infill panel with Marine plyboard to existing and opening at high level above double door. Prime and paint. Approx size 3.5x2m high
5. Clean out existing higher level alcove to wall approx 800x600x600mm. Undertake minor repairs to brickwork allow to repair 1sqm - see note 10

- 1. Clean off brickwork primer and paint existing painted surfaces with Kals paint system as per specification
- 2. Carefully rub down and clean existing bare brickwork
- 3. Carefully rub down stone work of loose and flaking material. Prepare and decorate stone walls with lime wash finish
- 4. Existing wall the wall 1/2 height. Clean down and allow for 10% replacement tiles to match

Ground Floor Plan

1. Undertake repair to existing timber double door to large opening. Soffit repair lower sections where damaged by water and overhaul existing ironmongery. Replace existing latch with new to match existing. Refer to door type drawing
2. Remove existing timber outboard and make good surrounding masonry wall ready to house new data server
3. Remove existing redwooded junction box
4. Undertake repair to existing timber single door to opening. Soffit repair lower sections where damaged by water and overhaul existing ironmongery. Replace existing latch with new to match existing. Refer to door type drawing
5. Undertake plaster repair to corner section of wall where missing approx 5sqm. Lime plaster to be used refer to specification M20310 details of lime allow to redecorate all plastered walls to this room with Kals paint. Infill opening with brickwork approx 900x200mm with new brickwork and lime plaster as above
6. Clear out all debris and redundant loose furniture within room
7. Undertake infill repair to opening with 2No. 225x75x120 TH1 Oak linings
8. Remove redundant lighting wiring and conduit hanging from ceiling
9. High level metal pipe work, clean and apply rust remover to pipe line and brackets. Allow to replace 10no. brackets in matching design
10. Assess lead paint to existing ceilings. Prepare Method Statement on removal method. Clean off all loose paint, prime and paint existing painted surfaces with breathable paint system as per specification
11. Remove existing high level windows and open up large opening between the two windows down to floor level make good reveals with new plaster where disturbed. Refer to engineer's details
12. Wash down existing brick pavior floor and walls adjacent which have water feed marks approx 500mm AFEL. Allow to repair 20sqm of paviors to reveal level and allow for 50sqm of repointing joints with beds paviors to reveal level and allow for 50sqm of repointing joints with lime sand mix

13. Carefully dismantle and remove existing metal cabin. Allow to transport sections to material storage area for potential reuse
14. Infill opening with brickwork approx 900x200mm with new brickwork, omitted
15. Infill small opening to stone work with new stone work approx opening 300x300mm repoint and bed in lime mortar
16. Area of missing floor approx 2m high by 3 tiles wide. Rebed matching tiles to match existing to repair
17. Existing galvanneal metal water tank to be drained and cleaned
18. Clean out existing higher level alcove to wall approx 800x600x600mm, essential minor repairs to brickwork allow to repair 1sqm
19. Clean down large concrete blocks
20. Remove cable trays fixed to wall and secure loose metal pipework with new metal brackets to match existing allow for 10No.
21. Carefully clean painted brickwork wall, retain metal brackets secured to wall apply rust remover and clean
22. Undertake brickwork repair to lower side of existing opening where missing. Allow for approx 1m high 500mm wide section of masonry to be reclaimed brickwork to adjacent masonry
23. omitted
24. Remove timber partition framing and mesh infill and existing timber stairwell
25. Clean brick steps and undertake small areas of repointing
26. Carefully take door off frame and undertake spiro repairs to rotten sections approx 1/2. Retain and overhaul all ironmongery and reset within existing frame. Allow to splice repair bottom 200mm of linch pin frame. Clean primers and paint
27. Remove loose fitted metal racking

28. Measure up existing timber workbench and shelving unit above and replace like for like stained brown to match existing
29. Clean and apply rust remover to small metal framed section secured to wall
30. Clean down existing cobble floor approx area 40sqm. Allow to replace 15sqm with new to match existing and allow to repoint 30cm
31. Clear earth floor of debris and level - minimal excavation only. Provide geotextile membrane 300mm to floor area and lay Dennis Bultion reclaimed 9" 40mm thick quarry tile on 50mm slabs sand bed - approx 35sqm
32. Provide new timber doorset to existing opening in ledge and brace design as per door detail
33. Open up and remove existing brickwork infill to existing doorway, allow to undertake repair to existing bricks once brickwork removed. Reuse bricks where possible to infill existing opening for item 5

