Public Document Pack
Cyngor Bwrdeistref Sirol Pen-y-bont ar Ogwr
Bridgend County Borough Council
Swyddfeydd Dinesig, Stryd yr Angel, Pen-y-bont, CF31 4WB / Civic Offices, Angel Street, Bridgend, CF31 4WB

Rydym yn croesawu gohebiaeth yn Gymraeg. Rhowch wybod i ni os mai Cymraeg yw eich dewis iaith.
We welcome correspondence in Welsh. Please let us know if your language choice is Welsh.

Cyfarwyddiaeth y Prif Weithredwr / Chief Executive's Directorate
Deialu uniongyrchol / Direct line /: 01656 643148 / 643147 / 643694
Gofynnwch am / Ask for: Andrew Rees

Ein cyf / Our ref:
Eich cyf / Your ref:

Dyddiad/Date: Friday, 5 July 2019

Dear Councillor,

SUBJECT OVERVIEW AND SCRUTINY COMMITTEE 3

A meeting of the Subject Overview and Scrutiny Committee 3 will be held in the Council Chamber, Civic Offices Angel Street Bridgend CF31 4WB on **Thursday, 11 July 2019** at **09:30**.

AGENDA

1. Apologies for Absence
   To receive apologies for absence from Members.

2. Declarations of Interest
   To receive declarations of personal and prejudicial interest (if any) from Members/Officers in accordance with the provisions of the Members Code of Conduct adopted by Council from 1 September 2008 (including whipping declarations)

3. Approval of Minutes 3 - 16
   To receive for approval the minutes of the meeting of the 25/02/2019 and 18/03/2019

4. Forward Work Programme Update 17 - 24

5. Overview and Scrutiny Feedback Report 25 - 36

6. Nomination to the Public Service Board Scrutiny Panel 37 - 40

7. Corporate Parenting Champion Nomination Report 41 - 44

8. Bridgend County Local Area Energy Strategy and Smart Energy Plan 45 - 192
   Invitees:

   Cllr Hywel Williams, Deputy Leader (representing Cllr Young);
   Zak Shell, Head of Operations - Community Services;
   Michael Jenkins - Team Leader Sustainable Development
   Ieuan Sherwood - Group Manager - Economy, Natural Resources & Sustainability
   Denis Richard, Head of Major Programmes -Energy Systems Catapult
   Paul Smith, Regional Development Manager Wales - Energy Systems Catapult

By receiving this Agenda Pack electronically you will save the Authority approx. £7.68 in printing costs

9. Urgent Items

To consider any item(s) of business in respect of which notice has been given in accordance with Part 4 (paragraph 4) of the Council Procedure Rules and which the person presiding at the meeting is of the opinion should by reason of special circumstances be transacted at the meeting as a matter of urgency.

Yours faithfully
K Watson
Head of Legal and Regulatory Services

Councillors:	Councillors	Councillors
N Clarke	JC Radcliffe	SR Vidal
P Davies	RMI Shaw	MC Voisey
DK Edwards	JC Spanswick	DBF White
DG Howells	RME Stirman	JE Williams
DRW Lewis	G Thomas	
JR McCarthy	E Venables	

SUBJECT OVERVIEW AND SCRUTINY COMMITTEE 3 - MONDAY, 25 FEBRUARY 2019

MINUTES OF A MEETING OF THE SUBJECT OVERVIEW AND SCRUTINY COMMITTEE 3 HELD IN COUNCIL CHAMBER, CIVIC OFFICES ANGEL STREET BRIDGEND CF31 4WB ON MONDAY, 25 FEBRUARY 2019 AT 10:00

Present

Councillor JC Spanswick – Chairperson

SE Baldwin	N Clarke	P Davies	DK Edwards
A Hussain	JC Radcliffe	RMI Shaw	G Thomas
MC Voisey	JE Williams		

Apologies for Absence

DG Howells, DRW Lewis, RME Stirman, E Venables and DBF White

Officers:

Rachel Keepins	Democratic Services Officer - Scrutiny
Tracy Watson	Scrutiny Officer

66. DECLARATIONS OF INTEREST

None.

67. APPROVAL OF MINUTES

That the Minutes of a meeting of Subject Overview and Scrutiny Committee 3 dated 24 January 2019, be approved as a true and accurate record subject to Councillor RMI Shaw's name being added to the list of apologies for absence for the meeting.

68. EMPTY PROPERTIES

The Head of Performance and Partnerships gave a presentation updating the Committee on the progress made following the report in March 2018 in regards to Empty Properties and in particular covering the following:

- Blended & Proactive Approach
- Chapels & Churches
- Council Tax Opportunities
- Un-banded Empty Properties
- Recruitment of a "dedicated" Empty Properties Officer
- Strategy in terms of Why, Approach and Progress to date of where we are.

The Committee thanked the Head of Performance and Partnerships and the Cabinet Member for Future Generations and Wellbeing for the work that has been done on this and were pleased to see Empty Properties brought back to the committee and the strategy is currently out for consultation.

A member asked if the Head of Performance and Partnerships could clarify his comment that the Empty Properties Officer worked 'primarily' in Bridgend. The Head of

Performance and Partnerships confirmed that this was the wrong choice of word and that the Empty Properties Officer focused only on Bridgend properties.

A member highlighted that this is a cross party commitment and everybody, no matter where you sit, wants this to be successful. Whilst there are a couple of issues in terms of funding and whilst it is understood the process needs to be followed we need to make property owners aware that we will use the legislation to enforce if necessary. The member reiterated the quantity and knowledge of the properties whilst trying to coordinate them and suggested one of the best ways to do this, was to split down the list by ward, with each ward member given that list so that they could supplement some of the un-banded properties that are not known about to have an up to date comprehensive list. Lastly the member spoke about revenue and whilst appreciated that grants were an incentive, clearly there wasn't enough revenue and would like to think that extra revenue could be raised through council tax as a result of bringing these properties back into use, and that maybe that revenue could be hypothecated into creating more funding to help and create economic activity.

A member highlighted that the report focused on Bridgend currently and asked the Head of Performance and Partnerships if he had any idea when this was going to be expanded into the rest of the borough and highlighted that he was pleased to see that Churches would be brought in, in some way, and highlighted the issue of finding owners that abandon these properties, and highlighted the issue of a church in Caerau. The Head of Performance and Partnerships confirmed that when he talked about Bridgend, her was referring to Bridgend County Borough Council and not specifically Bridgend Town Centre, with a holistic approach across all properties across the authority. The Head of Performance and Partnerships asked the member to pass on the details of the church in Caerau so that this could be looked into.

A member again thanked the committee and was pleased to see a one council approach. The member asked the Head of Performance and Partnerships why there was no elected member on the working group and whether the panel was encouraging members to take representation of this back to their own departments. The Head of Performance and Partnerships confirmed that the working group fed into Cabinet as a whole, but could look at bringing back an elected member if needed. In addition the Cabinet Member for Future Generations and Wellbeing confirmed that fortnightly meetings were held with the Head of Performance and Partnerships in relation to Empty Properties. The member further highlighted that whilst 48% of empty properties are across the 3 major town centres, 52% aren't, so a fair representation is needed across the county. The Head of Performance and Partnerships highlighted the strength of the marking matrix and the legislative process if needed but outlined the council is looking to support property owners with collaborative engagement in the first instance.

A member questioned where there are issues of engaging with property owners and there is a potential for a CPO, having gone through a very arduous budget process, where in the budget is the money to pursue CPO's and how do we value these properties, with a view to engaging owners. The Head of Performance and Partnerships confirmed that in terms of budget there is £100k of capital money to use towards the legislative process, but appreciated that in some instances there will be difficulties engaging with property owners but that the correct process must be used.

A member asked the Head of Performance and Partnerships to clarify what the 5 difference stages of the model are. The Head of Performance and Partnerships talked through the process highlighting the increasing engagement opportunities and suggested sharing a copy of the 5 stage letters to the committee. The member confirmed that this would be helpful from a ward point of view to understand what stage a property is at and what progressive steps the authority has taken to date.

A member asked of the three other councils listed, who've imposed council tax premiums, the member is aware than Ceredigion Council the premium is 25%, not the full 100% premium that they could do. The member asked if clarification could be given in terms of what Wrexham and Flintshire Council's premiums were. The Head of Performance and Partnerships to confirm.

A member asked for clarification as to what is meant my residential properties. The Head of Performance and Partnerships confirmed that it is based on the Welsh Government definition, although the council will take into consideration chapels and churches where there is an opportunity, but will need to look at an alternative strategy for commercial properties to support changes. The Cabinet Member for Future Generations and Wellbeing confirmed that this was likely to be a separate strategy.

A member highlighted that there appeared to be a shortage of commercial properties in Bridgend, so pursuing this type of property would be an advantage for business in the Borough and should be a priority. The Cabinet Member for Future Generations and Wellbeing confirmed that this was in relation to industrial units, rather than high street units.

A member asked whether it would be beneficial to involve V2C in the meetings. The Head of Performance and Partnerships explained that RSL's should support from a management perspective with empty property owners to remove the stress from the property owners and are in discussions with RSL's as a pilot project.

A member asked whether the pilot could look at enveloping a certain amount of empty properties to create training and apprenticeship opportunities. The Head of Performance and Partnerships agreed to take this away as an action.

A member asked if there was any way in which the residential and commercial strategies could be linked to do some integrated work, e.g. potential that commercial properties could be converted to boost the supply of affordable housing and enhancing the city centre. The Head of Performance and Partnerships explained that this strategy focuses on residential properties, but that a longer term strategy is needed in terms of commercial property and confirmed planning sit on the empty properties working group, but focus was around residential properties initially.

A member asked whether Social Landlord properties which are empty in the Ogmore Valley in particular, are included in the brief, or tackled separately. The Head of Performance and Partnerships confirmed that those properties were not included in the brief but that discussions had taken place about the particular properties outside of the working group and what to do and challenges faced.

A member confirmed that Bridgend Town Centre is only made up of 3 small wards and that figure was still relatively high.

A member asked where there may be little or no equity in a property to obtain funding to carry out the work, what happens and additionally asked if a piece of work had been done in respect of these figures? The Head of Performance and Partnerships explained that in terms of equity this information was not accessible to the Council. The Council's remit was to ensure safety as well and to bring back to use, but whether there is equity or not is down to the process as it goes forward with the property owner.

A member asked if the consultation link could be sent to all Members from the Head of Performance and Partnerships. The member also highlighted the last paragraph on page 24 of the report in respect of Porthcawl, specifically 'being a holiday resort…tourism plays a large part in Porthcawl's economy and there are more

employment opportunities'. The Member did not agree with the paragraph and highlighted that tourism was only for part of the year, primarily June to August, and that there were only better transport links for drivers. The member further went on to say that it was known fact that many youngsters that left for University, did not return to Porthcawl, because there was a lack of opportunities outside of tourism. The Head of Performance and Partnerships took on board the member's comments and was happy to engage with the member to make the report more representative of the member's area.

A member highlighted the issues of changing the use of larger properties into shared accommodation. The Head of Performance and Partnerships noted whilst there are some challenges with multi occupancy, encouragement with RSL's to provide the right platform for multi occupancy is key from the Council's perceptive. There are also positive examples of multi occupancy.

Another member highlighted that there had been anti-social issues with a terrace property in Caerau that had been converted to 5 single bedrooms with shared facilities that did not have to be registered as multi occupancy. The Head of Performance and Partnerships agreed that this is an example of a multi occupancy not having to be registered and the best way to raise issues of anti-social behaviour was via 101 so that something can be done about it, as without evidence little action can be taken. This highlighted the point about RSL's starting to deliver a quality product that can be managed, rather than the private sector taking on the gap in the market.

A member picked up on the conversion issue and V2C and highlighted that there had been an entire change with the executive in V2C with a more proactive chief executive wanting to work with the Local Authority having strategic meetings. The member further highlighted the impact of welfare reform and the need for single person's properties.

A member stated that the Council needs to have a policy in place in respect of HMO's, which can complement the Empty Properties strategy.

A member suggested writing to the valuation office and through MP's or the housing minister in respect of un-banded properties, to bring them back into use. Whilst having our own strategy through the WLGA or WG, we need to have a coherent national strategy in Wales.

A member highlighted that the word 'consider' should be removed from Point 5 on Page 30 of the report and furthermore a member asked who would be taking that action. The Head of Performance and Partnerships explained that a case file based on the 5 stage process and engagement with the property owner, would then be taken forward by the legal team.

A member asked when the online confidential reporting service would be available. The Head of Performance and Partnerships explained that functionality should be added by 31st March 2019 and will link to the My Account provision.

A member asked for a clearer understanding of the difference between the performance indicators PAM/013 and PAM/014. The Head of Performance and Partnerships explained that PAM/014 would be a converted property that has created additional units whereby PAM/013 is making a property habitable again.

A member asked how many properties in the last financial year have been dealt with, without the strategy and whether there is a target to bring in so many properties back into use. The Head of Performance and Partnerships confirmed that there is no baseline, but will use the PAMs with the ultimate goal to put some physical targets in

place. The Group Manager Housing and Community further confirmed that for 2019/20 the target has been set at 5% for PAM/013 and for PAM/014, 5 additional units, using the welsh average figure to get more accurate information keeping it realistic. The Senior Strategic Officer confirmed that the performance for 2018/19 will not be reported until after the end of March 2019, but in terms of properties it will be 60 to 70 properties for next year. A member asked whether it was achievable to bring 60 to 70 properties back into use, given past experience. The Senior Strategic Officer highlighted that engaging or advising with owners counted towards the targets and as more engagement is taking place, the targets should be reached. The Head of Performance and Partnerships added that it was important to stretch the target.

A member enquired to the number of people who had completed an application for a grant. The Group Manager Housing and Community explained that the process had changed in terms of loans and grants to bring it up to date with the strategy and to streamline the process. Expression of Interest forms have been sent to those contacted, collecting quite a bit of information at the first stage, thus concentrating the minds of applicants e.g. whether they are prepared to rent when the property is upgraded, whether they are going to be Rent Smart Wales registered, whilst contributing to bringing the property up to date in line with grant conditions and limits on the money allocated to particular properties. Of the people contacted, 31 have asked for grant information and 13 expressions of interest completed. Some will go through to the next stage, where a property survey takes place and some don't meet the requirements for a grant, but meet the requirements for a loan, and some need further information.

A member asked whether there are restrictions that can be put in place on private owners to make sure that the rent is set at the local housing level or to make the property more affordable, given that public resources will be used to help private owners bring properties back into use. Whilst there is a need to ensure that the property is to a particular building standard, the governance and management of those properties should also be fair and equitable for everyone. The Group Manager Housing and Community confirmed that private owners needed to be Rent Smart Wales registered and that properties are managed appropriately and are the sort of questions asked on the expression of interest form.

A member asked whether the council would be contacting Flintshire and Wrexham Council's as they had performed well in terms of the PAM/013 targets, having previously linked in with Shelter Cymru. What challenges did they have and what lessons did they learn, so that the process can be accelerated in this council. The Head of Performance and Partnerships confirmed that the Empty Homes Officer was liaising with other authorities in terms of best practice and lessons learned. The Senior Strategic Officer explained that there had been some changes to the way PAM/013 was reported and that there was much more consistent reporting across authorities as a result.

A member asked whether there was any clawback clause on the public money invested into empty properties particularly in respect of any uplift in the value of the property if sold. The Senior Strategic Officer explained that in terms of the empty homes grant, owners had to agree that rent is at the rate of the local housing allowance and they have to be registered with Rent Smart Wales or use a letting agent to agree that the property receives housing nominations from the housing department for 3 years. Whilst the grant is not payable, it means that the council has access to an affordable property for 3 years. In terms of the loan, owners have 5 years to pay the loan back if rented and 2 years if selling the property. A member further asked if the grant was paid pack on a percentage basis or just the grant itself. The Senior Strategic Officer explained that it was just the grant itself.

A member asked whether Empty Dwelling Management Orders (EDMO) or similar had been used in the past and whether they could be suitable for some properties going forward. The Head of Performance and Partnerships explained that EDMO's were specifically put in place to deal with empty properties, but feedback from other authorities was that they might not be the right mechanism, if the property is going to be converted from an empty property to a usable property.

A member asked whether there was a reluctance to use the Section 215 Town and Country Planning Act 1990, due to resources. The Head of Performance and Partnerships confirmed that there was availability of capital money and there was a differentiated approach going forward. The Cabinet Member Future Generations and Wellbeing confirmed that there had been a number of enforced sales in the area over the last couple of years and whilst EDMO's had not necessarily been used, the enforced sales had been a feature that had been used by the Shared Regulatory Service.

The Cabinet Member Future Generations and Wellbeing highlighted that the consultation was still live until the end of April.

69. FORWARD WORK PROGRAMME UPDATE

The Scrutiny Officer presented the feedback from the previous meeting in respect of Community Asset Transfer and asked Members to approve the responses/comments as detailed in the report.

The Scrutiny Officer asked members if any additional information was required regarding the Homelessness Strategy and Supporting People Grants, due to be considered at the 18th March 2019 meeting, adding that the Supporting People Grants item had been due to go to SOSC1 in February, but that it had been agreed that this item would complement the Homelessness Strategy item, and so it was agreed that these two items would come to SOSC3, rather than SOSC1 as originally intended. Members of SOSC1 will be invited to attend the meeting on the 18 March 2019.

The Scrutiny Officer outlined that the meeting to be held on 1st May 2019 had been allocated as a Forward Work Programme Workshop to discuss future items, but that following a Forward Work Programme Planning Meeting with the Interim Chief Executive and Corporate Director a number of items had been put forward that may impact on the Workshop.

RESOLVED: The Committee:

1. Approved the feedback from previous meetings of the Subject Overview and Scrutiny Committee and noted the list of responses;
2. The Committee noted that it had been delegated items on Homelessness Strategy and Supporting People Grants for its next meeting;
3. The Committee noted that that a Forward Work Programme Planning Workshop had been arranged for its meeting in May, but maybe subject to change.

70. URGENT ITEMS

None.

The meeting closed at 11:41

MINUTES OF A MEETING OF THE SUBJECT OVERVIEW AND SCRUTINY COMMITTEE 3 HELD IN COUNCIL CHAMBER, CIVIC OFFICES ANGEL STREET BRIDGEND CF31 4WB ON MONDAY, 18 MARCH 2019 AT 10:00

Present

Councillor JC Spanswick – Chairperson

SE Baldwin	P Davies	DK Edwards
DG Howells	A Hussain	DRW Lewis
J C Spanswick	G Thomas	E Venables

Officers:

Gail Jewell	Democratic Services Officer - Scrutiny
Rachel Keepins	Democratic Services Officer - Scrutiny
Michael Pitman	Business & Administrative Apprentice

Invitees:

Cllr D Patel	Cabinet Member Future Generations and Wellbeing
Sue Cooper	Corporate Director, Social Services and Wellbeing
Martin Morgans	Head of Performance and Partnership Services;
Mark Shephard	Interim Chief Executive
Lynne Berry	Group Manager - Housing & Community Regeneration
Joanne Ginn	Housing Solutions Team Manager
Ryan Jones	Supporting People Strategy, Planning and Commissioning Officer

NA Burnett	RJ Collins	PA Davies
AJ Williams	K Watts	M Jones
JP Blundell	C Webster	TH Beedle

71. APOLOGIES FOR ABSENCE

J Williams, P Davies and N Burnett

72. DECLARATIONS OF INTEREST

Cllr A Hussain declared a personal interest in Agenda items 4 and 5 because he was Chair of Brynawel House;
Cllrs K Watts, N Clarke, C Webster and P Davies declared personal interests are they are all Private Landlords.

73. APPROVAL OF MINUTES

RESOLVED:

That the minutes of the meeting of Subject Overview and Scrutiny Committee 3 dated 17 September 2018 be approved as a true and accurate record.

74. HOMELESSNESS STRATEGY 2018-2022

The Head of Performance and Partnership Services made a presentation to the Committee detailing the draft Homeslessness Strategy. He explained that the draft strategy had been developed to respond to the findings of the review and

has been submitted to Welsh Government. This has been submitted on the basis that it is subject to public consultation and final approval by Cabinet.
The review identified a number of areas to be developed but one of the key messages was to reinforce that homelessness is a complex, cross cutting issue which not only requires a corporate approach but also a partnership approach to tackle. It was reported that to further develop corporate and partnership responses to the Strategy findings, an Action Plan is being developed and will be reported to Cabinet alongside the final Strategy. Discussions have been held with many of the key stakeholders around formulating the priorities and actions that have been identified and included in the draft Strategy. This has included relevant internal and external stakeholders and the Council's key partners.

The Head of Performance and Performance and Partnerships reported that on 22nd January 2019 Cabinet approved public consultation on the draft Strategy over a period of six weeks to ensure that members of the public who have concerns or are affected by the issues around housing and homelessness are able to formally put forward their views as well as any stakeholders or organisations who have an interest in the issues and proposed actions. The Housing (Wales) Act 2014 requires the Authority to consult with relevant stakeholders as it considers appropriate in relation to a proposed Strategy. Responses will then be taken into account and necessary amendments made, with a final Strategy being presented to Cabinet for approval in April 2019.

As part of the consultation process the Committee were asked to consider the draft Strategy and provide comments.

Discussions were held around collaborative working where it was reported that although there were challenges ahead, there was a general consensus between all partners involved to prioritise preventing homelessness. This culture change and focus would ensure that resources would be targeted to the right places.

The Head of Performance and Partnerships reported that one of the challenges was that 65% of young presentations to the Authority who needed support require single bedroom accommodation which there is simply no capacity for. There are, for example 1200 empty properties, but the majority of these are three bedroom. The Authority are working better with partners and Registered Social Landlords to challenge them to try and provide the right properties for the needs of Bridgend.

In relation to the figures for those who present as homeless, it was confirmed that in relation to families, only the lead household member would be recorded in the figures. The Housing Solutions Manager clarified that we record all household member details and can report on the numbers that are families.

It was identified by the Housing Solutions Manager that there was various accommodation and support available to meet people's needs; temporary accommodation for example that would be supported for those with complex needs. Other types could be a house, a flat, with only floating support or self-contained accommodation or Houses of Multiple Occupancy (HMOs) with support only should they need it. One of the challenges was with HMOs in that getting the match right was key and they were predominantly private sector

accommodation that we don't have control over. It was reported that the Authority does have a new initiative through the Supporting People's Grant which is a private sector rented support scheme 'Early Doors' where landlords or tenants can sign up to receive targeted support with the aim of maintaining accommodation for the tenant
Discussions were held around homelessness of young people where parents have no longer been able to accommodate them. It was reported that there is a tenancy crisis service and mediation support which aims to provide early prevention and intervention. A pilot project called EMPHASIS has been developed for 14 – 19 year olds with the aim of early prevention of homelessness The Committee were advised that with some circumstances there was a need to create more of a pathway with Social Services to ensure that there was wrap around support.

In relation to the Hostel facility in Brynmenyn there were concerns from the Committee around the suitability and standards of facilities. They were advised by the Head of Performance and Partnerships that the building is not of an acceptable standard and they were looking at the options appraisal for this for relocation or redevelopment. Unfortunately it is the only asset that the Authority has at the moment for supporting families. Despite this, the day to day support that is provided to families at the facility is very good.

Discussions were held around support for prison leavers presenting as homeless, particularly those who may have originally come from out of county. egislation states that they have to evidence a local connection in order to receive housing support . A prisoner must evidence a local connection to receive housing assistance from the Authority.
There is a Supporting People Grant funded project that has been put in place to support prison leavers with a local connection to Bridgend. This project, is run by Taff Housing Start service and has been put in place to provide support in prison and through transition back into the community. Other support is provided which does not need to evidence a local connection. It was reported that initial social services funding had been provided to LAs with prisons for the first two years but that following this, this funding had been reduced as it had been divided between all 22 LAs.

RESOLVED:

The Committee recommend that the strategy includes services provided by Third Sector organisations, to present members of the public who are facing possible homelessness with alternative options for assistance and supply citizens the opportunity to choose the most appropriate choice for them.

Although the Committee are mindful of the resource required to improve collaboration and communications with Bridgend County Borough Council staff and external organisations, Members recommend that Officers explore best practice for inter-agency working with reference to homelessness. The Committee further recommend that a mechanism is created to share referrals made with each agency to outline what support is being supplied and could also be required in the future.

Members raised concerns regarding the issues relating to the effects that may be encountered with 'employed' homeless people being placed in emergency accommodation. Firstly with placements being amongst other individuals who may sustain more vulnerable and chaotic needs and secondly in relation to the high cost implications of residing in temporary accommodation, which could lead onto financial difficulties for an individuals on a low income.

Members recommend that a programme of rota visits are launched for the temporary accommodation options provided by the Council, which will offer the opportunity for Elected Members to meet with people who reside in these establishments and listen to their views.

The Committee also voiced their apprehensions relating to the safety of citizens who are housed in Houses with Multiply Occupancy (HMO's). As previously mentioned, Members reiterated the differing needs of individuals and the necessity to ensure that individuals are housed in-line with their requirements and support network. Therefore Members recommend that the Council create a HMO Strategy which outlines the effect of incorrect allocation of housing and looks to engage effectively with registered and private landlords to mitigate these issues.

To encourage communication, Members recommend that the Housing Department look to explore the opportunity to create 'Strategic Housing Forums'. When discussing the membership of the potential Forum, the Committee recommend that in addition to the inclusion of any relevant partners, that thought is given of involving letting agents as well as private and registered landlords.

The Committee recommend that there is a continuation of care and monitoring of service users that have previously presented as homeless, as many of the previous issues, especially relating to substance misuse and mental health could be re-occurring.

Following discussions in relation to the Local Authority owned hostel accommodation in Brynmenyn, Members raised grave concerns regarding the suitability of the facility and the possible regression with children's learning skills, such as toilet training due to existing shared bathrooms. Therefore Members recommend that strict timelines are implemented for the hostel options appraisal and further recommend that the outcome is reported back to the Committee.

Additional Information

- Members requested to receive the percentage of people who present as homeless but don't continue with support offered.

- When discussing the Homelessness Presentations, Members requested to receive the precise recording of all presentations including children in each household. In addition the Committee request that the information includes citizens that have presented that reside outside the borough;

- With reference to one of the greatest reason for homelessness – 'parent no longer able or willing to accommodate', Members requested to receive

statistics on how successful mediation is currently to ensure funding is being spent in the most efficient way;

- Members asked to receive further information from the Education Directorate in relation to school transport to and from Brynmenyn hostel to ensure that continuity of education is ensued;

- The Committee asked to receive a breakdown of the 41% of people for whom the Council had a 'final' duty to house that had a negative outcome - along with an action plan to mitigate the outlined reasons;

- To assist Members with monitoring the implementation of the Homelessness Strategy, the Committee requested to receive timelines against the aims and objectives outlined within the Homelessness Strategy and for the establishment of multi-agency Homelessness Strategy Delivery Group.

Members agreed that when in receipt of the above additional information the Committee will decide as to whether the data and statistics should be included within the Strategy or if Members wish to make further recommendations in relation to it.

75. SUPPORTING PEOPLE GRANT PROGRAMME

The Head of Performance and Partnership Services made a presentation to the Committee providing detail around the Supporting People Grant Programme. The Committee were advised that the Supporting People Programme Grant (SPPG) was a Welsh Government programme, which provides housing related support to help vulnerable people to live as independently as possible. The SPPG was an early intervention programme which has preventing people from becoming homeless at its core. The vision for the Programme was "A Wales where nobody is homeless and everyone has a safe home where they can flourish". The Grant provides vital funding to prevent homelessness and allows vulnerable service users to live as independently as possible, including young people with support needs, care leavers, older people, men and women experiencing domestic abuse and people with; criminal offending histories, learning disabilities, mental health issues, physical disabilities, substance misuse issues. Services were a combination of generic and specialist provision to specific groups and can be broadly distinguished between fixed support, which is available on site and floating housing related support, which can be delivered to individuals across the County Borough.

Discussions were held around the grant funding with concerns expressed by Members over the reduction in funding, yet numbers of homelessness were increasing. The Head of Performance and Partnership Services provided a breakdown of the funding and where they were being targeted, expressing the view that as a funds were now centrally held, they reduced bureaucracy and allowed the Authority's own Corporate Management Board to target the funding to meet needs.

The Committee questioned the sustainability of the grant, particularly for those with Learning Disabilities where there was a need for continued support and provision. The Corporate Director – Social Services and Wellbeing reassured Members that both the LA, along with three other independent providers have worked very hard in changing the model of delivery, carrying out in depth reviews of individuals involved. This has led to a shift in the support that they receive which has made it more sustainable, rather than possibly them losing the provision, becoming homeless or having to move to a high cost out of county placement. It was reported that the reliance on this type of funding for those with Learning Disabilities has decreased from 50% to 35% with the hope of reducing this by a further 10 % over the next year or two. Competing demand however is a continuing and increasing challenge for the Directorate. It was reported that Bridgend has only a very small number people with Learning Disabilities in OOC high cost placements compared with most other Authorities, as many had already been brought back in under a project with Health called 'Closer to Home'. Those remaining were historical cases and with very specific reasons for why they are in these placements.

The Interim Chief Executive reported that there were significant challenges as with any demand led services with the biggest one being where best to spend funding with increasing demand and decreasing resources, whilst dealing with some of the most vulnerable people in the community. This was the challenge for Cabinet and CMB and had to be based on outcomes, evidence and impact. Key was to collaborate better, join up and align services better, but this wasn't just a 'One Council' approach, this was actually a 'One County Borough' approach.

RESOLVED:

The Committee note the increasing numbers of presentations from men experiencing domestic abuse and were pleased to hear of options being explored for a refuge for men only, although Members did query where the facility would be placed if a joint service with other Local Authorities is employed.

Additional Information

- The Committee request to receive timelines that are being adhered to in relation to the options for a hostel for men.

- In relation to the Supporting People Grant Spend Category detailed in the report, Members note the line 'Women experiencing Domestic Abuse' and queried whether this should state people experiencing domestic abuse which would include women, men and LGBT. The Committee further questioned whether the percentage presented on page 40 only totalled women experiencing domestic abuse.

Future Work

Following the implementation of the Homelessness Strategy, Members have requested to receive a further report on the Supporting People Grant and provide

an update in relation to what steps have been implemented as recommended by the Independent Review undertaken.

76. FORWARD WORK PROGRAMME UPDATE

The Scrutiny Officer presented the report on the Forward Work Programme, highlighting the FWP workshops to be held in April and May.

RESOLVED:

Following the Committee's discussions, Members determined the following in relation to the Overview and Scrutiny Forward Work Programme:

1.1 Regarding the potential Enforcement Vehicle item, Members have requested that the following information is included in the report:
- Detailed feedback on the vehicles use;
- Agreed route for vehicle along with timings;
- How are the recordings reviewed?
- Statistics in relation to letters sent and details of enforcement.

The items below has been highlighted by the Committee as a priority to be presented to the Corporate Overview and Scrutiny Committee for formal prioritisation:

Communication and Engagement.
Enforcement Vehicle.

77. URGENT ITEMS

The meeting closed at Time Not Specified

This page is intentionally left blank

BRIDGEND COUNTY BOROUGH COUNCIL

REPORT TO THE SUBJECT OVERVIEW AND SCRUTINY COMMITTEE 3

11 JULY 2019

REPORT OF THE HEAD OF LEGAL AND REGULATORY SERVICES

FORWARD WORK PROGRAMME UPDATE

1. Purpose of the Report

a) To present the Committee with a list of further potential items for comment and prioritisation;

b) To ask the Committee to identify any further items for consideration using the pre-determined criteria form.

2. Connection to Corporate Improvement Objectives / Other Corporate Priorities

2.1 The key improvement objectives identified in the Corporate Plan 2016–2020 have been embodied in the Overview & Scrutiny Forward Work Programmes. The Corporate Improvement Objectives were adopted by Council on 1 March 2017 and formally set out the improvement objectives that the Council will seek to implement between 2016 and 2020. The Overview and Scrutiny Committees engage in review and development of plans, policy or strategies that support the Corporate Themes.

3. Background

3.1 Under the terms of Bridgend County Borough Council's Constitution, each Overview and Scrutiny Committee must publish a Forward Work Programme (FWP) as far as it is known.

3.2 An effective FWP will identify the issues that the Committee wishes to focus on during the year and provide a clear rationale as to why particular issues have been selected, as well as the approach that will be adopted; i.e. will the Committee be undertaking a policy review/ development role ("Overview") or performance management approach ("Scrutiny").

Feedback

3.3 All conclusions made at Subject Overview and Scrutiny Committee (SOSC) meetings, as well as recommendations and requests for information should be responded to by Officers, to ensure that there are clear outcomes from each topic investigated.

3.4 These will then be presented to the relevant Scrutiny Committee at their next meeting to ensure that they have had a response.

3.5 When each topic has been considered and the Committee is satisfied with the outcome, the SOSC will then present their findings to the Corporate Overview and Scrutiny Committee (COSC) who will determine whether to remove the item from the FWP or to re-add for further prioritisation at a future date.

