Site Analysis & Design Vision Statement

Revision C

7 Ten Acre Wood
Margam

On Behalf of:

Andrew Hall

Job No. 2658

Date: 16.10.23

spring design

01. Introduction

Spring Design have been appointed by Mr. Andrew Hall to explore the redevelopment potential of the single family dwellinghouse located at 7 Ten Acre Wood. This document has been prepared as part of a suite of information to support a pre-application for a replacement dwelling on the site.

The information presented in this document includes site analysis and commentary on the existing built form to examine the baseline of the site which transitions into a discussion of the planning context within which an application for a replacement dwelling would be considered. The document concludes by establishing the energy efficiency aspirations of the dwelling and presents architectural character and massing studies which will inform the design.

No design proposals have been developed for presentation at this juncture: this preapplication is perceived as engaging proactively with Neath Port Talbot Council to establish acceptable principles.

Architects & Passive House Designers	Spring Design
Planning Consultants	Asbri Planning
Flood Risk Assessors	JBA Consulting
Topographical Surveyors	Senior Surveys
Arboriculturists	Tirlun Design Associates
Ecologists	Hawkeswood Ecology

Figure 1: Aerial view of the site (boundary defined in red) in context within Ten Acre Wood

02. Site Analysis & Constraints

Figure 2: Site Plan (not to scale)

Key

- Site boundary
- Access - vehicular
- Access - pedestrian
- Dense hedgerow / shrub
- Sun path - summer
- Sun path - winter
- Views - near
- Views - middle
- Views - long (Mynydd Margam)
- Overlooking potential
- M4 / A48 acoustic impact

Additionally, refer to:

Appendix A: Site Survey

Appendix B: Building Survey.

Appendix C: Tree Constraints Plan

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03. Existing Dwelling

Built in the 1970s, 7 Ten Acre Wood is a detached dwelling comprising 186m² of accommodation over two storeys. It is set within a relatively level c. 0.55 acres and has two garages accessed from the communal parking court.

The existing dwelling is generously proportioned but poorly arranged. It presents an inactive frontage containing service spaces - Utility, WC, Bedroom 4 - to the primary pedestrian site entrance and limits potential views of Mynydd Margam to a run of small windows serving the stair landing and First Floor Bathroom. Rooms are predominantly single aspect and poorly connected with very little built-in storage or space to accommodate modern plant or accessibility requirements.

Any reconfiguration of the dwelling would incur significant structural work due to its construction. Loadbearing masonry partitions at Ground Floor support the first floor: chimney flues, and indeed some masonry walls, are then continued at First Floor. Its capacity for renewal is thus considered poor.

Figure 4: Front Elevation (NE-facing)

External wall finishes are brick and render. Areas of render are failing on the north-facing gable end, both chimneys and around flashings. Roof coverings are weathered double Roman concrete tiles. Doors and windows vary between replacement white or brown uPVC double glazed units and three surviving timber framed windows.

Figure 3: Rear of property with conservatory viewed from SW corner of garden

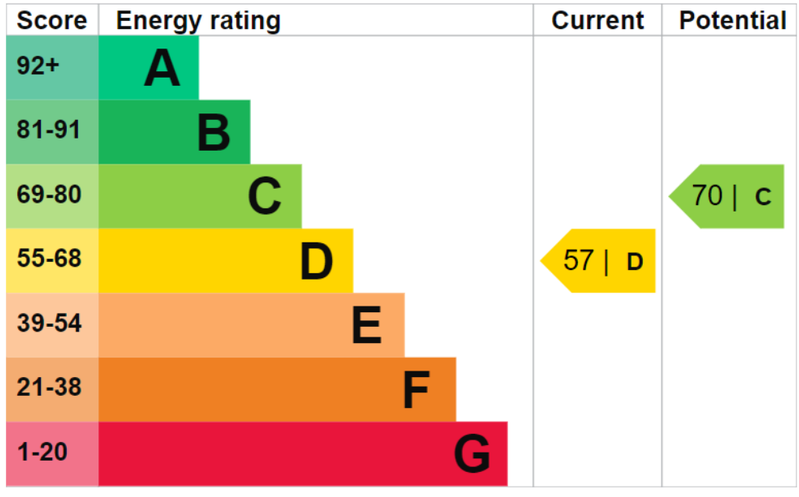

Figure 5: EPC Certificate for dwelling

The existing house, as analysed using the SAP methodology, has an estimated annual heating demand of 140 kWh/m²/yr. This resolves itself into a low D rating with the potential to achieve a low C following significant upgrades.

It should be noted there exists a recognized performance gap between SAP calculated and actual operational values with fabric heat losses between 50%–60% more than design predictions and consequently a space heating demand typically 100%–150% greater. Conservative adjustments to the SAP estimate, or more rigorous interrogation through an alternate thermal modelling process, may result in an annual heating demand exceeding 200 kWh/m²/yr. To achieve a meaningful improvement would require extensive work to ensure continuous high-quality insulation and airtightness layers, installation of a new heating and ventilation system plus replacement of all doors and windows.

Following this analysis it was concluded to explore the option of a replacement dwelling. This approach enables maximum energy efficiency and climate resilience with a fabric first approach and resolution of the internal layout to reflect the requirements of a modern family.

03. Existing Dwelling

Full survey drawings were prepared by **Senior Surveys**. These are represented (not to scale) in **Appendix A: Site Survey** and **Appendix B: Building Survey**.

Figure 6: First Floor Plan

Figures 8 & 8.1: View from main pedestrian entrance & detail of render failing on chimneys

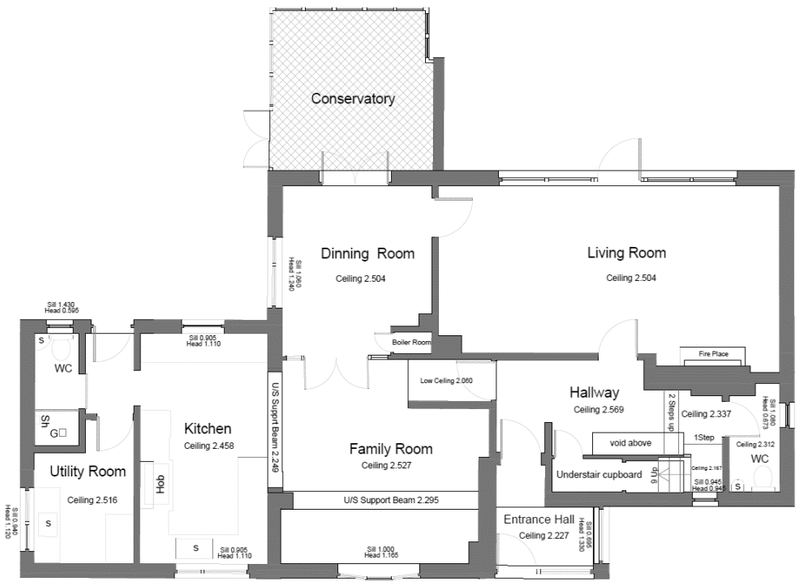

Figure 7: Ground Floor Plan

Figure 9 & 9.1: View of NE gable & detail of render degradation on the gable

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04. Planning Context

Asbri Planning are the appointed Planning Consultant on this project and have composed a detailed **Planning Statement** to support the proposals discussed within this document. The following commentary is provided to establish the context from which the design vision evolved.

