

*HISTORY AND THEORY*  
*Architecture in your hometown*



*Newton House*

*Vs*

*Arnant*



## **Introduction**

This essay will compare key features of Newton House and Arnant. A particular focus will be given to the sustainability and practicality elements of modern homes. This will be compared to the principles in which Newton House; an 1800's building was built upon.

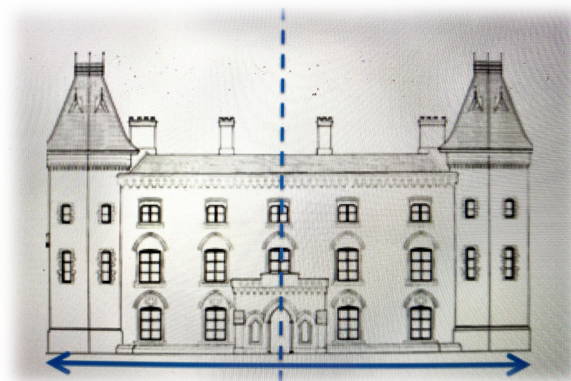
## **Context and historical background:**

Set in the grounds of a 9<sup>th</sup> century castle is Newton House, a grade II listed country house in Llandeilo. In 1659 Edward Rice, the Dean of Gloucester, ordered the construction of Newton House, a Jacobean style building (Morgan, 2014). During the 1850's the house underwent it's most prominent renovation (Davies, n.d.). Newton House is east facing. The location provides a vantage point looking down and beyond the surrounding valleys.

In contrast, set on a plot of land within an old mining village in Cwm Gwendraeth is Arnant, a 2019 built private dwelling. Arnant, a south facing property, is built in a practical location, benefitting from nearby amenities and the M4.

## **External Architecture and plans**

Four square perpendicular turrets, in a diamond form on each corner of the rectangular building are the boldest external features of Newton House. The medieval turrets with steep slopping roofs demonstrates a cross between French Renaissance and Baronial styles (Morgan, 2014). These architectural styles provide a powerful and wealthy image. The external elevations demonstrate reflective symmetry: (Appendix 1)

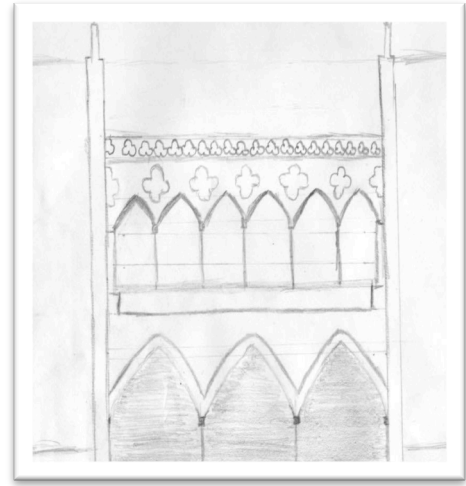


(Appendix 1): Demonstration of the reflective symmetry on the east elevation.

The refurbishment designed by architect, Richard Penson demonstrates many key Gothic architectural features (Morgan, 2014). Most noticeably, the pointed arched windows, the pointed arch entrances for the front porte cochere and the loggia situated at the back. The external walls are dressed in local limestone (Coflein.gov.uk, 2009).

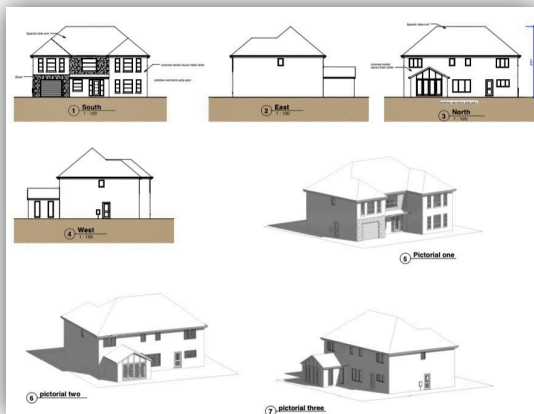


Image showing the turrets, arched windows and lime stone on the north and east elevation. (Author. 2020, Newton House (Photograph))



Sketch of the Gothic loggia situated at the back of Newton House (Not to scale). (Author. 2020, Newton House loggia (Sketch))

In comparison, Arnant was built with strict planning permission requirements and building regulations. Unlike Newton House's grounds and large private driveway that is surrounded by a Ha-Ha and gates, Arnant has an open, shared driveway with the neighbouring property. This is in order to achieve an "open community" principle, stipulated by the planning authority. The Structure itself forms a U shaped with perpendicular walls and hipped roof. The external aesthetics comprise of white render and large anthracite windows. This demonstrates the modern simplistic and slick design. A section of the South facing elevation is decorated in Welsh stone cladding.