3.6 The FWPs will remain flexible and will be revisited at each COSC meeting with input from each SOSC and any information gathered from FWP meetings with Corporate Directors and Cabinet.

4. Current Situation / Proposal

4.1 Attached at **Appendix A** is the overall FWP for the SOSCs which includes the topics prioritised by the COSC for the next set of SOSCs in Table A, as well as topics that were deemed important for future prioritisation at Table B. This has been compiled from suggested items from each of the SOSCs at previous meetings as well as the COSC. It also includes information proposed from Corporate Directors, detail from research undertaken by Scrutiny Officers and information from FWP Development meetings between the Scrutiny Chairs and Cabinet.

4.2 The Committee is asked to first consider the next topic they have been allocated by the COSC in Table A and determine what further detail they would like the report to contain, what questions they wish Officers to address and if there are any further invitees they wish to attend for this meeting to assist Members in their investigation.

4.3 The Committee is also asked to then prioritise up to six items from the list in Table B to present to the COSC for formal prioritisation and designation to each SOSC for the next set of meetings.

Corporate Parenting

4.4 Corporate Parenting is the term used to describe the responsibility of a local authority towards looked after children and young people. This is a legal responsibility given to local authorities by the Children Act 1989 and the Children Act 2004. The role of the Corporate Parent is to seek for children in public care the outcomes every good parent would want for their own children. The Council as a whole is the ‘corporate parent’, therefore all Members have a level of responsibility for the children and young people looked after by Bridgend.

4.5 In this role, it is suggested that Members consider how each item they consider affects children in care and care leavers, and in what way can the Committee assist in these areas.

4.6 Scrutiny Champions can greatly support the Committee in this by advising them of the ongoing work of the Cabinet-Committee and particularly any decisions or changes which they should be aware of as Corporate Parents.

Identification of Further Items

4.7 The Committee are reminded of the Criteria form which Members can use to propose further items for the FWP which the Committee can then consider for prioritisation at

a future meeting. The Criteria Form emphasises the need to consider issues such as impact, risk, performance, budget and community perception when identifying topics for investigation and to ensure a strategic responsibility for Scrutiny and that its work benefits the organisation.

5. Effect upon Policy Framework & Procedure Rules

5.1 The work of the Overview & Scrutiny Committees relates to the review and development of plans, policy or strategy that form part of the Council's Policy Framework and consideration of plans, policy or strategy relating to the power to promote or improve economic, social or environmental wellbeing in the County Borough of Bridgend. Any changes to the structure of the Scrutiny Committees and the procedures relating to them would require the Bridgend County Borough Council constitution to be updated.

6. Equality Impact Assessment

6.1 There are no equality implications attached to this report.

7. Well-being of Future Generations (Wales) Act 2015 Assessment

7.1 The Act provides the basis for driving a different kind of public service in Wales, with 5 ways of working to guide how public services should work to deliver for people. The following is a summary to show how the 5 ways of working to achieve the well-being goals have been used to formulate the recommendations within this report:

- Long-term - The approval of this report will assist in the Planning of Scrutiny business in both the short-term and in the long-term on its policies, budget and service delivery

- Prevention - The early preparation of the Forward Work Programme allows for the advance planning of Scrutiny business where Members are provided an opportunity to influence and improve decisions before they are made by Cabinet

- Integration - The report supports all the wellbeing objectives

- Collaboration - Consultation on the content of the Forward Work Programe has taken place with the Corporate Management Board, Heads of Service, Elected Members and members of the public

- Involvement - Advanced publication of the Forward Work Programme ensures that the public and stakeholders can view topics that will be discussed in Committee meetings and are provided with the opportunity to engage.

8. Financial Implications

8.1 There are no financial implications attached to this report.

9. Recommendations

9.1 The Committee is recommended to:

(i) Identify any additional information the Committee wish to receive on their next item delegated to them by Corporate Overview and Scrutiny Committee and any other items in the overall FWP shown in Appendix A;

(ii) Identify any additional items using the criteria form, for consideration on the Scrutiny Forward Work Programme.

K Watson
Head of Legal and Regulatory Services

Contact Officer: Scrutiny Unit

Telephone: (01656) 643695

E-mail: Scrutiny@bridgend.gov.uk

Postal Address Bridgend County Borough Council,
Civic Offices,
Angel Street,
Bridgend.
CF31 4WB

Background documents

None

Scrutiny Forward Work Programme **Appendix A**

The following items were previously prioritised by the Subject OVS Committees and considered by Corporate at its last meeting where the top three items were scheduled in for the next round of meetings:

Date	Subject Committee	Item	Specific Information to request	Rationale for prioritisation	Proposed date	Suggested Invitees	Prioritised by Committees
05-Sep-19	SOSC 3	Sports Provision Playing Field Charging Strategy	Pre-decision item as part of consultation over strategy - to receive outcome of consultation before going to Cabinet in September			Mark Shephard, Chief Executive Cllr Richard Young, Cabinet Member – Communities; Zak Shell, Head of Operations - Community Services; Kevin Mulcahy, Group Manager - Highways & Green Spaces; Philip Beaman, Green Spaces and Bereavement Services Manager; Guy Smith, Community Asset Transfer Officer; Andrew Thomas, Group Manager - Sports and Physical Activity.	
09-Sep-19	SOSC 1	Post 16 Education - Consultation	Report schedueld to go to Cabinet in April 2019 incorporating comments from Scrutiny. This is a further report to receive hard options now going forward for Post-16 Education. Incorporate Penybont model- for discussion		Timimgs TBC with SIG - when go to Cabinetand Scrutiny etc around Oct 2019 approx	Lindsay Harvey, Corporate Director - Education and Family Support; Cllr Charles Smith, Cabinet Member for Education and Regeneration; Nicola Echanis, Head of Education and Early Help; Andy Rothwell, CSC Senior Challenge Advisor; Managing Director CSC	
09-Sep-19	SOSC 1	Post 16 Consultation - Response to comments and recs	Provide a response/update to SOSC 1 as part of the feedback report			N/A	
16-Sep-19	SOSC 2	Youth Offending Service	Directorate to produce a report outlining progress against inspection recommendations. To possibly include a case study open to Social Services.		Item Proposed by Corporate Director for this date. Corporate to confirm.	Lindsay Harvey, Corporate Director - Education and Family Support; Cllr Charles Smith, Cabinet Member for Education and Regeneration; Susan Cooper, Corporate Director - Social Services and Wellbeing?	
09-Oct-19	SOSC 1	Plasnewydd	MSEP Escalation to Committee			Lindsay Harvey, Corporate Director - Education and Family Support; Cllr Charles Smith, Cabinet Member for Education and Regeneration; Nicola Echanis, Head of Education and Early Help; Andy Rothwell, CSC Senior Challenge Advisor; Head and COG and Challenge Adviser?	
10-Oct-19	SOSC 2	Prevention & Wellbeing Approaches and Day Time Opportunities	To be updated by Directorate				
04-Nov-19	SOSC 3	Highways	• To receive an updated on a previous recommendation for Officers in Communities to work with the Digital Transformation team to improve the use of information sharing through ICT and explore options of the development of an app for residents and Councillors to use to enable them to report issues in their areas; • Members have asked to be provided with an action plan along with timelines.	Prioritised by at FWP Workshop	Last received June 2018	Mark Shephard, Chief Executive Cllr Richard Young, Cabinet Member – Communities; Zak Shell, Head of Operations - Community Services; Kevin Mulcahy, Group Manager - Highways & Green Spaces;	
09-Mar-20	SOSC 1	Tynyrheol	MSEP Escalation to Committee			Lindsay Harvey, Corporate Director - Education and Family Support; Cllr Charles Smith, Cabinet Member for Education and Regeneration; Nicola Echanis, Head of Education and Early Help; Andy Rothwell, CSC Senior Challenge Advisor; Head and COG and Challenge Adviser?	

TABLE B

For prioritisation					
Item		**Rationale for prioritisation**	**Proposed date**	**Suggested Invitees**	

Review of Enforcement Vehicle	COSC areed that the item titled 'Review of Enforcement Vehicle' needed to be more than just an information report but possibly too small for it to be an individual item. The Committee proposed that this be considered as part of another related topic. The scrutiny officer agreed to take the comments back and see possibly where it could fit in with another item. It was suggested that FWP Planning meeting with Scrutiny Chairs and Cabinet Members that there be an general annual report on Enforcement and that the findings should include requested data in relation to the Enforcement Vehicle as outlined below: In February 2018 SOSC 3 requested to receive an update on the enforcement vehicle to enable Members to monitor performance 6-12 after implementation. Possibly an information report. • Detailed feedback on the vehicles use; • How are the recordings reviewed? • Statistics in relation to letters sent and details of enforcement.	SOSC 3 Prioritised this item - 18 March 2019		Mark Shephard, Chief Executive Cllr Richard Young, Cabinet Member – Communities; Zak Shell, Head of Operations - Community Services;	
Remodelling Children's Residential Services Project	SOSC 1 requested that the item be followed up by Scrutiny in the future for monitoring purposes, incorporating evidence of outcomes. *A report is due to go to Corporate Parenting 6 March 2019. Do Members want to receive as information only or as a discussion item?*		Corporate Director proposed for later in the year, say Dec 2019	Susan Cooper, Corporate Director, Social Services and Wellbeing; Cllr Phil White, Cabinet Member – Social Services and Early Help;	
Member and School Engagement Panel - Annual Report	Annual Update to - SOSC 1 on the work of the Member and School Engagement Panel			Spring term 2019 - Plasnewydd Primary School; Summer term 2019 - Ogmore Vale Primary School; Autumn term 2019 - Tynyrheol Primary School.	
Strategic Review of Health & Safety Responsibilities	Practice , Policy and review of reported "near misses". - How many near misses have been reported? - How did we respond? - What lessons have been learnt? With reference to a recommendation made by BREP 2018 - The Panel request that an assessment of School Crossing Patrol and possible alternatives is included in this report **Scrutiny Chairs have agreed to carry out an 'Information Gathering' excercise, interviewing representatives from schools, governers from schools and parents to present alongside the Officer report.** **Item to include information gathered from Scrutiny Chairs Research Group**	Lindsay Harvey, Corporate Director - Education and Family Support; Cllr Charles Smith, Cabinet Member for Education and Regeneration; Health and Safety rep	Wait until after scrutiny research group completed	Lindsay Harvey, Corporate Director - Education and Family Support; Cllr Charles Smith, Cabinet Member for Education and Regeneration; Gary Squire, Health and Safety Manager Mark Shephard, Interim Chief Executive	
Education Outcomes	See Feedback from 30 January 2019		Feb-20	Lindsay Harvey, Corporate Director - Education and Family Support; Cllr Charles Smith, Cabinet Member for Education and Regeneration; Nicola Echanis, Head of Education and Early Help; Andy Rothwell, CSC Senior Challenge Advisor; Managing Director CSC Representative from School Budget Forum Headteacher Representation	
New Curriculum Changes	Report on changes to new curriculum and how this is impacting on schools Need to determine purpose of report - whether this needs scrutinising or presentation to Members outside of Committee		TBC - 2020	Lindsay Harvey, Corporate Director - Education and Family Support; Cllr Charles Smith, Cabinet Member for Education and Regeneration; Nicola Echanis, Head of Education and Early Help; Andy Rothwell, CSC Senior Challenge Advisor; Managing Director CSC Headteacher representation	
Home to School Transport	To provide assurances on rationalisation of Learner Transport as far as possible in order to make budget savings: Update on pilot that school transport team proposing to run in Spring and Summer terms 2017-2018 - to support the enforcement of bus passes on home to school transport contracts. As part of this pilot, the Authority is also investigating opportunities to track the use of our school bus services by individual pupils. Update on Recommendation from BREP: The Panel recommend the need for the Authority to adopt a Corporate approach in relation to Home to School Transport maximising the LA's minibuses such as those used for day centres. It is proposed that this be supported by slightly amending the opening and closing times of day centres so that the buses can be available for school transport. Other aspects that could be considered include the exploration of whether school staff could transport children and young people instead of hiring independent drivers. To test and scrutinise the current licensing and school transport regime to gain assurances that it provides adequate protection against the potential of putting children and vulnerable children at risk from those who are in a position of trust. Changes to the DBS status of their employees to be scrutinised to ensure that children are not being put at undue risk. To provide robust scrutiny and recommendations on how the current regime can be improved. To provide assurances to the public and maintain public confidence in the system of school transport Report to include Update on the current arrangements of how licensing and school transport operates within the County Borough since the change in 2015 to the Police National Policy for disclosing non-conviction information to the local authority. Information to include a report from South Wales Police on its approach to disclosing information it holds about licencees following arrests, charges and convictions. What is the current relationship between the local authority's licensing and school transport departments in relation to the disclosure of information from South Wales police? Is there sufficient oversight on behalf of the local authority and a risk of contractors withholding information which may prejudice the continuation of their contract? Further proposed that Communities be invited to add to report and attend meeting to update Committee on safe routes assessment to determine what work has been undertaken since funding was allocated to this over a year ago.	Receipt of the external review of transport report not due until end of August. Report not ready until November at the earliest.	SOSC 2 Prioritised for 16 September 2019. Not ready until November at the earliest.	Lindsay Harvey, Corporate Director - Education and Family Support; Cllr Phil White, Cabinet Member for Social Services & Early Help (To stand in for Cllr Smith); Cllr Richard Young, Cabinet Member Communities Nicola Echanis, Head of Education and Early Help. Mark Shephard, Chief Executive; Zak Shell, Head Of Operations - Community Services; Robin Davies, Group Manager Business Strategy and Performance; Sue Cooper, Corporate Director Social Services and Wellbeing.	

Plastic Free Bridgend	To receive an update on the previous recommendations made: • Members suggest that the Authority should take the lead on reducing single use plastic and encourage local businesses to follow suit. Officers responded that this would be discussed at Cabinet/CMB; • Members recommend that the Authority use social media to communicate what can be recycled at kerbside and at Community Recycling Centres; • Receive an update on the procurement of an external contractor to undertake enforcement action on littering in the Borough;			Mark Shephard, Chief Executive Cllr Richard Young, Cabinet Member – Communities; Zak Shell, Head of Operations - Community Services;	
Empty Properties	• To consider the impact of the removal of the 50% discount, after a suitable period of time to allow it to have an affect; • To receive evidence that demonstrates the 'Activity' of work that has been undertaken across the Authority given the crossovers and links this subject has with other services; • To consider the pilot project mentioned by Officers where the Authority was looking to engage and work with RSLs to support property owners from a management perspective with the overall aim being to return a property back to use; • To monitor the performance and outcomes of the strategy including scrutiny of the national PIs for empty properties contained within the Authority's Corporate Plan as well as any further underlying targets and expected outcomes related to the strategy; • To consider how the Authority deals with property owners who persistently refuse to engage with the Council. • To consider any future alternative strategy that relates to Commercial properties.			Martin Morgans, Head of Performance and Partnership Services Cllr Dhanisha Patel, Cabinet Member Future Generations and Wellbeing Cllr Hywel Williams, Deputy Leader Helen Rodgers - Revenues Manager Lynne Berry - Group Manager Housing & Community Jonathan Flower - Senior Strategic Officer	
Emergency Accommodation	• To receive a more detailed option appraisal with reference to the replacement facility in Brynmenyn in the short, medium and long term including costings and timescales; • To receive an update in relation to Members recommendation to explore the opportunity to utilise surplus Local Authority owned buildings; • Members request a site visit to the Kerrigan Project direct access floor space facility that is managed by Gwalia.			Martin Morgans, Head of Performance and Partnership Services Cllr Dhanisha Patel, Cabinet Member Future Generations and Wellbeing Cllr Hywel Williams, Deputy Leader Helen Rodgers - Revenues Manager Lynne Berry - Group Manager Housing & Community Jonathan Flower - Senior Strategic Officer	
Supporting People Grant	Following the implementation of the Homelessness Strategy, Members have requested to receive a further report on the Supporting People Grant and provide an update in relation to what steps have been implemented as recommended by the Independent Review undertaken.			Mark Shephard, Chief Executive Sue Cooper, Corporate Director Social Services and Wellbeing Martin Morgans Lynne Berry Cllr Dhanisha Patel, Cabinet Member Future Generations and Wellbeing Ryan Jones, Supporting People Strategy Planning and Commissioning Officer	
Secure Estate	Possibly an information report to follow up on recommendations made.			Susan Cooper Corporate Director Social Services and Wellbeing; Cllr Phil White, Cabinet Member – Social Services and Early Help; Jacqueline Davies, Head of Adult Social Care; Laura Kinsey, Head of Children's Social Care;	
Welsh Community Care Information Systems (Information Report)	Corporate Director offered an to members on how WCCIS has developed over the last few years. Members agreed to receive this at a future meeting			NA	
Early Help and Childrens Social Care	Presentation provided to Corporate Parenting on the below issues. • Detail of the process for a child coming into care - From a referral being received to a decision being made; • How is ongoing support established as well as any associated costs; • How is the step down or step up process monitored? • If individuals need support from more than one service (such as IFSS and Baby in Mind) how do services work together to monitor the individual? • Historical data to enable Members to determine if there has been any progress made; • Report to include clearer evidence of outcomes; • More examples of case studies outlining processes, challenges and outcomes achieved; • Members raised concerns regarding the freedom that schools have in the framework for teaching Personal and Social Education for preparing youngsters with Life Skills especially in Flying Start areas. Members therefore request details of what and how pupils are taught and how they monitor its effectiveness. A report to be provided detailing position statement one year on. (May 2020)		May-20	Lindsay Harvey, Corporate Director - Education and Family Support; Cllr Charles Smith, Cabinet Member for Education and Regeneration; Nicola Echanis, Head of Education and Early Help;	
ALN Reform	To receive an update on implementation on the act.			Lindsay Harvey, Corporate Director - Education and Family Support; Cllr Charles Smith, Cabinet Member for Education and Regeneration; Nicola Echanis, Head of Education and Early Help. Michelle Hatcher, Group Manager Inclusion and School Improvement Elizabeth Jones, Additional Learning Needs Transformation, Central South; Denise Inger, Chief Executive Director SNAP Cymru; Caroline Rawson, Assistant Chief Executive Director SNAP Cymru John Fabes, Specialist Officer Post 16 Education & Training.	
Empty Commercial Property	Members requested that the report include: - Members understand that the Council are concentrating on domestic housing in the first instance when implementing the Empty Property Strategy, but have requested to receive a report on plans for empty commercial property when the timing is appropriate.			Mark Shephard, Chief Executive.	

Homelessness Strategy	Members requested that the report include: - Progress on implementation of the strategy; - Report to include information on vulnerable groups such as ex-offenders and care leavers.			Mark Shephard, Chief Executive; Martin Morgans, Head of Performance and Partnership Services Cllr Dhanisha Patel, Cabinet Member Future Generations and Wellbeing Lynne Berry, Group Manager, Housing & Community Regeneration; Joanne Ginn, Housing Solutions Team Manager.	
Mental Health Strategy	Members requested that the report include: - Members acknowledged that the Council are compling a Mental Health strategy and recommended that the Council take into account the stratistic that 95% of emergency calls received by the police after 5.00pm are in relation to mental health.			Susan Cooper, Corporate Director, Social Services and Wellbeing; Cllr Phil White, Cabinet Member – Social Services and Early Help; Lindsay Harvey, Corporate Director -	
Waste	• Receive an update on the recommendation for the Leader to make contact with local supermarkets and food manufacturers to phase out the use of black plastic and also to Welsh Government to encourage them to enforce the approach; • Receive an update on the alternative imagery regarding the clarification of vehicle and sizes permitted to enter the Council's CRC; • Receive an update on the recommendation of exploring the possibility of an additional dropdown box or a coding system to aid filtering subject matter to support what concerns are raised within each Directorate.			Mark Shephard, Chief Executive Cllr Richard Young, Cabinet Member – Communities; Cllr Hywel Williams, Deputy Leader; Zak Shell, Head of Operations - Community Services	
Dementia Care	Members requested that this remain on the FWP to see what progress has been made since this last camee to Committee in April 2019 • An update on plans to enable alternative options for short break beds • Members have asked for an update in relation to carrying out dementia awareness training through Corporate Training; • Facts and figures on Dementia Care through Cwm Taf.		Apr-20	Susan Cooper Corporate Director Social Services and Wellbeing; Cllr Phil White, Cabinet Member – Social Services and Early Help; Jacqueline Davies, Head of Adult Social Care;	
School Governing Bodies	MSEP expressed concerns over Governor training and whether it was sufficient enough to enable School Governors to carry out their role effectively. The Panel requested that this be investigated by Scrutiny with a view to a recommendation that Governor training be reviewed and improved to make it more effective and fit for purpose. Members proposed that a job description, for example, be provided when schools advertise for Parent Governors to ensure that the right people apply for the position and understand what is expected of them. At SOSC 1 on 29 April 2019, Committee also concluded the following in relation to comments from MSEP: • Due to the fact that there are currently approximately 41 vacancies for School Governors, Members recommend that the promotion and advertising for these appointments are considered; • That the proposed School Governor job description also include the days of scheduled meetings to outline what commitment the post would necessitate; • Due to training sessions being cancelled due to non-attendance, Members request that the promotion of School Governor training sessions is explored; • That a selection of School Governor representatives are invited to attend the meeting to provide their views. *(see responses to this feedback)*				
Movement of Pupils	*From MSEP Plasnewydd (raise at next OPM with Lindsay/Nicola)* Based on evidence received, the Panel requested that a scoping exercise be carried out by Scrutiny Officers to determine whether there is an item suitable for Scrutiny in relation to the movement of pupils from Welsh Schools to English schools within the County Borough.				

	The following items for briefing sessions or pre-Council briefing	
Item	**Specific Information to request**	
Social Services Commissioning Strategy	To include information on what work has taken place following the Social Services and Wellbeing Act population assessment. To also cover the following: • Regional Annual Plan • Bridgend Social Services Commissioning Strategy	
Cwm Taf Regional Working	Provide a overview of working relationships with Cwm Taf. How are we undertaking regional working?	Apr-20
Changes to Education Outcomes	Update on how education outcomes are now being reported based on new WG legislation	

BRIDGEND COUNTY BOROUGH COUNCIL

REPORT TO OVERVIEW AND SCRUTINY COMMITTEE 3

11 JULY 2019

REPORT OF THE HEAD OF LEGAL AND REGULATORY SERVICES

OVERVIEW AND SCRUTINY – FEEDBACK FROM MEETINGS

1. Purpose of report

1.1 The purpose of this report is to present the feedback from the previous meetings of the Subject Overview and Scrutiny Committee 3 for discussion, approval and actioning.

2. Connection to corporate improvement objectives/other corporate priorities

2.1. This report assists in the achievement of the following corporate priority/priorities:

- **Supporting a successful economy** – taking steps to make the county a good place to do business, for people to live, work, study and visit, and to ensure that our schools are focused on raising the skills, qualifications and ambitions of all people in the county.

- **Helping people to be more self-reliant** – taking early steps to reduce or prevent people from becoming vulnerable or dependent on the Council and its services.

- **Smarter use of resources** – ensuring that all its resources (financial, physical, human and technological) are used as effectively and efficiently as possible and support the development of resources throughout the community that can help deliver the Council's priorities.

3. Background

3.1. All conclusions, recommendations and requests for additional information made at Overview and Scrutiny Committee meetings are sent to Officers for a response to ensure that there are clear outcomes from each topic investigated.

3.2. These are then presented to the relevant Scrutiny Committee at their next meeting to ensure that they have received a response.

3.3. For Subject Overview and Scrutiny Committees (SOSC), when each topic has been considered and the Committee is satisfied with the outcome, the SOSC will then present their findings to the Corporate Overview and Scrutiny Committee (COSC) who will determine whether to remove the item from the Forward Work Programme (FWP) or to agree it remains an item for future consideration and prioritisation.

4. Current situation/proposal

4.1. Members will recognise that capturing and assessing the impact of Scrutiny is not

an easy task as the outcomes of Scrutiny activity are not always tangible and able to be measured in a systematic way.

4.2. Whilst 'outputs' like the number of recommendations approved by Cabinet or accepted by Officers may shed light, this does not reveal the extent to which the substance of the recommendations were actually implemented and whether or not intended outcomes were achieved.

4.3. Sometimes there are no measureable outputs from Committee discussion yet the opportunity for Cabinet Members and Officers to reflect on proposed courses of action has influenced the way in which the proposal was implemented. It is important to reflect some of the intangible effects of Scrutiny and its ability to influence decision makers through discussion and debate.

4.4. With this in mind, during the Overview and Scrutiny Workshops held in May 2019, Members discussed the regular feedback received from Officers in relation to Scrutiny Committee recommendations and comments. Evidence presented at the workshops indicated that there was a gap in the Scrutiny process for the follow up and actioning of recommendations to Officers which made it difficult to evidence what impact each Committee had achieved.

4.5. As a result Members agreed that a more effective process for considering and following up on feedback was required and recommended that the FWP and the feedback from meetings be presented to Scrutiny Committees as two separate items. This would firstly give the feedback more importance on the agenda and also an opportunity for the Committee to consider it in more detail.

4.6. This process will also take into account a previous recommendation made by Wales Audit Office whilst undertaking a review of Scrutiny - 'for the Council to ensure that the impact of scrutiny is properly evaluated and acted upon to improve the function's effectiveness; including following up on proposed actions and examining outcomes'.

4.7. It is recommended that the Committee approve the feedback and responses to the comments and recommendations prepared by Members at the previous meeting (Attached as **Appendix A**), allocate Red, Amber and Green (RAG) statuses to each recommendation where appropriate and action the feedback as needed.

4.8. The RAG status would consist of the following:

Red – where there has been no response;
Amber – where Members consider the recommendation/comment requires follow up action, for example where a recommendation has been accepted but there would be a need for follow up to see if it has been implemented;
Green – where Members consider a suitable response has been provided and no follow up action is required.

4.9. The Committee would then monitor these RAG statuses on an ongoing basis and action as they see appropriate. For Amber statuses, it is proposed that updates be provided after six months to allow time for the recommendation to be implemented.

4.10. It is further recommended that this process be used to monitor any feedback from Cabinet in response to any pre-decision scrutiny items that are then presented to them and any further formal recommendations that are sent from Scrutiny to Cabinet.

5. Effect upon policy framework and procedure rules

5.1. The work of the Corporate Overview and Scrutiny Committee relates to the review and development of plans, policy or strategy that form part of the Policy Framework and consideration of plans, policy or strategy relating to the power to promote or improve economic, social or environmental wellbeing in the County Borough of Bridgend.

6. Equality Impact Assessment

6.1. There are no equality implications arising directly from this report.

7. Well-being of Future Generations (Wales) Act 2015 implications

7.1. The well-being goals identified in the Act were considered in the preparation of this report. It is considered that there will be no significant or unacceptable impacts upon the achievement of well-being goals/objectives as a result of this report.

8. Financial implications

9.1. There are no financial implications arising from this report.

9. Recommendation

9.1. The Committee is recommended to consider the attached feedback and Officer's responses (**Appendix A**) and:

a) Allocate RAG statuses where appropriate;

b) Make any further comments in relation to Officer's responses.

Kelly Watson
Head of Legal and Regulatory Services

Contact Officer: Scrutiny Unit

Telephone: (01656) 643613

E-mail: scrutiny@bridgend.gov.uk

Postal Address Bridgend County Borough Council,
Civic Offices,
Angel Street,
Bridgend,
CF31 4WB

Background Documents: None

This page is intentionally left blank

Date of Meeting	Item	Members wished to make the following recommendations	Response/Comments	RAG Status
18-Mar-19	**Homelessness Strategy 2018-2022**	The Committee recommend that the strategy includes services provided by Third Sector Organisations, to present members of the public who are facing possible homelessness with alternative options for assistance and supply citizens the opportunity to choose the most appropriate choice for them.	This can be incorporated	Amber
		Although the Committee are mindful of the resource required to improve collaboration and communications with Bridgend County Borough Council staff and external organisations, Members recommend that Officers explore best practice for inter-agency working with reference to homelessness. The Committee further recommend that a mechanism is created to share referrals made with each agency to outline what support is being supplied and could also be required in the future.	We do have a quarterly Supporting People and Homeless forum which providers, internal departments and external organisations attend. We could not share referrals between agencies as there are GDPR implications. We would need consent to share this information. Welsh Government are currently developing a wales wide street homeless database which 3rd sector and the Authority will have access to. This will enable each organisation working with the individual to understand who is providing support and whether there are any gaps.	Amber

	Members raised concerns regarding the issues relating to the effects that may be encountered with 'employed' homeless people being placed in emergency accommodation. Firstly with placements being amongst other individuals who may sustain more vulnerable and chaotic needs and secondly in relation to the high cost implications of residing in temporary accommodation, which could lead onto financial difficulties for an individuals on a low income.	We have a varied range of temporary accommodation. Whilst we do have 24 hour supported hostel type accommodation, we also have independant accommodation which are private rented properties leased to a housing association to manage. This consist of houses and flats. Persons who do not have high support needs are referred to these placements. We acknowledge that the rent in temporary accommodation is higher than the market rent and local housing allowance rates. In circumstances where an individual or household is working, and thus not entitled to housing benefit, we would charge the applicant their eligible local housing allowance amount and pay the difference. Unless an individual is priority need (is vulnerable) then temporary accommodation would not ordinarily be secured.	Green
	Members recommend that a programme of rota visits are launched for the temporary accommodation options provided by the Council, which will offer the opportunity for Elected Members to meet with people who reside in these establishments and listen to their views.	This can be arranged	Amber

	The Committee also voiced their apprehensions relating to the safety of citizens who are housed in Houses with Multiply Occupancy (HMO's). As previously mentioned, Members reiterated the differing needs of individuals and the necessity to ensure that individuals are housed in-line with their requirements and support network. Therefore Members recommend that the Council create a HMO Strategy which outlines the effect of incorrect allocation of housing and looks to engage effectively with registered and private landlords to mitigate these issues.	These properties are independent of the council and BCBC do not allocate housing in the private rented sector. Decisions on tenancies are undertaken by the landlord and managing agent. HMO policy/Strategy is a planning matter	Amber
	To encourage communication, Members recommend that the Housing Department look to explore the opportunity to create 'Strategic Housing Forums'. When discussing the membership of the potential Forum, the Committee recommend that in addition to the inclusion of any relevant partners, that thought is given of involving letting agents as well as private and registered landlords.	As per above, there is a quarterly SP and Homeless forum. We also have a quarterly landlord forum. Letting agents are invited to this meeting. The Bridgend Housing Partnership meetings are also due to be reinstated shortly. This partnership consists of the most senior management of the RSL's and Authority's .	Amber

The Committee recommend that there is a continuation of care and monitoring of service users that have previously presented as homeless, as many of the previous issues, especially relating to substance misuse and mental health could be re-occurring.	The Authority don't provide an assertive outreach service which would enable a continuation of care to be provided by the Housing Solutions Department. However, there are a number of agencies which do provide a community based service. The Wallich are funded directly by Welsh Government to provide a Housing Solutions service and a Rough Sleeper Intervention Service. Both these services will engage individuals in the support and agencies relevant to their needs. Likewise, Pobl have a floating support service on a much larger scale which operates 6 days a week supporting citizens of the borough. They also deliver our homeless 'floor space'. This has an engagement worker attached to the service which will again provide daily support to persons using that service. The supporting people team also fund mental health and substance misuse services in the community.	Green
Following discussions in relation to the Local Authority owned hostel accommodation in Brynmenyn, Members raised grave concerns regarding the suitability of the facility and the possible regression with children's learning skills, such as toilet training due to existing shared bathrooms. Therefore Members recommend that strict timelines are implemented for the hostel options appraisal and further recommend that the	This is being followed up currently and future report to be made when information available	Amber
Additional Information		

• Members requested to receive the percentage of people who present as homeless but don't continue with support offered.	In 2018/19 there were 1320 households that presented as homeless of which 215 households (17%) did not continue with support offered. Reasons for not continuing with support include where the household is unreasonably failing to cooperate with the Local Authority, where the household has withdrawn their application, where there has been loss of contact after numerous attempts or where the household refuses an offer of accommodation.	Green
• When discussing the Homelessness Presentations, Members requested to receive the precise recording of all presentations including children in each household. In addition the Committee request that the information includes citizens that have presented that reside outside the borough;	Please see "Presentations by Family Type" tab. Information on citizens that have presented that reside outside the borough is not available as the authority area presenting from is not recorded. It is not possible to analyse by addresses, as household addresses change a number of times, and many homeless applicants may present with no fixed abode.	Green
• With reference to one of the greatest reason for homelessness – 'parent no longer able or willing to accommodate', Members requested to receive statistics on how successful mediation is currently to ensure funding is being spent in the most efficient way;	In 2016/17 the mediation service received 117 referrals, 70 young persons returned or remained at home (60%). In 2017/18 the mediation service received 129 referrals, 57 young persons returned or remained at home (44%). In 2018/19 the mediation service received 104 referrals, 54 young persons returned or remained at home (52%)	Green

• Members asked to receive further information from the Education Directorate in relation to school transport to and from Brynmenyn hostel to ensure that continuity of education is ensued;	It is fairly unusual for children (under the age of 18) to be placed in Brynmenyn hostel. However, when children are placed there, transport is always provided to ensure whatever educational establishment they are attending, that their placement is maintained while they are accommodated in the hostel.	Amber
• The Committee asked to receive a breakdown of the 41% of people for whom the Council had a 'final' duty to house that had a negative outcome - along with an action plan to mitigate the outlined reasons;	A breakdown of the 41% is as follows: a. 16% became homeless intentionally from suitable temporary accommodation (15 households) b. 10% voluntarily ceased to occupy suitable temporary accommodation (10 households) c. 10% refused an offer of accommodation via the Common Housing Register (10 households) d. 2% unreasonably failing to cooperate (2 houseolds) e. 1% deceased (1 household) f. 1% refused an offer of temporary accommodation (1 household)	Green
• To assist Members with monitoring the implementation of the Homelessness Strategy, the Committee requested to receive timelines against the aims and objectives outlined within the Homelessness Strategy and for the establishment of multi-agency Homelessness Strategy Delivery Group.	Further to the completion of the consultation, a plan will be developed to deliver the strategy which will incorporate timelines.	Amber

	Members agreed that when in receipt of the above additional information the Committee will decide as to whether the data and statistics should be included within the Strategy or if Members wish to make further recommendations in relation to it.		
Supporting People Grant	The Committee note the increasing numbers of presentations from men experiencing domestic abuse and were pleased to hear of options being explored for a refuge for men only, although Members did query where the facility would be placed if a joint service with other Local Authorities is employed.	Service users needs will be the determining factor of any provision and a range of options will need to be explored to respond to these needs.	Amber
	Additional Information		
	• The Committee request to receive timelines that are being adhered to in relation to the options for a hostel for men.	Service users needs will be the determining factor of any provision and a range of options will need to be explored to respond to these needs. Further information to be provided when available	Amber
	• In relation to the Supporting People Grant Spend Category detailed in the report, Members note the line 'Women experiencing Domestic Abuse' and queried whether this should state people experiencing domestic abuse which would include women, men and LGBT. The Committee further questioned whether the percentage presented on page 40 only totalled women experiencing domestic abuse.	This will be reviewed	Amber
	Future Work		

		Following the implementation of the Homelessness Strategy, Members have requested to receive a further report on the Supporting People Grant and provide an update in relation to what steps have been implemented as recommended by the Independent Review undertaken.	Added to the FWP	Green

BRIDGEND COUNTY BOROUGH COUNCIL

REPORT TO SUBJECT OVERVIEW AND SCRUTINY COMMITTEE 3

11 JULY 2019

REPORT OF THE HEAD OF LEGAL AND REGULATORY SERVICES

NOMINATION TO THE PUBLIC SERVICE BOARD SCRUTINY PANEL

1. Purpose of Report

1.1 The purpose of the report is to request the Committee to nominate one Member to sit on the Public Service Board Scrutiny Panel.