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Ross Cook Architects

Rev	Date	Description	By	Check
T1	10/11/23	Initial issue	LI	JB
T2	15/12/23	SP Project amendments	LI	JB

Comments

Client
Brymbo Heritage Trust

Project Info

Pattern Shop
Drawing Info

Scale: 1:100@A1 Date: 10/11/23 Drawn By: LI Checked By: JB Office: Wrexham

Job Number: 17003-3 Project: BM5-TACP-PS-ZZ-DR-A-101 Rev: 001

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Residues	Rpt.	Date	Description	Bc. Crs.	
				U	L
	T1	10/11/23	Private house		

Project title

Pattern Shop

Scale	Date	Drawn By	Checked By	Office
1:1.100@A1	07/08/23	U	JB	Wrexham
Job Number	Project: Ring road / Zone 1 North / Lane 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14 - 15 - 16 - 17 - 18 - 19 - 20 - 21 - 22 - 23 - 24 - 25 - 26 - 27 - 28 - 29 - 30 - 31 - 32 - 33 - 34 - 35 - 36 - 37 - 38 - 39 - 40 - 41 - 42 - 43 - 44 - 45 - 46 - 47 - 48 - 49 - 50 - 51 - 52 - 53 - 54 - 55 - 56 - 57 - 58 - 59 - 60 - 61 - 62 - 63 - 64 - 65 - 66 - 67 - 68 - 69 - 70 - 71 - 72 - 73 - 74 - 75 - 76 - 77 - 78 - 79 - 80 - 81 - 82 - 83 - 84 - 85 - 86 - 87 - 88 - 89 - 90 - 91 - 92 - 93 - 94 - 95 - 96 - 97 - 98 - 99 - 100 - 101 - 102 - 103 - 104 - 105 - 106 - 107 - 108 - 109 - 110 - 111 - 112 - 113 - 114 - 115 - 116 - 117 - 118 - 119 - 120 - 121 - 122 - 123 - 124 - 125 - 126 - 127 - 128 - 129 - 130 - 131 - 132 - 133 - 134 - 135 - 136 - 137 - 138 - 139 - 140 - 141 - 142 - 143 - 144 - 145 - 146 - 147 - 148 - 149 - 150 - 151 - 152 - 153 - 154 - 155 - 156 - 157 - 158 - 159 - 160 - 161 - 162 - 163 - 164 - 165 - 166 - 167 - 168 - 169 - 170 - 171 - 172 - 173 - 174 - 175 - 176 - 177 - 178 - 179 - 180 - 181 - 182 - 183 - 184 - 185 - 186 - 187 - 188 - 189 - 190 - 191 - 192 - 193 - 194 - 195 - 196 - 197 - 198 - 199 - 200 - 201 - 202 - 203 - 204 - 205 - 206 - 207 - 208 - 209 - 210 - 211 - 212 - 213 - 214 - 215 - 216 - 217 - 218 - 219 - 220 - 221 - 222 - 223 - 224 - 225 - 226 - 227 - 228 - 229 - 230 - 231 - 232 - 233 - 234 - 235 - 236 - 237 - 238 - 239 - 240 - 241 - 242 - 243 - 244 - 245 - 246 - 247 - 248 - 249 - 250 - 251 - 252 - 253 - 254 - 255 - 256 - 257 - 258 - 259 - 260 - 261 - 262 - 263 - 264 - 265 - 266 - 267 - 268 - 269 - 270 - 271 - 272 - 273 - 274 - 275 - 276 - 277 - 278 - 279 - 280 - 281 - 282 - 283 - 284 - 285 - 286 - 287 - 288 - 289 - 290 - 291 - 292 - 293 - 294 - 295 - 296 - 297 - 298 - 299 - 300 - 301 - 302 - 303 - 304 - 305 - 306 - 307 - 308 - 309 - 310 - 311 - 312 - 313 - 314 - 315 - 316 - 317 - 318 - 319 - 320 - 321 - 322 - 323 - 324 - 325 - 326 - 327 - 328 - 329 - 330 - 331 - 332 - 333 - 334 - 335 - 336 - 337 - 338 - 339 - 340 - 341 - 342 - 343 - 344 - 345 - 346 - 347 - 348 - 349 - 350 - 351 - 352 - 353 - 354 - 355 - 356 - 357 - 358 - 359 - 360 - 361 - 362 - 363 - 364 - 365 - 366 - 367 - 368 - 369 - 370 - 371 - 372 - 373 - 374 - 375 - 376 - 377 - 378 - 379 - 380 - 381 - 382 - 383 - 384 - 385 - 386 - 387 - 388 - 389 - 390 - 391 - 392 - 393 - 394 - 395 - 396 - 397 - 398 - 399 - 400 - 401 - 402 - 403 - 404 - 405 - 406 - 407 - 408 - 409 - 410 - 411 - 412 - 413 - 414 - 415 - 416 - 417 - 418 - 419 - 420 - 421 - 422 - 423 - 424 - 425 - 426 - 427 - 428 - 429 - 430 - 431 - 432 - 433 - 434 - 435 - 436 - 437 - 438 - 439 - 440 - 441 - 442 - 443 - 444 - 445 - 446 - 447 - 448 - 449 - 450 - 451 - 452 - 453 - 454 - 455 - 456 - 457 - 458 - 459 - 460 - 461 - 462 - 463 - 464 - 465 - 466 - 467 - 468 - 469 - 470 - 471 - 472 - 473 - 474 - 475 - 476 - 477 - 478 - 479 - 480 - 481 - 482 - 483 - 484 - 485 - 486 - 487 - 488 - 489 - 490 - 491 - 492 - 493 - 494 - 495 - 496 - 497 - 498 - 499 - 500 - 501 - 502 - 503 - 504 - 505 - 506 - 507 - 508 - 509 - 510 - 511 - 512 - 513 - 514 - 515 - 516 - 517 - 518 - 519 - 520 - 521 - 522 - 523 - 524 - 525 - 526 - 527 - 528 - 529 - 530 - 531 - 532 - 533 - 534 - 535 - 536 - 537 - 538 - 539 - 540 - 541 - 542 - 543 - 544 - 545 - 546 - 547 - 548 - 549 - 550 - 551 - 552 - 553 - 554 - 555 - 556 - 557 - 558 - 559 - 560 - 561 - 562 - 563 - 564 - 565 - 566 - 567 - 568 - 569 - 570 - 571 - 572 - 573 - 574 - 575 - 576 - 577 - 578 - 579 - 580 - 581 - 582 - 583 - 584 - 585 - 586 - 587 - 588 - 589 - 590 - 591 - 592 - 593 - 594 - 595 - 596 - 597 - 598 - 599 - 600 - 601 - 602 - 603 - 604 - 605 - 606 - 607 - 608 - 609 - 610 - 611 - 612 - 613 - 614 - 615 - 616 - 617 - 618 - 619 - 620 - 621 - 622 - 623 - 624 - 625 - 626 - 627 - 628 - 629 - 630 - 631 - 632 - 633 - 634 - 635 - 636 - 637 - 638 - 639 - 640 - 641 - 642 - 643 - 644 - 645 - 646 - 647 - 648 - 649 - 650 - 651 - 652 - 653 - 654 - 655 - 656 - 657 - 658 - 659 - 660 - 661 - 662 - 663 - 664 - 665 - 666 - 667 - 668 - 669 - 670 - 671 - 672 - 673 - 674 - 675 - 676 - 677 - 678 - 679 - 680 - 681 - 682 - 683 - 684 - 685 - 686 - 687 - 688 - 689 - 690 - 691 - 692 - 693 - 694 - 695 - 696 - 697 - 698 - 699 - 700 - 701 - 702 - 703 - 704 - 705 - 706 - 707 - 708 - 709 - 710 - 711 - 712 - 713 - 714 - 715 - 716 - 717 - 718 - 719 - 720 - 721 - 722 - 723 - 724 - 725 - 726 - 727 - 728 - 729 - 730 - 731 - 732 - 733 - 734 - 735 - 736 - 737 - 738 - 739 - 740 - 741 - 742 - 743 - 744 - 745 - 746 - 747 - 748 - 749 - 750 - 751 - 752 - 753 - 754 - 755 - 756 - 757 - 758 - 759 - 760 - 761 - 762 - 763 - 764 - 765 - 766 - 767 - 768 - 769 - 770 - 771 - 772 - 773 - 774 - 775 - 776 - 777 - 778 - 779 - 780 - 781 - 782 - 783 - 784 - 785 - 786 - 787 - 788 - 789 - 790 - 791 - 792 - 793 - 794 - 795 - 796 - 797 - 798 - 799 - 800 - 801 - 802 - 803 - 804 - 805 - 806 - 807 - 808 - 809 - 810 - 811 - 8			