South side Elevation drawings of all 4 sides of Arnant. (Andrew Evason, 2018)

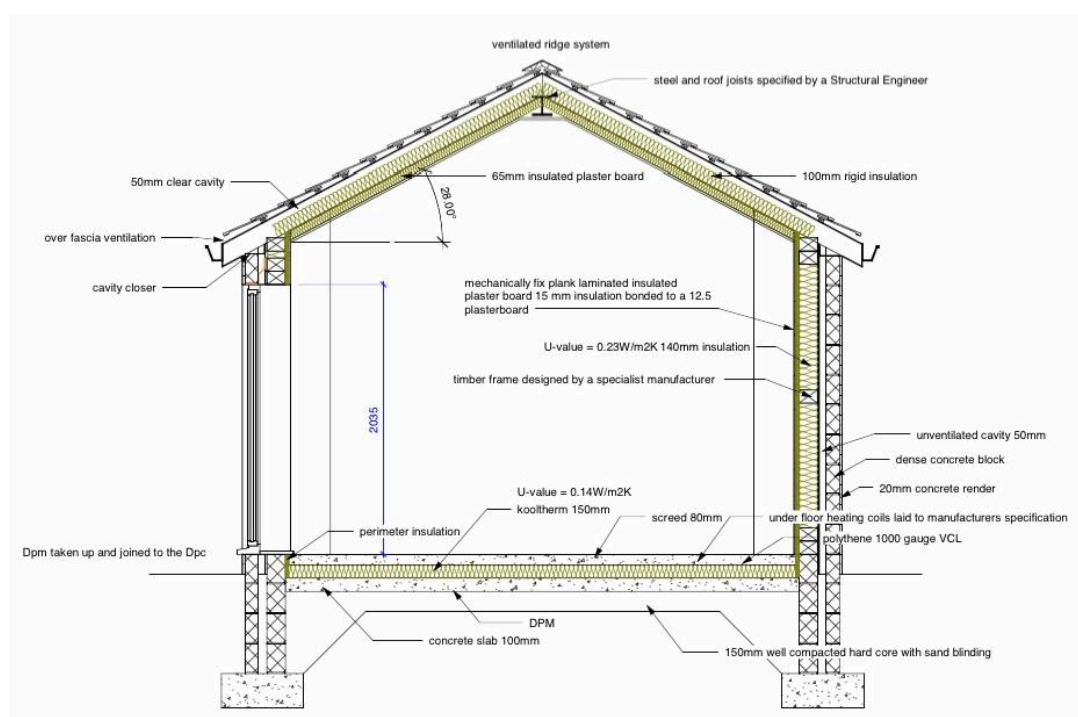


1:50 scale south side elevation drawing of Arnant, showing the Welsh cladding and revised design. (Author, 2020)

Although there are similarities between the use of local stone, the stonework used for Newton House would have required intense masonry. In comparison,

the stone cladding for Arnant is prefabricated, lightweight panels, reducing labour time and cost.

In today's modern world, there is a focus on climate change and using sustainable materials and systems. Arnant is an example of this principle. Regulations were imposed to ensure that the property functioned efficiently and sustainably. The structure of the building is made of sustainable prefabricated timber frame, assembled on site. Arnant comprises of many types of thick insulation (Appendix 2). The property's heating and water system is generated from ground source energy. As a result, Arnant is not dependent on fossil fuels. This is a direct comparison with Newton House' heating system. This labour intensive system was heavily dependent on large amounts of coal and wood, emitting vast amount of carbon.