2. Connection to Corporate Improvement Objectives / Other Corporate Priorities.

2.1 The key improvement objectives identified in the Corporate Plan 2018–2022 have been embodied in the Overview & Scrutiny Forward Work Programmes. The Corporate Improvement Objectives adopted by Council on 22 February 2018 and formally set out the improvement objectives that the Council will seek to implement between 2018 and 2022. The Overview and Scrutiny Committees engage in review and development of plans, policy or strategies that support the Corporate Themes.

3. Background.

3.1 From 1 April 2016, the Well-being of Future Generations (Wales) Act 2015 introduced statutory Public Services Boards (PSB) across each local authority area in Wales. PSBs work together to improve the social, economic, cultural and environmental well-being of the board's area. The Act specified that one Committee take an overview of the overall effectiveness of the Board which this Authority determined to carry out via a PSB Scrutiny Panel which is now proposed to sit under the remit of the Corporate Overview and Scrutiny Committee.

3.2 The purpose of the Panel is to review and scrutinise the efficiency and effectiveness of the PSB and its decisions as well as the governance arrangements surrounding it. The Panel will hold up to two meetings a year and will make reports or recommendations to the Board regarding its functions, with the aim of enhancing its impact. These recommendations are to be presented to the Corporate Overview and Scrutiny Committee for approval prior to submission to the Board.

3.3 A copy of any report or recommendation made to the Public Service Board must be sent to the Welsh Ministers, the Commissioner and the Auditor General for Wales.

3.4 The membership of the PSB Panel is determined annually and incorporates three Members from the Corporate Overview and Scrutiny Committee, one Member from each of the Subject Overview and Scrutiny Committees and counterpart representatives that sit on the Public Service Board.

4. Current Situation / proposal.

4.1 The Committee is asked to nominate one Member to sit on the Public Service Board Scrutiny Panel.

5. Effect upon Policy Framework and Procedure Rules.

5.1 The work of the Subject Overview and Scrutiny Committee relates to the review and development of plans, policy or strategy that form part of the Policy Framework and consideration of plans, policy or strategy relating to the power to promote or improve economic, social or environmental wellbeing in the County Borough of Bridgend.

6. Equalities Impact Assessment

6.1 There are no equality implications arising from this report.

7. Well-being of Future Generations (Wales) Act 2015 Implications

7.1 The Act provides the basis for driving a different kind of public service in Wales, with 5 ways of working to guide how public services should work to deliver for people. The following is a summary to show how the 5 ways of working to achieve the well-being goals have been used to formulate the recommendations within this report:

- Long-term - The establishment of the PSB Panel will assist in the long term planning of the business of the Council by the continuation of effective relationships with other organisations to improve wellbeing in Bridgend County now and in the future.

- Prevention - The PSB Scrutiny Panel will monitor the Public Service Board's objectives and priorities within the Wellbeing Plan which address underlying causes of problems and prevent them getting worse or happening in the future.

- Integration - The report supports all the wellbeing objectives.

- Collaboration - The PSB Panel supports partnership working with other organisations both locally and regionally.

- Involvement - The PSB Panel will maintain a relationship with other Organisations through effective partnership working and act as a critical friend to ensure the PSB are involving

citizens of Bridgend when making decisions that affect them.

8. Financial Implications

8.1 There are no financial implications arising from this report.

9. Recommendation

The Committee is asked to nominate one Member to sit on the Public Service Board Scrutiny Panel.

K Watson
Head of Legal and Regulatory Services

Contact Officer: Sarah Daniel, Scrutiny Support Officer

Telephone: 01656 643387
Email: scrutiny@bridgend.gov.uk

Postal Address: Scrutiny Unit
Bridgend County Borough Council,
Civic Offices,
Angel Street,
Bridgend,
CF31 4WB

Background Documents

None

This page is intentionally left blank

BRIDGEND COUNTY BOROUGH COUNCIL

REPORT TO SUBJECT OVERVIEW AND SCRUTINY COMMITTEE 3

11 JULY 2019

REPORT OF THE HEAD OF LEGAL AND REGULATORY SERVICES

CORPORATE PARENTING CHAMPION NOMINATION REPORT

1. Purpose of the Report.

1.1 The purpose of this report is to request the Committee to nominate one Member as its Corporate Parenting Champion to represent the Committee as an invitee to meetings of the Cabinet Committee Corporate Parenting.

2. Connection to Corporate Improvement Objectives.

2.1 The key improvement objectives identified in the Corporate Plan 2018-2022 have been embodied in the Overview & Scrutiny Forward Work Programmes. The Corporate Improvement Objectives were adopted by Council on 22 February 2018 and formally set out the improvement objectives that the Council will seek to implement between 2018 and 2022. The Overview and Scrutiny Committees engage in review and development of plans, policy or strategies that support the Corporate Themes.

3. Background

3.1 Corporate Parenting is the term used to describe the responsibility of a local authority towards looked after children and young people. This is a legal responsibility given to local authorities by the Children Act 1989 and the Children Act 2004. The role of the Corporate Parent is to seek for children in public care the outcomes every good parent would want for their own children. The Council as a whole is the 'corporate parent' therefore all Members have a level of responsibility for the children and young people looked after by Bridgend. [1]

3.2 In order to further develop and enhance the Council's Corporate Parenting role with its partners, a Cabinet Committee Corporate Parenting comprising all Members of Cabinet was established by Cabinet on 4 November 2008.

3.3 The inaugural meeting of the Cabinet Committee was held on 27 November 2008 where it was agreed that the Cabinet Committee will meet bi-monthly. The terms of reference for the Cabinet Committee Corporate Parenting are:

- to ensure that looked after children are seen as a priority by the whole of the Authority and by the Children and Young People's Partnership;

[1] Welsh Assembly Government and Welsh Local Government Association *'If this were my child… A councillor's guide to being a good corporate parent to children in care and care leavers'*, June 2009

- to seek the views of children and young people in shaping and influencing the parenting they receive;
- to ensure that appropriate policies, opportunities and procedures are in place;
- to monitor and evaluate the effectiveness of the Authority in its role as corporate parent against Welsh Government guidance.

3.4 At its inaugural meeting, the Cabinet Committee requested that a Corporate Parenting "Champion" be nominated from each of the Overview and Scrutiny Committees to become permanent invitees to the Cabinet Committee.

4. Current Situation / Proposal.

4.1 The Committee is requested to nominate one Member as its Corporate Parenting Champion to represent the Committee as an invitee at meetings of the Cabinet Committee Corporate Parenting.

4.2 The role of the Corporate Parenting Champion is to represent their Overview and Scrutiny Committee, partaking in discussions with Cabinet over items relating to children in care and care leavers.

4.3 It is also suggested that in this role each Champion considers how all services within the remit of Scrutiny affect children in care and care leavers and encourage their own Committee to bear their Corporate Parenting role in mind when participating in Scrutiny.

4.4 Scrutiny Champions can greatly support the Committee by advising them of the ongoing work of the Cabinet Committee and particularly any decisions or changes which they should be aware of as Corporate Parents.

5. Effect upon Policy Framework and Procedure Rules.

5.1 The work of the Subject Scrutiny Committee relates to the review and development of plans, policy or strategy that form part of the Policy Framework and consideration of plans, policy or strategy relating to the power to promote or improve economic, social or environmental wellbeing in the County Borough of Bridgend.

6. Equality Impact Assessment.

6.1 There are no equality implications arising from this report.

7. Well-being of Future Generations (Wales) Act 2015 Implications.

7.1 The Act provides the basis for driving a different kind of public service in Wales, with 5 ways of working to guide how public services should work to deliver for people. The following is a summary to show how the 5 ways of working to achieve the well-being goals have been used to formulate the recommendations within this report:

- Long Term – The establishment of the Corporate Parenting Cabinet Committee demonstrates the Authorities long term commitment to improving and strengthening their role as Corporate Parents to care leavers and Looked After Children.

- Prevention – The Corporate Parenting Cabinet Committee are preventative in their nature and ensure that appropriate policies, opportunities and procedures are in place for all care leavers and Looked After Children.

- Integration – This report supports all the well-being objectives.

- Collaboration – All members are Corporate Parents and this report supports collaborative working with Cabinet and Members of Scrutiny and emphasises the role of Corporate Parents for all Elected Members.

- Involvement – Corporate Parent Champions provide practical support and guidance to children in care and care leavers to ensure they achieve their well-being goals.

8. Financial Implications.

8.1 None.

9. Recommendation.

The Committee is asked to nominate one Member of the Committee as its Corporate Parenting Champion to represent the Committee at meetings of the Cabinet Committee Corporate Parenting.

K Watson
Head of Legal and Regulatory Services

Contact Officer: Sarah Daniel, Scrutiny Support Officer

Telephone: 01656 643387
Email: scrutiny@bridgend.gov.uk

Postal Address: Democratic Services - Scrutiny
Bridgend County Borough Council,
Civic Offices,
Angel Street,
Bridgend,
CF31 4WB

Background Documents

Bridgend County Borough Council Constitution

Part II of the Local Government Act 2000: Executive Arrangements

Report of the Corporate Director – Children to Cabinet, 4 November 2008: Establishment of a Corporate Parenting Cabinet Committee

Report of the Corporate Director – Children to the Inaugural Meeting of the Corporate Parenting Cabinet Committee, 27 November 2008

BRIDGEND COUNTY BOROUGH COUNCIL

REPORT TO THE SUBJECT OVERVIEW AND SCRUTINY COMMITTEE 3

11 JULY 2019

REPORT OF THE CHIEF EXECUTIVE

BRIDGEND COUNTY LOCAL AREA ENERGY STRATEGY AND SMART ENERGY PLAN

1. Purpose of Report

1.1 The purpose of this report is to update Committee on the progress being made to deliver the Bridgend Local Area Energy Strategy (LAES) and Smart Energy Plan.

2. Connection to Corporate Improvement Objectives/Other Corporate Priorities

2.1 The report contributes to the following outcomes within the Corporate Plan 2016-20:

Priority 1 – Supporting a successful economy - taking steps to make the county a good place to do business, for people to live, work, study and visit, and to ensure that our schools are focused on raising the skills, qualifications and ambitions of all people in the county.

Priority 3 – Smarter use of resources - ensuring that all its resources (financial, physical, human and technological) are used as effectively and efficiently as possible and support the development of resources throughout the community that can help deliver the Council's priorities.

3. Background

3.1 Bridgend County Borough Council (BCBC) has been engaged with the Smart System Heat (SSH) Programme since 2013 when it submitted a Pre-Qualifying Questionnaire (PQQ) to the Energy Technologies Institute (ETI) and was selected from over 70 local authorities from across the UK to be one of the shortlisted 11 prioritised authorities in the SSH Programme.

3.2 Participation in the SSH Programme was approved by Cabinet on 3rd February 2015.

3.3 The SSH Programme is divided into three phases with a degree of overlap across each phase:

Phase 1 Strategy - 2015 – 2017 – Use of the EnergyPath Network suite of tools to create a Local Area Energy Strategy (LAES) for Bridgend County Borough.

Phase 2 Development 2016 – 2018 – Development of a Smart Energy Plan for Bridgend County Borough and the creation of a "Living Lab" within Bridgend County Borough.

Phase 3 Delivery 2019 – 2025 – Deployment of projects from the Smart Energy Plan. The delivery of Phase 3 is subject to funding and partners being secured to progress with delivery. The funding will be from a variety of sources such as European, UK, Welsh Government (WG) and private sector.

3.4 The LAES and Smart Energy Plan were approved by Cabinet on 19th February 2019.

4. Current Situation/proposal

4.1 The LAES and Smart Energy Plan offer a route to achieving the decarbonisation of heat within Bridgend County Borough. The LAES proposes a pathway to achieving decarbonisation targets and the Smart Energy Plan provides the detail of how technologies, business models and consumer propositions will be deployed and tested in order that scale up can happen and the decarbonisation targets be achieved. The LAES is attached to this report at Appendix 1.

4.2 The decarbonisation transition is arguably the largest economic development opportunity Bridgend County Borough will have in the next 30 years. The LAES considers that with a local focus on the decarbonisation of heat the economic opportunity for Bridgend County Borough would be between £7.3 and £7.4billion.

4.3 The Smart Energy Plan formally maps out the near term delivery of the first phase of the LAES (up to 2025). The Smart Energy Plan is aligned to the Welsh Government Carbon Budget time periods and identifies the projects and activities to be delivered during this period. The Smart Energy Plan aims to deliver the following benefits:

- Decarbonise heat within Bridgend County Borough
- Stimulate economic growth
- Provide new job opportunities
- Attract new and existing businesses to trial initiatives and grow within the County Borough.

4.4 The Smart Energy Plan is attached at Appendix 2 to this report. A summary of progress made against projects listed as deliverables within the Smart Energy Plan is outlined below:

Bridgend Town Heat Network – Phase 1

4.4.1 The Bridgend Town Heat Network Project proposes to deliver heat (via a gas combined heat and power engine located within the Bridgend Life Centre) to the Bridgend Life Centre, Civic Offices, Bridgend Bowls Hall and the Wellbeing Centre and 59 housing units within the Sunnyside Wellbeing Village. The project will also

provide electricity to the Bridgend Life Centre, Civic Offices, Bridgend Bowls Hall and Wellbeing Centre.

4.4.2 A report was approved by Cabinet in April 2018 seeking approval for the financial case of the Outline Business Case for the project and to submit an application to UK Government through its Heat Network Investment Programme (HNIP). The UK Government HNIP grant scheme opened in January 2019 with the first round of applications closing 6th April 2019. An application was submitted for the Bridgend Town Heat Network Project for a grant of £1.934 million.

4.4.3 The next steps for the project are to begin the procurement process for the appointment of a Design, Build, Operate and Maintain contractor for the project. This is estimated to begin in July 2019 with a contractor in place by February 2020.The target date for the delivery of the project is December 2020.

Bridgend Town Heat Network – Phase 2

4.4.4 Phase 2 of the Bridgend Town Heat Network project is being developed as an innovative partnership between BCBC, Welsh Water and Wales and West Utilities to supply homes and public buildings with heat from a hybrid source of gas and heat recovered from the sewerage network. Funding is being sought from Heat Networks Delivery Unit (HNDU) to develop a business case for the project. It is anticipated that a bid will be submitted in summer 2019 with a decision on this expected mid-Autumn 2019.

Domestic Energy Efficiency Project

4.4.5 The Welsh Government has operated domestic energy efficiency programmes since 2009. A Phase 3 programme will run from 2018-2021 and will be delivered by Arbed am Byth. Cabinet approved on 16th April 2019 BCBC's participation in the scheme and BCBC will be working with Arbed am Byth to identify suitable areas where energy efficiency measures can be offered to residents.

Caerau Minewater Heat Scheme

4.4.6 The Caerau Mine Water Heat Scheme is an innovative project aiming to utilise heat from the flooded former mine workings of the Caerau Colliery. The scheme is looking to supply 300 homes, community buildings and the primary school in its first phase of development. A feasibility study was completed in 2018 which showed that water is present beneath the village at a consistent temperature of 20.5°C and a techno-economic model shall be built for the project in 2019 which should establish the commercial position of the project.

4.4.7 The Coal Authority has undertaken a mine water resource assessment beneath the village and this will be validated through an intrusive investigation due to take place in 2019. Hitachi has completed an assessment of local energy supply options for the heat pumps and as an alternative to a grid connection a connection to a local wind farm via a private wire is being explored.

4.4.8 The next stage of the project is to develop an Outline Business Case (OBC) that will present the commercial delivery options for the project. Following the completion of the OBC a report will be presented to Cabinet making recommendations for the next phase of the project should the OBC be shown to be commercially viable. Funding of £6.5m has been secured from WEFO through the European Regional Development Fund to assist in the delivery of the project and a further offer may be forthcoming subject to a re-profiling of the financial model that had previously been submitted to WEFO together with a revised Business Case.

Small Business Research Initiative

4.4.9 BCBC has secured funding (£200,000 for Phase 1) through the Welsh Government Small Business Research Initiative (SBRI). Phase 1 will seek innovative ideas to reduce the cost of developing heat networks. Phase 1 is likely to begin in September 2019 and end in spring 2020. Phase 1 will allow innovative ideas to be brought forward, with up to four likely to be funded to develop a feasibility report for the idea.

4.4.10 If any of the ideas within Phase 1 are considered suitable, there may be a further opportunity to develop and test those ideas within the Caerau Mine water Heat Scheme. A further £1 million of Welsh Government funding may be available for this stage subject to the ideas generated through Phase 1 being considered suitable. Should the proposal progress to stage 2 match funding considerations will be considered and reported on as required at that time.

Electrification of Heat

4.4.11 This project is a follow on from the SSH Programme and will be a collaboration between BCBC, Greater Manchester Combined Authority, Newcastle City Council and Energy Systems Catapult. The project aims to seek UK Government – Business Energy Industrial Strategy (BEIS) funding to develop an innovative electrification of heat project that identifies innovative business models and consumer propositions that enable homeowners to transition away from gas boilers. The current position of this project is that BCBC and its consortium partners are awaiting suitable funding opportunities to arise from BEIS.

Industrial Strategy Challenge Fund

4.4.12 BCBC as part of a consortium led by Cenin Renewables Ltd (a local SME) and including Hitachi, First Cymru Bus and Cardiff University was successful in securing funding from Innovate UK (£172,000) to develop a high level design that integrates heat, power and transport vectors within the County Borough.

4.4.13 The design was completed on 30th June 2019 and will look at utilising the Parc Stormy site in Bridgend to charge electric buses and integrate the heat network projects at Caerau and Bridgend Town with sustainable transport solutions.

4.4.14 The intention is to seek further funding from Innovate UK to develop a detailed design for Bridgend that will create a local energy market into which innovators can test products and services and which can be scaled up across the region.

4.5 In order to establish an internal governance mechanism to oversee the delivery of the Smart Energy Plan, an internal Energy Programme Board has been set up with representatives from key departments across the Authority to oversee the delivery of the Smart Energy Plan. The Energy Programme Board reports to the Communities Directorate Management Team and then to the Corporate Management Board.

5 Effect upon policy framework and procedure rules

5.1 There are no effects upon BCBC's Policy Framework or Procedure Rules.

6 Equality Impact Assessment

6.1 There are no equality implications arising from this report.

7 Well-being of Future Generations (Wales) Act 2015 implications

7.1 The LAES and the Smart Energy Plan are a positive step in regard to the Council's role in complying with the Well-being of Future Generations (Wales) Act 2015. BCBC is taking a positive proactive role within the decarbonisation agenda which will ensure that the significant environmental, social and economic opportunities created through the decarbonisation transition of the energy market will be captured for Bridgend.

7.2 In terms of meeting the 5 ways of working within the Act:

Long Term: The LAES and Smart Energy Plan will provide the template and the tools to provide Bridgend County Borough with a decarbonised heat system that meets the UK 2050 decarbonisation targets.

Prevention: The LAES and Smart Energy Plan will provide an opportunity for all to benefit from the decarbonisation transition and ensure that solutions are designed and available for everyone and not just the ability to pay market.

Integration: The LAES and Smart Energy Plan offers an opportunity to create a low carbon hub within Bridgend that will offer carbon reductions, reduced fuel bills and create economic opportunities through a clearly identified value chain.

Collaboration: BCBC is working with both UK Government and Welsh Government as well as private sector partners to deliver the decarbonisation agenda.

Involvement: The Smart Energy Plan involves working with a variety of stakeholders to deliver sustainable solutions around the delivery of decarbonised heat for residents.

8 Financial implications

8.1 The LAES and the Smart Energy Plan have been funded and produced through Phase 2 of the SSH Programme which has been funded through the UK Government Department for Businesses, Energy and Industrial Strategy (BEIS).

8.2 BCBC is not committing to funding all of the project proposals included within the Smart Energy Plan but will play an enabling and facilitation role to bring together the funding partners and the consumers for the successful delivery of the projects.

8.3 It is not anticipated that funding for all the projects identified will pass through BCBC.

8.4 A summary of what is currently considered to be the overall financial envelope of the delivery of the Smart Energy Plan projects outlined in section 4 of this report is below. It is noted that a number of these projects are at early stage development and therefore costs are subject to change. All funding proposals will only be taken forward with agreement from S151 Officer.

Project name	Funders	BCBC Contribution £m	External Contribution £m	Overall value £m
Bridgend Town Heat Network – Phase 1	HNIP, BCBC, WG, Accumulated reserves	1.579	2.650	4.229
Bridgend Town Heat Network – Phase 2	Welsh Water, Wales and West utilities, BCBC, HNDU	-	0.200	0.200
Domestic Energy Efficiency Project	WG			TBC (typically £5k per property is available)
Caerau Minewater Heat Scheme	ERDF/WG/BCBC (matched funding staff)/ESC	0.387	9.649	10.036
SBRI	WG/ERDF	-	2.200	2.200
Electrification of Heat	BEIS	-	15.000	15.000
Industrial Strategy Challenge Fund	Innovate UK	-	3.000	3.000

HNIP - Heat Network Investment Project
HNDU - Heat Networks Delivery Unit
ERDF - European Regional Development Fund
ESC - Energy Systems Catapult
SBRI - Small Business Research Initiative
BEIS - UK Government Department for Business Energy and Industrial Strategy

9 Recommendation

9.1 That the Committee note and comment on the content of this report.

Mark Shephard
Chief Executive
11th July 2019

Contact Officer: Michael Jenkins
Team Leader Sustainable Development-Energy

Telephone: (01656) 643179

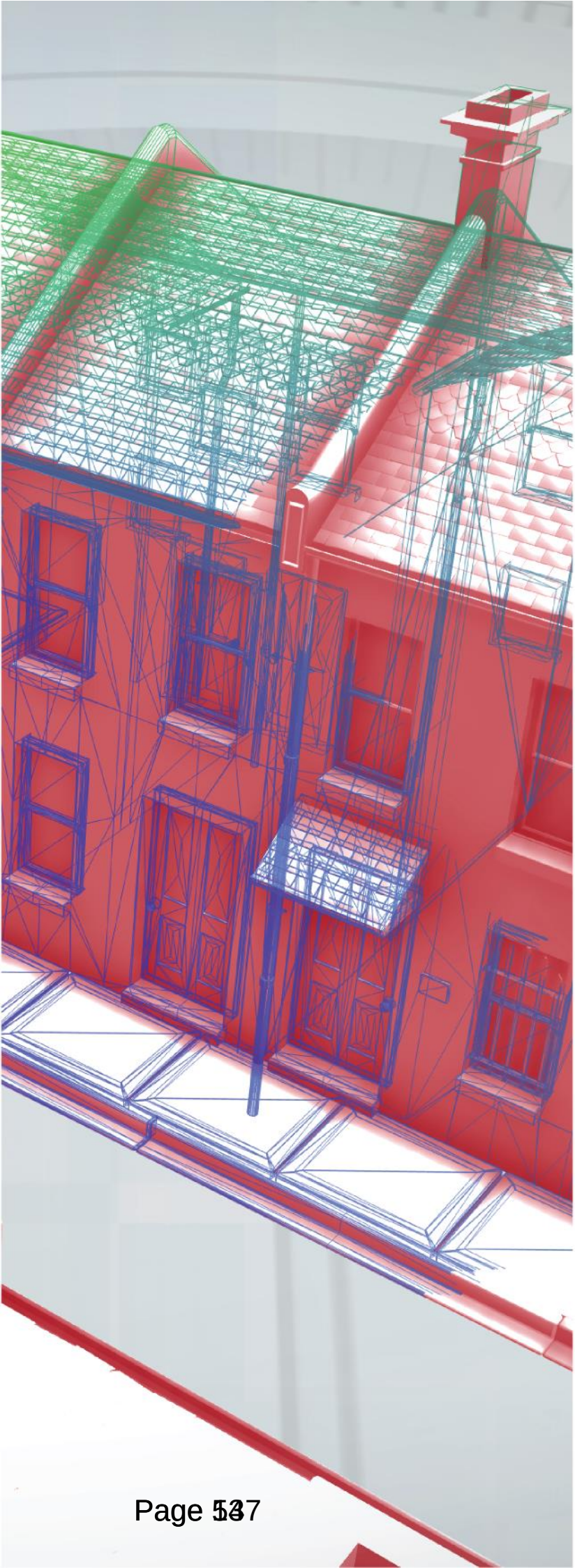
E-mail: Michael.jenkins@bridgend.gov.uk

Postal Address Civic Offices, Angel Street, Bridgend, CF31 4WB

Background Documents:

None

This page is intentionally left blank



Bridgend County Borough Council

Local Area Energy Strategy

ESC Project Number ESC00048

ETI Project Number SS9006

Version 2.3

Final

Contents

Executive Summary

The Vision

Bridgend County Borough Council has a vision to transition from the current national centralised energy system to a future low carbon decentralised energy system that works for its people, communities and businesses[1]. This could realise many benefits in enabling investment, economic growth and employment opportunities for the local area. This transition will require major change to Bridgend's energy networks, moving away from using fossil fuels to provide heating, increasing decentralised low carbon and renewable energy generation, taking forward planned and targeted energy efficiency programmes and utilising advanced home, building and network energy management systems; working with a wide range of technologies at different scales.

The Approach

The council has been working with a group of stakeholders consisting of Welsh Government, Western Power Distribution, Wales and West Utilities and the Energy Systems Catapult, to pilot an advanced whole system approach to local area energy planning. Bridgend is one of three areas including Newcastle and Bury in Greater Manchester participating in the pilot project as part of the Energy Technologies Institute (ETI) Smart Systems and Heat (SSH) Programme.

This Strategy recognises that both Wales and the UK have made major carbon emission reduction commitments and provides a means for Bridgend County Borough Council to lead its own low carbon transition. Its initial focus is on decarbonising domestic heating, which is a major contributor to the borough's carbon emissions. This recognises that different homes in different locations have several possible future energy network and low carbon heating options which need to be considered and there is no one size fits all solution.

This Strategy focuses on planning for the long-term, with major energy system change anticipated to roll out from 2030. This Strategy should be revisited when substantial changes in energy technology, policy or market warrant, as well as when the approaches for decarbonising heat in all of Bridgend's non-domestic buildings, along with emissions from transportation and land use, are developed.

Informed by Evidence

The development of this Strategy has been informed by modelling the local energy system using EnergyPath Networks, a local whole energy system design and planning analysis framework, used to investigate potential decarbonisation pathways for energy supply and demand and compare the cost-effectiveness of different routes to reduce the borough's carbon emissions by 2050[2].

Future Local Energy Scenarios

The EnergyPath Networks analysis involved the investigation of many possible future local energy scenarios. Of these, three main scenarios have been selected by the stakeholder group to demonstrate potential pathways for the decarbonisation of Bridgend's energy system. These scenarios are intended to

[1] Bridgend County Borough Council, Smart Systems and Heat, June 2014 Submission in response to Request for Proposal to participate in Local Area Energy Planning pilot study

[2] A detailed and comprehensive supporting Evidence Base document summarises this EnergyPath Networks analysis.

provide three alternative visions of Bridgend's future energy system to 2050, dependent on what actions are taken to reduce carbon emissions.

- **Business-as-Usual**. This scenario assumes national electricity generation will decarbonise but there is no coordinated focus to decarbonise heat. This results in a **58%** reduction in carbon emissions[3] from a 1990 baseline. The total discounted energy and system cost to 2050 is **£6.6 billion**[4].
- **A World Without Green Gas**. This scenario assumes there is a local focus on decarbonising heat; reducing local carbon emissions by 95% from a 1990 baseline. This considers various options to decarbonise including the use of electricity, biofuel and heat supplied through heat networks to provide heat. It assumes the gas network will not decarbonise significantly by 2050. High proportions of heat pump based heating systems (78%) are used to provide heat to homes, with circa 15% of homes served by heat networks; replacing the use of gas fired boilers. This scenario costs **£0.8 billion more** than business as usual.
- **A World with Green Gas**. This scenario also assumes there is a local focus on decarbonising heat, however it considers the availability of green gas that can be blended with natural gas, again reducing local carbon emissions by 95% from a 1990 baseline. This scenario has a higher proportion of homes using hybrid heating systems (+3.5%) and connected to heat networks (+3.5%) than the World Without Green Gas scenario and a lower proportion of high temperature electric air source heat pumps (-7.5%). This scenario is estimated to cost **£0.7b billion more** than business as usual.