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[illegible]

Chem. please: finish on air consists of either a proprietary 1:2 blend (see p. 55) of hard and soft risks (see table below) within 2 weeks to prevent decay of hard reinforcement before encapsulation.

Alternatively, a mix ratio 1:3 from 1:2 mix plus 50% soft risk will be prepared, ensuring moisture is fully removed to be suitable but not damaged. On cool or good hot, the risks dry and then should be used, adding 20 mm per m² of existing work and 20 mm per m² for new risks. Any more than that is required due to the 'hardening' of concrete risks, soaked approximately 1 hour apart, for further information please refer to Culture Specifications.

[illegible]

Winderas & Doorn

Plating should use all parts to be removed from steel solution boxes. Ensure no residue, particularly in the interior of the frame. Loading steel frame to be treated into tanks with parts to be cleaned off other work. Plans to be usually supported for stability, deep and over the contaminants. Any such items should also be used and replaced at the same time, if convenient applied. Once all is removed, some good quality steel information per ASTM standards should be before parting, or further information for the above specification.

[illegible]

Where feasible, existing historic glazing is to be removed, cleaned and reused. Where new single glazing is required, it is to be Tinted 21.4 Series glass unless safety glass is required. This will be partly fixed with hinges for easy opening. This will be partly fixed with hinges for easy opening. This will be partly fixed with hinges for easy opening. This will be partly fixed with hinges for easy opening.

First Floor Plan

Ground Floor Plan



1. Contractor to verify all dimensions and check level datums on site
2. All of the designs are the sole property of TACP Architects Ltd and may not be used without their written agreement
3. All prints, specifications and their copyright are the property of TACP Architects Ltd
4. Do not scale off drawings
5. All dimensions shall be checked on site before commencement of shop drawings, manufacture and all discrepancies must be reported to TACP Architects Ltd

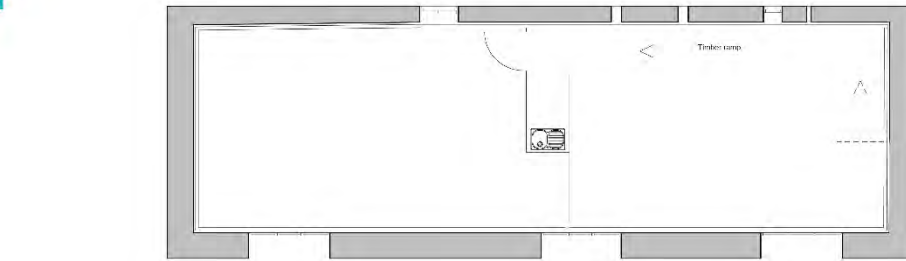
And...the Winner Is:

Existing base drawings produced by
Boyd Clark Architects Limited

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-------------	--

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TACP
Architects Ltd



Existing Ground Floor Plan

Timber ramp

Concrete Ramp

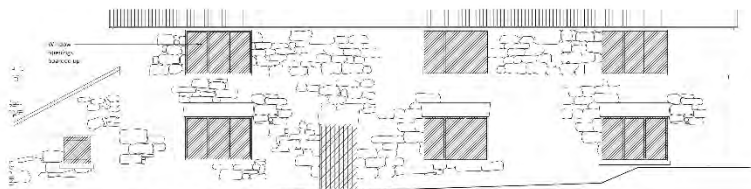
Timber internal boxing

General Notes

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2. All of the designs are the sole property of TACP Architects Ltd and may not be used without their written agreement
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[illegible]