Section drawing showing the external construction materials used to build Arnant. (Andrew Evason, 2018)

| This document must be submitted with your SAP calculations for building control approval |                                                                                                                                                                                     |                                                 |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Building Fabric                                                                          |                                                                                                                                                                                     |                                                 |
| Element                                                                                  | Construction                                                                                                                                                                        | U value (W/m <sup>2</sup> K)<br>Office Use Only |
| Floor                                                                                    | 100mm concrete slab, 150mm Kingspan Kooltherm (as specified), 80mm screed – U-value as calculated                                                                                   | 0.11                                            |
| External wall                                                                            | 12.5mm plasterboard on 15mm PIR insulation board, 120mm PIR insulation in softwood timbers at 600 centres. 50mm cavity and dense concrete blocks outer leaf – U-value as calculated | 0.20                                            |
| Roof (Slope)                                                                             | 12.5mm plasterboard on 47.5mm PIR insulation board below 150mm rafters at 400 centres with 100mm PIR insulation between – U-value as calculated                                     | 0.19                                            |
| Roof (Plane)                                                                             | 400mm Isover mineral wool insulation between and above joists – U-value specified                                                                                                   | 0.11                                            |
| Doors                                                                                    | UPVC double glazed panels – U-value specified                                                                                                                                       | 1.4                                             |
| Windows                                                                                  | UPVC double glazed panels – U-value specified                                                                                                                                       | 1.4                                             |
| Garage Door                                                                              | UPVC – default U-value used                                                                                                                                                         | 2.0                                             |
| Heating & Hot Water                                                                      |                                                                                                                                                                                     |                                                 |
| Primary heating                                                                          | Ground source heat pump – SAP default used                                                                                                                                          |                                                 |
| Additional heating                                                                       | None                                                                                                                                                                                |                                                 |
| Water Heating                                                                            | 200 litre cylinder assumed with 80mm factory insulation and fully insulated primary pipework                                                                                        |                                                 |
| Heating controls                                                                         | Time and temperature zone controls                                                                                                                                                  |                                                 |
| Ventilation                                                                              | Natural                                                                                                                                                                             |                                                 |

(Appendix 2): Table showing the sustainable materials and heating system used in Arnant. (Melyn, 2018)

### Internal Materials and plans

Newton House's interior provides a relaxed country house feel. The arched windows provided a lot of natural light whilst also capturing views of the outside landscape. This, alongside the rectangular rooms and tall ceilings, provides an open bright environment that effectively exhibits fine details of artwork and patterns throughout the interior. The ground floor dining and drawing rooms exhibits a 17<sup>th</sup> century coffered ceiling with low plaster relief mouldings (Coflein.gov.uk, 2009). The entrance hall comprises of a doric collumed screen with a 19<sup>th</sup> century ribbed roof (Morgan, 2014). The 17<sup>th</sup> century hand crafted open balustrade staircase leads to the two upper floors contain private and guest bedrooms. These rooms are highly decorated in 18<sup>th</sup> century features such as dado panels, lugged architraves and decorated plaster ceilings (Coflein.gov.uk, 2009).

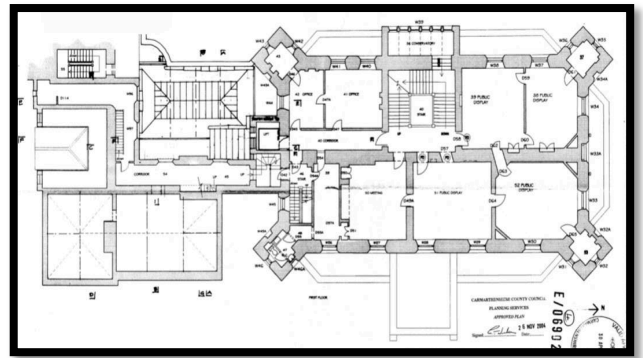
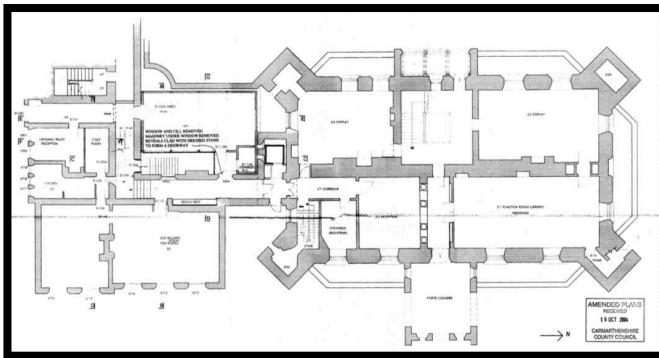


