Report of the Cabinet Member for Homes & Energy

Cabinet – 21 June 2018

More Homes Parc Yr Helyg Site Options Appraisal

Purpose:	To update Members on which option should be progressed at Parc Yr Helyg, along with financial implications.
Policy Framework:	More Homes Strategy Council Constitution:- Financial Procedure Rules
Consultation:	Finance, Legal, Access to Services.
Recommendation(s):	It is recommended that Cabinet:

1) Consider the options as outlined in the report and confirm the preferred specification as Swansea Standard (with value engineering).

2) Note the emerging longer term development programme and approve the allocation of £500,000 for the scheme for Colliers Way Phase 2 for the enabling works, the detail of which will be delegated to Director of Place, in line with the requirement of FPR7.

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1. Background

1.1 Following construction of the first pilot project at Colliers Way (formally Milford Way), Penderry, a report reviewing progress and any "lessons-learned" was approved by Cabinet on the 16th November 2017. It was agreed a further report would be presented to Cabinet to confirm which options should be progressed at Parc Yr Helyg, along with details of the final expected costs.

The mix of new homes for the Parc Yr Helyg scheme was determined as the following:

- 4 no. 2 bedroom units and 12 no. 1 bedroom units.

To ensure the scheme meets the Council's policy of tackling fuel poverty and future generation's obligations, it was agreed to build to a standard above building regulations as minimum standards were not deemed acceptable. As such, a comparison was to be made between the Passivhaus standard and a "fabric first" high-energy efficient property which will be referred to as a 'Swansea Standard'. This report deals with the outcome of these comparisons, along with the recommendations for Parc Yr Helyg.

2 Improvements from Lessons Learnt

As summarised in the Cabinet report dated 16th November, the lessons learnt included:

i. Site selection
ii. Timescale for delivery
iii. Decision to proceed with Passivhaus house.
iv. Design issue.
v. Restricted supply chain procurement due to Passivhaus standard.
vi. Enhanced specification choices.
vii. Supplementary heating
viii. Pilot scheme experience/Knowledge gained.
ix. Review external works
x. All costs "cost comparison" benchmark data

These were reviewed in order to try to assess the potential benefit and reduction in costs that these could make for Parc Yr Helyg and as such, the following principle changes were deemed necessary.

2.1 Changes to Specification

As stated in the Lessons Learnt report, the Council had not designed new homes directly for a generation which led to the decision being made to commission architectural and Passivhaus Support. In line with CPRs, a specialist Passivhaus advisor was appointed to prepare the Passivhaus designs for both Colliers Way and Parc Yr Helyg. Although the Passivhaus support/experience offered was extensive, issues did arise in relation to insufficient construction detailing and specification which caused problems in terms of accurately pricing the works, ensuring Building Regulations were met and designs being WHQS compliant. In addition, the site layout provided did not align with topographical & GIS data once further detailed analysis had been carried out.

These issues all impacted at site level, affecting both the programme and sequencing of construction works and would all still need to be considered if the option was to build again to Passivhaus Standard.

2.2 Changes to Size

There were no changes made to size as the original layouts would be used for both options, with the aim being that cost comparisons could calculated on a 'like for like' basis in terms of size/scale.

The external stores housing the MVHR units have been omitted from the Parc Yr Helyg design, and the MVHR's units located within the property which would potentially reduce build cost. However this would apply to both Passivhaus and 'Swansea standard' at Parc Yr Helyg.

The properties will be built to design quality requirements and lifetime homes standards and as a result of the revision of the standard, there is now an opportunity to incorporate accommodation for families.

2.3 Local Supply Chain

A recommendation within the Lessons Learnt report was that there is a need to maximise the opportunities across the supply chain in particular target suppliers based in the locality. The sub-contractors and material supply chains used when pricing the two different options were primarily all from the South Wales Region, with one being from North Wales. It should be noted that for the Swansea Standard, the supply and installation of windows and doors were from a company based in England.

Should Passivhaus design be approved, it will be necessary for us to seek tenders from Welsh based timber frame companies.