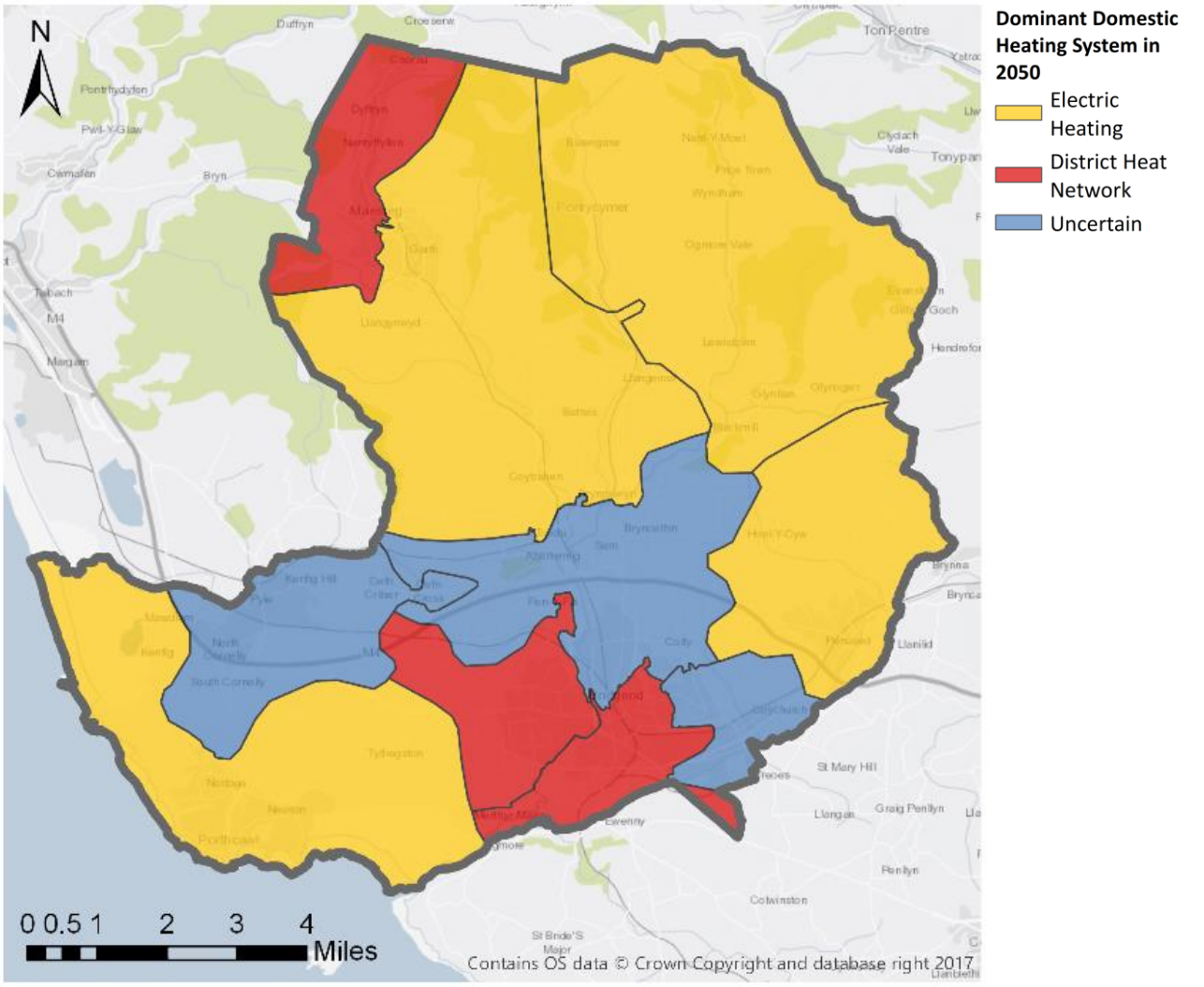
The Role of this Strategy in Supporting a Smart Low Carbon Energy System

In addition to developing these scenarios, the options and choices for future energy networks in specific areas of Bridgend have been investigated (as illustrated in the Figure 1-1). To cost effectively deliver Bridgend's vision this is likely to involve a combination of electrification of heating through heat pump systems and connection of existing homes to heat networks. This is informed by assessing trends for decarbonising homes from many possible decarbonisation pathways using EnergyPath Networks.

This approach provides the basis of this Strategy, through identifying recurring low carbon transition themes to be explored and tested further. This Strategy recognises that there are various uncertainties associated with the decarbonisation options. Technical, commercial, policy and regulatory barriers are identified which need to be overcome before confident local energy system decisions and long-term network choices are made. A key aspect of this Strategy is to test and demonstrate how the transition of Bridgend's energy system can be delivered, acknowledging that there is a window of opportunity for Bridgend to plan for transition of the local energy system.

[3] CO_2 Emissions associated with providing all electricity, gas & other fuels to domestic, industrial and commercial buildings and large industrial installations; including electricity emissions associated with domestic electric vehicles.
[4] The total systems costs presented (and discussed throughout this Strategy) include network reinforcement, energy network/infrastructure new build and operation, changes to individual homes (including heating system changes and fabric retrofit) and the cost of the energy consumed.

Figure 1-1 Dominant heating system transitions to 2050



Moving this Strategy Forward

To take this Strategy forward, three key areas of focus are defined, outlining areas for the council to concentrate on as it progresses this Local Area Energy Strategy, these are:

- **An on-going whole system approach to Local Area Energy Planning**

  The following activities provide initial recommendations to take forward over the next few years, to continue the local area energy planning approach that has been initiated. Recognising that further activity will be required as the process of local area energy planning evolves.

  - Set a local carbon emissions target.
  - Establish on-going whole system planning dialogue with energy network operators.
  - Work with Welsh Government to ensure that national policy aligns to local policy.
  - Work with Welsh Government to determine an on-going whole system local area energy planning process.
  - Support low carbon product and service developers to innovate in Bridgend.
  - Develop a suitable governance framework.

- **A focus on innovation to unlock the barriers to decarbonisation of heat**.

This can be achieved through developing decarbonisation options into more mature solutions. This is important as many aspects of enabling the decarbonisation of the borough's buildings are outside of the council's direct control. However, the council can directly influence this aspect through facilitating the Development & Demonstration of the decarbonisation options discussed in this Strategy. This is significant, so that the council can focus its resources on the activity that will provide the most benefit.

- **Implementation of the Near-Term Delivery Plan**

  This strategy has identified five key activities to progress in the near term. These have been developed in response to the recurring transition themes identified through the whole system analysis; in support of Bridgend's vision and consultation with key stakeholders. The council will need to determine how, when and by whom these activities are taken forward, whether as council led initiatives, public/private partnerships or through innovators and industry.

  - Better targeted retrofit.
  - Developing and testing compelling customer propositions for hybrid heat pumps.
  - Overcoming barriers to transitioning existing homes from gas to heat networks.
  - Reducing costs of heat networks in urban centres and expanding to connect existing homes.
  - Developing and testing compelling customer propositions for electric heating (heat pumps) including targeting able to pay/early adopters through council services.

Realising the benefits of low carbon transition

Decarbonisation will require the majority of households in Bridgend to decide to replace gas boilers with a low carbon heating system. Breaking the established boiler replacement cycle is unlikely unless new heating systems and products, new energy service business models and compelling customer propositions for the mass market are developed; a major transformation of the energy market is needed which may require policy and regulatory intervention. This means that there is a window of opportunity to effectively plan for major network choices and to develop, test and demonstrate integrated low carbon solutions for mass market adoption, providing confidence to investors and Bridgend's residents and businesses to develop and adopt them.

The council is already making progress, for example, as part of the Smart Systems and Heat Phase 2 programme Bridgend is working with the Energy Systems Catapult in trialling the type of advanced home energy management control that could become prevalent in homes over the next decade, supporting the design of more appealing low carbon heating solutions for consumers. It is also working on the development of the Caerau Heat Scheme[5] which aims to use local renewable resources to support transitioning existing homes from gas boilers to a low carbon heat network. However, many more benefits are available from implementing this Strategy, including:

- **Jobs and economic growth** – Delivering the transition will create jobs and economic growth. There is also an opportunity to develop the high value jobs that will be needed to enable the transition.

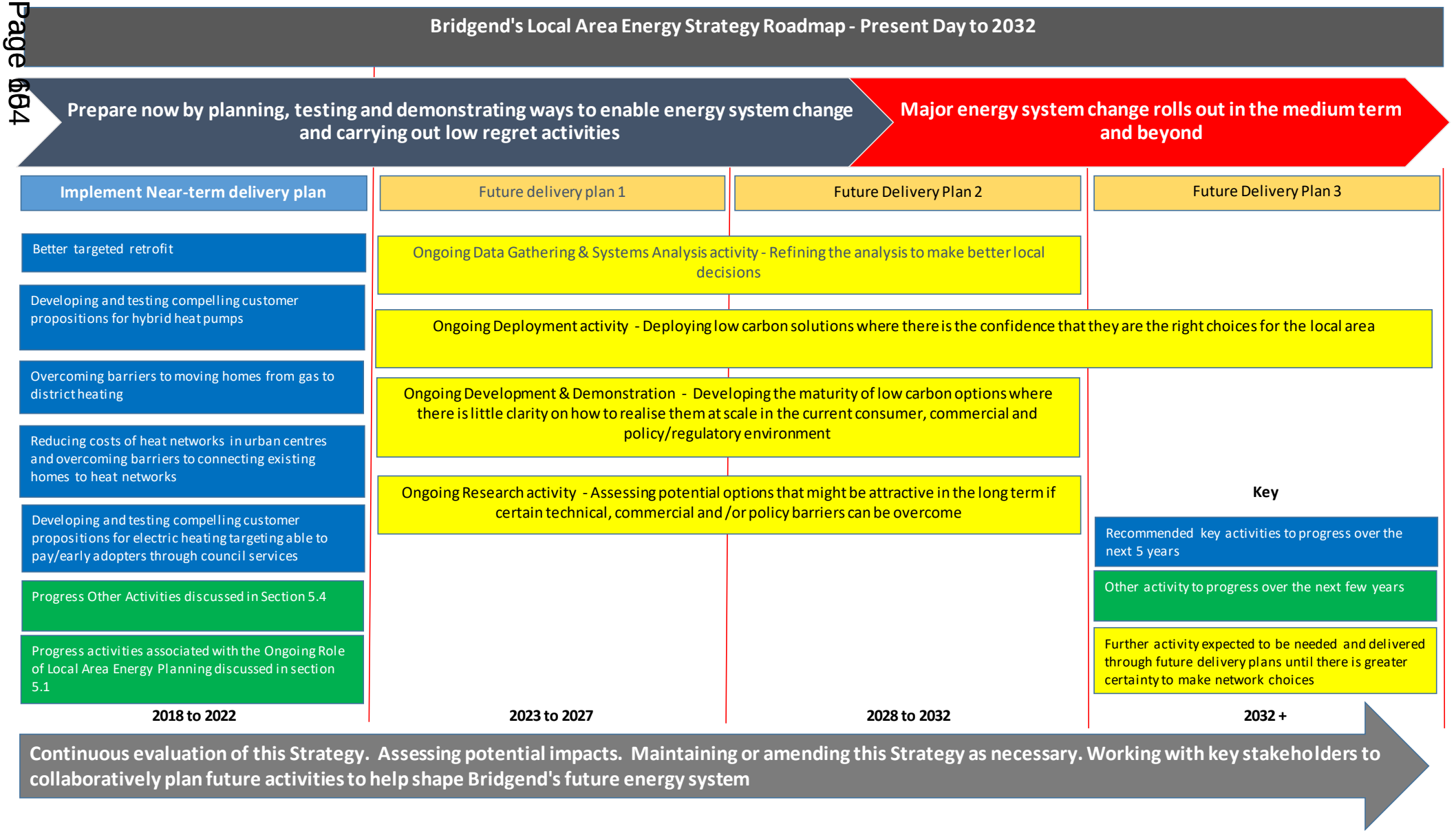
[5] http://www.bridgend.gov.uk/media-centre/2018/january-2018/19-01-2018-65m-awarded-for-uk-s-first-large-scale-mine-water-energy-project.aspx

- **Transition** to a decentralised low carbon energy system will deliver social and economic benefits including reductions in energy consumption and carbon emissions, and wider benefits such as improvements in health (where homes are made warmer) as well as contributing to national targets to address climate change (refer Socio-Economic Report[6]).
- **Innovation and Collaboration** - Decarbonisation provides significant opportunity for Bridgend and any partnering organisations to develop the systems, technologies, services, business models, governance and funding solutions that will be needed. If Bridgend makes itself a more attractive location for start-ups and large company R&D, new solutions can then be exported throughout Wales, the UK and internationally.
- **Infrastructure Investment**. A clear strategy that sets out Bridgend's approach to decarbonising the area's energy system can provide confidence to investors to invest in the area.
- **Empower Residents and Businesses**. Through providing guidance that can help individuals make informed decisions on the types of energy systems and products they choose, acknowledging that some assets (e.g. a new vehicle or heating system) are significant investments.
- **Fuel poverty**. A new approach provides an opportunity to consider how a future energy system can lead to safeguarding the most vulnerable.
- **Leadership** – The council, collaborating with other key stakeholders such as the Welsh Government and Western Power Distribution and Wales and West Utilities, can act as leading examples and help to influence future strategy and policy at both local and national level.

Implementation Roadmap

This strategy sets out an implementation roadmap to focus resource and help plan for the major change needed to the local energy system if Bridgend is to achieve its ambition of transitioning to a future low carbon decentralised energy system. This includes the role of establishing near-term delivery plans, to test and demonstrate the proposed future energy system through delivery plan activity, to enable energy network and technology choices to be made with more confidence.

[6] Energy Transition Plan: Policy and Commercial Insights for Energy System Transformation, Feb 2018



1 Introduction

1.1 Purpose of the Local Area Energy Strategy

This Local Area Energy Strategy provides an approach to support Bridgend County Borough Council transition from the current national centralised energy system to a future decentralised and low carbon energy system. This Strategy sets out the vision, objectives and roadmap to enable the transition.

This Strategy has been developed through investigating:

- **The potential pathways, using EnergyPath Network analysis, to decarbonise Bridgend's buildings cost effectively.**
- **The changes needed to Bridgend's buildings and energy networks based on the pathways.**
- **The innovation opportunities available to the local area through decarbonising heat**.

It sits alongside the local area's other spatial planning activities, and those of the Welsh Government and other agencies and authorities. It aims to inform the decisions needed to achieve the ambition of transitioning to a decentralised low carbon energy system.

The production of this Strategy has drawn upon close collaboration with a stakeholder group consisting of Bridgend County Borough Council, the Welsh Government, Western Power Distribution and Wales and the West Utilities and the Energy Systems Catapult.

This Strategy recognises that it will be necessary to largely eliminate heat related carbon emissions by 2050[7] and there has been little progress made to date in a static market with just 4% of homes in the UK having low carbon heating[8], whereas the decarbonisation of the electricity used in buildings is well underway[9]. It sets out a vision to decarbonise Bridgend's buildings by 95% from a 1990 baseline by 2050. Studies have shown the elimination of carbon emissions from buildings is more cost effective than deeper cuts in other energy sectors such as goods transport and international travel[10]. In time the approach to local energy planning can evolve to consider emissions from other energy uses such as industry and transportation.

Who is it for?

This Strategy has been developed primarily for the council, to support the transition to a low-carbon future, based on the council's priorities of economic growth, job creation and reduced fuel poverty. It acknowledges that the council alone could not realise this ambition: action by several key stakeholders including network operators is also needed. Therefore, it focuses on the areas that the council can influence.

Recognising that the transition requires action by various stakeholders, the Strategy aims to aid their planning and decision-making processes. A sector-wide transformation of market structure is needed to

[7] October 2016, Next Steps for UK heat policy, Committee on Climate Change
[8] ETI 2015 Consumer Insight
[9] https://www.gov.uk/government/publications/decc-single-departmental-plan-2015-to-2020/single-departmental-plan-2015-to-2020
[10] http://www.eti.co.uk/insights/heat-insight-decarbonising-heat-for-uk-homes/

consider and then enable the regulatory, policy and planning changes required to facilitate a low carbon future. This Strategy assumes that major physical work to energy networks and systems will take place in the medium to long-term, starting approximately from 2030. Therefore, these key stakeholders will need to work on this challenge over the next decade, to provide the guidance and governance mechanisms to deliver the transition. National Government plans to determine its position regarding the long-term future of heat[11] in the period 2020 to 2025 and this will drive future decision making.

This Strategy acknowledges that the council cannot deliver the transition by itself, but it can take a lead role. It is best placed to guide the transition so that it considers and benefits Bridgend's residents and businesses, just as local government does in other areas such as spatial and transport planning.

What does it provide?

This Strategy is released with the intention that the council takes it forward in their preferred format. It is underpinned by a technical Evidence Base, which is published separately and presents the results of an EnergyPath Networks modelling study. It is also supported by a Socio-economic and Policy Evaluation for Energy System Transformation report, which offers suggestions on interventions that the council and the Welsh Government could implement to enable the transition.

The EnergyPath Network analysis investigated least-cost decarbonisation pathways, considering a range of possible options for decarbonising heat which are appropriate and technically feasible in Bridgend (refer to Evidence Base). This process identified several cost-optimal decarbonisation technologies, based on the use of fabric retrofit, heat pumps (and hybrid gas/electric heating solutions) and district heat networks. Heat pumps and district heat networks are the most commonly identified options.

The EnergyPath Network analysis was also used to develop three core decarbonisation scenarios, based on investigation of many different future local energy scenarios and associated sensitivity analyses, and input from the council and other key stakeholders. These core scenarios illustrate credible pathways for Bridgend's future local energy system. They illustrate the scale and cost of potential change, along with the technologies that could be part of the local energy system.

Central to this Strategy is a map of Bridgend's proposed future energy system, illustrating potential network choices to decarbonise the local energy system, based on the identification of recurring transition themes in different parts of Bridgend.

Consumer, commercial and policy factors are then considered. This Strategy recognises that current market conditions make it hard to move away from today's energy system because, for example, there is currently no clear commercial route to market for heat networks and heat pumps in owner-occupied homes. It is therefore considered too early to make definitive network choices. However, this Strategy highlights opportunities for the council and other organisations to develop and test the solutions needed to overcome these barriers. Specific activities are identified to test the future energy system before any network choices are made. The activities are also designed to support the council's priorities of economic growth, job creation and reduced fuel poverty. The council can seek new partnerships and funding opportunities to facilitate this.

A roadmap is provided to help manage delivery of the Strategy, along with the activities, and recommendations to review and evolve it over time. The Strategy aims to focus local effort and resources on testing and demonstrating solutions to enable the proposed future energy system, as well as carrying

[11] HM Government, Government Response to the CCC,2017 Report to Parliament - Meeting Carbon Budgets

out low regret activities where relevant. This testing and demonstration phase is expected to last until there is enough certainty to make firm network choices. Other stakeholders will also be working on these challenges, so it is difficult to forecast how long this will take, however, this Strategy assumes that there is a ten to fifteen-year window of opportunity before choices must be made. As such, the Strategy's roadmap illustrates a lifetime to 2032, based on taking forward activity defined in near-term delivery plans that have a 5-year timeframe.

1.2 Context

Addressing Climate Change

The case for addressing climate change is overwhelming, and one of the defining issues of our time[12]. The UK has responded through committing to a legally binding obligation to cut greenhouse gas emissions by 80% by 2050 (against 1990 levels)[13]. The UK is the first country to set legally binding carbon budgets to support achieving the obligation. These place a restriction on the total amount of greenhouse gases the UK can emit over a 5-year period. The current (third) carbon budget applies for the period 2018 to 2022. In its latest annual report to parliament (published in March 2018), a 41% reduction in emissions from the 1990 base year were reported[14].

Climate Change - Welsh Government Approach

The Welsh Government approach for tackling the causes and effects of climate change is set out in their Climate Change Strategy for Wales[15]. The Bridgend Local Area Energy Strategy will need to consider and align with relevant and evolving Welsh Government guidance regarding climate change and energy such as:

- **The Environment (Wales) Act 2016** This sets out the approach to help Wales reduce its carbon emissions and sets a minimum of 80% emission reduction by 2050. This will be achieved through the setting of interim targets for 2020, 2030 and 2040 and five yearly carbon budgets. The Welsh Government will be laying regulations around their interim targets and first two carbon budgets by the end of 2018 and shortly afterwards by publishing a Low Carbon Delivery Plan.
- **Planning Policy Wales** – This has been under consultation until May 2018 and the conclusion of this process should be evaluated. For instance, it states that "Planning authorities should develop an evidence base to inform the development of renewable and low carbon energy policies. Planning authorities should consider the contribution that can be made by their local area towards carbon emission reduction and renewable and low carbon energy production, they are asked to assess the potential for renewable energy in their area and to set local targets in their local development plans".
- **Renewable Energy Targets** - Welsh Government has set renewable energy targets of generating 70 per cent of Wales' electricity consumption from renewables by 2030, that 1 GW of renewable electricity capacity in Wales to be locally owned by 2030 and Renewable energy projects to have at least an element of local ownership by 2020

[12] http://en.unesco.org/themes/addressing-climate-change
[13] https://www.legislation.gov.uk/ukpga/2008/27
[14] https://www.gov.uk/government/publications/annual-statement-of-emissions-for-2016
[15] http://gov.wales/topics/environmentcountryside/climatechange/emissions/climate-change-strategy-for-wales/?lang=en

The Decarbonisation of Heat

Energy use in buildings is a significant contributor to carbon emissions. Heating accounts for over 40%[16] of the UK's total demand for energy. Decarbonising heat, and, domestic heat, is critical to achieve a decentralised low carbon energy system. 96% of Bridgend's domestic heating in homes is by natural gas, with little incentive for consumers to change. Previous emissions reductions have been achieved through relatively simple and cheap measures with clear benefits to households (e.g. cavity and loft insulation and boiler replacement). This challenge provides the context for this Local Area Energy Strategy, recognising that a new, whole system approach to planning and delivering local energy systems is vital, to create a resilient, low carbon energy system for the future. Further information can be gained by referring to ETI Insight Papers: Options, Choices and Actions[17], Housing Retrofits, A New Start[18], Decarbonising Heat for UK Homes[19], How Can People Get the Heat They Want at Home Without the Carbon[20].

The Low Carbon Transition

Delivering a cost effective and socially accepted low carbon transition will require change to existing energy infrastructure and the types of energy that are supplied to buildings; as well as how, and when, they are used. The transition will involve switching from using fossil fuels and natural gas fired boilers to other forms of energy and heating systems, this could involve many possible components such as greater uptake of heat networks; the electrification of heating; upgraded electricity networks; repurposed or decommissioned gas grids; improving the efficiency of buildings; and systems to manage and control how energy is used in buildings.

A Whole Energy System Perspective

This Strategy will need to consider any potential change to one part of the energy system as a component of a whole energy system, as a decision on any one element could have an impact across the whole system. For example, this Strategy includes an assumption that a proportion of Bridgend's residents (primarily those with off-road parking) will switch to electric vehicles by 2050[21]. If this significantly changes then the impact on the electricity network and options for decarbonising heat using electrically based systems may need to be reconsidered. Section 5.2 provides an approach for reviewing potential change. Options for decarbonising all of the local area's transportation and industry will need to be considered in conjunction with the decarbonisation of heat.

Barriers to Decarbonisation

Achieving a desirable and effective transition will require an integrated energy system, reflecting local priorities and constraints. Policy or regulatory barriers which impede Bridgend's transition will need to be overcome. Funding will need to be drawn from public and private sources who will expect a return on their investment over a specified payback period. Consideration will be needed to work out how to work

[16] October 2016, Next Steps for UK heat policy, Committee on Climate Change
[17] http://www.eti.co.uk/insights/options-choices-actions-uk-scenarios-for-a-low-carbon-energy-system/
[18] http://www.eti.co.uk/insights/housing-retrofits-a-new-start
[19] http://www.eti.co.uk/insights/heat-insight-decarbonising-heat-for-uk-homes
[20] http://www.eti.co.uk/insights/how-can-people-get-the-heat-they-want-without-the-carbon
[21] Electric vehicle charging profiles are based upon assumed take-up rates for electric vehicles and are based on car journeys extracted from the Department for Transport's National Travel Survey. This means that distances travelled (level of charge required) and times of arrival (time of charging) reflect the diversity of real world use. This scenario assumes that electrification continues as the main form of decarbonisation in vehicles, although it is acknowledged that this is only an assumption and that the actual situation can differ, dependent on factors such as the development and uptake of hydrogen vehicles.

with and influence the actions the key stakeholders described in Section 2.3.4, as their choices and actions will impact Bridgend's future energy system. Refer Douglas J, 2015, Decarbonising Heat for UK Homes, ETI Insight Paper[22].

1.3 Key Influences

The following four sections discuss some of the key aspects that have influenced the development of this Strategy.

1.3.1 This Strategy's Vision

To transition Bridgend from the current national centralised energy system to a future low carbon decentralised energy system that works for its people, communities and businesses. Enabling investment, economic growth and employment opportunities for the region.

1.3.2 Objectives

The following objectives have been developed to support this Strategy's Vision and to enable the council to oversee and guide the important energy network related decisions and interventions that are required to decarbonise Bridgend's buildings.

- **Future Energy Approach** - To provide a whole energy system based strategy and roadmap, based on exploring many possible future pathways and defining possible future local energy scenarios, that indicate what actions are needed to move the area from its current centralised energy system to a future low carbon decentralised energy system. Supported with a Near-term delivery plan to take forward over the next five years and a structure to develop and adapt the Strategy to circa 2032[23].
- **Economic Growth** – To provide opportunities that can create local and regional jobs and economic growth.
- **Emission Reduction** - To support the council in meeting future carbon budget targets, particularly where the Welsh Government determines its approach to carbon emissions reduction.
- **Investment** - To guide and facilitate investment in the areas energy networks and systems and better connect energy network decisions; recognising that current practice means that energy network decisions are made independently, without considering the whole energy system.
- **Activity Prioritisation** - To identify and prioritise activities that can help the council achieve its decarbonisation aspirations. To also demonstrate innovation in the areas of reducing carbon emissions, improving energy security, providing affordable energy and reducing fuel poverty.

[22] http://www.eti.co.uk/insights/heat-insight-decarbonising-heat-for-uk-homes
[23] The Strategy is based on progressing delivery plans that have a 5-year timeframe. Delivery plans will be needed until there is certainty to adapt the areas energy system. The 2032 timeframe is based on the provision of three 5-year delivery plans

- **Local area energy planning approach** – To support an objective, evidence based and data driven local area energy planning approach that can be scaled up throughout Wales and better connected with other local planning functions.

1.3.3 Opportunities & Challenges

This section discusses the opportunities available from implementing this Strategy and the challenges surrounding decarbonisation and local area energy planning. Delivering a cost effective and socially desirable low carbon transition will require significant change to the way energy is currently generated, stored, distributed and consumed.

Opportunities

There is a significant opportunity to shape Bridgend's future energy system, providing an opportunity to cost effectively design the local energy system and inform energy network choices, thus avoiding the potential of investing in energy system stranded assets. This has the benefit of managing uncertainty, creating jobs and investing in low carbon infrastructure, and importantly creating a better, healthier and cleaner environment for citizens and future generations.

- **Jobs and economic growth** – Delivering the transition will create jobs and economic growth. There is also an opportunity to develop the high value jobs that will be needed to enable the transition.
- **Innovation and Collaboration** - Decarbonisation provides significant opportunity for Bridgend and any partnering organisations to develop the systems, technologies, services, business models, governance and funding solutions that will be needed. If Bridgend makes itself a more attractive location for start-ups and large company R&D activities, new solutions can then be exported throughout, Wales, the UK and internationally.
- **Infrastructure Investment** - A clear strategy setting out Bridgend's approach to decarbonising the local areas energy system can provide confidence to investors to invest in the area.
- **Empower Residents and Businesses** - Through providing guidance that can help individuals make informed decisions on the types of energy systems and products they choose, acknowledging that some assets (e.g. a new vehicle or heating system) are significant investments.
- **Fuel poverty** - A new approach will create an opportunity to consider how a future energy system can lead to safeguarding the most vulnerable.
- **Leadership** - The council can demonstrate leadership, working with other key stakeholders such as the Welsh Government and Western Power Distribution and Wales and West Utilities, can demonstrate leadership and influence the necessary direction of future strategy and policy at both local and national level.

Innovation is important, it can support economic growth in Bridgend by attracting investment in new and low carbon energy infrastructure and systems, providing new skills and employment opportunities.

Challenges

- Considering the cost to society, recognising that there will be a cost to decarbonise over the cost of maintaining the current system (referred to as Business-As-Usual (BAU) throughout this Strategy).
- Changes to the way energy is provided and used today. Such as the electrification of transport and moving away from the dominance of fossil fuels to new ways to heat buildings.
- Significant change to existing energy infrastructure and building heating systems, along with advances in technology, connectivity and digitisation.
- The role of the council in influencing the transition recognising the council's current responsibilities and resources.
- Removing barriers and reducing the risk associated with new low carbon systems; to allow more confident decisions to be made regarding changing energy networks and systems.
- The need to develop mechanisms, skills and supply chains to deliver new systems rapidly, at scale.

1.3.4 Key Stakeholders

This Strategy has been developed for Bridgend County Borough Council. Taking this Strategy forward will require collaboration with and consideration of many key stakeholders including the Welsh Government, UK Government, the energy industry (including the electricity and gas network operators), energy retailers, product developers, innovators, property investors and Bridgend's residents and businesses. This section explains the roles and relationships between the various key stakeholders, summarised in Table 1-1, that will influence the successful delivery of this Strategy.

Local ambition cannot be achieved without the national energy system adapting (such as the decarbonisation of the electricity system) and the council is aware of the influence of national decisions (including policy and regulation) and their effect on the local energy landscape. Organisations will need to develop low carbon products and solutions with mass market appeal; recognising that there has been little uptake of low carbon heating system to date. Decarbonisation will be reliant on building owners and individuals changing from business-as-usual (e.g. using fossil fuels for heating) to adopting new low carbon products or solutions. This will need a market transformation which is much more likely to be successful under a supportive carbon policy environment. Market transformations are not uncommon if the market can provide the right solutions, such as the uptake of broadband in the telecoms sector, where consumers were willing to pay more for a better experience (replacing dial-up internet).

Table 1-1 Key Stakeholders

Stakeholder	Relationship with the Strategy
National Government (including Regulators)	Establish UK level energy system policy, decisions and regulation that can influence and affect Bridgend's current and future energy system.
Welsh Government	Establish Welsh Government energy, climate change and emission reduction related policy, decisions and regulation that can influence and affect Bridgend's current and future energy system.
Bridgend County Borough Council and other Local Government	Bridgend County Borough Council can support the transition by providing local leadership and guidance. It can also use its current planning remit to make decisions on energy related aspects e.g. land allocation for new energy generation systems and infrastructure. Bridgend County Borough Council should also work with other regional Local Government organisations, such as the Cardiff Capital Region to ensure a coordinated approach for the region.
Western Power Distribution & Wales and West Utilities (Network operators)	Own and operate Bridgend's current energy networks. Consideration will be needed to plan what changes will be needed to energy networks (including potential new and adapted networks) to enable Bridgend's low carbon future.
Energy sector organisations such as energy generators & suppliers and energy service & product / technology providers	These organisations make decisions on how energy is supplied to and used by Bridgend's residents and businesses. Decarbonisation will require new and improved ways of providing Bridgend's energy along with new low carbon products and services.
Bridgend's residents, businesses, industry and building owners	Decarbonisation will mean that these key stakeholders will use energy differently (such as charging electric vehicles) and will need to use new types of products and services to provide heat.

This Strategy has been developed with these key stakeholders in mind, to provide a framework and evidence base to support their decision-making process. A low carbon future can only be achieved through acknowledging that coordination is essential as these key stakeholders will make many interdependent choices and decisions that can impact the whole energy system. In addition, it is important to highlight that local area energy planning cannot be viewed in isolation from the wider national energy system as "decisions taken in one locality can affect the interests of consumers in another"[24].

This Local Area Energy Strategy has been developed to support the key stakeholders through providing vital insight into potential future energy infrastructure changes and investment needs from a whole system perspective.

[24] https://www.ofgem.gov.uk/system/files/docs/2017/01/ofgem_future_insights_series_3_local_energy_final_300117.pdf

2 Bridgend's Local Energy System

This Strategy focuses on developing an approach to meet the area's current and future energy demand whilst ensuring security of supply and affordability for the people and businesses of Bridgend. Consideration is also needed to ensure that Bridgend's future energy system can meet changing expectations of consumers for comfort and smart control, but within the constraint of a carbon target that falls to near-zero by 2050.

2.1 Current & Future Energy Demands

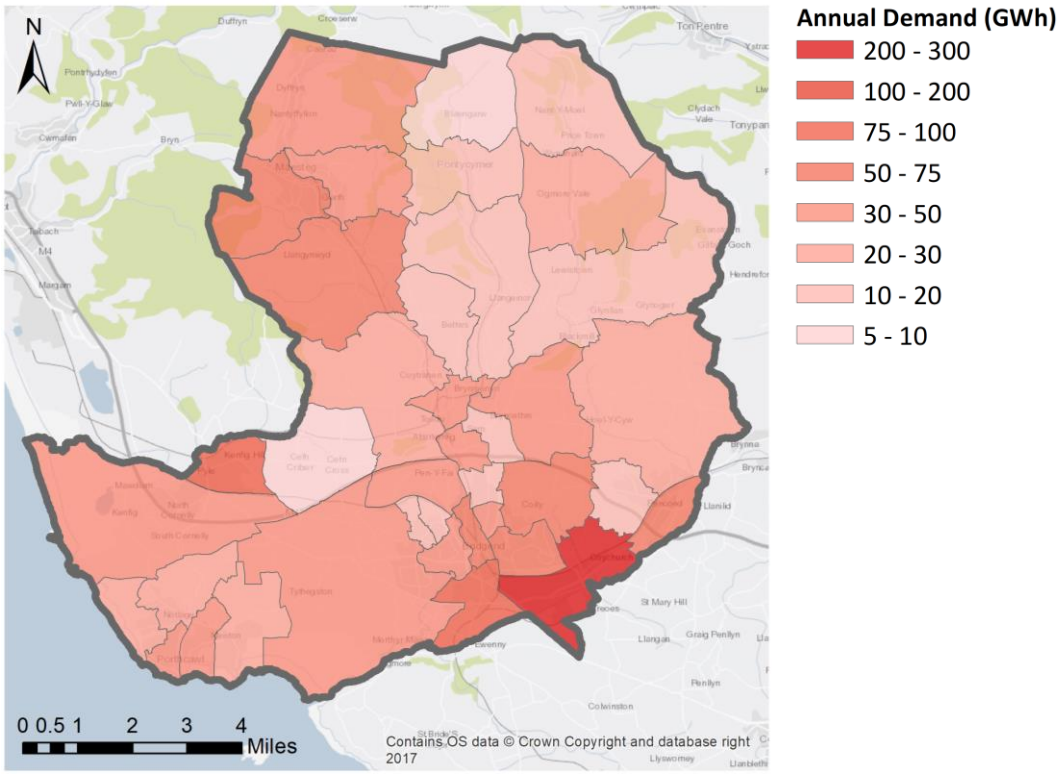
2.1.1 The Local Area

The Bridgend County Borough covers 255 km^2 and has a population of approximately 142,000. There are around 62,000 domestic buildings, of which 3% (2,060) are not connected to the gas network, and 5,600 non-domestic buildings.