Newton House's 17<sup>th</sup> century staircase. (©NTPL/John Hammond. Not known)



Image of the drawing room- demonstrating the natural light and tall coffered ceilings, Newton House. ((©NTPL/John Hammond. Not known)

Newton House's double-pile floor plan centred around the main entrance hall (Morgan, 2014). The main house comprised of large grand rooms dedicated for social functionality only. The high ceilings providing good airflow and acoustics. Two discreetly placed doors in each ground floor dining room further enhance this principle. The doors each lead to a vaulted cellar and an underground passage to the servant's quarter, located on the south side of the main house (Coflein.gov.uk, 2009). This plan demonstrates how the house was designed to function around serving the family and guests through a clear form of division in classification that was apparent during this period in history.



Ground floor plan and the first floor plan of Newton House. Servant quarters situated on the left side of each plan with the main house on the right side of each plan. (Online.carmarthenshire.gov.uk, 2014)

In contrast, the internal decoration of Arnant is a simplistic style. The plain thistle plastered walls and ceilings are decorated with paint. Light colour schemes and large windows on the south and north facing sections provide a light and positive environment. The use of technology plays a large role in the building's functionality. Modern lighting systems have the ability to change the atmosphere. The use of modern electric doors, popup sockets and functional appliances provide a practical and efficient form of living. Materials such as washable paint on the walls and waterproof respatex boards decorating the bathrooms provide low maintenance and sustainable longevity. These decorative materials are pre-fabricated and mass-produced and then assembled on site. This compares to the hand crafted work in Newton House, demonstrating high quality craftsmanship that was required during that period, providing a unique identity to the house.

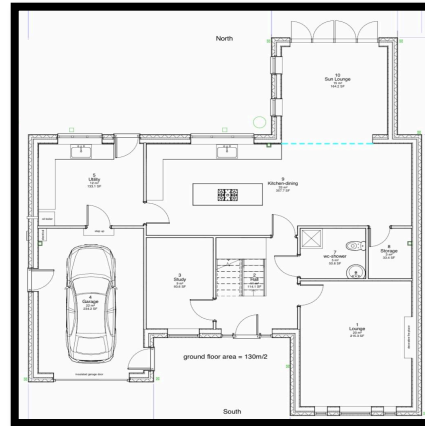


Image showing the natural light and simplistic style inside Arnant. (Author. 2020. (Photography))



Images demonstrating how the modern lighting in Arnant can change the atmosphere. (Author. 2020. (Photography))

Arnant has only two floors. Arnant's ground floor, open plan design encourages a mixed social, relaxing and functioning environment. This contrasts with Newton House, which segregated the servants from the family. The relatively large rectangular bedrooms in Arnant provide a multi functional space such as a space to sleep, to study and to do exercise. This contributes to an efficient and sustainable form of living with the aim to reduce the need to travel, such as working at home. This contrasts with the design of Newton House whereby wealth and space encouraged for each room to have a specific function.



Ground floor plan of Arnant showing the open plan design on the northern section of the house. (Andrew Evason, 2018)

### **Conclusion**

There are many contrasts to both properties. Firstly, Newton House comprises of a mixture of architectural styles. The layout and high maintenance, such as the heating systems, emphasize that the house is built upon the principle of dividing classification and demonstrating wealth. In contrast, Arnant is built on a sustainability principle, looking ahead to the future by introducing renewable systems, efficient materials and multi functional spaces. Secondly, there is an interesting contrast between the construction processes of each house. Arnant was mainly built of prefabricated materials, assembled on site. This compares to the intense hand crafted masonry work that was required to construct and decorate Newton House.

This project has broadened my knowledge and ability to analyse and identify different architectural features and styles.

**Words- 1090** (excluding titles and referencing)

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