Planning Policy Wales 11 (**PPW11**), **TAN 12: Design** and **TAN 24: The Historic Environment** are all relevant national policy documents with bearing upon the replacement dwelling on the site. Aspects of the design vision concerning **PPW11**'s aspirations for energy efficiency are addressed later in this document in **05. Sustainability & Energy Vision** with **TAN 12** following in **06. Architectural Character & Form**.

The site falls within Flood Zone C2 and therefore proposals must accord with **TAN 15: Development and Flood Risk**. While this designation would inhibit new development in this location, a replacement dwelling offers the opportunity to remove an at-risk dwelling with no built-in flood protection measures and replace it with a climate resilient one. JBA Consulting are providing specialist consultancy on how to mitigate flood risk.

In addition to the context of national policy, proposals must refer to Neath Port Talbot County Borough Council's adopted **Local Development Plan 2011-2026**. Of particular bearing to the site and intention for a replacement dwelling are Policy EN2 Special Landscape Areas, Policy EN3 Green Wedges and Policy EN4 Replacement Dwellings in the Countryside. Whilst the site is adjacent to rather than within the Margam Park Conservation Area it is within close proximity of several Scheduled Ancient Monuments and therefore SP 21 Built Environment and Historic Heritage should also be considered.

Landscape and Seascape: Supplementary Planning Guidance supports the adopted LDP and provides additional, in-depth guidance concerning the Green Wedge EN3/5 Margam and Special Landscape Area SLA4 Margam. A 2019 draft **The Historic Environment: Supplementary Planning Guidance** clearly defines the Margam Conservation Area.

EN4 Replacement Dwellings in the Countryside states:

"*The replacement or rebuilding of an existing lawful dwelling located in the countryside outside settlement limits is likely to be acceptable where the proposal will conserve and where possible enhance local biodiversity interest, the countryside and landscape. Opportunities to provide a high quality design which respects the local style and scale of dwellings, but which may be innovative, will be encouraged where appropriate. The size, bulk and siting of the proposed building is likely to have a significant influence on the visual and landscape characteristics of the area, and proposals should not normally exceed the overall dimensions or cubic content of the original building by more than 20% or deviate significantly from the siting of the original building.*"

Tirlun Design Associates as arboriculturists have prepared a **Pre-Development Tree Survey & Assessment** in addition to a **Tree Constraints Plan** to inform proposals. The key drawing describing these constraints is reproduced for reference within **Appendix C: Tree Constraints Plan**. In addition, **Hawkeswood Ecology** have been appointed to undertake a preliminary habitat assessment in the next season to establish important extant habitat features and propose interventions to make or strategies implement to improve biodiversity.

06. Architectural Character & Form discusses how proposals would seek to innovatively reinterpret the local vernacular, using high quality materials to deliver the performance aspirations set in **05. Sustainability & Energy Vision**.

07. Volume & Massing contains a volumetric study of the existing to establish what is perceived as proportionate for the replacement dwelling.

By proactively considering and responding to these key aspects of EN4, proposals will be developed in line with policy to deliver a high quality, energy efficient replacement dwelling of appropriate mass and architectonic expression. Proposals will demonstrate enhancement of both character and biodiversity of its context.

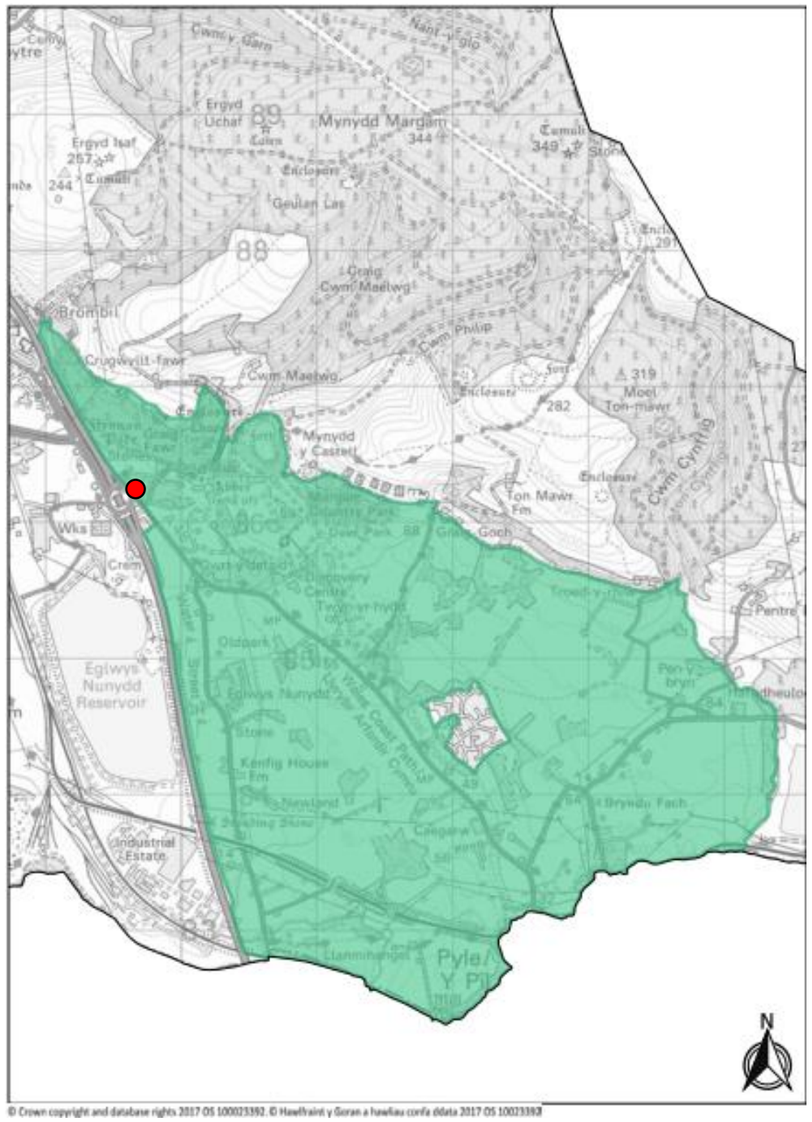

Figure 10: Map of EN3/5 Green Wedge 5 Margam

Green Wedge 5: Margam is intended to protect the setting of Margam Park and prevent the expansion of the built-up areas of Pyle and North Cornelly north into Neath Port Talbot. The green wedge is bounded by the M4 to the west and the main railway line and County Borough boundary to the south and extends as far as the base of the escarpment