3. Analysis of Options

3.1 Specification

3.1.1 <u>Option 1: Passivhaus Standard</u>

The specification to meet Passivhaus Standard is as follows:

Target U-Values for building fabric:

- External walls 0.125 W/m2k
- Roofs 0.095 W/m2k
- Ground Floor 0.090 W/m2k
- Windows 0.80 W/m2k

Airtightness Target – 0.6 ac/h@50Pa
Ventilation – Mechanical Ventilation Heat Recovery (MVHR)

Supplementary Heating/Hot water – Energy efficient, Gas fired condensing combination boiler (partial wet heating system – 3 radiators per property)

No tolerances for acceptable cold bridging.

3.1.2 Option 2: Swansea Standard

The specification required to meet the Swansea Standard is as follows:

Target U-Values for building fabric (25% above min. building regulations requirements):

- External walls 0.14W/m2k
- Roofs 0.11W/m2k
- Ground Floor 0.13W/m2k
- Windows 0.12W/m2k

Airtightness Target – 5m³/(m².hr)@50Pa (compared to 10m³/(m².hr) @50Pa required by Building regulations)

Ventilation – Natural and Mechanical extract ventilation

Heating/Hot water – Energy efficient Gas fired condensing combination boiler with full wet heat system.

Acceptable cold bridging tolerances allowed.

3.1.3 The main differences between the two options therefore are:

i. Building fabric thermal performances

Acceptable cold bridging tolerances are lesser than those of Passivhaus, giving flexibility on foundation types (this is not to say that certain types of foundation types can't be achieved using the Passivhaus standard, although it has been advised by the Passivhaus consultants that some methods would be assumed as extremely difficult/unable to be achieve)

Timber frame thicknesses would be reduced if the Swansea Standard option is chosen as the amount of insulation required to achieve targeted u-values are less than those required by Passivhaus standards.

ii. Extent of heating system

Heating systems for the Swansea Standard option would be that of a full wet system rather than partial. Energy efficient radiators will be installed to all necessary rooms with the combination of thermostatic radiator valves allowing occupiers to have more flexibility to adjust room heating to meet their individual comforts. (traditional and a familiar system)

iii. Ventilation requirements

Window and door specification for the Swansea Standard option would not have to be Passivhaus certified. Therefore, such items would be more readily available from Local Suppliers.

iv. Air tightness values

Items i and iii above contribute to the overall air tightness value which will be achieved which would be a maximum of 5m³/hr if the Swansea Standard option is chosen. Further details on this are provided in paragraph 3.3 below. The actual air tightness values will be confirmed following testing on site.

3.1.4 Both standards would have the options of the installation of renewables such as photovoltaics, solar panels etc. though it is assumed that the installation would likely to be less complex to the 'Swansea standard' due to the allowable tolerances in relation to air tightness/cold bridging.

3.2 Cost Analysis

3.2.1 Option 1: Passivhaus Standard

The Budget Cost for Parc Yr Helyg based on the Passivhaus design used at Colliers Way (incorporating where possible design changes identified from the Colliers Way scheme) is **£3,140,075 or £2,940/m²** as shown in **Appendix A.**

The above figures included all external works/drainage and design fees (inclusive of Planning & Building Reg. charges).

It is normal when reviewing costs and evaluating comparison to refer to "build costs" only as external works, services and groundworks will always be site specific and can vary considerably.

As such, the build cost equates to £1,761,458 with a cost per unit of £110k or £1,649/m².

The sprinkler costs included in the above figures are **£44,560** which when omitted to align with unit costs elsewhere in the UK reduces the build cost per m² to £1,608/m² (£1,761,458 - £44,560/1068 m²).

It should be noted that these figures reflect an increase on the Colliers Way scheme of 6% where the rate for flats was £1,511/m². This is primarily attributed to substantial increases in the timber frame and other sub-contractor package costs since the previous tender.

3.2.2 Option 2: Swansea Standard

The Budget Cost for Parc Yr Helyg based on the Swansea Standard specification as detailed in 3.1.2 above, is **£2,875,634 or £2,693m²** as

shown in **Appendix B.** These figures include all external works/drainage and design fees (inclusive of Planning & Building Reg. charges).

It is normal when reviewing costs and evaluating comparison to refer to "build costs" only as external works, services and groundworks will always be site specific and can vary considerably. As such, the build cost equates to £1,518,852 with a cost per unit of £95k or £1,422/m².

The sprinkler costs included in the above figures are £44,560 which when omitted to align with unit costs elsewhere in the UK reduces the build cost per m² to £1,380/m² (£1,518,852 - £44,560/1068 m²).