The modelled local electricity network consists of 10 high voltage and 759 low voltage sub stations. The local electricity network is made up of a network length of approx. 3,340 km.

The annual gas and electricity demands in 2016 for Bridgend were 1,259 GWh and 616 GWh respectively shown by ward in Figure 2-1.

Figure 2-1 Energy Used for Heat in Bridgend's Buildings[25]



[25] Domestic and non-domestic buildings (non-domestic includes gas used for process use)

Bridgend uses 3,416 GWh/year of energy

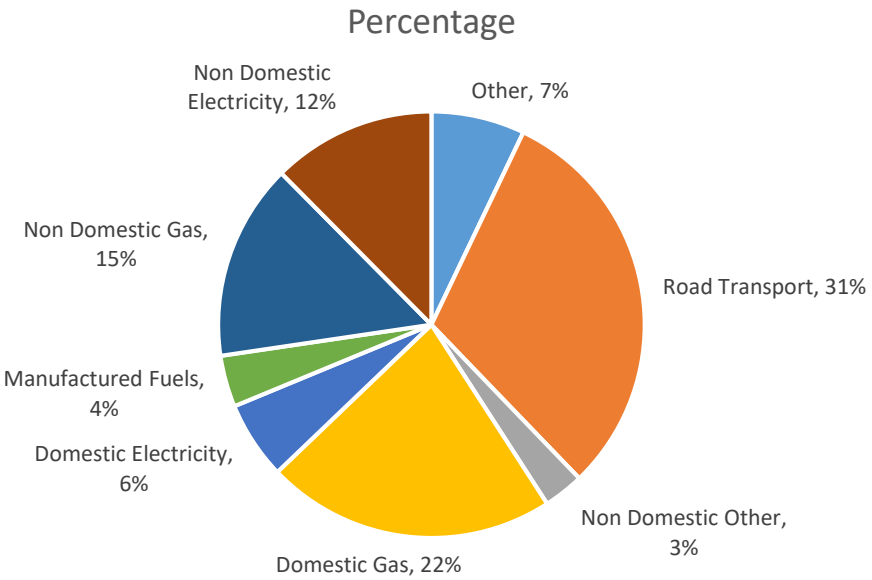


Figure 2-2 Breakdown of Bridgend's Energy Use[26]

A breakdown of Bridgend's energy use is shown in Figure 2-2.

- **28%** of Bridgend's energy use is attributed to the domestic sector. 37**%** is used by the non-domestic sector and the majority of the remainder is used by the road transport sector (31**%).**
- Gas is the primary heating fuel for homes in Bridgend **(22% of all energy)**, with domestic electricity consumption accounting for 6%.

Bridgend has a wide range of housing types of different ages which influences energy consumption.

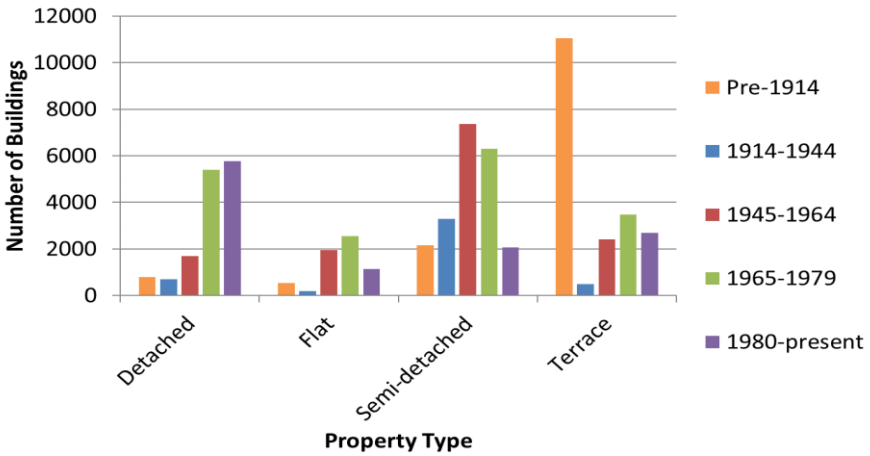


Figure 2-3 Breakdown of Bridgend's Housing Types and Age Including Planned New Homes

[26] BEIS, Sub-national total final energy consumption data, 29TH September 2016. Road transport represents the energy used (tonnes of oil equivalent) by all road using vehicles, based on fuel consumed (i.e. petrol and diesel), within the borough in a year.

A breakdown of Bridgend's housing types and age is shown in Figure 2-3.

- The greatest proportion of Bridgend's housing stock was built between **1965-1979**, with approximately **21%** being **pre-1914** and over **20% built between World War 1 and 2**. The pre-1914 and some of the world war 1 to 2 stock are generally more difficult to treat from an energy efficiency perspective[27].
- **23% of Bridgend households** are estimated to be in **fuel poverty**[28] with the greatest areas of fuel poverty concentrated in Nant-y-moel, Pontycymmer, Caerau and Bleangarw.
- **76% of homes are owner occupied and 10% are private rented versus a 14% of social housing stock**[29]. Therefore, the council has little influence over **86%** of the housing stock. Consumer/commercial solutions will need to be found for decarbonising the owner-occupier and private rented homes. This has traditionally not been a priority for the council and will require a new way of thinking.
- Most of **the existing homes in Bridgend are likely to be still in use by 2050**. Identifying cost effective pathways for the domestic retrofit of energy efficiency and low carbon heating systems to these homes is essential to support Bridgend's long-term decarbonisation targets.

Bridgend also has a wide range of non-domestic buildings

There are a broad range of building types in Bridgend that make up the 5,600 non-domestic buildings. The total floor area for the top nine combined archetypes is illustrated in Figure 2-4. The greatest proportion of floor area is classed as factory type. This sector also generally has a higher average energy use per square metre than other types, particularly in the industrial and manufacturing sectors.

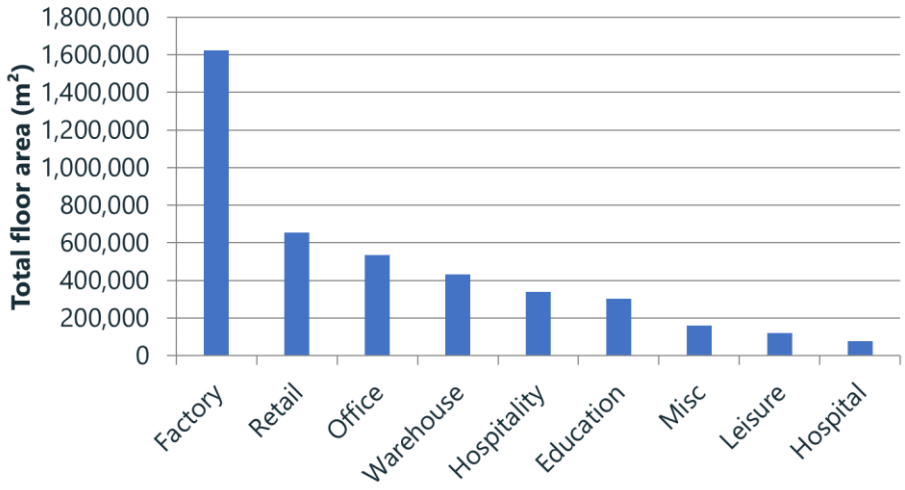


Figure 2-4 Non-Domestic Building Archetypes by Floor Area (top nine categories)

The council should increase its understanding of Bridgend's non-domestic buildings (as recommended in Section 5.4.1), so that it can further develop this Strategy. This will involve understanding how and where energy is used, recognising that there are many aspects to consider. For example, energy use in sectors

[27] These homes are generally more expensive to insulate than home built with cavity walls suitable for retrofit cavity wall insulation
[28] http://lle.gov.wales/map/fuelpoverty#b=europa&l=209h,0.8;396h,0.7;398hi,0.7;220,0.5;223h,0.5;263h;&m=-3.37408,51.90948,8
[29] Bridgend County Borough Council, CASH Local Action Plan

such as industry and manufacturing can be diverse and is dependent on a site's activities and processes. Therefore, a robust data set is required for the non-domestic sector in the first instance, so that decarbonisation options can be developed further for Bridgend's non-domestic buildings in the future.

2.1.2 The Modelling Approach

The modelling approach is summarised here and described in detail in the accompanying Evidence Base.

EnergyPath Networks

This Strategy has been supported by EnergyPath Networks. The Energy Technologies Institute (ETI) developed EnergyPath Networks, as part of the Smart Systems and Heat programme[30], to support an evidence based whole system approach to local area energy planning. This aims to engage relevant stakeholders to investigate possible cost effective future local energy scenarios and systems designs and better inform future network planning and choices.

Whole System Optimisation

EnergyPath Networks is a whole energy system optimisation analysis framework that provides a robust, technology neutral techno-economic evidence base. It considers the technical aspects of the whole energy system and is built on a detailed local area representation of the energy system. It has been designed in partnership with local authorities to develop cost-effective local energy system options for the UK.

Multi Scenario and Limitations

Using EnergyPath Networks, many possible scenarios have been generated to inform this Strategy. These look across a range of assumptions and constraints to identify lowest-cost decarbonisation pathways for the Bridgend's energy system. It is important to highlight that EnergyPath Networks has its limitations, as will any model of the future. Hence the outcomes that have informed this Strategy cannot provide a conclusive indication of the future. Further information regarding the EnergyPath Networks Modelling Approach is explained in the supporting Evidence Base document.

Consumer, Commercial and Policy/Regulatory Aspects

This Strategy has been informed by the Bridgend Local Area Energy Planning Evidence Base alongside a consideration of related consumer, commercial and policy/regulatory aspects. This is a critical component of effective Local Area Energy Planning. Considering these factors is crucial if informed investment based decisions are to be made in the future.

Future Updates

Future consideration will be needed:

- As the practice of local area energy planning incorporating whole energy system analysis develops.
- To also encompass industry and transportation decarbonisation analysis.
- Considering the relationship between the local system (which this Strategy has focused upon) and the wider regional and national energy systems.

[30] http://www.eti.co.uk/programmes/smart-systems-heat

2.1.3 Analysis Areas

The EnergyPath Network modelling approach is based on the consideration of ten analysis areas as illustrated in Figure 2-5. This figure shows the relationship between analysis areas and ward boundaries. The analysis areas are based on High Voltage (HV) substations and all buildings and electrical network infrastructure served by them. Due to the number of buildings and the complexity of the energy networks within Bridgend this Strategy takes an area based approach for considering future network choices. Rationale behind this methodology is discussed in the supporting Evidence Base.

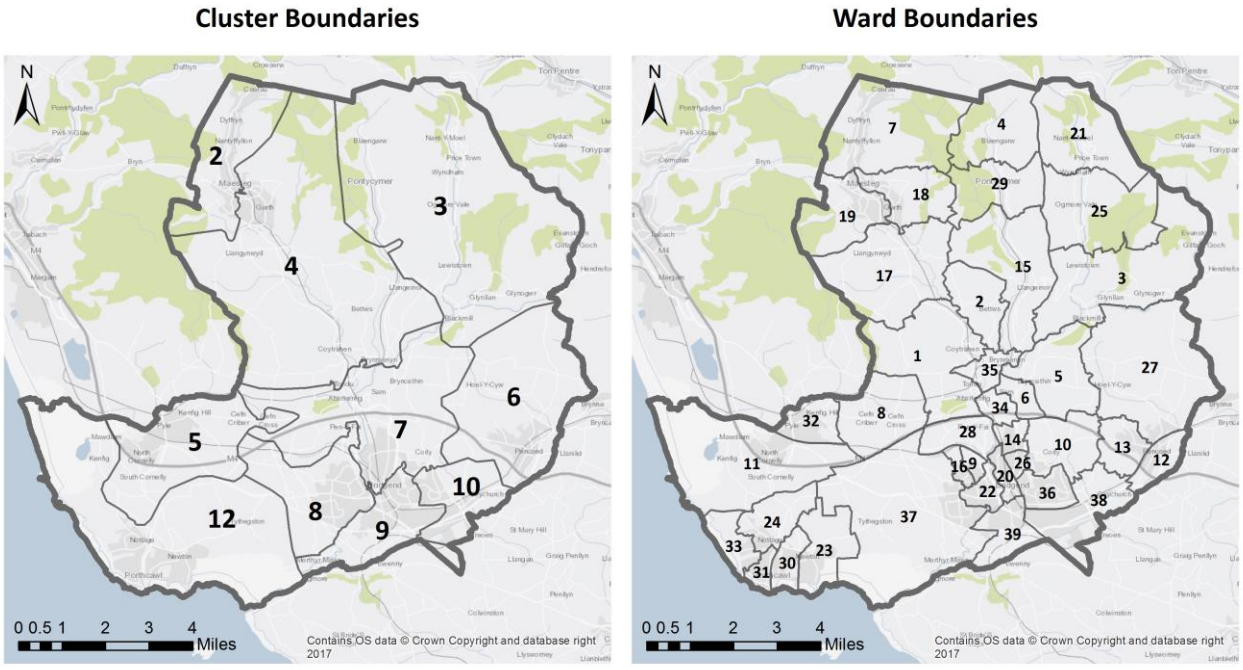


Figure 2-5 Bridgend's Ward Boundaries & Relationship with EnergyPath Networks Analysis Areas

2.1.4 Planned Growth

This Strategy has considered the impact of planned growth from over 5,900 new homes and 1,200 non-domestic buildings in the region[31] (Figure 2-6). New build homes are assumed to be constructed in accordance with Welsh Government sustainable building standards. Increased energy demand from space heating and hot water demand is estimated at less than 40 GWh/yr. This is around 6% of total heat related energy demand used for buildings in Bridgend. The new gas demand from new homes under business as usual could increase carbon emission by ~7,000 tCO2/year (equating to circa 1% of assumed 2020 emissions).

[31] Building types allocated based on the Joint Housing Land Availability Study (JHLAS) https://democratic.bridgend.gov.uk/documents/s10059/290916%20-%20JHLAS%202016%20INCLUDING%20APPENDIX.pdf?LLL=0 where details available. Otherwise, breakdown suggested by BCBC planning department was used.

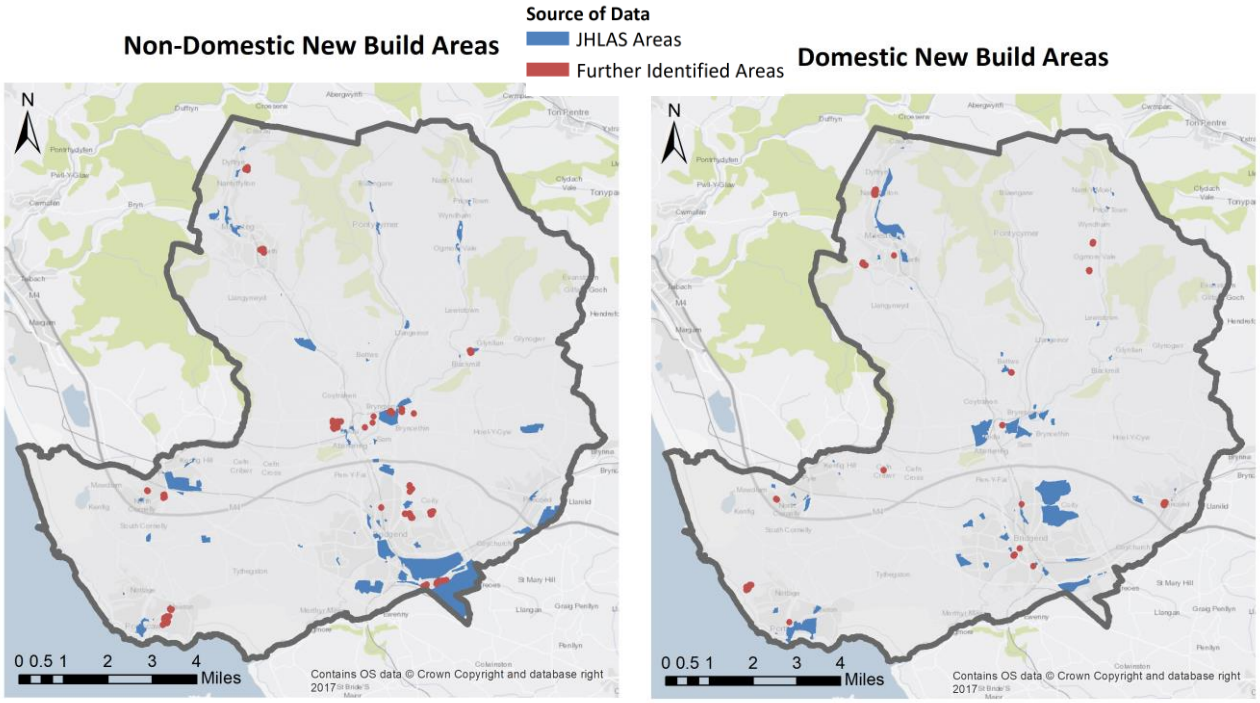


Figure 2-6 Bridgend's Planned Domestic and Non-Domestic Growth Areas

2.2 Local Carbon Emissions

Reducing carbon emissions from buildings and the local energy system is essential to achieve a low carbon decentralised energy system that works for the borough's people, communities and businesses. This Strategy has explored cost-effective pathways to decarbonise Bridgend's buildings.

2.2.1 Scope of Emissions

In scope CO_2 emissions include those associated with providing all electricity, gas & other fuels to domestic, industrial and commercial buildings and large industrial installations. Carbon emissions out of scope relate to those associated with agriculture, land use change and transportation (apart from the electricity associated with the assumed electric vehicle take-up rate discussed in section 1.2 which are in scope).

2.2.2 Local Carbon Target

This Strategy considers a future where carbon emissions associated with providing energy to all buildings are reduced by 95% compared to a 1990 baseline. Figure 2-7 and Table 2-1 illustrate the outcome if this future vision were followed. The 95% local carbon target was agreed with the project stakeholder group. The remaining 5% of emissions are predominantly associated with heat used in the non-domestic sector (such as in manufacturing processes).

Table 2-1 Modelled Emission Reduction in Bridgend Through Delivering the Strategy

Year	Emissions ($ktCO_2/yr.$)[32] [33]	% Reduction from 1990
1990	1086	
2020	556	49
2030	330	70
2040	154	86
2050	58	95

The table and figure depicts the carbon emissions associated with providing energy to all the borough's buildings (domestic and non-domestic). They show that around a 50% reduction is assumed to have been achieved (by 2020) from 1990 levels predominantly due to a reduction in industrial related carbon emissions. Followed with a further expected reduction to be achieved by 2030 through the assumed decarbonisation of the UK's electricity system. This, of course, is based on electricity decarbonising in-line with the scenario illustrated in Figure 2-8 and any deviation from this would need to be assessed.

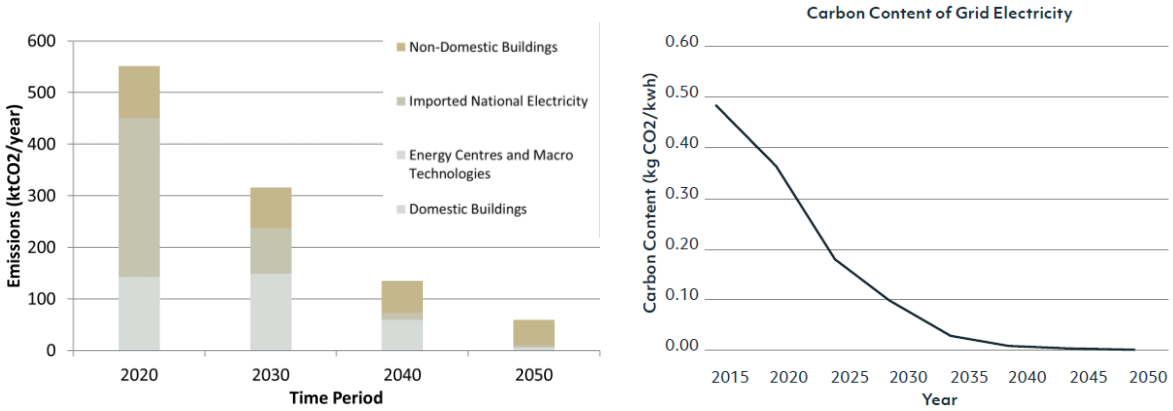


Figure 2-7 Illustrative Carbon Emissions Projection to Decarbonise Bridgend's Buildings by 95% and Figure 2-8 Assumed Grid Decarbonisation[34]

Figure 2-7 highlights that most carbon emissions associated with domestic buildings are assumed to be eliminated by 2050. The remaining carbon emissions in the 2050 period are predominantly associated with energy use in Bridgend's non-domestic buildings; where future consideration will be needed to determine an approach for reducing these emissions. It is appreciated that it can be more difficult to decarbonise non-domestic carbon emissions, as acknowledged by the Committee on Climate Change[35]. This Strategy recommends that on-going discussion and consideration of all building and site owners is essential as it is vital to plan for a clean future that provides advantages to the region's businesses and industries.

[32] Presented carbon emissions are calculated by EnergyPath Networks. These are derived from a 1990 baseline.
[33] In scope carbon emissions include those associated with: Domestic, Industrial and Commercial electricity, gas & other fuels and large industrial installations. Out of scope relate to carbon emissions associated with: Agriculture, Land Use Change and Transportation.
[34] Based on future projections of UK grid carbon sourced from the ETIs ESME model; Patchwork Scenario.
[35] https://www.theccc.org.uk/2015/03/27/industrial-decarbonisation-and-energy-efficiency-roadmaps-to-2050/

3 Future Local Energy Scenarios

There are many possible energy system pathways to decarbonise Bridgend's energy system and it is not practical to represent every possible scenario. Insights were drawn from over 100 scenarios assessed in the EPN modelling analysis, from which the three most feasible future local energy scenarios were selected for inclusion in the Strategy.

These scenarios have been developed in collaboration with the project stakeholder group using EnergyPath Networks. This process involved incorporating feedback from the stakeholder group to consider factors outside the modelling framework, with the emphasis on ensuring outputs represent cost-effective scenarios for the borough's future energy systems, reflected in a credible and detailed local evidence base, with due regard to local priorities and constraints.

The three scenarios are not intended to predict the future (which would not be possible), but they suggest credible pathways for Bridgend's future local energy system. The scenarios illustrate the technologies and energy systems that are likely to be part of the local energy system dependent on what action is taken. A key objective of presenting these scenarios is to stimulate debate and facilitate an on-going process of local area energy planning.

3.1 Business-as-Usual Scenario

It is important to consider the assumed Business-as-Usual (BAU) scenario. This has been generated for Bridgend using the EnergyPath Networks model of the local area's existing energy system with no local carbon emissions reduction target being set.

The assumption is made that imported national electricity generation will decarbonise driven by national policy initiatives regardless of any local action in Bridgend. This scenario assumes that there will be limited coordination between the key stakeholders to collaboratively adapt the whole energy system and few consumers pro-actively adopting low carbon technologies, with the retention of gas boilers in most homes by 2050.

There is some assumed modest growth of district heating around the town centre, predominantly associated with expansion of the planned town heat network, between now and 2050 under business-as-usual, but no other significant change to heating infrastructure. Natural gas remains the predominant form of heating for most homes and new homes continue to be fitted with gas boilers. Where district heat networks are built, gas fuelled energy centres are utilised in preference to low carbon alternatives. Some retrofit and improvement in the thermal efficiency of Bridgend's existing homes is undertaken, predominantly through low cost measures such as fitting cavity wall, loft insulation and double glazing where this is cost-effective or part of typical refurbishment cycles.

The total energy system cost to 2050 under business-as-usual is estimated at **£6.6b**[36]. All costs illustrated in this Strategy are discounted[37] to 2015 values and represent the total energy cost to society. In general, the business-as-usual scenario represents a continuation of today's market arrangements, with consumers continuing to use and be charged for gas and electricity as they do today (with some change due to expected electric vehicle and district heating uptake), adjusted to account for future cost variation. The modelled reduction in carbon emissions achieved under Business as Usual is illustrated in Figure 3-1 below.

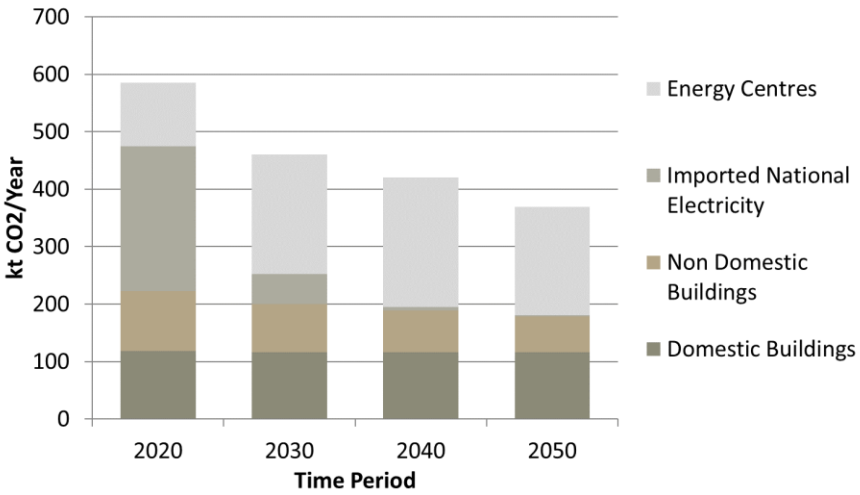


Figure 3-1 Illustrative Carbon Emissions Projection Under BAU

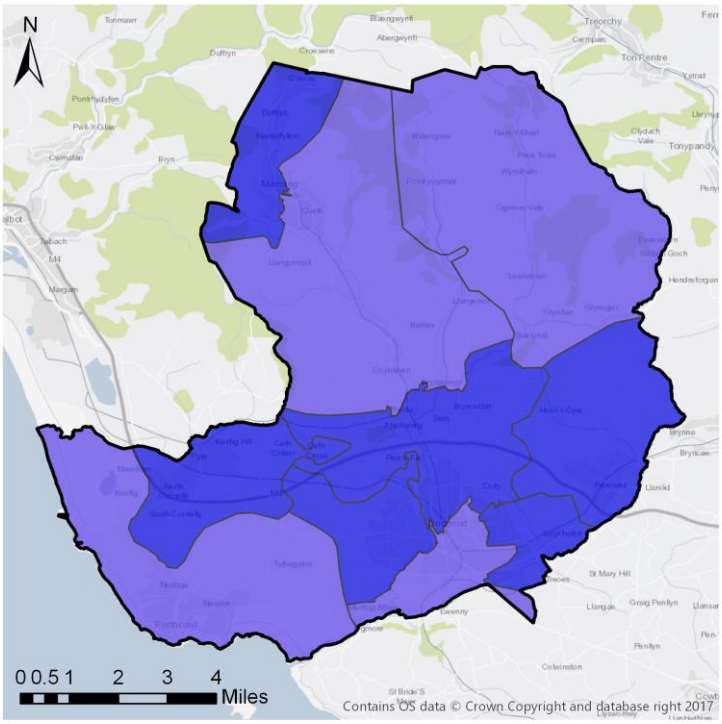
The assumed 2020 CO_2 emissions from energy used in buildings is 586ktCO_2/yr. In the BAU scenario, comparing 2050 CO_2 levels without the implementation of the local decarbonisation target, CO_2 emissions are expected to reduce to 369 ktCO_2/yr. as illustrated in Table 3-1. This reduction is based on the emissions already reduced from 1990 levels and the assumed decarbonisation of the UK's electricity system, expected building retrofit and heating systems changes (predominantly more efficient boilers), along with the increase of Heat Networks[38]. This scenario equates to a 58% reduction from a 1990 baseline; highlighting that without co-ordinated action to decarbonise heat used in Bridgend's buildings, there is a significant shortfall in achieving the 95% CO_2 emissions reduction target.

Table 3-1 Projected Variation in Carbon Emissions Between BAU and 95% Reduction

Year	BAU Emissions (ktCO_2/yr.)	95% Reduction Emissions (ktCO_2/yr.)
1990	1086	1086
2020	586	556
2030	461	330
2040	421	154
2050	369	58

[36] The total systems costs presented (and discussed throughout this Strategy) include network reinforcement, energy network/infrastructure new build and operation, changes to individual homes (including heating system changes and fabric retrofit) and the cost of the energy consumed
[37] Discounting is a process that accounts for costs and benefits with different time spans to be compared on a present value basis. This is considered as the value of money will vary over time, where due to factors such as inflation, a £ today is worth more than it would be in a years' time.
[38] The business-as-usual scenario assumes a small level of heat networks development under current market conditions.

2050 Dominant Heating System Business as Usual

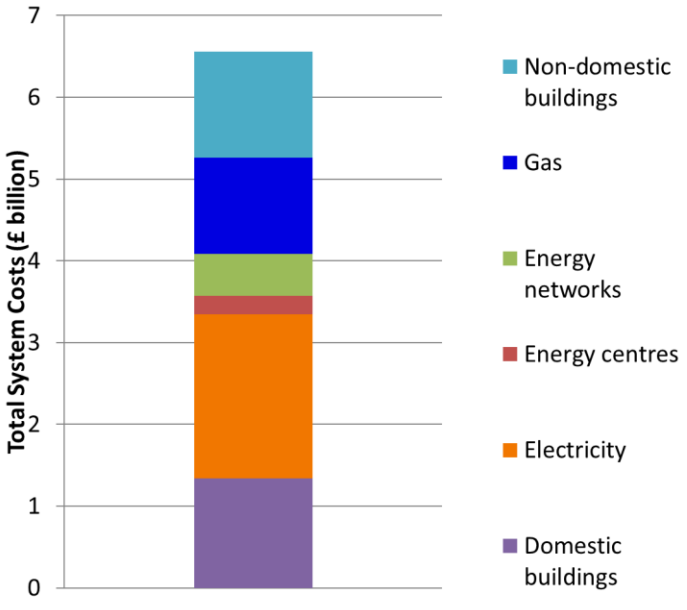


Proportion of Homes with Gas Boiler

95% - 100%

90% - 95%

Total discounted energy system cost to 2050



Business as Usual

Under BAU no local heat decarbonisation target is set. The scenario assumes national policy will drive decarbonisation but there is no local co-ordinated focus on decarbonising heat.

- By 2050 over 95% of properties remain on gas boilers, less than 2% are connected to a heat network.
- Only 255 non-domestic buildings are connected to a heat network.
- The total discounted energy system cost to 2050 is estimated to be £6.6 billion, attributed to:
  - £2.0b and £1.2b to electricity and gas imports.
  - £1.3b spent on changes to individual homes, this includes heating system changes (replacement of gas boilers) and fabric retrofit. The same amount is spent for non-domestic buildings.
  - £0.23b on building energy centres.
  - £0.5b spent on reinforcing, operating and maintaining gas, electricity and heat networks.
- A small number of energy centres are built for local heat generation, they are powered by gas technologies.
- Gas peak network demand varies from 485 MW (2020) to 451 MW (2050).
- Electricity peak network (at 11kV) demand varies from 205 MW (2020) to 221 MW (2050).
- Heat network peak heat demand increases from 0 MW (2020) to 12 MW (2050).

3.2 Bridgend's Low Carbon Future

Two main low carbon future local energy scenarios have been developed as alternatives to Business-as-Usual and illustrate how Bridgend might cost effectively decarbonise its local energy system.