04. Planning Context

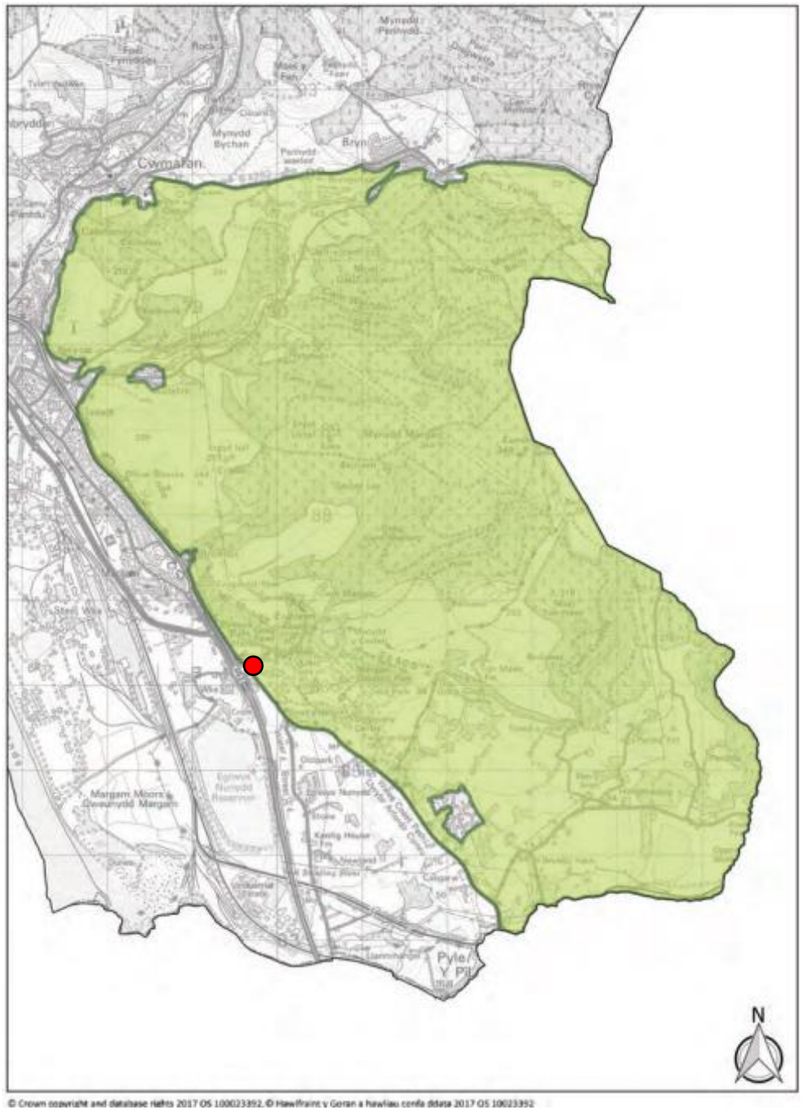

Figure 11: Map of SLA4 Margam

of Margam Mountain (Mynydd Margam) in the east. The part of the green wedge east of the A48 is also designated as part of the Margam SLA (SLA4), indicating high value.

While policy EN3 states "*a presumption against inappropriate development*" within green wedge areas, it does clarify that this does not apply to "*limited extensions, alterations and replacement of existing dwellings*".

Special Landscape Area 4: Margam relates to the setting of Mynydd Margam: a broad, low-lying plateau of NE dipping productive coal formation mudstones and coals between South Wales Pennant Formation escarpment and E-W Millstone Grit ridge to the south, dissected by shallow, alluvium filled valleys of tributaries and the Cynfig valley. It also includes mine workings.

Cultural features in the landscape include evidence of prehistoric and later agricultural practices, rural settlements and contemporary forestry activities.

Margam represents an evolved landscape containing multi-period cultural expressions untrammelled by industrial exploitation - extensive archaeological evidence of land husbandry, now given over to forestry interspersed with some small farms and thus is a comparatively rare example of a surviving relict landscape.

The SLA, which contains the site-adjacent Margam Park, with its exceptional examples of architecture; its history as a major Cistercian Abbey and the wider monastic landholdings, provides a combination of high-grade historic visitor attraction and a variety of multi-period pleasure grounds. It contains cultural elements dating from pre-history through every period up to the 21st century.

The scenic quality of the area is enhanced by the historic buildings of the Park and the backdrop of scarp creating a sheltered setting which link visually and provide the integrity of the whole. The sense of place for the park is initially prompted with stone boundary walls and clearly defined, gated entrances. The historic core and deer park make this area unique within the County.

In this context, a replacement dwelling should demonstrate high quality design, provide climate resilience and not significantly increase the volume of the existing. In achieving these criteria the proposal should be considered an asset that can enhance the character of the Green Wedge, Special Landscape Area and Historic Environment.