3.2.3 External Works

Attention is drawn to the significant costs of external works amounting to in excess of £1m, which is significantly above the external works costs at Colliers Way site, which amounted to £646,379. This is due to the difficult nature of the sites and the need to divert overhead cables and major attenuation works to surface water drainage and the current need for retaining walls.

As a result of this significant cost, the construction and design team have looked at options in terms of redesign which would result in savings of approx. £150 – £200k.

As such whichever option is agreed, there would be a requirement for a revised planning application to enable significant savings to be achieved through value engineering of the external works. Therefore an anticipated start date of end of September 2018 in planned, regardless of which option is progressed.

3.2.4 Summary of Comparison

When considering Passivhaus versus Swansea Standard there is a potential cost saving of £242k or £226/m² on the building works using the Swansea Standard. This is equivalent to a 16% reduction on the Passivhaus costs.

Analysis of the "build costs" compared to BRE data indicate that the Passivhaus costs are 4% higher than BRE comparative figures however the Swansea Standard costs are 8% below BRE comparative figures as shown in **Appendix C.**

It should be noted that the BRE report (where the comparative figures are drawn from) was produced in February 2016 and build cost have increased since this time (The RICS BMI indices indicate construction costs have increased by approx. 8% since February 2016).

It should also be noted that the need for additional units of affordable housing needs to be balanced against the Council's objective to develop

high quality energy efficient housing. The Swansea Standard helps to balance this need by providing the energy efficient housing using resources more efficiently. This will mean that more units can be delivered on future schemes.

3.3 Analysis of Potential Energy Savings

Due to the fact the Colliers Way scheme has only recently been completed, statistical data is not yet available on the Energy Savings made as a result of the Passivhaus design and as such, a comparison between this and the Swansea Standard is not possible at this stage.

For the purpose of this report, it is clear that the insulation for each design varies and as such, any potential energy savings would also vary accordingly. The main energy savings would be from the air tightness values, the requirements of which under standard Building Regulations are below 10m³ per hour. For Passivhaus, these need to be below 0.6m³ per hour. For Swansea Standard, which replicates Fabric First, the building would be looking to achieve a maximum figure of 5m³ per hour.

It is difficult to quote reliable data without detailed evidence and as such, monitoring equipment has been installed on the Colliers Way site to assess the performance of the properties over the next 2 years. However, the estimated difference between Swansea Standard and Passivhaus would be in the region of 10-20% of heating costs equating to circa £20 per year. It would be intended to install the same monitoring equipment on Parc Yr Helyg, whichever standard is used.

Given the Council's commitment to Fuel Poverty and Energy Efficiency, the design for any future schemes will consider more innovated solutions such as Air Source or Ground Source Heat Pumps, Photovoltaic panels and battery storage, if innovative housing funding is available to support this.

4 Funding Opportunities

4.1 Welsh Government Grant Opportunities

4.1.1 Innovative Housing Programme

Developing the Swansea Standard also gives the opportunity to build in renewable technology to further improve the energy performance of the homes. This may offer a chance for a successful bid for funding for the second round of Innovative Housing Programme to fund these additional elements. It is unlikely that a second Passivhaus scheme would be seen as innovative in the future bidding round, whereas developing a Swansea Standard may be more likely to attract grant.

4.1.2 Affordable Housing Grant

Welsh Government have also announced the introduction of Affordable Housing Grant (AHG) for Local Authorities. This will be an annual revenue grant to support 58% of the borrowing costs of the scheme over 30 years. This grant will be available for 18/19 and 19/20 and can be used to support the delivery of Parc Yr Helyg (Subject to the criteria which is yet be confirmed). In addition, Welsh Government are looking to make additional borrowing available to councils that have ambitions to develop more affordable homes. In order to maximise the AHG opportunities, a third site which is proposed to be Colliers Way Phase 2 needs to be worked up. This site can then be brought forward should the additional borrowing from Welsh Government materialise in time for the Council to take advantage of the opportunity.

4.2 City deal - Homes as Power Stations (HAPS)

As part of the City Deal programme, one key strand relates to the progression of homes as power stations, which involves installation of energy producing assets for use on site and surpluses to be exported to the grid. It had been hoped that the city deal funding would have been able to be drawn down from the start of the financial year but it is currently looking more likely to be towards Autumn 2018. This could also be a potential funding source to support further innovation on top of the preferred specification.