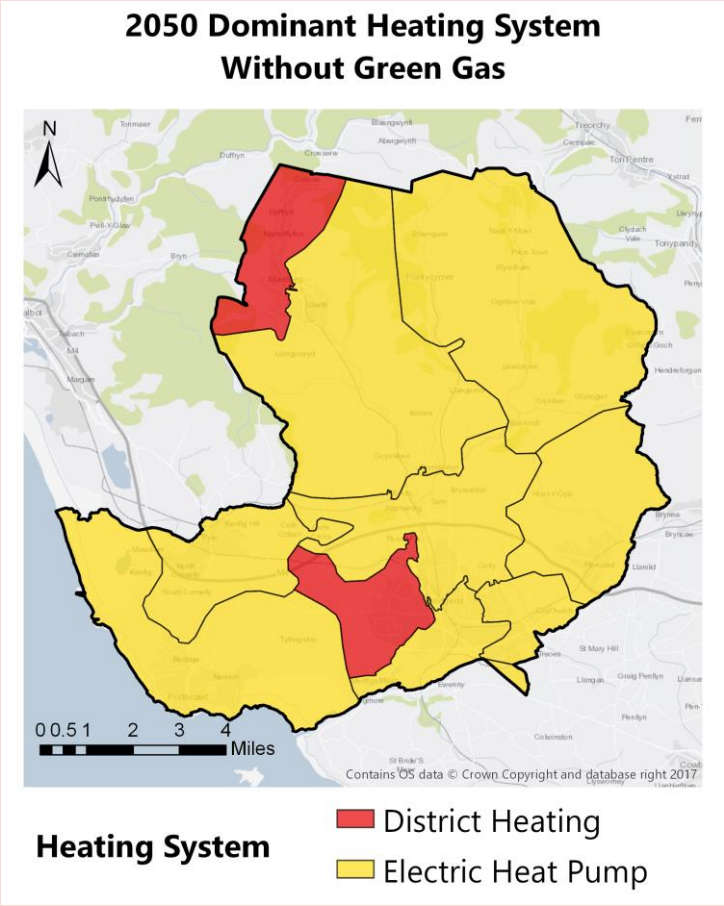
- **Scenario 1 - A World without Green Gas.** A least cost decarbonisation pathway that considers various options to decarbonise including the use of electricity, biofuel and heat supplied through heat networks to provide heat. It does not assume that the national gas grid will decarbonise, although the use of natural gas is considered where needed.
- **Scenario 2 - A World with Green Gas**. This provides another decarbonisation pathway, based on assessing the potential availability of Green Gas[39]. This scenario assumes the availability of low carbon gas which is blended with natural gas, assessing what role this could play in contributing to the cost-effective reduction of carbon emissions when considered alongside other options.

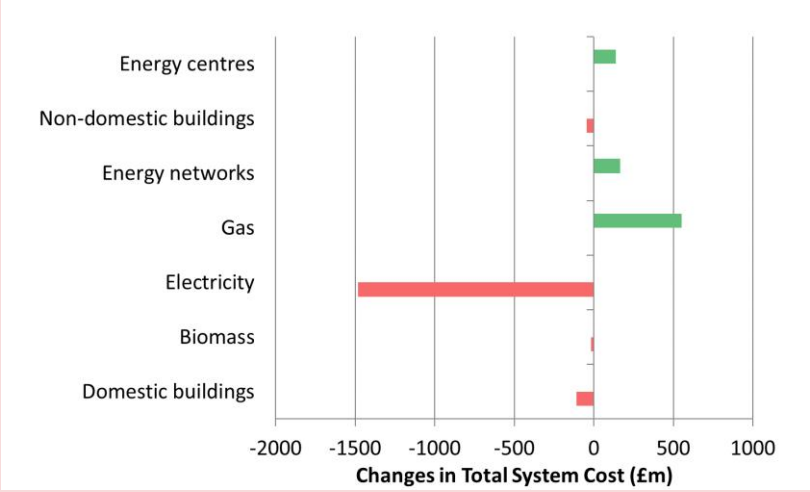
Both these future local energy scenarios are based on transitioning from using fossil fuels to alternative forms of low carbon heating along with a projection of the associated transition cost. They have been developed based on EnergyPath Networks cost-optimisation modelling analysis and outputs. This analysis has been combined with assessment of the practical limitations to network and technology choices that were not considered by the modelling, based on feedback from the project stakeholders group.

The scenarios represent a vision of Bridgend's low carbon future energy system informed by the energy system modelling and analysis using EnergyPath Networks. Whilst the scenarios are a modelled vision of the future, they provide a good indication of the scale of change that will be needed to transition to a decarbonised energy system.

Importantly, the costs discussed are entirely dependent on transitioning to a modelled, low carbon future. This means that the modelled scenarios assume a well-managed low carbon transition. In reality, it is appreciated that the transition will not follow an orderly modelled view of the future. This will of course impact the actual cost of decarbonisation.

[39] Green Gas derived from biomethane and bio-Synthetic Natural Gas (SNG). The methodology for assessing and determining the availability of Green Gas is discussed in the supporting Evidence Base.



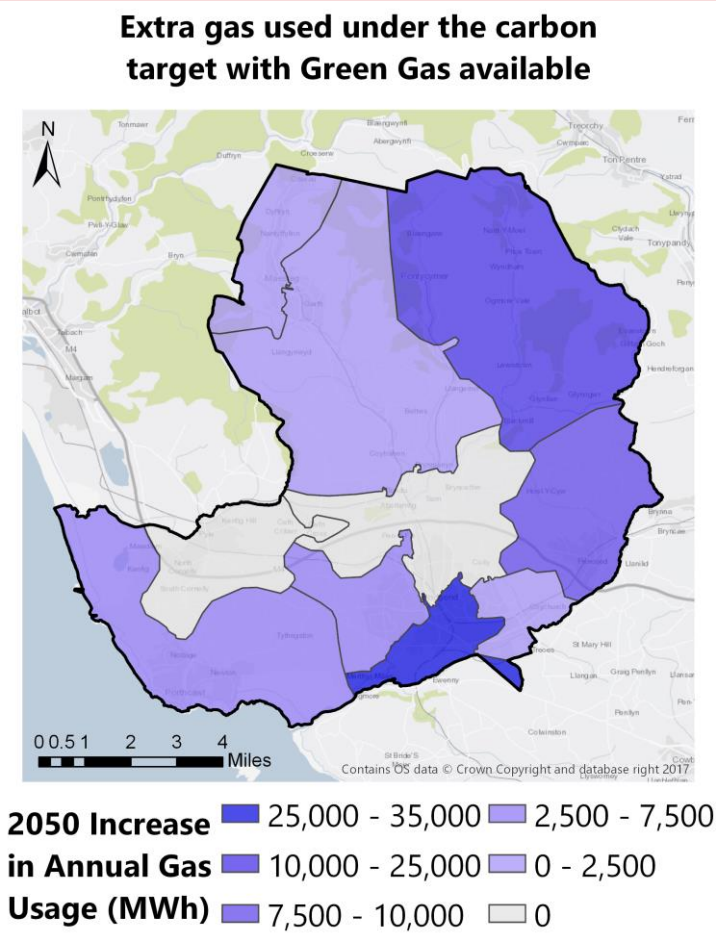


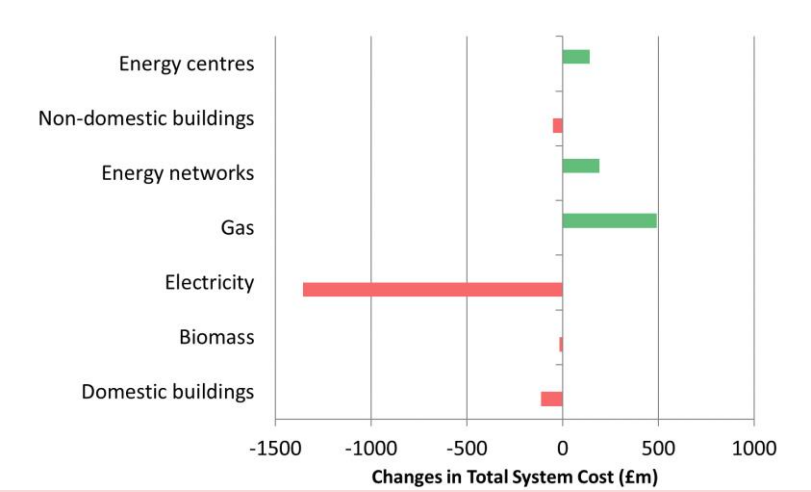
The figure above illustrates where there has been a change in total energy system cost compared to BAU. Green bars indicate where more money is spent under BAU compared to this World Without Green Gas scenario. For example, under BAU more money is spent on using gas because consumers continue to use fossil fuels to heat their homes. Red bars indicate where less money is spent under BAU. For example, under BAU far fewer buildings use electricity based heating systems, therefore less money is spent on using electricity.

A World Without Green Gas

A 2050 low carbon transition scenario where electric heat pump based systems provide nearly 80% of heat.

- Consisting of 47% high temperature Air Source Heat Pumps, 24% Ground Source Heat Pumps & 7% hybrid heat pumps. This leads to almost 650MW of electricity network reinforcement.
- By 2050 10,500 homes (circa 15% of total) are connected to a heat network.
- The total discounted energy system cost to 2050 is £7.4 billion, attributed to;
  - £3.5b and £0.6b on electricity and gas imports
  - £1.4b spent on changes to individual homes, this includes heating system changes and fabric retrofit. Non-domestic spend is estimated at £1.3b.
  - £89m on building energy centres.
  - £350m spent on reinforcing, operating and maintaining gas, electricity and heat networks.
- Gas peak network demand varies from 451 MW (2020) to 87 MW (2050)
- Electricity peak network (at 11kV) demand varies from 205 MW (2020) to 285 MW (2050)
- Heat network peak demand increases from 0 MW (2020) to 53 MW (2050)





The figure above illustrates where there has been a change in total energy system cost compared to BAU. Green bars indicate where more money is spent under BAU compared to this World with Green Gas scenario. For example, under BAU more money is spent on using gas because consumers continue to use fossil fuels to heat their homes. Red bars indicate where less money is spent under BAU. For example, under BAU far fewer buildings use electricity based heating systems, therefore less money is spent on using electricity. Availability of green gas has made some changes to the transition of heating system type but does not significantly impact the cost of transition.

A World with Green Gas

A 2050 low carbon transition scenario based on the availability of Green Gas.

- Domestic heating systems are predominantly electrically heated with an increase in hybrid heat pumps (additional 2,500) due to the lower carbon content of gas. Fabric retrofit is less critical to decarbonise and effectively prioritised and target at those where it delivers best value
- There are more properties connected to heat networks (13,000) in this scenario. This is because the lower carbon content of gas allows higher gas consumption in energy centres. Heat networks are assumed to be supported at a national level and planned effectively at a local level enabling development at scale in the local area.
- Annual electricity demand in 2050 is 32,000 MWh/y less than the world without green gas scenario.
- The total discounted energy system cost to 2050 is £7.3 billion, attributed to;
  - £3.3b and £0.68b on electricity and gas imports
  - £1.4b spent on changes to individual homes, this includes heating system changes and fabric retrofit. For non-domestics this was £1.3b.
  - £88m on building energy centres.
  - £320m spent on reinforcing, operating and maintaining gas, electricity and heat networks.
- Gas peak network demand varies from 450 MW (2020) to 109 MW (2050)
- Electricity peak network (at 11kV)

4 Network Choices

In addition to developing the future local energy scenarios for Bridgend discussed in Section 3, this Strategy has explored the most prevalent forms of decarbonisation options that are repeatedly identified in the modelling for specific areas of Bridgend. This is based on assessing trends across the many scenario and sensitivity analyses considered, including the World With and Without Green Gas scenarios.

This multi scenario approach identifies the recurring transition themes that should be explored and tested further. This has involved analysing different system choices and adjusting cost and performance characteristics to understand the impact on Bridgend's future energy system. This provides an understanding of the most valuable combinations of technologies under different conditions, and which combination of network choices occur consistently across a wide range of input assumptions. The different scenarios that have been considered in this analysis are discussed in the supporting Evidence Base document.

This approach is based on looking for consistent transition themes. For example, if under multiple cost and input assumptions, EnergyPath Networks consistently identities transition to a heat network or electric heat pump based solutions in a particular area as the most cost effective in decarbonising the local energy system, then this provides evidence to inform future network choices and local energy system designs for the area.

4.1 Prevalent Future Heating System and Network Changes

Figure 4-1 illustrates the most prevalent transitions identified across all scenarios, where the objective is to achieve the lowest cost transition. These relate to replacing fossil fuel based heating systems (primarily the use of gas) with electric heating using heat pump based systems, with heat networks selected in areas of denser development. This identifies the areas[40] of Bridgend where heat network and electric heat pump transition occurs under a wide variety of circumstances. **These outputs illustrate the most prevalent heating system network options identified across multiple scenarios, based on current information.**

Figure 4-1 also shows that there are areas where there is no prevalent form of future network option, illustrated as the "Uncertain" areas, these generally follow the route of the M4 motorway through the region, where homes are decarbonised through a combination of solutions.

[40] Based on the analysis areas explained in Section 2.1.3

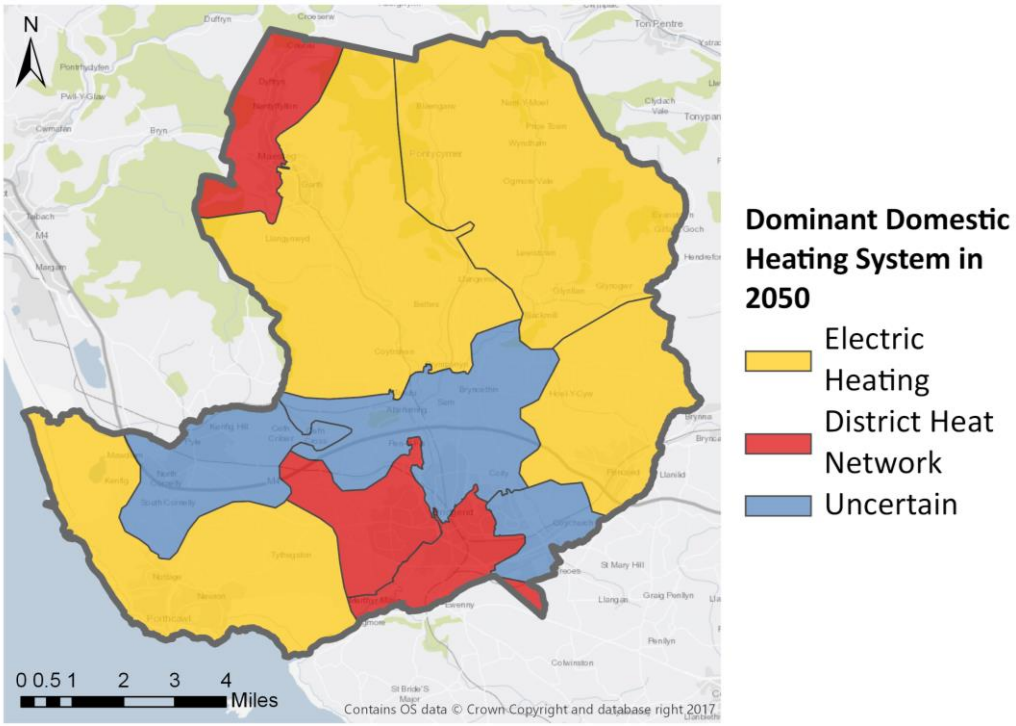


Figure 4-1 Dominant Energy Networks and Systems by Area

4.2 Network Choice Considerations

4.2.1 Factors that need to be considered in relation to network choices

There are many factors that will influence whether this represents a realistic vision of the future. Therefore, a key focus of the Strategy is based on planning, testing and demonstrating how these changes to the energy system could be progressed before any network choices should be made; where barriers to transition need to be overcome and opportunities to enable are required.

This strategy is not suggesting that all buildings in the analysis areas illustrated in Figure 4-1 would transition to one type of energy network. Even in areas where a dominant network choice is illustrated, other options will still be needed as there are many different aspects to consider regarding suitability of system and technology to building type. Importantly, such a widescale transformation of the local energy system would be highly disruptive to the energy sector and market and consideration relating to consumer, commercial and policy/regulatory factors is needed.

Decisions will need to be made regarding Bridgend's existing electricity and gas networks, along with the development of new energy infrastructure. For this Strategy to deliver its vision it must enable the key stakeholders to work together in planning and developing the low carbon networks of the future.

4.2.2 Area by Area Influences on Network Choices

There are many factors that contribute to whether a particular heating system is a suitable option for a specific building. For example, where areas contain buildings of similar construction, area based trends can

occur. EnergyPath Networks is a sophisticated model that trades off domestic & non-domestic building level options, network options and energy centre & macro level technology options. Therefore, it is impossible to conclude that a particular energy system option is completely dependent on one or two inputs. However, it is useful to consider potential contributing metrics as it can help to consider solutions and approaches for planning future energy system transition. The supporting Evidence Base document discusses key metrics that have influenced network choices; examples include:

- The district heat dominated areas have higher levels of semi-detached and terrace buildings than detached buildings. Analysis areas 3, 4 and 6 (refer to Figure 2.5 for area locations) also have higher levels of semi-detached and terrace buildings, although these areas are much larger and the building density is sparser.
- Building age and condition does have a significant impact on heating system, however, building age can impact what type of electric solution is chosen. For example, low temperature ASHPs may not be able to meet the heat demand of inefficient properties that are very costly to retrofit (e.g. large pre-1914 buildings with uninsulated solid walls). Instead, a high temperature system or a hybrid system may be necessary.

4.3 Network Impact

The modelled impact on peak gas, electricity and heat network demand (for the three scenarios discussed in Section 3) is illustrated in figure 4-2 below. This illustrates the likely scale of change over time to the local area's energy networks in each scenario.

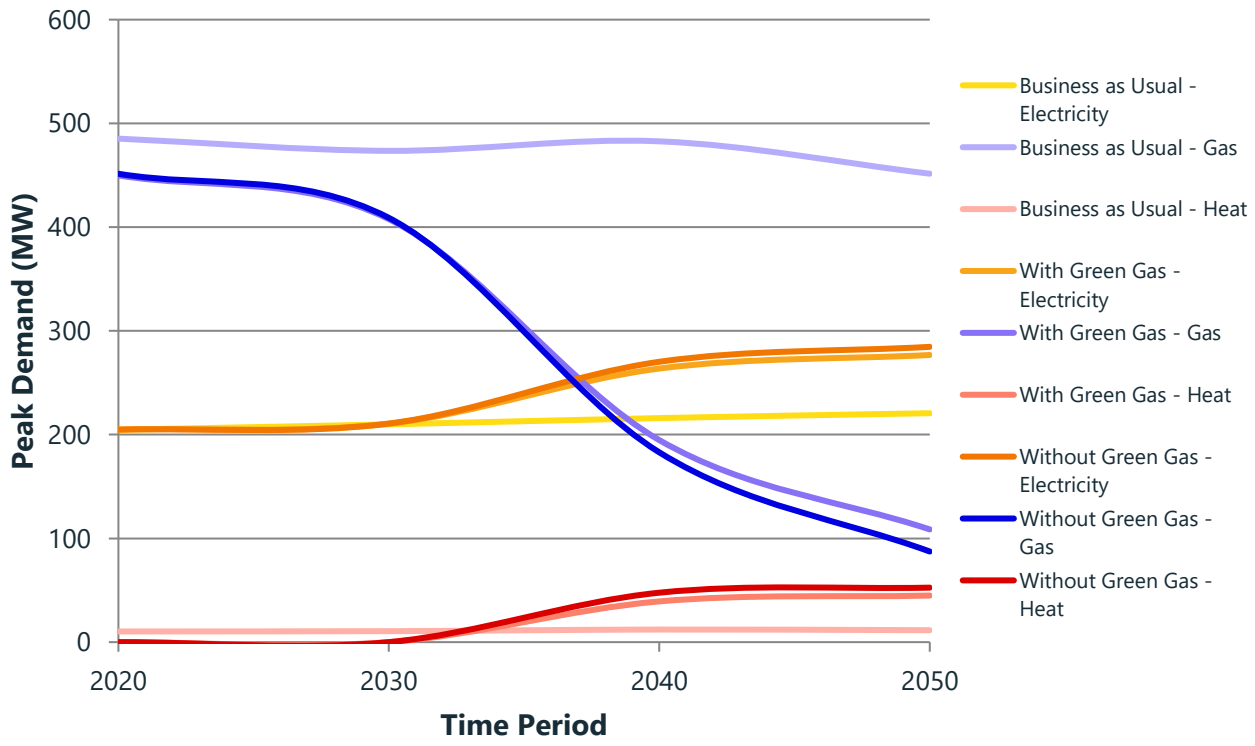


Figure 4-2 Change in Peak Network Demand for Gas, Electricity and Heat for the 3 Scenarios

Under BAU, Bridgend continues to be reliant on imported gas, with a minor increase in electricity network peak demand and no significant change in heat network peak demand.

Under the modelled future low carbon scenarios there is a major decline in peak demand for gas, a significant increase in electricity peak demand and minor increase in heat network peak demand. The variation in network demand scenarios highlights why it is essential to plan for an evolving energy system.

Wales & West Utilities Statement

"Whilst the project has demonstrated that changes to the energy system may be required, there are some further opportunities which haven't necessarily been considered in detail which could be a cheaper and less disruptive way of meeting the challenge of decarbonisation. We suggest that the opportunity offered by additional vectors such as hybrid appliances, needs to be fully evaluated. This may provide for a more integrated approach across different energy networks and potentially a more optimal solution.

Work undertaken in piloting EnergyPath Networks and a whole system approach to local area energy planning and informing this strategy along with WWU's project Freedom all highlight that more flexible networks and systems will be required to make best use of intermittent renewable energy that may be available in the future if we want to maintain the levels of reliability we are used to.

It is key that network operators can invest in networks that can be operated in a way that delivers flexibility across a range of demand supply scenarios. Interactions between networks need to be identified and planned for, including some less well recognised impacts such as a requirement to transport more gas to feed gas fired power stations where these are required to support the additional power requirement resulting from the increased use of Electric Vehicles. We would also anticipate that integrated System Operation across power and gas, and transmission and distribution, will be key in order to allow the best use of the networks, based on their design.

We see central Government as the key influencer of local policies which will encourage both networks and our customers (homes and businesses) to invest in the most appropriate way to minimise their CO_2 emissions. This assumes they implement appropriate levers to either ban or penalise use of less appropriate solutions and / or provide subsidies for those that are more optimal to our total (gas and electric) energy system. When considering how appropriate a solution is we would anticipate consideration being given to its impact on the total energy system.

Energy networks are currently unable to invest in speculative infrastructure and only build new capacity once the need for it has been confirmed either via general load growth or a specific enquiry. Our arrangements are also currently focussed on meeting the highest demand we would anticipate in 20 years. New arrangements or incentives to allow returns for investment based on total system (gas and electric, transmission and distribution) efficiency or reduction in UK CO_2 emissions would be required in order to enable us to invest in and support the development of plans for future energy systems such as those demonstrated by this project."

Western Power Distribution Statement

"The development of Bridgend's local area energy strategy has highlighted the major changes to electricity supply and demand that we can expect in the future. WPD has prepared for the changes in supply and demand by using innovation projects to learn about the potential technical and commercial solutions to meet the challenges of the proliferation of low carbon technology. This has resulted in solutions, such as alternative connections and active network management, that enable the connection of renewable generation faster and at lower cost. We have recently set out our strategy for transition to a distribution system operator, which outlines how we will respond to the requirements to operate more flexible networks and to plan using a whole system approach.

Distribution Network Operators can support the local authority planning process by providing the information to assess the potential impacts and costs of various options. In the case of the project in Bridgend, we were able to provide network data for third party analysis and we are continuing to investigate how we can provide stakeholders with similar information via our project on the Common Information Model. It is important for the various parties involved in long term planning to share their information and assumptions. We have built on the National Grid scenarios for our analysis of the regional impact of the changes in load and demand and have publicised the local impacts in our set of sub-transmission reports."

4.3.1 Potential Future Role of Hybrid Heating Solutions

This Strategy has considered the use of hybrid solutions recognising that they could have an important role in decarbonising heat, just as they have in the transport sector. For example, hybrid heating solutions could help overcome issues associated with practical constraints to deployment of electric heat pump technologies and the impact of moving peak heat demand onto Bridgend's local electricity distribution network. The supporting Evidence Base illustrates the average proportion of buildings within each analysis area that were found to be cost-effective to transition to hybrid heat heating across all the scenarios analysed. However, hybrid heat pumps could have a greater role if they are proven to provide greater benefits than the alternative options.

The development of hybrid heating technologies provides a good example of how technology development may result in the need to reconsider this Strategy, particularly when combined with the use of low carbon gas, either hydrogen or green gas. Continued collaboration with Wales and West Utilities to assess any low carbon gas and hybrid technology developments is recommended.

Recognising the potential role of hybrid heating solutions, the Near-term Delivery Plan Activity in section 5.4.1 provides a project concept to improve the understanding of the potential role of hybrid heating.

4.3.2 Potential Future Role of Hydrogen

Significantly, this Strategy has not assessed the option for repurposing the gas grid to a hydrogen-based system, lacking (at the time of the study) sufficient, robust data to include in the analysis. It is recognised that work is ongoing across the UK assessing the potential of using hydrogen to provide heat in the residential, commercial and industrial sectors. Whilst hydrogen supplied fuel cells or gas engines could also provide potential future options for local electricity generation. This Strategy will be updated to consider hydrogen's use (along with any other form of low carbon gas) when valid and robust data is available and if

a cost-effective and sufficient supply of low carbon hydrogen is planned for the region. This is a key requirement of this Strategy, so that it evolves and considers any significant change to the energy sector and system. This potential scenario, along with other examples of possible areas of significant change, are discussed in Section 5.2.

4.4 The Role of the Strategy in Supporting Network Choices

Section 4.1 illustrated what the prevalent future heating system and network changes might look like in Bridgend's future energy system. Section 4.2 Network Choice Consideration, 4.3.1 Potential Future Role of Hybrid Heat Pumps and 4.3.2 Potential Future Role of Hydrogen, highlighted that there are many aspects that need to be addressed before it is possible to consider formalising any network choices.

This Strategy's focus is over the short to medium term (over the next five to ten years) exploring how heat can be provided at scale through district heating and the electrification of heat using heat pumps. The outcomes from this activity is expected to coincide with greater certainty on the potential of using hydrogen as a replacement for natural gas. The combined evidence will provide greater confidence in local area energy planning and decision making, discussed further in Section 5 Moving this Strategy Forward.

4.4.1 The Role of Testing and Demonstration to Overcome Uncertainty

A key challenge and opportunity for this Strategy is to work out what scale of transition using district heating and the electrification of heat using heat pumps could evolve when all factors are considered. Importantly, there is not enough certainty, or the right conditions (e.g. from a market and policy perspective), to make major decisions on infrastructure choices now. Therefore, significant innovation, test and demonstration is needed over the next decade to inform network choices and de-risk the decarbonisation of heat in Bridgend. Section 5.3 The Role of Innovation provides a recommended approach for taking this theme forward.

4.5 Building fabric retrofit

In the majority of homes, analysis has shown that widescale and extensive energy efficiency improvement is not a cost-effective option for decarbonisation. It does not significantly affect network choices, particularly where retrofit measures become more difficult and costly to implement e.g. solid wall insulation. As the level of emission reduction target increases, retrofit alone cannot meet the level of reduction required[41]. Therefore, a low carbon heating system is also required and once the capital investment of installing the new heating system is made, it becomes more cost-effective to fit a higher power heating system than to fit a lower power system combined with improvements to building thermal performance. This is also influenced by the cost of whole house retrofit which is very expensive and is

[41] Whole house retrofit, which can involve more extensive energy efficiency measures such as solid wall insulation, floor insulation and mechanical ventilation with heat recovery system, can achieve high levels of emission reduction. However, renewable systems, such as photo-voltaic panels and solar thermal hot water systems are typically required to reduce carbon emissions more than 80%.

unlikely to deliver cost-effective carbon savings to justify the work at current energy prices (especially without a carbon price on gas used for heating).

It's important to recognise that fabric retrofit can deliver wider social benefits such as reducing fuel poverty and improved comfort. Therefore, consideration is needed to determine where fabric retrofit can be used to manage the cost of decarbonisation to Bridgend's residents. However, extra insulation aimed at reducing fuel poverty and/or increasing comfort may reduce running costs for the targeted residents, but will increase total systems costs, and so should be considered holistically.

In addition, analysis has shown that some level of basic retrofit of thermal efficiency measures is cost-effective and better suited to some housing types and areas of Bridgend than others. Lower cost items such as topping up loft insulation, filling the last 'easy-to-fill' cavity walls and fitting double glazing where properties still have single glazing should be prioritised. The supporting Evidence Base document describes the average percentage of homes where an insulation package (of cavity wall and loft insulation) is selected by EnergyPath Networks. The Near-term Delivery Plan Activity in section 5.4.1 provides a project theme to improve the building fabric of targeted homes across Bridgend.

5 Moving the Strategy Forward

This section provides activities, tools and processes to both progress and deliver this Strategy and manage, review and evolve it over time.

5.1 Ongoing Role of Local Area Energy Planning

To ensure this Strategy's success, this Strategy will need to continually evolve and develop over time, aligning with relevant Welsh and National Government policy and guidance and developing supporting initiatives and projects accordingly. In the first instance, there are several activities to proactively consider before progressing the Near-term Delivery Plan Activity described in section 5.4.1. These activities provide initial recommendations to take forward, to continue the local area energy planning approach that has developed through this project, recognising that further activity will be required as the process of local area energy planning evolves:

- **1. Set a local carbon emissions target.** A local carbon emissions target should be set combined with developing supporting policy with ambitious but achievable interim targets. Setting local carbon targets aligned to the evolving Welsh Government approach referenced in Section 2.2 could be an effective means of incentivising local low carbon transition. This should include a mechanism for monitoring progress of domestic sector emission reduction alongside emissions for other sectors.

- **2. Establish on-going whole system planning dialogue with energy network operators**. The Strategy has already been developed through consultation with Western Power Distribution, and Wales and West Utilities. To support the delivery of this Strategy, continued collaboration is needed with these organisations along with considering how local and Welsh Government engages with the regulator (Ofgem). Joint local area energy planning decisions will need to be made, seeking consensus where possible, to ensure that Bridgend plans for and delivers the lowest-cost transition, recognising that considerable investment[42] is needed to achieve decarbonisation.

- **3. Work with Welsh Government to ensure that national policy aligns to local policy**. It is expected that Welsh Government will be working with central government departments such as BEIS, in conjunction with ongoing collaboration between network operators, to support and or influence the development of policy with respect to:

    - Decarbonisation of the National electricity generation in a way that provides affordable, secure and reliable supplies for Bridgend County Borough.

    - National policies that support development and expansion of new energy networks and low carbon and energy efficient solutions in areas such as addressing market structures, liquidity and pricing issues; supporting new technologies with effective financial and regulatory measures and regulation of District Heat Network operation in a similar framework to that used for other energy network operators.

[42] For example, this Strategy has illustrated that the additional cost of transition to a low carbon energy system between 2016 and 2050 is estimated to be between £0.7 billion and £0.8 billion to achieve a 95% emission reduction

The council should work with Welsh Government to ensure any developments in these areas reflect and consider the needs of Bridgend's residents and businesses.

- **4. Work with Welsh Government to determine an on-going whole system local area energy planning process**. The council should work with the Welsh Government to consider an ongoing approach for local area energy planning. This recognises that decisions on network choices will also need to consider interaction with other local areas served by the existing energy system. The council should also consider how this Strategy aligns and interacts with relevant and evolving Welsh Government policy and guidance.

- **5. Support low carbon product and service developers to innovate in Bridgend.** The council should consider initiatives to support product and service developers to introduce low carbon offerings that building owners and occupiers want to use. Initiatives such as development & demonstration projects can be used as potential mechanisms as these also facilitate research and innovation. The decarbonisation themes that would benefit from such initiatives are discussed in Section 5.4.1 (Near-term Delivery Plan Activity).

- **6. Develop a governance framework**. The council should develop and implement a suitable governance framework. This will also ensure that this Strategy is regularly reviewed and updated, and therefore relevant over time. The Governance Framework should set out the roles, responsibilities and procedures to manage the delivery of this Strategy, recognising that this Strategy will require the resource and capability within the Council to deliver.

In addition, the council could develop and implement a low carbon heat transition consumer charter. Acknowledging that it will be the council that will be directing the transition. A charter should be developed to ensure that any decisions benefit, protect and improve the quality of the energy services to its residents and businesses over other market influences. The charter will also be used to influence the products and services brought forward by any third-party organisation so that they benefit and protect consumers, meeting agreed standards of service in a just, affordable, sensitive and inclusive manner. These products and services should be based on consumers' needs.

The Charter should consider any conclusion from the Fair Futures initiative[43] which is being developed to better understand the issues faced by a range of vulnerable energy consumer groups and identify the areas where commercial, governmental, community and householder needs and motivations could be aligned to provide more and effective innovative policies, products and services.

[43] The ESC is partnering with organisations from various sectors to develop the Fair Futures programme

5.2 Reviewing & Monitoring Delivery

This Strategy will need to be flexible throughout its lifetime and will involve numerous iterations. Recognising that the Strategy is based on planning for the future, so that important, informed and tested, energy network related decisions can be made to support the vision.

Reviewing Delivery

Where the Dominant Energy Networks and Systems by Area map in Figure 4-1 has indicated the prevalence of certain energy networks by area, it is critical to reiterate that these are based on modelling analysis, using present day assumptions. Significant work is required to ascertain applicability in the consumer, commercial and policy/regulatory environment.