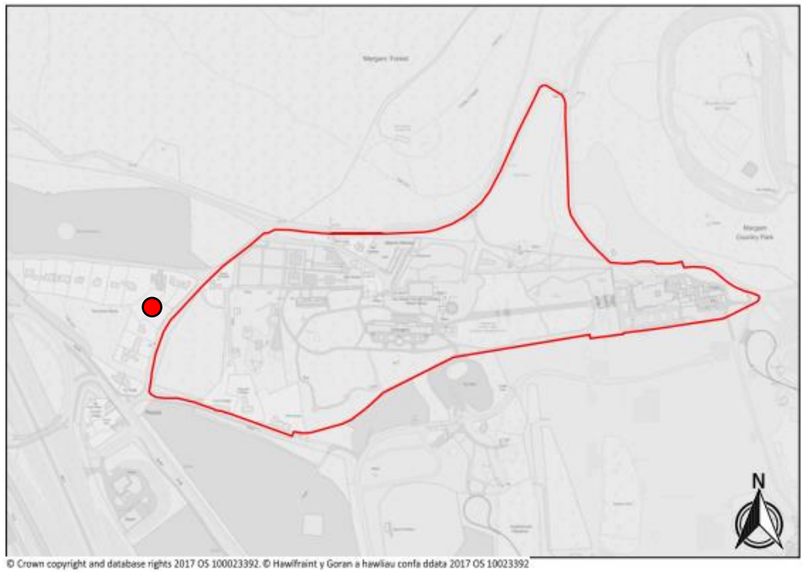

Figure 12: Margam Park Conservation Area

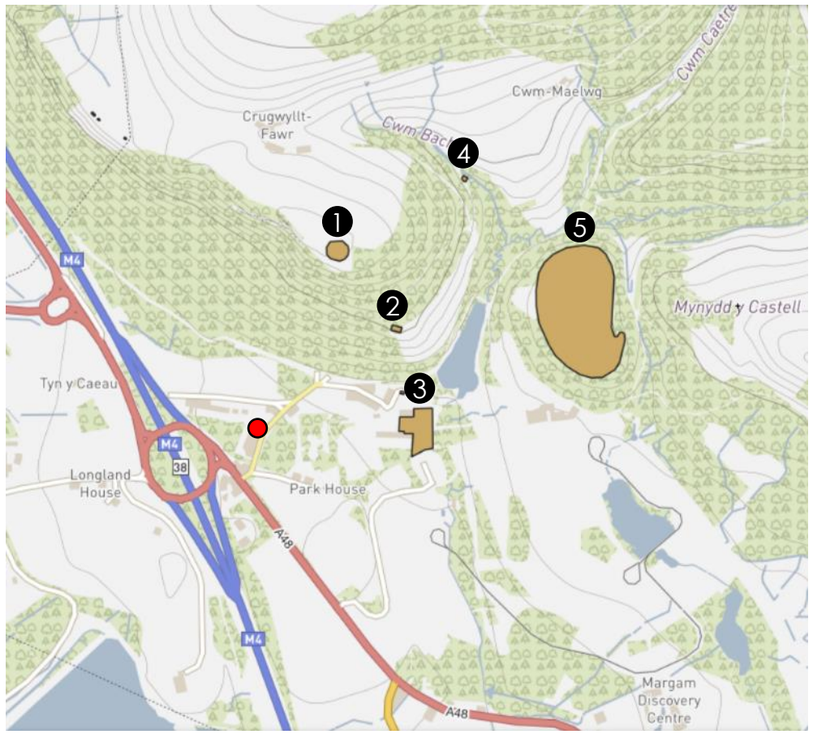

Figure 13: Scheduled Ancient Monuments: 1) Half Moon Camp; 2) Hen Eglwys; 3) Margam Inscribed Stones & Margam Abbey; 4) Medieval Bath House;
5) Mynnydd y Castell Camp

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05. Sustainability & Energy Vision

The Welsh Government has identified Climate Change as the globally defining challenge of our time and has been proactive in passing legislation such as the **Environment (Wales) Act** and the **Well-Being of Future Generations Act** in order to establish a legislative context within which detailed policies and guidance can be developed to meet it.

As part of this response, both **Planning Policy Wales 11** (PPW11) and **Prosperity for All: A Low Carbon Wales** (PfA) clearly identify that "*The Welsh Government's highest priority is to reduce demand wherever possible and affordable*,"

PfA identifies domestic heating as generating the majority of CO_2 emissions in Wales. PPW11 responds to this and establishes the Welsh Government's Energy Hierarchy for Planning (above), with the reduction of energy demand clearly identified at the very top of the hierarchy.

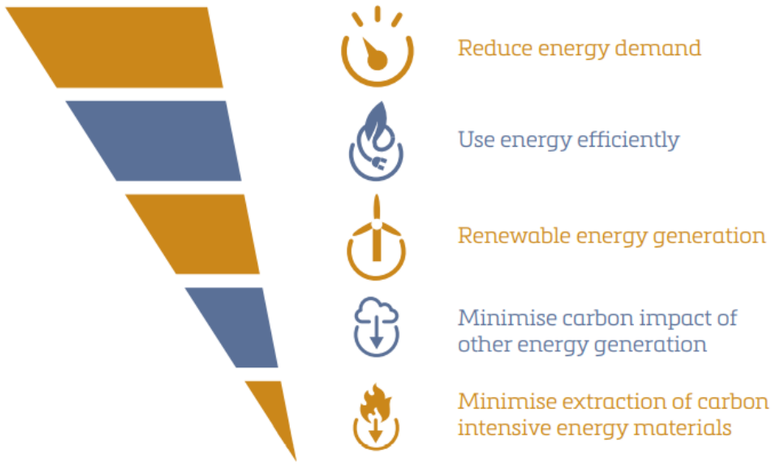

Figure 14: The Energy Hierarchy for Planning

It is important to note that whilst support for low carbon technology and energy generation is, rightly, strongly supported by PPW11, renewable energy generation lies in the middle of the overall energy hierarchy, between the need to use energy efficiently and the need to minimise the carbon impact of other energy generation.

Prioritising the reduction of energy demand ahead of renewable generation ensures buildings are designed to be inherently efficient instead of justifying inefficient buildings through bolt-on technologies. This legislative hierarchy should promote the delivery of better performing buildings which can accommodate the future installation of renewables to build-in climate resilience.

The requirement to reduce demand is best demonstrated through the graphic below. Prepared by LETI, this graph demonstrates the heating demand of the UK's existing housing stock and its average space heating demand. This figure is approximately 140 kWh/m²/yr, broadly comparable to the SAP calculated performance of the existing dwelling (before adjustment for the performance gap).

The energy efficiency standards embodied by the Building Regulations in Wales do not reflect the aspirational policies of reducing demand and instead allow less efficient buildings to offset poor performance with bolt-ons. This remains the case despite the recent publication of the revised Approved Documents and in the face of significant increases in fuel and energy prices.

In contrast to this misalignment of Planning and Building Regulations, our vision is to embrace PPW11's hierarchy and prioritise the reduction of energy demand.

The replacement dwelling will consume c. <u>90% less energy</u> than the national average and perform 300%+ more efficiently than an EPC A rated dwelling.