5 Financial Implications

5.1 Capital

In February 2018, Council agreed a budget for Parc Yr Helyg as detailed in the table below.

	Passivhaus Cost £000's	**Swansea Standard Cost £000's**
2016/2017 Spend	107	107
2017/2018 Spend	112	112
Remaining Budget 18/19	3038	3038
Total Budget	3257	3257
Total Cost Forecast	3140	2876
Over/Under Budget	117	381

Savings, therefore for the Swansea Standard option over Passivhaus would be £264k

In February 2018, Council also approved a budget of £421k for the conversion of the former Clase DHO into units of accommodation and the purchase of a property in Acacia Avenue. This scheme will now be funded from commuted sums. In addition, £100k of unallocated More Homes budget was carried forward from 2017/18. This budget could be utilised to

allow a third scheme at Colliers Way to be progressed. A budget of £521k is proposed to commission design and enabling works.

5.2 Revenue

Whilst maintenance costs will be met from the existing Housing Revenue Account budget, the actual costs, particularly over the longer term are unknown as it depends on a number of factors in terms of extent of repairs or replacement versus the fact that there would be limited requirements over the initial years of a new build property.

It is believed by sourcing more "local" products this differential can be reduced on this scheme if the lessons learnt in this report are followed.

6. Equality and Engagement Implications

The Council is subject to the Public Sector Equality Duty (Wales) and must, in the exercise of their functions, have due regard to the need to:

- Eliminate unlawful discrimination, harassment and victimisation and other conduct prohibited by the Act.
- Advance equality of opportunity between people who share a protected characteristic and those who do not.
- Foster good relations between people who share a protected characteristic and those who do not.

Our Equality Impact Assessment process ensures that we have paid to regard to the above.

An EIA screening form has been completed and reviewed (**Appendix D**). The agreed outcome was that a full EIA report is not required at this time. This will be reviewed as the project progresses and any developments will be subject to normal planning procedures. It is confirmed all new homes are being built to homes for life standards to ensure that accessibility is part and parcel of the design.

7. Legal Implications

All external goods and services will be procured in line with Contract Procedure Rules and European procurement regulations as appropriate.

All works will also be carried out in line with the Well-being of Future Generations Act (Wales) 2015. This lists seven well-being goals which provide a shared vision for Public bodies to work towards. These are:

- A globally responsible Wales;
- A prosperous Wales;
- A resilient Wales;
- A healthier Wales;
- A more equal Wales;

- A Wales of cohesive communities;
- A Wales of vibrant culture and thriving Welsh Language.

In addition to the above, the Act states that Public bodies need to ensure decisions they make take into account the impact they may have on people living their lives in Wales in the future. Public bodies must take into account five considerations in order to show they have applied the sustainable development principle. These ways of working are aimed at ensuring Public bodies work together better, avoid repeating past mistakes and tackle some of the long term challenges faced:

- Long Term - The importance of balancing short-term needs with the need to safeguard the ability to also meet long-term needs.
- Prevention - How acting to prevent problems occurring or getting worse may help public bodies meet their objectives.
- Integration - Considering how the public body's well-being objectives may impact upon each of the well-being goals, on their other objectives, or on the objectives of other public bodies.
- Collaboration - Acting in collaboration with any other person (or different parts of the body itself) that could help the body to meet its well-being objectives.
- Involvement - The importance of involving people with an interest in achieving the well-being goals, and ensuring that those people reflect the diversity of the area which the body serves.

8. Summary

The two options contained within this report both allow for significant improvements in relation to the energy efficiency compared to the current Building Regulations, with comparable savings being achieved on the energy bills for heating the property. We also have the option to include additional innovative energy efficiency measures which will further reduce the energy consumption.

Passivhaus is no longer recognised as being "innovative" whereas developing a Swansea Standard will be, which will allow us to explore the option of innovative funding via WG.

In addition to this, the Swansea Standard would realise an overall saving of £264,441 compared to Passivhaus on the Parc Yr Helyg scheme.

Background Papers: Cabinet Report: 16th November 2017

Appendix A: Cost Breakdown – Passivhaus Standard
Appendix B: Cost Breakdown – Swansea Standard
Appendix C: Cost Comparison
Appendix D: Equality Impact Assessment Screening Form