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Kommunikationswissenschaft
Kommunikationswissenschaft
Kommunikationswissenschaft
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West Elevation

General notes:

1. Construction to verify all dimensions and check level/finish are as shown.
2. All of the designs are the sole property of T&P Architects Ltd and may not be used without their written agreement.
3. All plans, specifications and their contents are the property of T&P Architects Ltd.
4. The contractor is to protect
5. All dimensions shall be checked on site before commencement of site work. If any dimensions are not as shown, the contractor must be notified to T&P Architects Ltd.

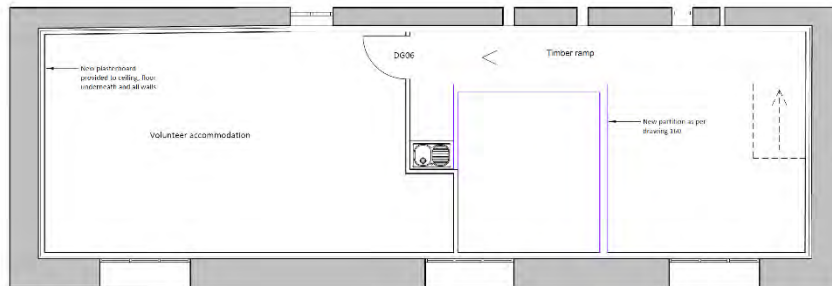
Exercises			
100	2.70	2.00 (Kiln)	the chalk
15	30.0 (10%)	1000000	it

[Anmelden](#) • [Passwort vergessen?](#) • [Passwort zurücksetzen](#) • [Neu registrieren](#) • [Passwort ändern](#) • [Passwort zurücksetzen](#)

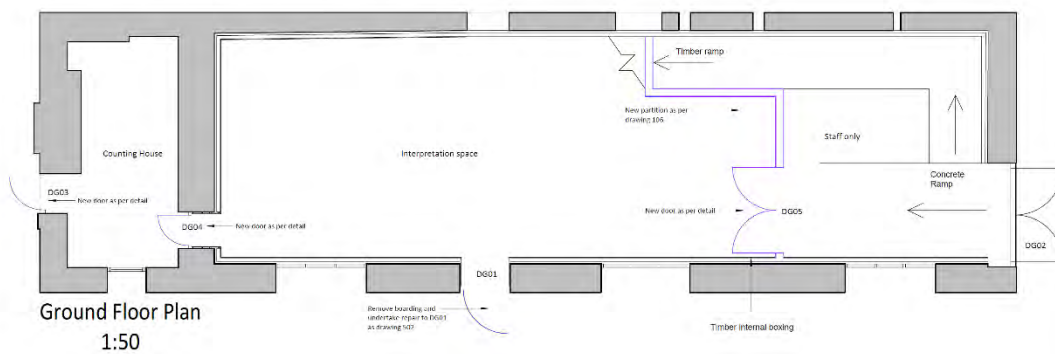
Re-pointing
Re-pointing to both stonework and brickwork to be 1:3 hot mix lime mortar. Original low salt mortar to be removed to a depth of not less than twice the joint width. All pointing shall leave a chamfer square face at the back of the joint. Any voids or defects shall be left unfilled unless it has weathered back behind the external wall face to a depth of half the joint width. Under no circumstances should an angle grinder or similar tool be used. For further information refer to the Outline Specification.

Stonework
Stonework, chimney and fireplace to be visually inspected. Chisel, hammer and any damaged stonework is to be replaced with a numbered specimen and photographic record. Stonework to be numbered on surface that will be hidden when rebuilt with corresponding number to replace. Photos to be taken during dismantling to ensure records of any special detail. Stonework to be kept on site during re-build progress and handed to architect on completion of work. All stone to be kept on site and inspected by architect as to whether it can be re-used or repaired. Damaged stonework to be stored in close proximity of where it has been removed, to be kept off the ground and separated with timber buffers. In-vitro stonework is to be protected during building work to prevent staining and other deterioration of stone. Stonework repairs are to be completed with either an Epoxi resin or polymer resin, care to be taken to follow manufacturer's instructions. For further information refer to the Outline Specification.