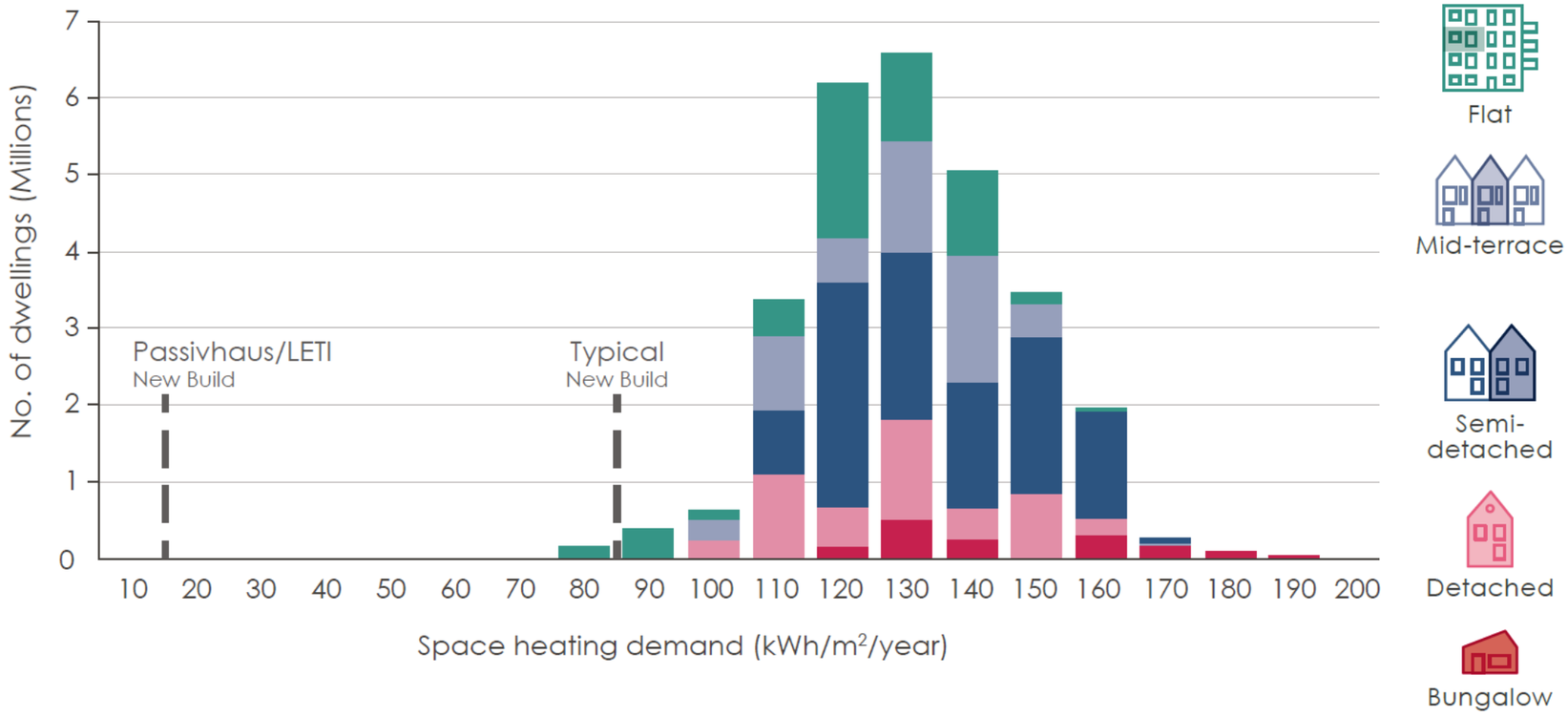

Figure 15: Typical heating requirements of existing UK housing stock, colour-coded by building typology

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05. Sustainability & Energy Vision

This will be possible by adopting the stringent design and construction requirements of the internationally recognised Passive House Institute which focuses on energy demand as the key design metric, with certification contingent upon an exacting quality assurance process. The Passive House Classic standard for new build development requires a maximum heating energy demand of 15 kWh/m²/yr: a typical new build dwelling in Wales with EPC A has an estimated heating energy demand of around 55 kWh/m²/yr.