For example, if no credible route evolves to enable the provision of wide scale heat network development in low rise residential areas (which is a UK wide risk), then this Strategy would need to be updated to reflect this reality.

Whilst not an exhaustive list, this example along with other types of potential change that may affect this Strategy and would need to be assessed by the review process, are described below. Any potential impact can be discussed with key stakeholders as further evidence and decarbonisation options become available, new information may need to be assessed through further research, assessment and modelling.

Potential Changes

- Policy & Regulation
- Political Change
- Market Forces & Consumer Behaviours
- Technology Developments
- Evolving Carbon Emissions Targets
- Decarbonisation Option Maturity[44]
- Development of Local Area Energy Planning and Whole Energy System Analysis

Dependent on the nature of the change, there is expected to be instances where an updated whole system model is generated. Example scenarios include:

- If new or repurposed gas grids using a low carbon form of gas, such as hydrogen, become a feasible, alternative decarbonisation option, then the new solution would need to be assessed to determine if it should be part of Bridgend's future energy system.

[44] 'Maturity' refers to when a decarbonisation option is classed as being ready for deployment. Readiness is dependent on the option being mature across four components (1. Consumer, 2. Commercial, 3. Technical & 4. Policy/Regulation)

- Evolving this Strategy to further consider the approach for decarbonising heat in Bridgend's non-domestic buildings, along with carbon emissions from other sectors such as industry and transportation

Defining an ongoing analytical process to support future updates will be essential for maintaining the validity of this Strategy.

5.3 The Role of Innovation

Managing Uncertainty

The predominant decarbonisation options (based on either using electric heat pump based systems or heat networks) that are discussed throughout this Strategy are not proven at scale in the UK. It is therefore difficult to make major energy network and system choices today.

At a high level, this Strategy is based on considering the use of new or adapted energy network choices to provide heat. This will result in replacing products and solutions that individuals are familiar with and like using (e.g. natural gas boilers) with new solutions. However, market conditions currently prevent such a major transformation. For example, when individuals need to replace their existing heating system, currently they are likely to buy a like for like replacement, rather than replace it with a low or zero carbon alternative.

Therefore, to have confidence in the proposed energy system changes, and before making area-based energy network choices, confidence is needed that the proposed energy system transition is achievable. This means that the uncertainties associated with the proposed energy system and network transition needs to be managed. For example, the electrification of heat could play a significant role in the future provision of decarbonised heat. However, there are many areas that need to be addressed before this can become a reality.

Necessary Market Conditions

The right market conditions should be in place before network choice decisions are made.

When making network decisions, confidence is needed that the right market conditions will emerge to support them. Products or services develop towards market readiness across the four components described in Table 5-1 below. A product/service could be technically mature, but not commercially as there is no route to market. Therefore, ideally all four components should be at or nearing maturity.

Confidence may also be possible before maturity is reached, particularly when there is significant momentum developing. For example, there is substantial impetus building regarding the electrification of vehicles. This is developing before all components are mature; technical componentry is still evolving (e.g. charging infrastructure) and the policy/regulatory environment hasn't been fully established. However, major decisions are being based on its use. The market is in part driving this change based on key influences such as consumer demand.

Table 5-1 Components of a Mature Solution

Component	Description
Consumer	A product/service should be accepted and wanted by consumers. Confidence is needed to a point where it is regarded as either normal to use, or something that a consumer aspires to want as they believe in the benefit it will provide.
Commercial	A product/service needs a viable business model and route to market to succeed. If the product/service is not provided in an appealing way to consumers, then they will not want to buy or use the solution.
Technical	Technologies need to be at a point where mainstream use has started to take off, past the point of being an emerging or improving technology, where all prototyping and testing is complete and all relevant technical componentry is effectively integrated.
Policy / Regulation	Solutions require a supportive policy and regulatory environment, along with a suitable legal framework to succeed. Organisations will want this to initially support the uptake of products and then to sell in an established market. Likewise, many consumers will want to know they are protected and supported when buying and using solutions.

Developing Mature Solutions

Developing market-ready solutions is important to provide confidence that an option is deployable before significant investment decisions are made.

Figure 5-1 illustrates the perceived maturity levels of electric heating (heat pumps) and heat networks. Neither is currently considered sufficiently mature across all aspects (consumer, commercial, technical, policy and regulation) for mass market uptake by existing homes in support of decarbonising heat[45]. These solutions need to be sufficiently mature across all aspects to be confident in mass market appeal and inform network choices.

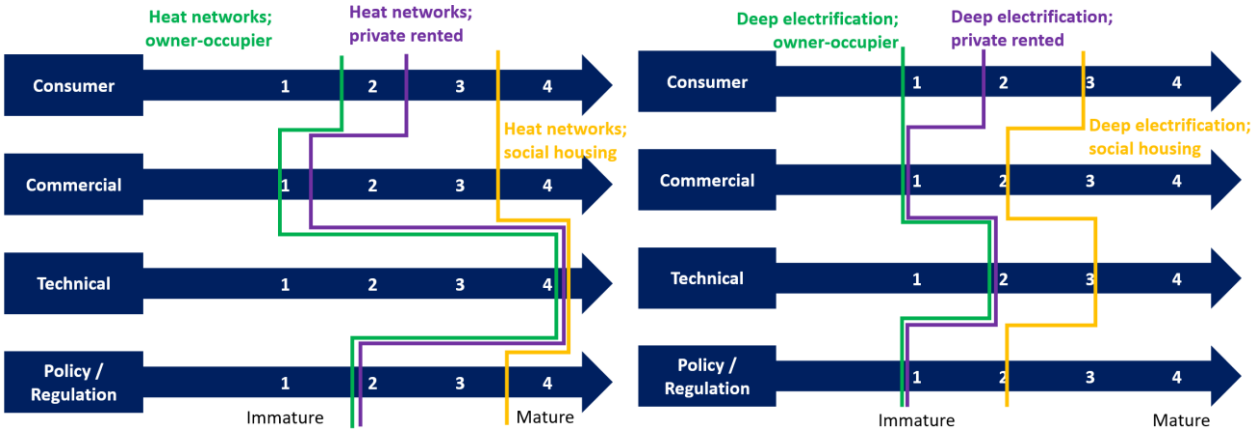


Figure 5-1 Indicative Market Readiness of the Electrification of Heat using Heat Pumps & Heat Networks

[45] For example, access to consumers for the electrification of heating is considered more mature for social housing owing to the role of social landlords as integrators to many consumers, and a policy environment supporting improving energy efficiency of rented properties. In the UK, retrofitting heat networks to existing social housing is much more mature both commercially and from a consumer perspective (with a number of heat networks serving social housing) than for the private renters and owner occupiers.

The purpose of highlighting these technology specific challenges is to:

- Provide focus for all future Strategy activity.
- So that resource can be targeted in developing SMART project objectives.
- Enabling solution development and demonstration that is Specific, Measurable, Achievable, Relevant and Time-bound.

The council should use this understanding when considering any future variation to this Strategy. For example, if hydrogen were to be considered as a decarbonisation option for Bridgend, then confidence is needed that is it a deliverable solution before this Strategy could plan on its use.

Development & Demonstration

Development & Demonstration is a key component of this Strategy and should be used to build the maturity of heat network and heat pump based systems. Many aspects of enabling the decarbonisation of Bridgend's buildings are outside of the council's direct control. However, the council can directly influence this aspect through facilitating the Development & Demonstration of the options.

Heat networks and heat pumps will need significant Development & Demonstration over the short to medium term. Some aspects of the following Section 5.4.1 (Near Term Delivery Plan) detail the Development & Demonstration activity to take forward over the next five years, based on the activity discussed and agreed with the project stakeholder group.

This Strategy recognises that ongoing Development & Demonstration will be needed, accepting that all the uncertainties will not be solved in one Development & Demonstration project, where it is likely that a project will identify new questions that need to be assessed. These challenges, as they develop, will need to be explored through future delivery plans, as illustrated in this Strategy's Roadmap (see section 5.5).

A programme of projects is needed to build capability through practical demonstration and experience. Local Authority leadership will help facilitate the establishment of industrial scale capability and stimulate private sector participation, innovation and investment.

Coordinating Future Activity to Benefit Bridgend and Align with Welsh Government Strategy

Not all aspects of decarbonising heat in buildings need to be addressed specifically in Bridgend, where it is recognised that similar challenges are relevant throughout Wales, the UK and internationally. Therefore, decisions will need to be made on whether Bridgend directly leads on the subject, supports, contributes to or monitors progress on other national projects. The H21 project led by Northern Gas Networks is a good example. This project investigated decarbonising the UK's gas distribution network from a technical and economic perspective through converting the existing gas network in Leeds to 100% hydrogen. The project looked in detail at the Leeds area but also considered the implications and options for a wider roll out across the UK.

The scale of innovation and solution development required to be able to decarbonise heat is significant.

Therefore, focusing resource towards solving specific challenges is recommended. The council should ascertain what activity to focus on, based on progressing the aspects that would provide the most benefit to Bridgend and align with relevant and evolving Welsh and UK Government Strategy, such as the UK Clean Growth and Industrial Strategies.

Consideration should be given to aspects such as existing local capability (in industry and academia), regional collaboration and local ambition for green growth, whilst also having an ongoing understanding of other regional and UK (and any relevant International) development & demonstration type projects to assess any lessons learnt and implications for Bridgend's future energy systems. This is particularly relevant as there will be many organisations considering the same challenges. **Working to this strategic approach should facilitate partnering, funding and innovation opportunities that can then lead onto more focused green growth activity**.

Participating in this solution development space is also important so that the council has confidence in the solutions being recommended, whilst also providing opportunities to forge new partnerships with energy system innovators.

Solution development is essential if Bridgend wants to benefit from embracing the transition, through developing the systems, technologies, services, business models, governance and funding solutions that will enable a low carbon future.

Consideration will be needed to determine how the council considers the actions of the various key stakeholders, so that relevant low carbon products and services are brought to the market that building owners and occupants want to use. Recognising that the council has limited influence over the type of heating system individuals choose to use and when they will replace their existing system.

The council should use this appreciation, that there is a need to manage uncertainty associated with technologies, services and solutions, to help inform the development of the Strategy; using this understanding to set the scope and objectives for testing and developing the future projects and activities that will be needed to achieve the low carbon transition.

5.4 Near Term Delivery Plan

This section describes the near-term delivery plan that has been developed to take forward Bridgend's Local Area Energy Strategy over the next five years. Figure 5-2 shows the near-term delivery plan alongside other illustrative future delivery plans. This highlights that these (future delivery plans) will need to be developed around every 5 years as and when further evidence is available, until there is certainty around making major area based decisions. This approach recognises that the Strategy is based on planning for the medium to long term. The council will need to develop the detail of each future Delivery Plan with relevant stakeholders, developing specific objectives and aligning focus to a rapidly evolving energy sector.

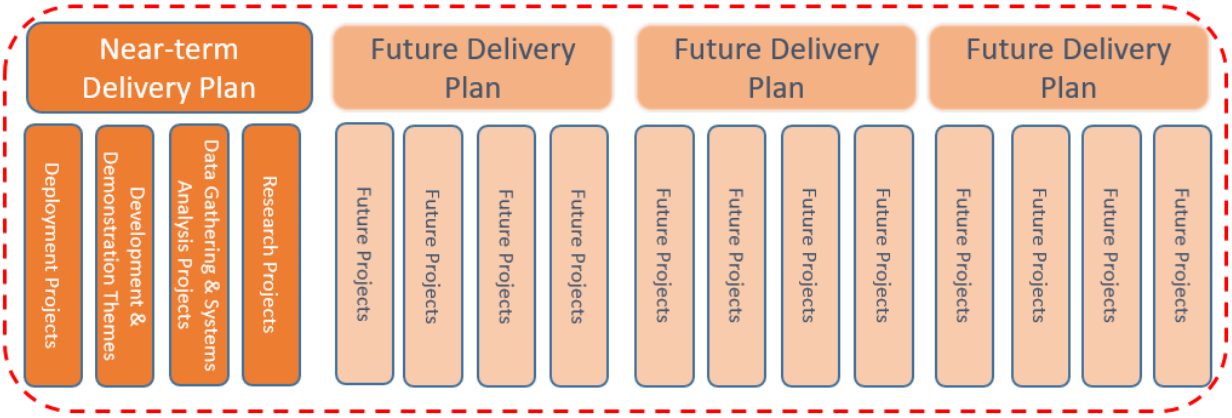


Figure 5-2 Near-term Delivery Plan and the Requirement to Develop Future Delivery Plans

The Near-Term Delivery Plan provides the focus for targeting resources and explores how the proposed energy system changes illustrated in Figure 5-1 could be progressed.

5.4.1 Near-term Delivery Plan Activity

The near-term delivery plan activity provides recommended activity to both continue and prepare for Bridgend's decarbonisation, describing the themes and activities that should be progressed in the near term. This consists of the following five activities:

- Better targeted retrofit.
- Developing and testing compelling customer propositions for hybrid heat pumps.
- Overcoming barriers to moving homes from gas to district heating.
- Reducing costs of heat networks in urban centres and overcoming barriers to connecting existing homes to heat networks.
- Developing and testing compelling customer propositions for electric heating targeting able to pay/early adopters through council services.

The Delivery Plan Activity has been developed through collaboration with the project stakeholder group. This process involved considering the proposed energy system change illustrated in Figure 5-1, alongside other evidence resulting from the EnergyPath Networks analysis.

Acknowledging that there are many potential activities needed to enable the transformation of Bridgend's energy system, focus has been given to five activities based on:

- Subjects that considered the drivers and priorities of the project stakeholder group.
- Prioritising activities that are objective and informed by the EnergyPath Networks evidence base.
- Addressing the challenge of decarbonising heat.

- A combination of innovation and deployment[46] projects, but with a focus on innovation to unlock the barriers to transforming the borough's energy system.

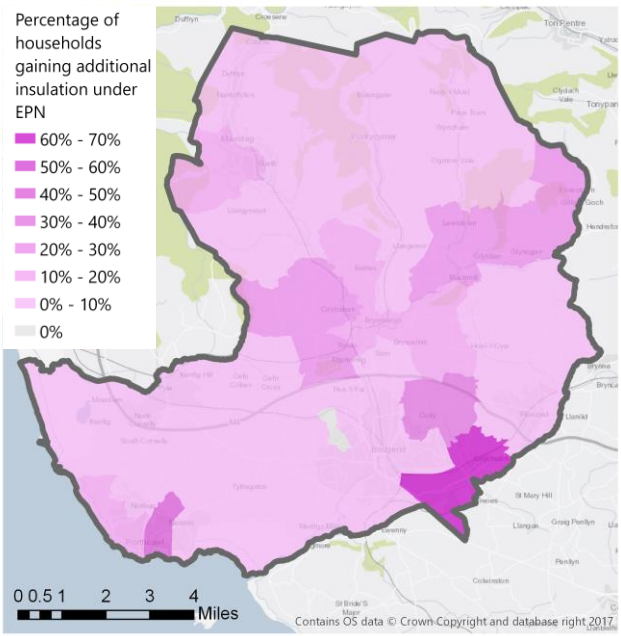
These activities are summarised below followed by **Other Activity** to consider progressing as identified and discussed during the development of this Strategy.

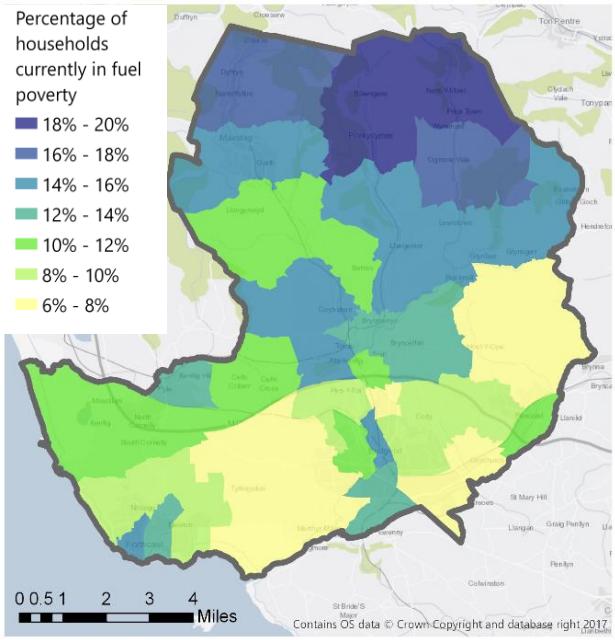
[46] Deployment Projects are considered to be low regret, short-term opportunities where there is certainty that they are the right solution and there is clarity on how to realise them in the current consumer, commercial and policy/regulatory environment.

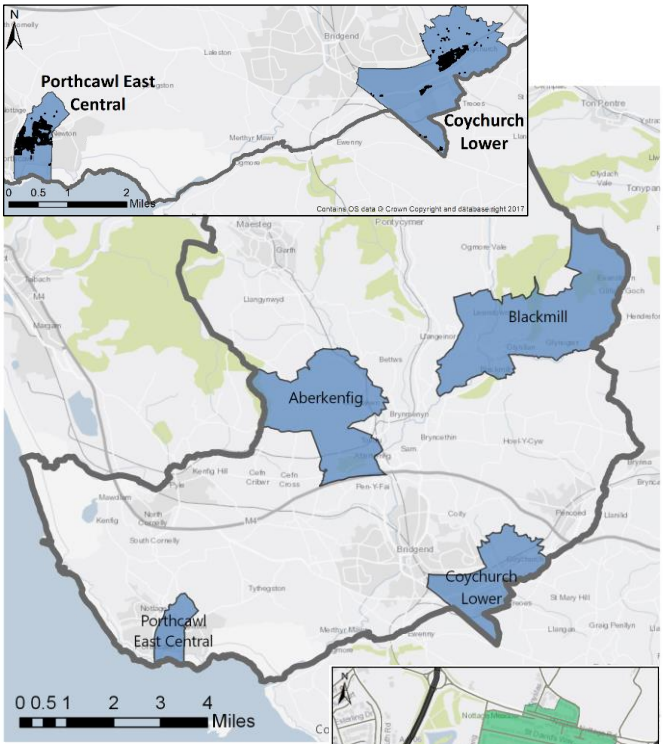
Activity No.1 Description	Deployment of Better Targeted retrofit. Refer EPN Supporting maps/data below.
Activity Context	Improving the energy efficiency of buildings is a key opportunity to reduce carbon emissions. This activity focuses on fabric retrofit which means improving the thermal performance of the building so it uses less energy to heat. This has the added benefit of reducing energy costs regardless of the type of system that is used, both currently (e.g. a gas boiler) and in the future.
Activity Objectives	▪ Build on available data and past projects to better target homes in need of fabric retrofit, prioritising areas of fuel poverty. ▪ Identify new business models that can self-finance wide scale deployment; this could involve providing integrated solutions incorporating other measures alongside retrofit. Reducing dependency on public grants. ▪ Work with Welsh Government to identify any mechanisms and available funding to initiate. ▪ Consider procurement options and service delivery partners. ▪ Develop new forms of service provision as different approaches will be needed for different areas and consumer segments. ▪ Focus on: developing and delivering new retrofit service offers and business models that also improve quality of homes/comfort; defining target areas and consumer segments; and adopting a means of performance contracting to ensure outcomes rather than measures are achieved
Supporting Evidence	EnergyPath Networks selects fabric retrofit for over 4,700 homes (average number across all scenarios) across Bridgend. The illustrations below highlight the areas EnergyPath Networks selects where it is cost-effective to do so (from a least cost decarbonisation perspective), showing a relationship with areas of fuel poverty. This is based on typically installing cavity wall and loft insulation. The data is derived from assessing EPCs and the council's building stock data where available. Installing these measures could save over 1,200 tonnes of CO_2 at an average cost of £1,900 per dwelling. As EnergyPath Networks works on the basis of achieving a least cost emission reduction target, additional opportunities to improve energy efficiency will be available where the objective is to reduce energy use and cost.

Activity No. 1 - EnergyPath Networks Supporting maps/data

The figure below highlights the proportion of properties by ward identified for basic fabric retrofit measures under the business as usual scenario, meaning that it is cost effective to progress even without working to a carbon target. This is shown alongside the average percentage of homes assumed to be in fuel poverty, where providing initial focus in areas of perceived fuel poverty would be beneficial.







Porthcawl

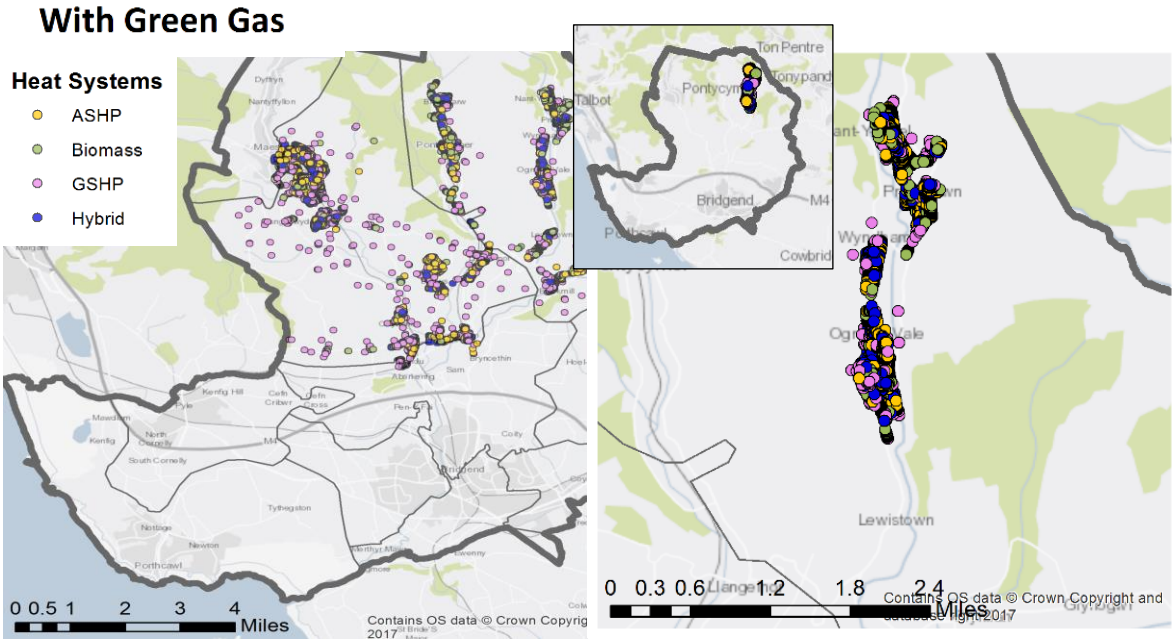
Areas of Pre 1965 Terrace/Semi-detached

Considering the areas with the highest perceived levels of fuel poverty and greatest proportion of properties that could benefit from basic fabric retrofit measures results in the four areas illustrated below, in the wards of Aberkenfig, Blackmill, Porthcawl East Central and Coychurch Lower. These provide potential focus areas to consider for this activity. Coychurch Lower, whilst not flagged as a fuel poverty area, contains 594 homes, of which nearly 70% are detached/semi-detached built since 1980, concentrated in two major housing estates. Porthcawl East contains nearly 3 times as many homes with 1,520, with more of a variety of types and ages. Semi-detached and terraced properties built prior to 1965 make up 57% of all homes in this area, which are likely to have a high energy demand and poorer thermal efficiency than the more modern homes of Coychurch Lower. The data suggests that they are also much more likely to be lived in by fuel-poor residents which makes them an ideal priority target for retrofitting insulation measures.

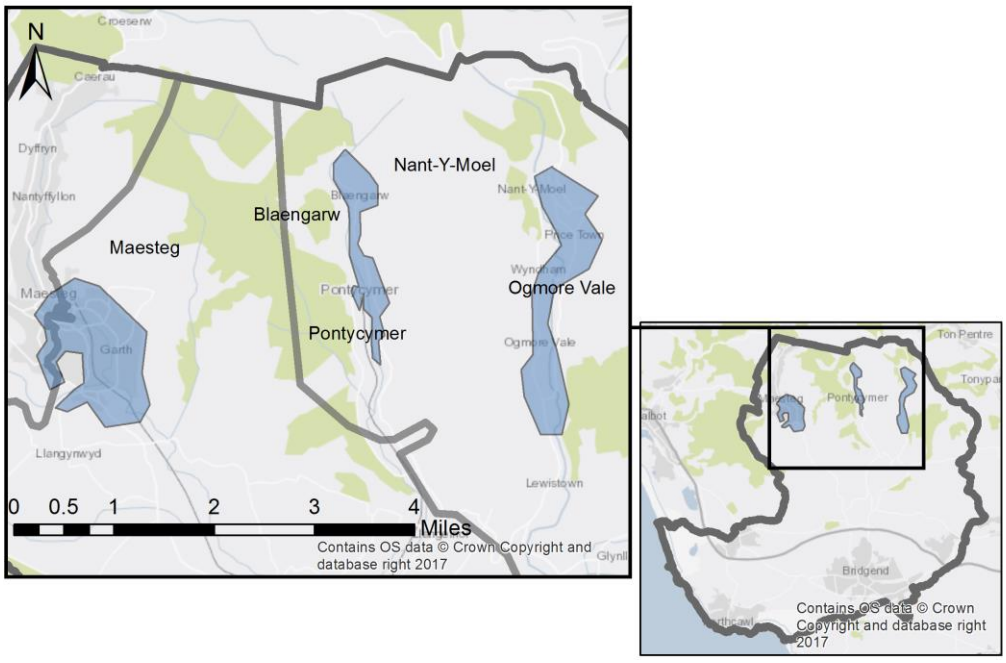
Activity No.2 Description	Innovation - Developing and testing compelling customer propositions for hybrid heat pumps. Refer EPN Supporting maps/data below.
Activity Context	Hybrid heat pumps combine an electric heat pump with a gas boiler. They provide the benefit of switching between both system types, dependent on the optimum time to use each system. Lower carbon forms of gas can also be used if supplies develop as suggested by the Freedom project. They can be perceived as being less disruptive and more appealing for residents.
Activity Objectives	▪ Understand value of hybrids – is it transition technology or a long term 2050 solution. ▪ Develop and test compelling customer propositions that are attractive to customers so they buy-in to the transition. ▪ Build on Freedom Project. For example, consider interaction with private rented/owner occupiers as the pilot worked with the social housing sector. ▪ Assess value of looking at more clustered deployment; understanding potential benefits to electricity and gas networks. ▪ Consider benefits of hybrid v electrification, potentially alongside fabric improvement. ▪ Provide further evidence on potential role of hybrid solutions before making energy network decisions
Supporting Evidence	EnergyPath Networks selects the greatest average number of hybrid heat pumps in analysis areas 3 and 4 comprising the Ogmore and Garw valleys. However, electric heat pumps and biomass boilers are also selected in nearby dwellings. Further consideration is needed to understand the potential role of hybrids in these and other comparable areas. If hybrid solutions were to be used in specific areas, then further thought is needed to assess the impact of increasing/reducing uptake e.g. utilising hybrid solutions instead of all electric heat pumps or biomass systems. For example, the project stakeholder group raised concerns over the use of biomass systems. These are often the least cost option in dwellings where it is not practical or is too expensive to use an electric heat pump, hence hybrid solutions could provide an alternative option.

Activity No. 2 - EnergyPath Networks Supporting maps/data

The figure below illustrates the variation in heating systems selected as the least cost decarbonisation option for one of the scenarios assessed in analysis areas 3 and 4. Highlighting a mixture of Air and Ground Source Heat Pumps, Hybrid Heat Pumps and Biomass systems.



Identified Zones to Develop and Test Compelling Customer Propositions for Hybrid Heat Pumps



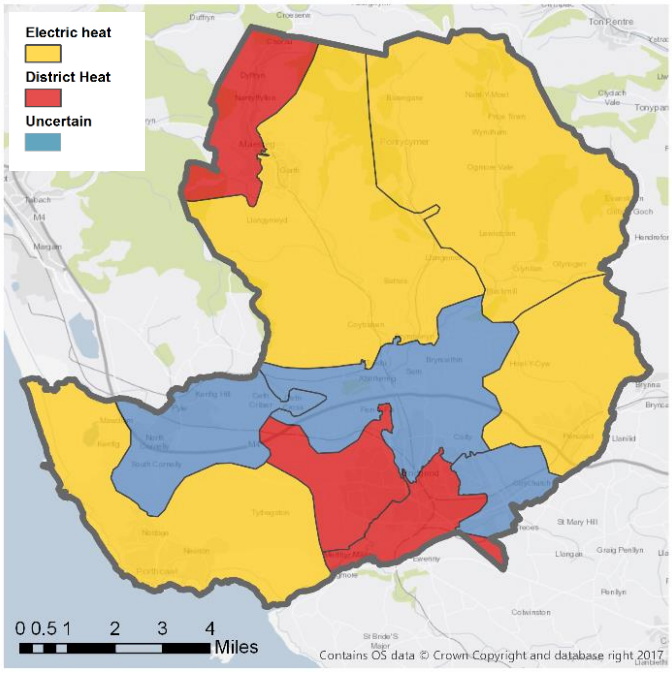
This activity could be focused on the three zones illustrated below. These comprise the largest clusters of homes modelled to transition to a form of heat pump, based around east Maesteg/Garth, Blaengarw/ Pontycymmer & Nant-Y-Moel/ Price Town/ Ogmore Vale. For example, there are over 2000 buildings in the Ogmore Vale valley to consider. The majority of are terraced (62.82%) homes, whilst there are 18% semi-detached homes, 10% flats and 8% detached homes. In the Green Gas scenario, over 55% of homes transition to air source heat pumps, 20% to hybrid heat pumps, 17% to biomass and 8% to GSHPs illustrating that further thought is needed before network choices for this and similar areas can be made.

Activity No.3 Description	Innovation – Overcoming barriers to moving homes from gas to district heating. Refer EPN Supporting maps/data below.
Activity Context	District heating has been consistently highlighted, across multiple scenarios, as providing the optimised decarbonisation option for many homes in and around Caerau. However, there are many barriers to overcome before the planned network could be expanded. Learning from this activity is essential if other heat network schemes, serving existing residential areas, are to be developed en-masse.

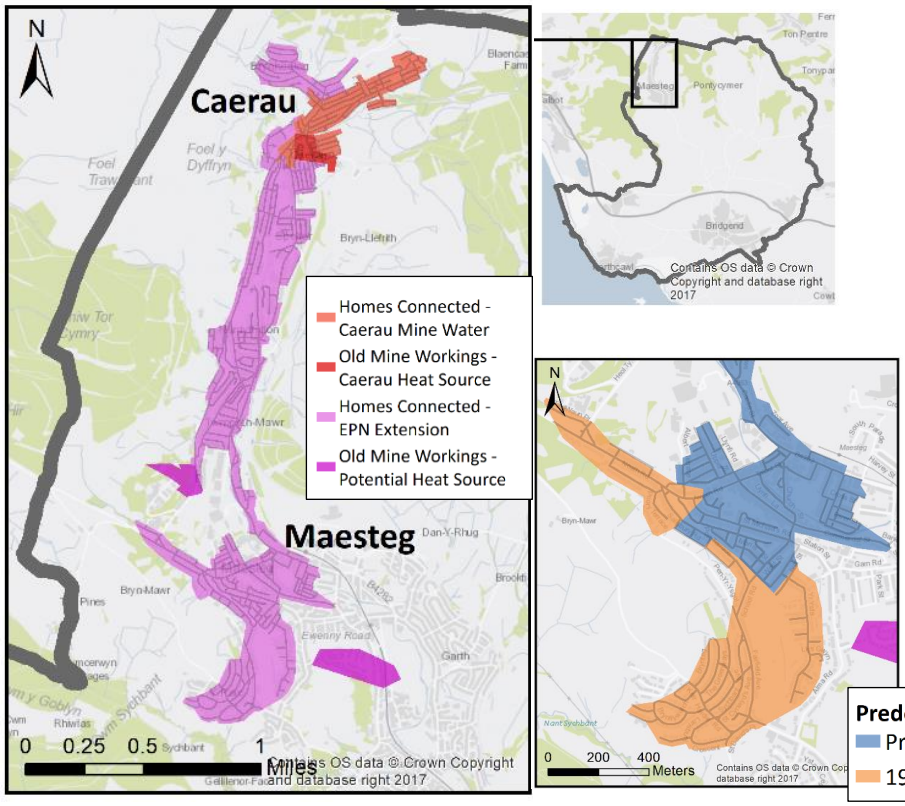
Activity Objectives	▪ Understand insights from Caerau Heat Network scheme to identify barriers and opportunities to extend the scheme in the areas illustrated below.
	▪ Provide key learning to inform other potential residential retrofit schemes to similar groups of housing.
	▪ Focus on understanding aspects such as:
	  ▪ Successful consumer engagement methods. Considering aspects such as the social demographic.
	  ▪ Commercial considerations. Key actual cost and economic data can be assessed to understand the financial implications of retrofitting heat networks to existing low rise residential areas.
	  ▪ Consumer's experience – what are the key aspects to focus on to encourage further uptake?