Joinery
Internal joinery to be subjected to controlled drying to achieve a moisture content of 12% or less and not exceeding 12% to be maintained until the building is handed over. Internal joinery to be European redwood or Western Redwood Class 3. Any oak to be European White Oak of quality not less than specified in BS 1363:1990. For further information refer to the Outline Specification.
Internal joinery to be subjected to controlled drying to achieve a moisture content of 12% or less and not exceeding 12% to be maintained until the building is handed over. External joinery to be European redwood Class 3. Organic solvent to be applied to timber to be treated to all external joinery. Where evidence of bats is found preservative chemicals are not to be used. Treat to concrete or masonry to be with slugs & snails. For further information refer to the Outline Specification.



First Floor Plan



1:50

General Notes

- Contractor to verify all dimensions and check level datums on site
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Revisions

Rev	Date	Description	By	Check
T1	18/11/23	Tender Issue	LJ	JB
T2	21/12/23	Added plasterboard note	LJ	JB

Client

Brymbo Heritage Trust

Project title

Agent's House

Sheet Name

GA Floor Plans

Purpose of issue

Status

Tender

Scale	Date	Drawn By	Checked By	Office
1:50@A2	23/10/23	LJ	JB	Wrexham

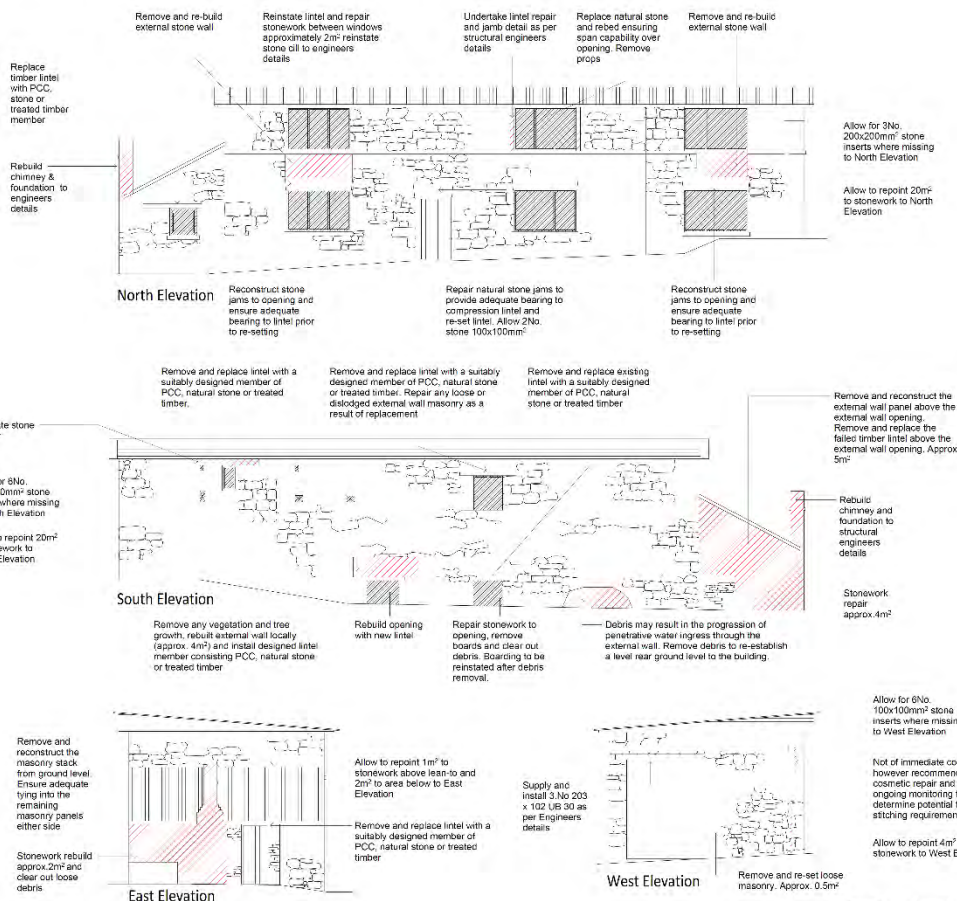
Job Number	Project+Originator+Zone+Level+Type+Rate+Number	Revision
17003-3	BMSTACAP-AH72-DR-A-100	T2