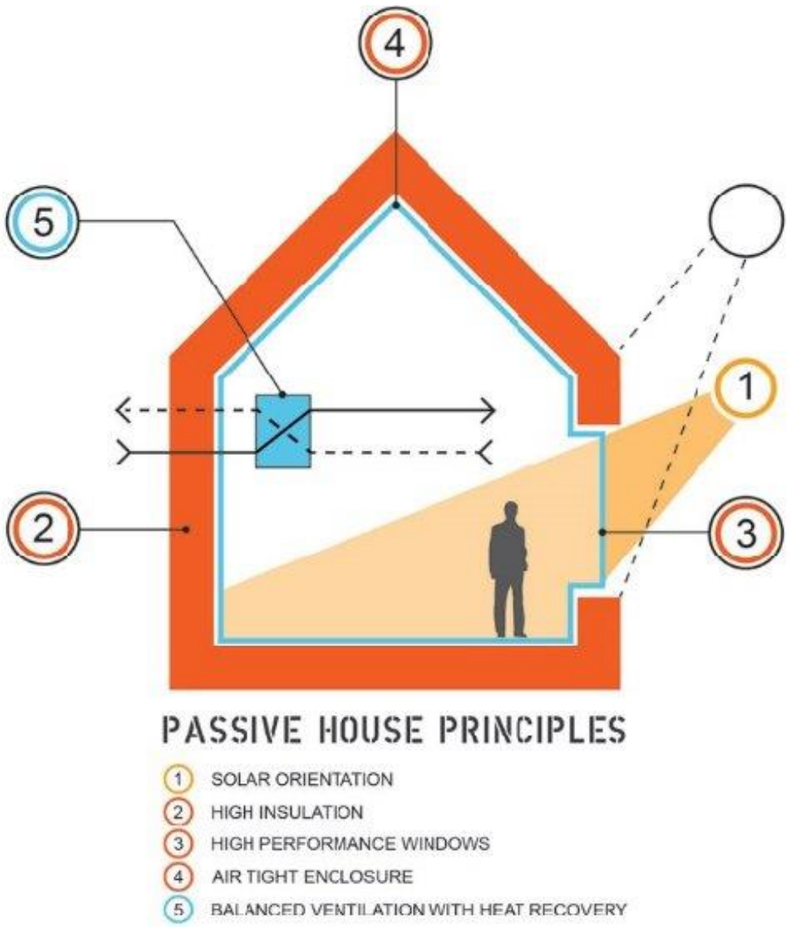

Figure 16: The five principles of Passive House design

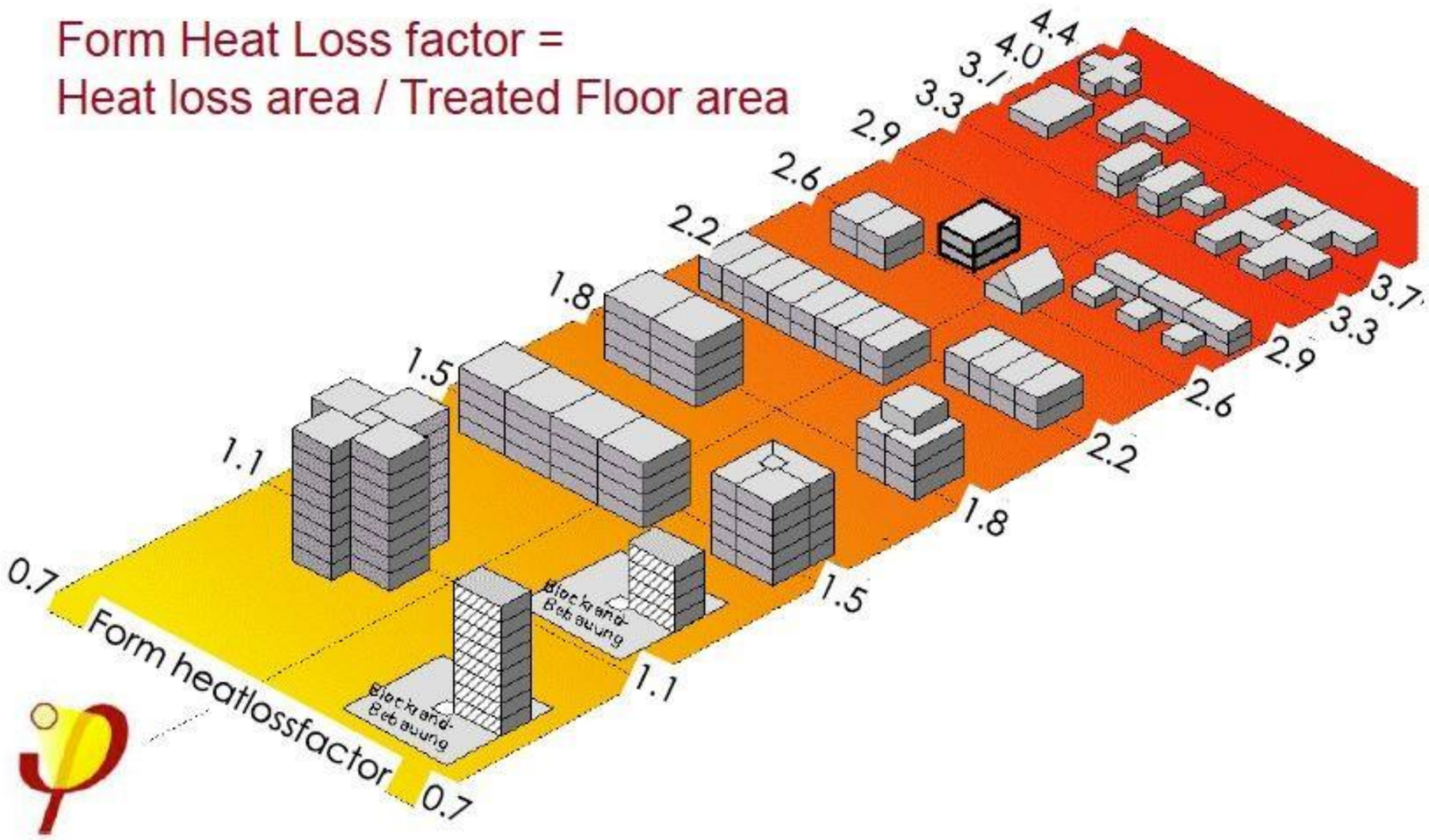

Figure 17: Passive House Institute graphic detailing how efficient building forms contribute to resource & energy efficiency

The performance gap between the design intent and the reality of homes built to Building Regulations standards is well documented. By contrast, post-occupancy evaluation has demonstrated the performance of certified Passive House dwellings aligns closely with the design expectations.

Designing and building to Passive House standards reduces the energy demand of new development, builds in climate resilience and should therefore be considered to directly address the criteria of paragraph 5.8.1 of PPW11:

"The planning system should support new development that has very high energy performance, supports decarbonisation, tackles the causes of the climate emergency, and adapts to the current and future effects of climate change through the incorporation of effective mitigation and adaptation measures."

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06. Architectural Character,Form and Style

In determining an Architectural style for the replacement dwelling it was decided that the current 1970s style isn't appropriate to replicate. Given the location of the dwelling, adjacent to a Green Wedge and Special Landscape area it was decided that a softer approach would be required. A new entrance created from the access lane gives the replacement a greater relationship with the green wedge and access lane; the existing property is well hidden by hedge growth along the boundary.

There are examples of Late Medieval cottages, Victorian Architecture and of course the Tudor revival style of Margam Castle in the wider area. After exploration of Georgian, Victorian and Edwardian options, The Arts and Crafts movement of the late 19th and early 20th centuries was chosen. The intention is to use the ideals of the Arts and crafts movement with the creation of interesting forms and subtle ornament. The introduction of circular windows, timber bay and stepped brickwork surrounds creates opportunities for meaningful and crafted details.

Balancing these details, and building form with the more strict requirements of low energy detailing has been considered from the outset. This balance affords opportunities to further develop the buildings narrative and avoid a pastiche replica.

Figure 18 - Neighbouring listed Cwm and Margam Cottages**.**
Figure 19-22 - Examples of Arts and Crafts architecture
Figure 23 – The Red House, Bexleyheath

Figure 18: Cwm Cottage (left) & Margam Cottage (right)

Figure 19: Arts and Crafts Example

Figure 20: Arts and Crafts Example

Figure 21: Arts and Crafts Example

Figure 22: Arts and Crafts Example

Figure 23: The Red House

08. Materiality & Details

The typically employed material palette of the Arts and Crafts movement is quite varied in material and colour. With the focus on craftsmanship.

Contemporary reinterpretations of this palette do still rely on a similar colour tone or combination.

Figure 26: Vernacular material palette

Figure 27: Decorative Hanging tiles

Figure 28: Stone window surrounds.