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Rev	Date	Description	By	Check
T1	18/11/23	Tender Issue	LJ	JB
T2	21/12/23	Added plasterboard note	LJ	JB

Brymbo Heritage Trust

Project title

Agent's House

Sheet Name

GA Elevations

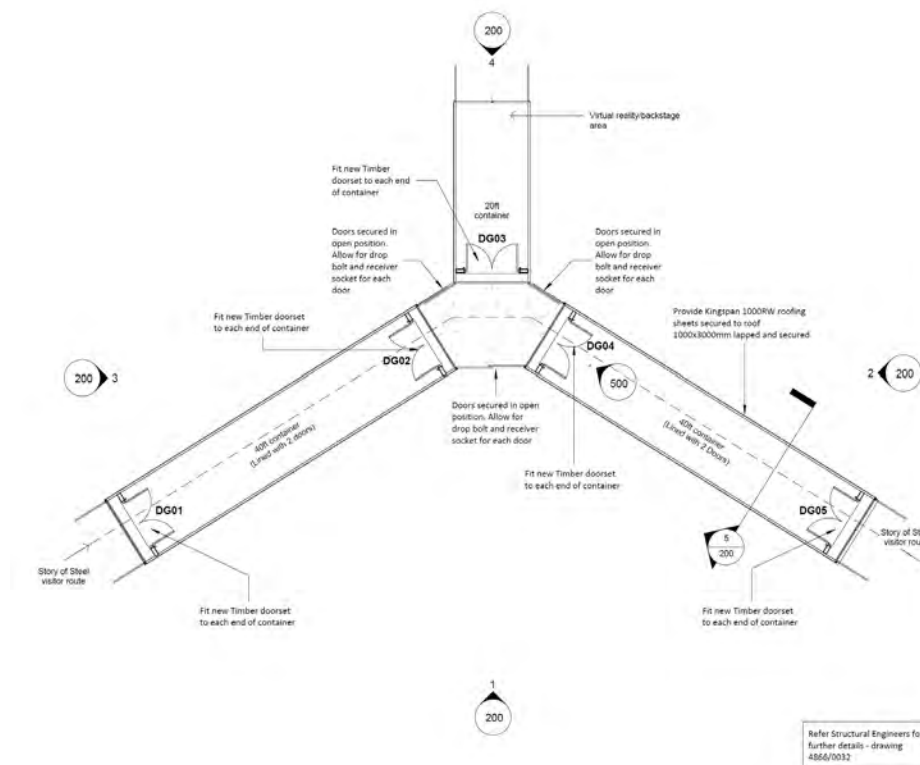
Purpose of issue

Status

Scale	Date	Drawn By	Checked By	Office
1:50@A2	23/10/23	LJ	JB	Wrexham

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Revisions:

Rev	Date	Description	By	Check
T1	03/01/24	SPP Comments	U	JB

Consultants:

Client: Brymbo Heritage Trust

Project Title: Story of Steel

Drawing Title: Story of Steel Plan

Scale: 1:100@A3

Date: OCT 23

Drawn By: JM

Checked By: JB

Office: Wrexham

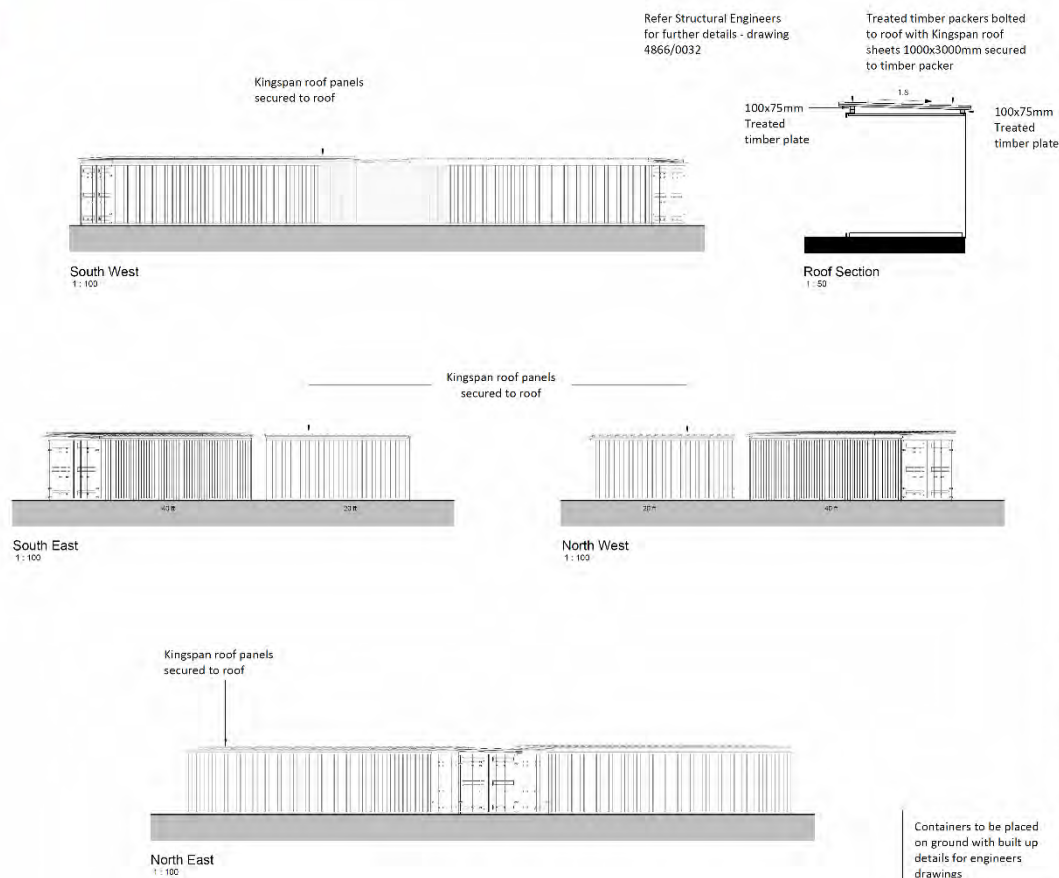
Job Number: 17003

Project Name: BMS-TACP-SS-00-DR-A-100

Revision: T1

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5. All dimensions shall be checked on site before commencement of shop drawings, manufacture and all discrepancies must be reported to TACP Architects Ltd

Revisions:

Rev	Date	Description	By	Check
T1	03/01/24	SPP Comments	U	JB

Consultants:

Client: Brymbo Heritage Trust

Project Title: Story of Steel

Drawing Title: Story of Steel Elevations

Scale: As indicated@A2

Date: OCT 23

Drawn By: JM

Checked By: JB

Office: Wrexham

Job Number: 17003

Project Name: BMS-TACP-SS-22-DR-A-200

Revision: T1

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Appendix B – Selection of Aerial Photographs of Brymbo Iron & Steelworks during the C20



Fig. a – RAF aerial photograph, 1946. © Air Photo Wales.



Fig. b – RAF aerial, 1947. © Air Photo Wales.



Fig. c – RAF aerial, 1962. © Air Photo Wales.

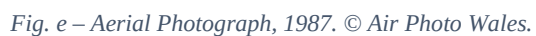




Fig. f – Aerial Photograph, 1989. © Air Photo Wales.



Fig. g – Aerial Photograph, 1996. © Air Photo Wales.



Fig. h – Aerial Photograph, 1999. © Air Photo Wales.



Fig. i – Aerial Photograph, 1999. © Air Photo Wales.



Fig. j – Aerial Photograph, 2002. © Air Photo Wales.

Appendix C – Brymbo Ironworks, Archaeological Assessment Phase 1 – V2
– ArchaeoDomus (2019)