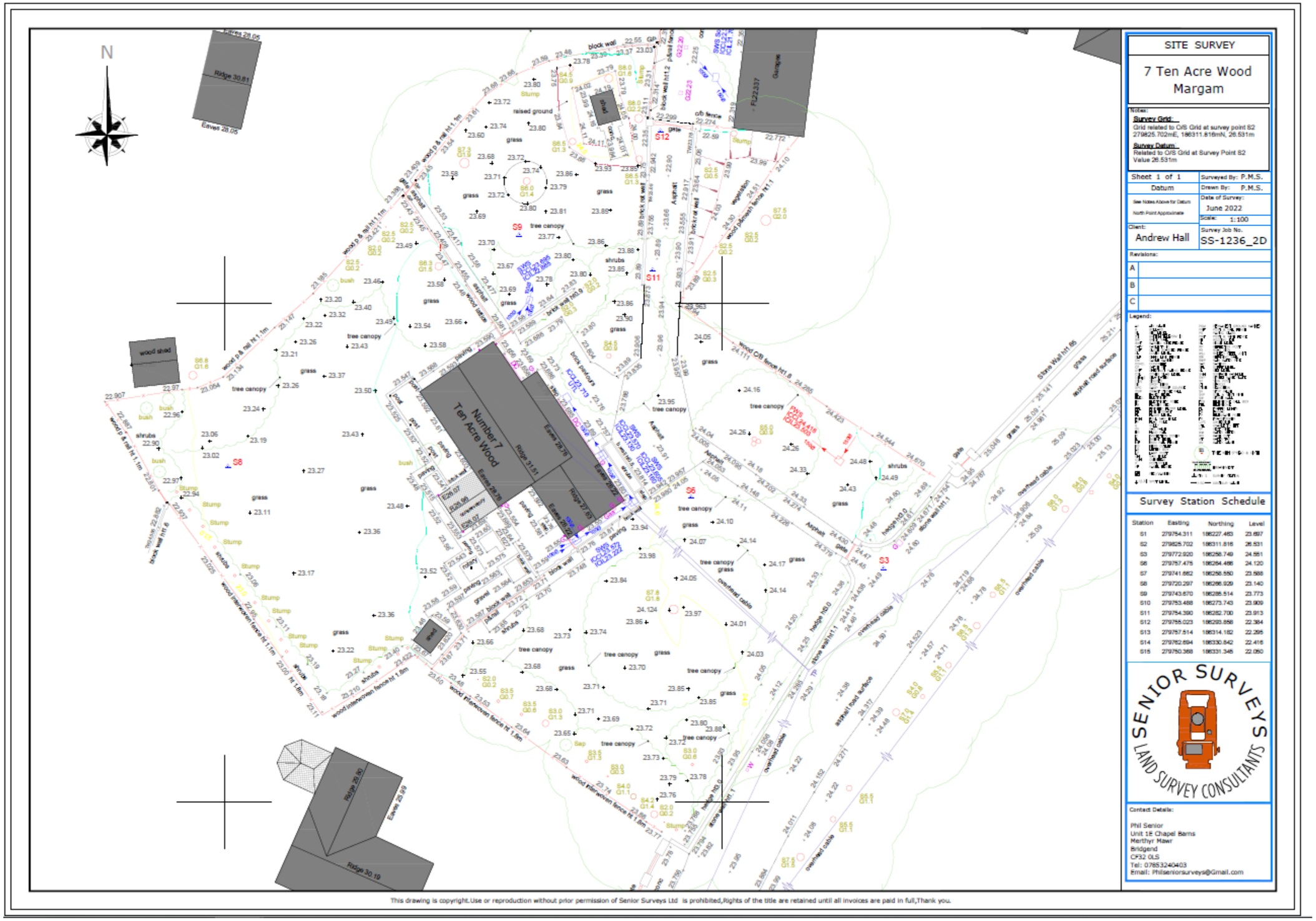
Figure 29: Arched doorway

Figure 30: Hanging tiles and Catslip roof

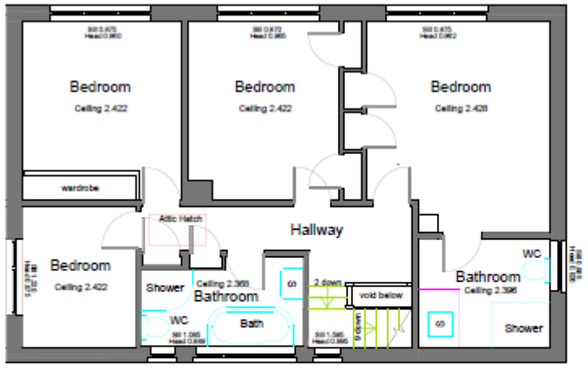
Figure 31: Bay Windiw

Figure 32: Stone Corbel

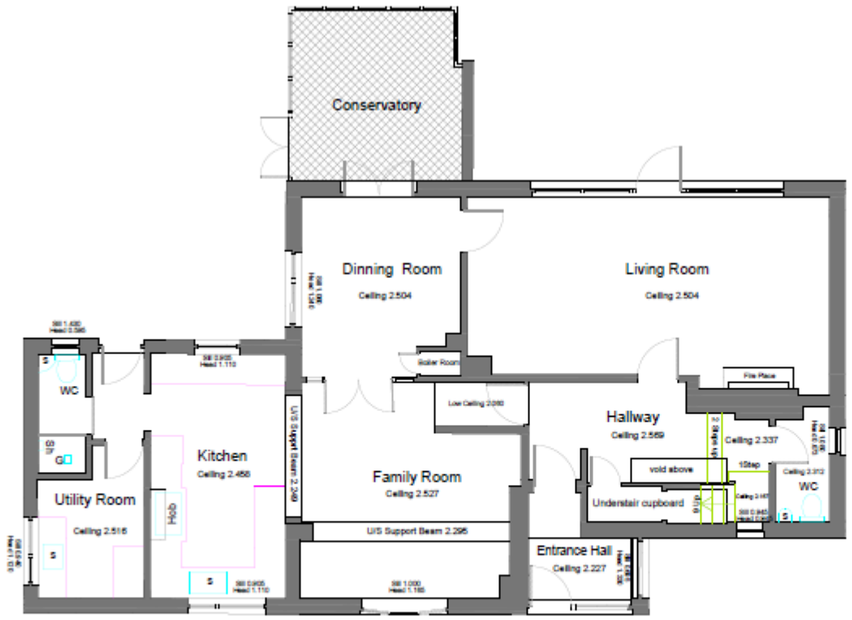
Appendix A: Site Survey



Site Plan, 1:100 at A1 (not to scale)



First Floor Plan 1:50 Scale



Ground Floor Plan 1:50 Scale

SITE SURVEY

7 Ten Acre Wood,Margam

Floor Plans

Notes:

Survey Grid:
Grid related to O/S Grid at survey point S2
279825.702mE, 186311.816mN, 26.531m

Survey Datum:
Related to O/S Grid at Survey Point S2
Value 26.531m

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Datum	Drawn By: P.M.S.
See Notes Above for Datum North Point Approximate	Date of Survey: June 2022 Scale: 1:50
Client: Andrew Hall	Survey Job No. SS-1236_2D

Revisions:

A	
B	
C	
D	
E	

Legend:

Survey Station Schedule

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S7	279741.662	186256.550	23.588
S8	279720.297	186266.929	23.140
S9	279743.670	186285.514	23.773
S10	279753.488	186273.743	23.909
S11	279754.390	186282.700	23.913
S12	279756.023	186293.858	22.384
S13	279757.514	186314.182	22.295
S14	279752.694	186330.842	22.416
S15	279750.368	186331.345	22.050

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Ground & First Floor Plans, 1:50 at A1 (not to scale)

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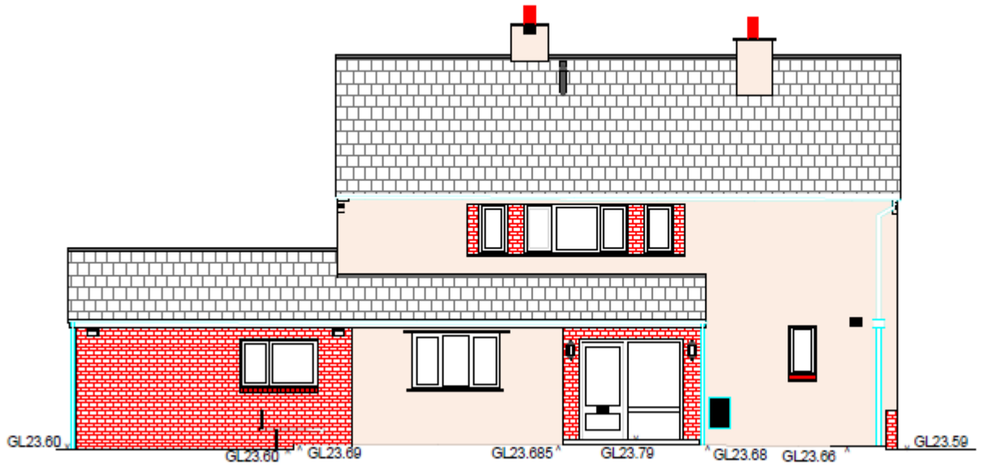
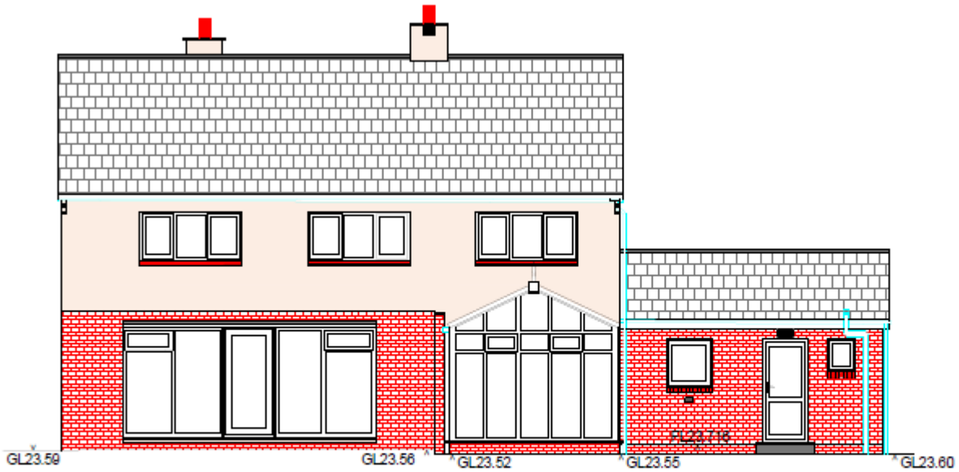


Front Elevation



Rear Elevation

SITE SURVEY

7 Ten Acre Wood,Margam
Front & Rear Elevations

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Revisions:
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B
C

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Front & Rear Elevations, 1:50 at A1 (not to scale)

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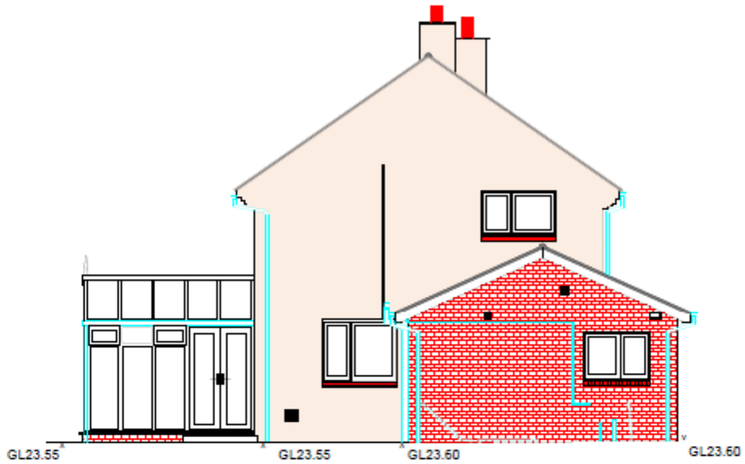
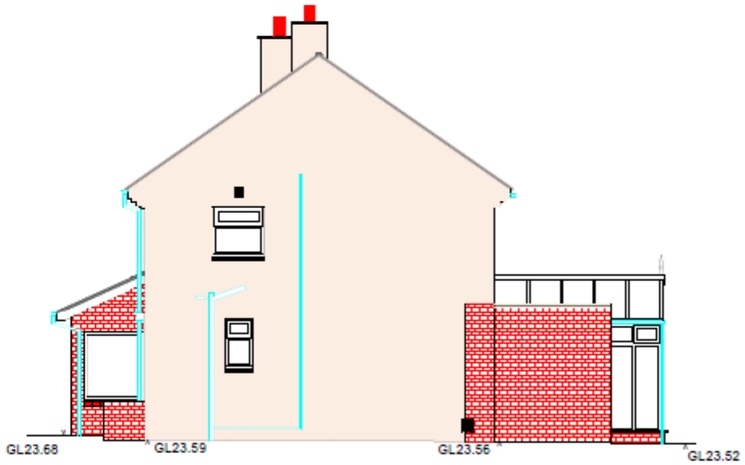


Left Side Elevation



Right Side Elevation

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7 Ten Acre Wood,Margam

Side Elevations

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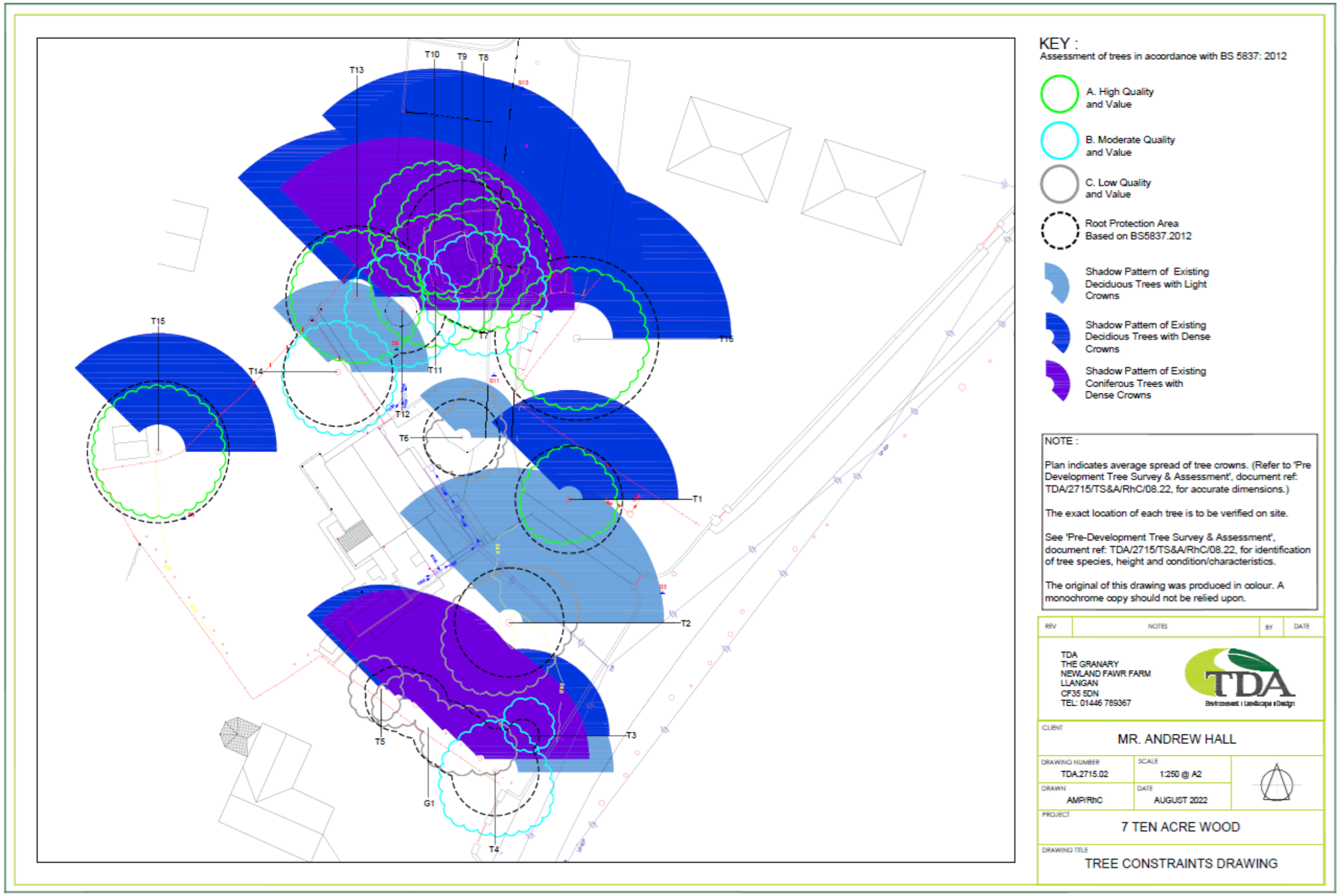
Side Elevations, 1:50 at A1 (not to scale)

Appendix C: Tree Constraints Plan



Tree Constraints Plan, 1:250 at A2 (not to scale)