Supporting Evidence	EnergyPath Networks has identified an average of over 70% of homes transitioning to heat networks in analysis area 2 which comprises Caerau and Maesteg, equating to over 3,800 homes. District heating has been identified as a cost-effective transition option, for reasons such as the density and type of dwellings in this area. For example, electric heat pumps are likely to be inadequate to heat the pre-1914 dwellings which make up a large proportion of dwellings in this area (accounting for 64% of all dwellings).

Activity No. 3 - EnergyPath Networks Supporting maps/data



The figure opposite re-illustrates that district heating has been identified as the dominant least cost network option for the analysis area surrounding Caerau (top left area), where the planned Caerau mine water heat network scheme would be built. Numerous barriers need to be overcome before the planned network, or other heat networks could be built/expanded.



The figure opposite illustrates the proposed Caerau Mine Water Heat Network Scheme in relation to other homes, extending south from Caerau to Maesteg, where district heating has been modelled as the least cost option. This also shows the location of the proposed mine water heat source for the Caerau scheme in relation to other mine water heat sources.

In Maesteg, pre-1914 terraced properties dominate the north of the town while the south comprises mainly semi-detached homes built between 1914-1964, where district heating was modelled as the least cost option for circa 160 of these homes.

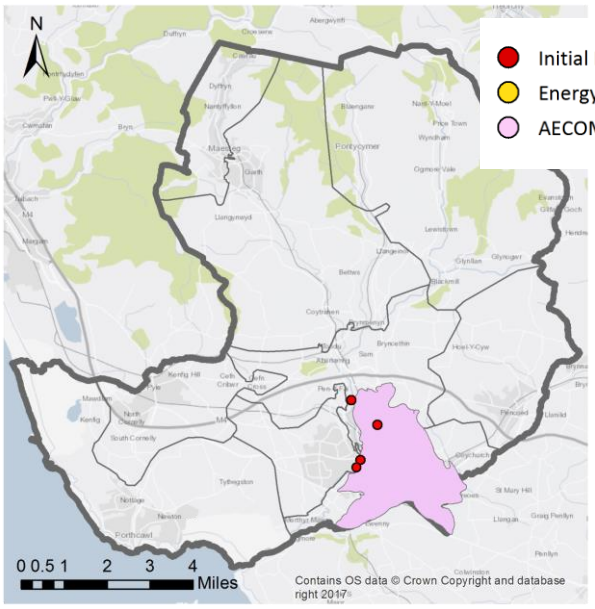
Activity No.4 Description	Innovation - Reducing costs of heat networks in urban centres and overcoming barriers to connecting existing homes to heat networks. Refer EPN Supporting maps/data below.
Activity Context	Market conditions combined with the cost of developing heat networks currently restrict heat network development throughout the UK. Innovation could be used to reduce the capital cost of schemes to facilitate increased uptake. Similarly, extending urban centre heat networks schemes to connect nearby existing residential areas faces many technical, commercial and consumer barriers. The effective planning for development and expansion of heat networks along with development of compelling customer propositions for people to connect to networks in the future could help to overcome such barriers.
Activity Objectives	▪ Assess options of reducing cost of heat networks; focusing on proposed Bridgend Town Centre scheme. Utilising resources such as ETI Heat Infrastructure Development project: Reducing the capital cost of district heat network[47]. ▪ Provide insights relevant to other potential comparable urban centre schemes. ▪ Consider aspects relevant to extending from urban centres to existing residential areas. ▪ Determine if compelling residential value propositions can be developed to support expansion from town centre non-domestic heat networks. ▪ Develop new forms of service provision as different approaches will be needed for different areas and consumer segments. ▪ Focus on overcoming barriers to connecting existing homes to heat networks
Supporting Evidence	EnergyPath Networks has identified an average of nearly 70% and over 90% of homes (in one scenario) transitioning to heat networks in analysis areas 8 and 9 respectively, consisting of areas around Bridgend's town centre. This would equate to circa 10,000 homes transitioning to a heat network that are currently served by gas boilers. These homes are shown below, highlighting their proximity to the location of the proposed town centre scheme. Should the town centre scheme develop, it provides an opportunity to consider expansion to these nearby homes, acknowledging that barriers to connecting existing homes to heat networks need to be overcome beforehand.

[47] http://www.eti.co.uk/programmes/energy-storage-distribution/heat-infrastructure-development

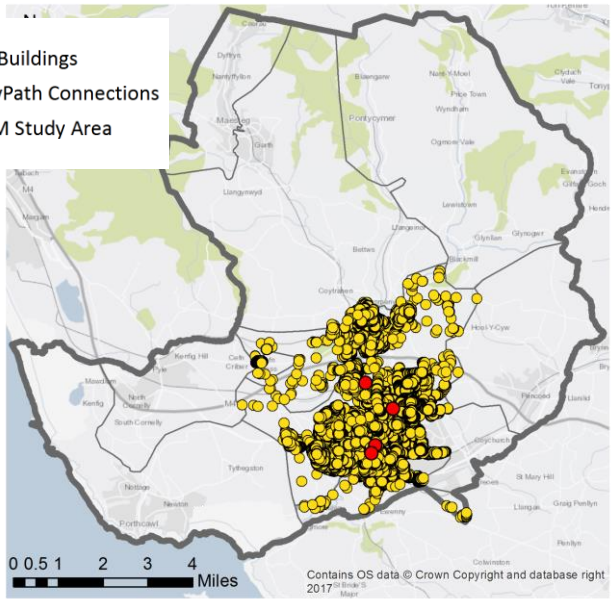
Activity No. 4 - EnergyPath Networks Supporting maps/data

The figure below shows the non-domestic buildings already proposed to connect to potential Bridgend Town Centre heat network scheme (red dots), alongside the other domestic and non-domestic buildings in the vicinity where district heating is selected as the least cost decarbonisation option (yellow dots). An existing heat network study covering the shaded polygon area is available for supporting information.

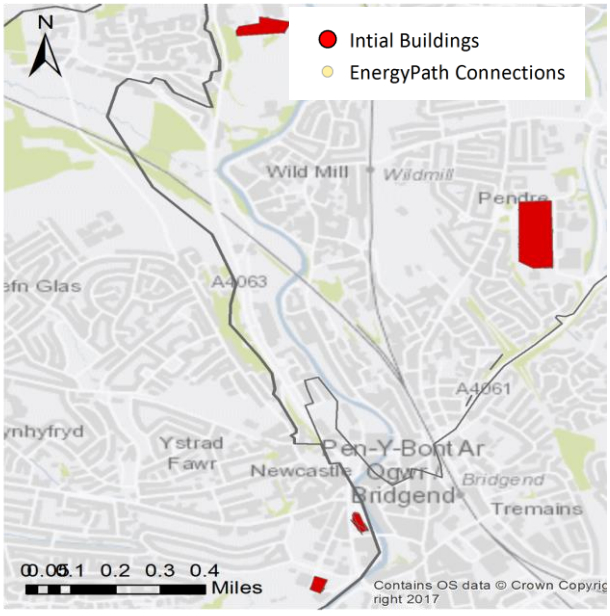
Aecom Study Area



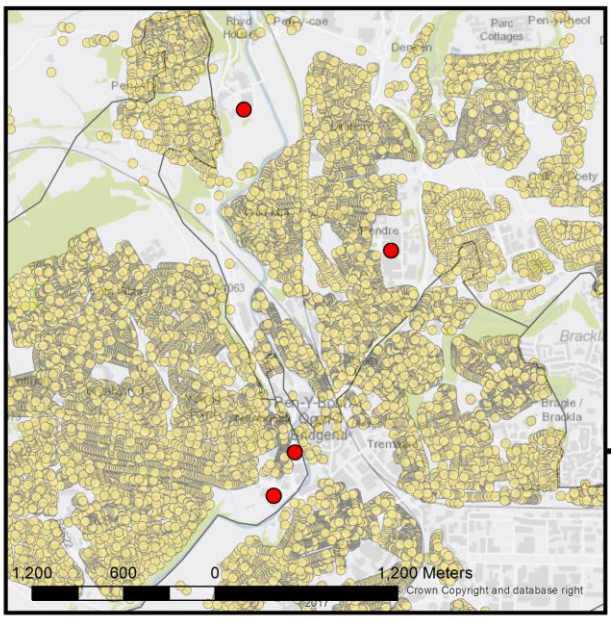
Energy Path Networks Average Connections



Aecom Study Area



Energy Path Networks Average Connections

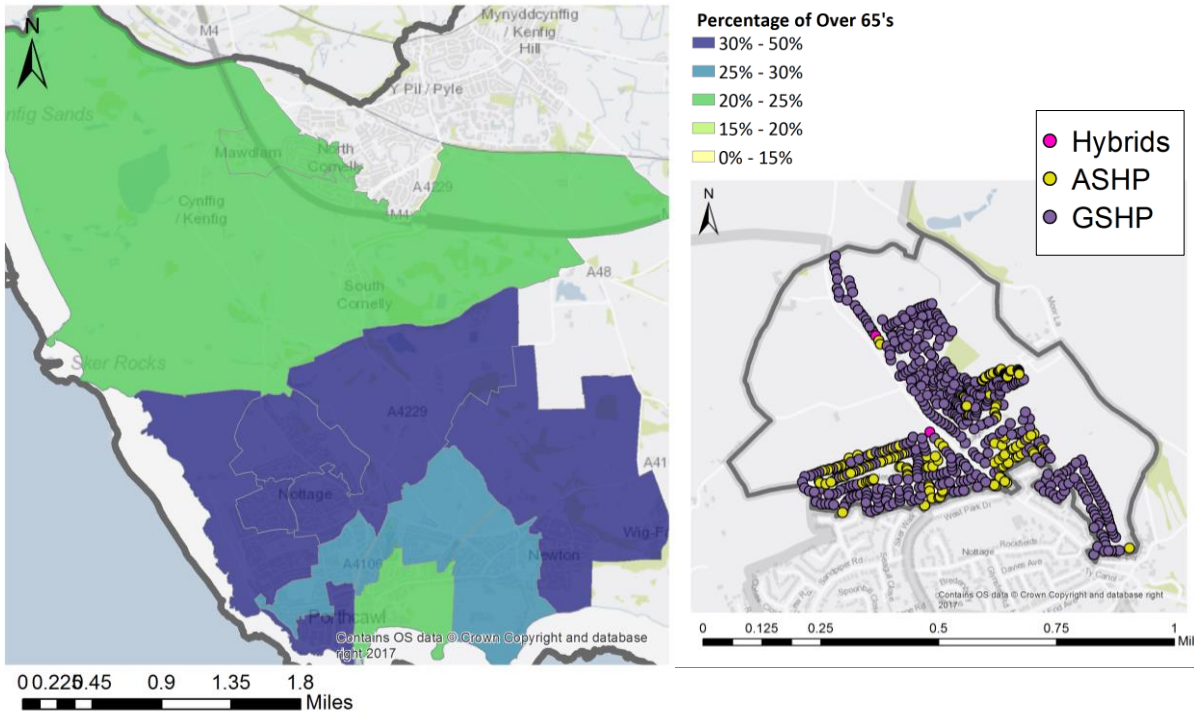


Activity No.5 Description	Innovation - Developing and testing compelling customer propositions for electric heating targeting potential early adopters through council services. Refer EPN Supporting maps/data below.
Activity Context	EnergyPath Networks selects the use of electric heat pump systems under multiple scenarios as the optimal decarbonisation solution for a significant proportion of Bridgend's housing stock. Whilst there are many barriers that prevent such a transition, having a compelling product and finding successful ways to engage with end users is critical to support the transition to new types of heating systems. Social care and other council services have been identified as a potential engagement route. This approach has been used in the UK as a means of providing energy efficiency measures. Testing the concept in the coastal areas of Bridgend has been suggested (e.g. Porthcawl) due to the location of perceived technology early adopters, due to socio demographic factors.
Activity Objectives	▪ Develop and test compelling customer propositions that are attractive to customers so they buy-in to the transition. ▪ Develop new forms of service provision as different approaches will be needed for different areas and consumer segments. ▪ Establish partners and test approaches through council services such as social care. ▪ Consider targeting perceived early adopters in coastal areas. ▪ Consider integration with fabric retrofit - creation of integrated service offer and new business models.
Supporting Evidence	EnergyPath Networks selects heat pumps as the least cost transition option in over 70% of homes in analysis area 12, comprising Porthcawl and surrounding areas. However, the technology type is not critical; the main challenge is to offer consumers a compelling electric heat product to switch to in the first place. The figure below highlights potential focus areas to test propositions based on areas with a high level of over 65s who may be utilising council services such as social care.

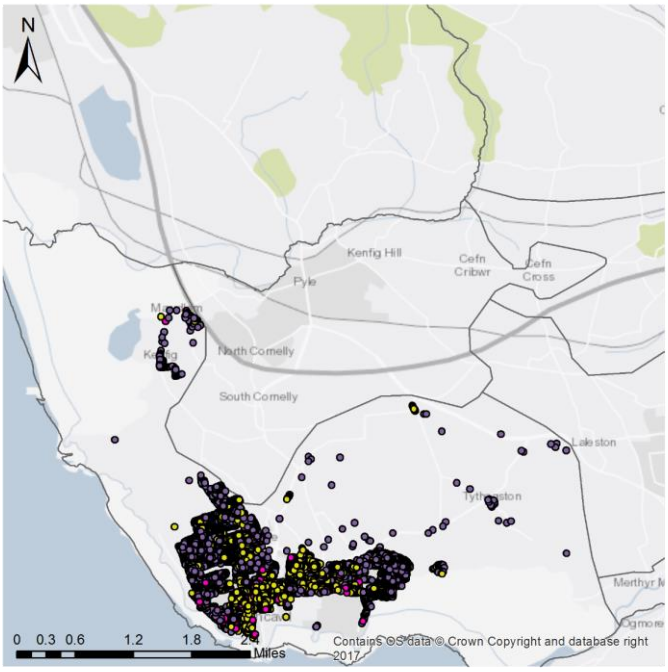
Activity No. 5 - EnergyPath Networks Supporting maps/data

The figure below highlights the areas surrounding Porthcawl with the greatest proportion of over 65s.

Map of Proportion of Over 65s by LSOA in Cluster 12



With Green Gas (Analysis Area 12)



The figure opposite highlights the dwellings in the vicinity where electric heat pump based systems are selected as the least cost decarbonisation option for a representative scenario. This shows clusters of Air and Ground Source Heat Pumps, generally selected due to the type of dwelling.

The figure illustrates the modelled least cost option for the northern parts of Nottage which could be an area to consider for this activity due to the high proportion of over 65s.

Other Activity

Table 5-2 Other Activity Identified During the Project

Context	Description
A detailed and robust data set for of non-domestic buildings is required to update the whole system analysis, assess impact on this Strategy and evolve where relevant.	Develop understanding of: 1) Actual sector classification and use of buildings 2) The construction method and thermal performance of buildings. 3) Heating Ventilation & Air Conditioning system in use 4) Current energy use 5) Breakdown of energy end uses
If district heating is going to be used at scale, suitable sources of low and zero carbon heat will be needed to decarbonise the heat supplied to heat networks.	A research activity could be progressed to gain a better understanding of the locations, magnitude and feasibility of potential low and zero carbon heat sources that can be used or upgraded. For example, identifying sources and feasibility of ground, water, mine water and industrial waste heat.
EnergyPath Networks consistently identifies heat pumps as the least cost heating system across a wide range of building types including terraced homes and converted flats.	Current planning policy may make installation problematic. Particularly in dwellings where planning guidance restricts the positioning/location of heat pumps in proximity to the dwelling. Consideration of relevant planning policy is recommended.

5.5 Implementation Roadmap

Successful delivery of the energy system transition will rely on effective evidence-based planning, proactive stakeholder engagement and a programme of activities to implement this Strategy. An indicative high level 'road map' has been developed to illustrate this Strategy's implementation and ongoing delivery. This shows:

- The near-term delivery plan to take forward between 2018 to 2022.
- Development of future delivery plans (approximately every 5 years).
- Use of whole system analysis to support the identification of activity.

Leading to certainty around making major area based decisions.

The Implementation Roadmap highlights that the Strategy's aim is to focus resource and to plan for the medium to long-term, when the major decisions regarding energy network and technology choices must be made.

The roadmap illustrates that the main transition to low carbon building heating systems is expected to take place around 2030 onwards, by which time some network based decisions and deployments may have occurred. Timescales and focus will change, keeping pace with an evolving energy sector.

The near-term delivery plan (for the period 2018 to 2022) provides a guide to take forward the Strategy over the next 5 years. The period post 2023 (to 2032) continues with the ongoing identification of focusing resource, recognising that options will need to be assessed to determine the lowest cost transition, identifying what energy network and system choices are recommended by area; whilst considering conclusions from the projects tested during the near-term plans. The future delivery plans will need to be developed over the Strategy's lifetime, as further priority projects / activities are identified.

This ongoing process should prioritise activity that both benefits the local area and progresses the vision of Bridgend's future energy network and system.

Near-term Implementation Period (2018 to 2022) Key Points

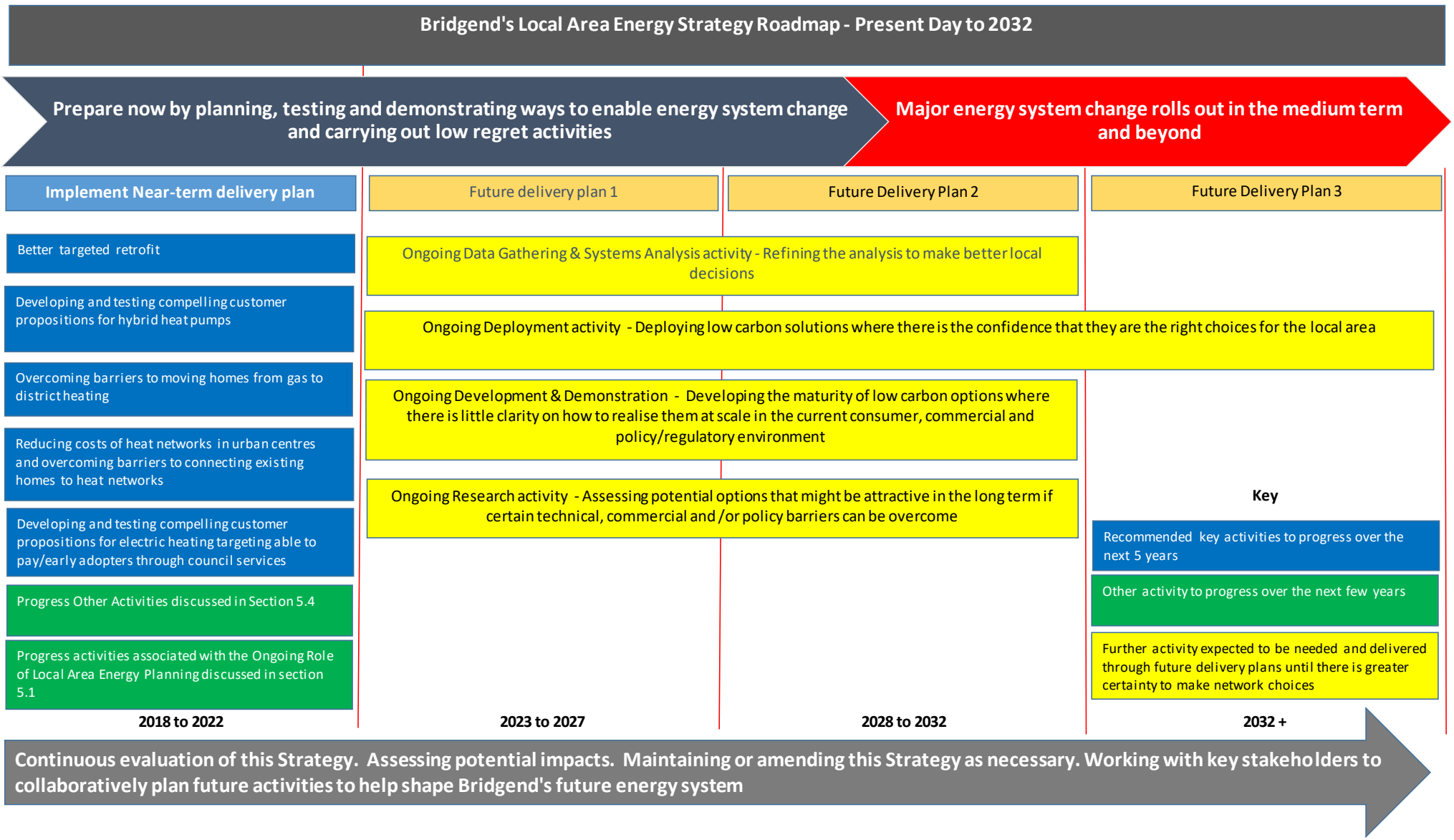
- This illustrates progressing the near-term delivery plan activity over the next 5 years.
- This contains the five activities discussed in Section 5.4 to take forward, informed by the whole system analysis. One of the core objectives of these activities is to inform the ongoing development of the Strategy.
- Innovation activities are expected to be progressed through multiple projects, recognising that there is significant uncertainty to overcome before major network and system choice decisions can be made. Some of these themes may move onto deployment projects in the medium to long term.
- The council will need to review the activities and develop compelling projects to take forward. This process will be supported by SSH Phase 2[48] and the appointment of a SSH Phase 2 Local Development Officer.

Period Post 2023 Key Points

- There is a requirement for ongoing development & demonstration, data gathering & systems analysis and research activities before this Strategy can prioritise and plan on the use of the specific energy networks and systems that are proposed by area. The actual activities will need to be determined.
- A continuous process of evaluation is needed as this Strategy will need to be regularly updated.
- Future deployment activity, such as the widescale use of low/zero carbon district heating and electric heating systems to domestic homes, can be progressed where these are proven to be the correct solution. These significant transitions (where a new system takes over from Business-as-Usual) are expected to be market-led, in parallel with other large-scale transitions[49].
- It is assumed that most of the major energy system change will occur in the later stages of this Strategy (post 2030). **This provides Bridgend with a window of opportunity to plan for the major change that will be needed, as the pathway to decarbonisation becomes clearer**.

[48] The Energy Systems Catapult has been awarded a £9.8m grant from the Department of Business, Energy and Industrial Strategy (BEIS) to deliver Phase Two of the Smart Systems and Heat (SSH) project

[49] Such as the widespread adoption of electric vehicles (EV), the reinforcement of the electricity grid to support increased demand, the decarbonisation of the electricity grid from fossil fuel produced electricity to renewable and nuclear sources; and the potential repurposing of the gas grid to a low carbon form of gas (such as hydrogen or Bio-SNG).



6 Conclusions

This Strategy has been developed to help Bridgend County Borough Council in collaboration with key stakeholder's plan for the transformation of Bridgend's local energy system and to benefit its people, communities and businesses.

Benefits

Bridgend has been the first Welsh region pilot a new whole system approach to local area energy planning. During the development of this Strategy, the Welsh Government noted that the Bridgend County Borough, with its mix of urban, rural, valley and coastal areas, provides a representation of the whole of Wales. This provides the council with an exciting opportunity to pioneer its low carbon transition and to realise the benefits from innovation and green growth and solutions developed in the local area can be exported throughout Wales and the UK. This should lead to the council establishing new partnerships with the many organisations that will be needed to provide a new low carbon future.

The benefits and advantages of implementing this Strategy are summarised as:
Jobs and economic growth – Enabling and delivering the transition will create jobs and economic growth. An estimated 120 full-time jobs could be created in the time period 2035 – 2050 for just physically delivering the transition.

Innovation and Collaboration - Providing opportunities for the council and any partnering organisations to develop the systems, technologies, services, business models, governance and funding solutions that will be needed. This provides opportunities for further job creation through enabling the transition.

Infrastructure Investment - A clear strategy setting out Bridgend's approach to decarbonising the local area's energy system can provide confidence to investors to invest in the area.

Energy Savings - Progressing the transition in line with the scenarios of Bridgend's Low Carbon Future discussed in this Strategy, could deliver net positive energy savings of c. 25TWh/year compared to the business-as-usual reference case.

Carbon Savings – providing emissions savings of c. 10.5 million tonnes of CO_2.

Empower Residents and Businesses - Through providing guidance that can help individuals make informed decisions on the future energy systems and products they choose.

Fuel poverty - A new approach will create an opportunity to consider how a future energy system can lead to safeguarding the most vulnerable.

Comfort and Health – Changing the way energy is delivered to homes provides an opportunity to improve the comfort of Bridgend's homes. This could result in a wider benefit from better health of c. £5 million (through having warmer homes).

Energy System Change

The Challenge

- Wales and the UK have committed to reducing greenhouse gas emissions by 80% by 2050 (against 1990 levels). This is a significant opportunity to fundamentally change the way energy is provided which is likely to be highly disruptive to the entire energy industry, and will require all major stakeholders to adapt from a business-as-usual position. The transition will directly impact the energy networks which will need to be adapted by reducing capacity in some places and increasing it in others.

- The lifespan of domestic heating systems, which predominantly use natural gas fired boilers, means that most homes in the borough are unlikely to have their boilers replaced more than twice between now and 2050. Natural gas boilers are expected to remain the predominant form of heating for many homes in the borough throughout the 2020s. This results in a window of opportunity, over at least the next 10 years or so, to effectively plan for major network infrastructure choices and to develop, test and demonstrate integrated low carbon solutions for wide-scale adoption.

- There are only a limited number of technology-based options currently available to decarbonise heat and there isn't a 'one size fits all' solution. A whole system analysis has identified that the electrification of heat and the use of heat networks are the predominant, currently available, technology choices to decarbonise Bridgend's buildings. However, significant work is required demonstrate that these solutions can be turned into attractive consumer propositions which can be delivered commercially at scale. In addition, some areas are more expensive to decarbonise than others and consideration will be needed to address this challenge. Other emerging solutions, for example the use of hydrogen, may also need to be considered for future iterations of this Strategy.

What Needs to Happen?

- This Strategy has provided various examples, highlighting that a successful low carbon transition is dependent on the ability to consider and manage multiple interdependencies including: consumer, commercial, technology and engineering based challenges; national and local influences; policy & regulation; economics and social impacts and benefits.

- Co-ordinated planning and action to decarbonise the national electricity supply is needed which falls outside of the council's control and influence. However, as this Strategy is taken forward, there will be opportunities for the local area and Welsh Government to consider how local changes and energy generation can reduce reliance on centralised power generation.

- Business-as-Usual without any local carbon target will not drive the change needed to buildings and local energy infrastructure. An ongoing whole system approach is needed to determine what future energy systems are used, requiring collaboration between the various responsible stakeholders who own, manage and regulate the borough's energy infrastructure. For example, if the electrification of heat is proven as a significant decarbonisation component, then coordination is required to determine if, and how, the additional electricity can be generated and distributed. Depending on building level choices, coordination will be required between decarbonising the electricity supply, building upgraded networks, changing the appliances at the customer premises and, potentially, implementing new digital solutions for matching supply-demand.

- Energy system change in Bridgend County Borough will also depend on the support and engagement of its local people and communities. Over 85% of homes in the borough are owner-occupied or privately rented properties. This means that new low carbon technologies and services that consumers want will be needed, providing significant opportunities for the council to work with organisations who can step up to the challenge.
- Greater clarity is needed on the potential role of hybrid heating solutions and low carbon gas (e.g. hydrogen), along with the development of heat networks and heat pumps so that they are market ready, before network decisions can be made.

Cost

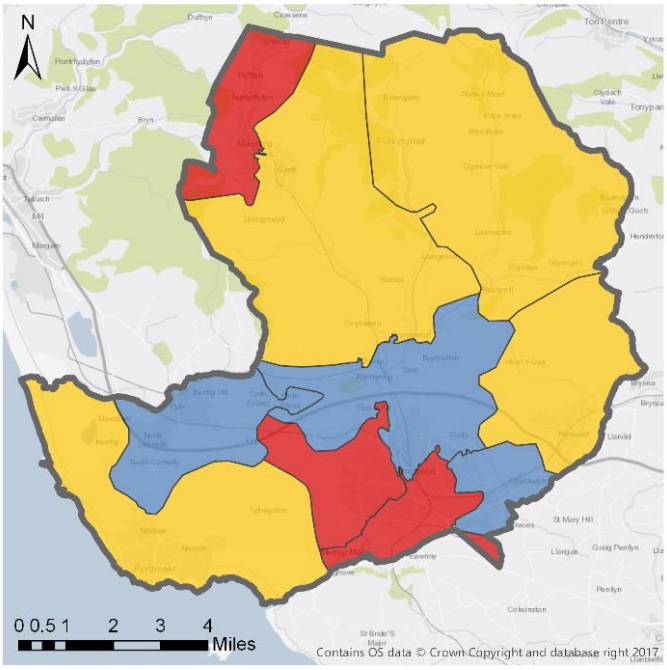
- The total modelled cost of the borough's energy system from present day to 2050 under Business-as-Usual is estimated at £6.6 billion. The additional modelled cost of transition to a low carbon energy system (based on reducing in scope carbon emissions by 95% from 1990 levels) is estimated to be between £0.7 billion and £0.8 billion[50]. This increase in cost highlights the need for society to think about how the cost of decarbonisation is managed.
- There are many factors that are outside of the council's control that can impact on costs and hence local energy system and network choices. For example, changes to national energy policy can influence the most cost effective local solution. Hence why this Strategy recommends monitoring and reviewing major change.
- This increased cost is offset by a direct benefit of c. £414 million from a reduction of c.10.5 million tonnes of CO_2 emissions saved when a value is placed on CO_2, plus a wider benefit from better health of c. £5 million. The supporting Socio-economic and Policy Evaluation report discusses these points and the value of carbon further, along with identifying potential related policy initiatives which could help overcome some of the barriers to decarbonisation.
- These figures are based on a modelled, low carbon future, where the modelled scenarios assume a perfectly managed low carbon transition. However, the actual transition will be different to a modelled view of the world. In addition, changes intended to save cost in one part of the energy system typically transfers the cost to another part of the system. These factors highlight the importance of adopting a whole system perspective to plan and manage the cost of decarbonisation.
- A key focus of this Strategy is based on benefiting economically from the innovation and collaboration needed to enable the transition. Between 2000 and 2008, innovation accounted for 51% of UK productivity growth[51], and Innovate UK's schemes (for example) return an average of £6 Gross Value Added to the economy for every £1 invested. The Governments Clean Growth Strategy highlights that more than 430,000 UK jobs in low carbon businesses and their supply chains have already been created and "the UK low carbon economy could grow by an estimated 11 per cent per year between 2015 and 2030 – four times faster than the rest of the economy –and could deliver between £60 billion and £170 billion of export sales of goods and services by 2030"[52]

[50] These costs reflect all energy related costs within Bridgend (e.g. energy system and network related), as well all the energy consumed in Bridgend. Within the current energy system, a large proportion of energy costs are recuperated via consumers energy bills.
[51] Royal Academy of Engineering Report, 2015
[52] https://www.gov.uk/government/publications/clean-growth-strategy

Bridgend's Future Energy System

Good progress has been made in beginning to address the challenge of climate change. Examples include the Council's key involvement in the SSH programme, activity in developing heat networks in Caerau and Bridgend Town Centre, and Bridgend's success in attracting an industry first project, the Freedom project, led by Western Power Distribution Wales & West Utilities. Moving forward, this Strategy provides a vision to transition the borough from the current national centralised energy system to a future low carbon decentralised energy system that works for its people, communities and businesses. This will help enable new investment, economic growth and employment opportunities for the region. The Strategy:

- Provides an evidence base and roadmap, to help prioritise and plan energy networks and systems for specific areas of the borough, to enable decarbonisation. It has identified, through a whole system analysis, a range of potential future pathways for the transition of the borough's local energy system.
- Provided a summary of the most prevalent decarbonisation themes within the local area, shown in the map below, and provides a vision of the borough's future low carbon energy system based on present day assumptions.



- Highlighted that the actual pathway will evolve over time given the inherent uncertainty in planning for the longer term, and as new information becomes available and challenges are addressed.
- Established that this Strategy will need to evolve to consider carbon emissions from other sectors such as transportation and industry, where a whole energy system approach will be needed.
- Clarified that it is not possible to make major area based energy network choice decisions today. A key focus of the Strategy is to test and evaluate - through innovation, development and demonstration - if and how the identified decarbonisation of heat themes can be rolled out at scale, and provide evidence to reduce uncertainty and increase confidence for planners, investors and businesses.

What Next?

Section 5 identified a series of activities associated with the ongoing role of Local Area Energy Planning for the Council and the Welsh Government to consider how to progress. These activities are initial recommendations to be taken forward over the next few years, and to be re-evaluated as part of a continuous evolving process of local area energy planning.

A Near-Term Delivery Plan is proposed which recommends the following key activities for the council to progress over the next five years. The activities focus on testing and progressing the recurring transition themes identified in the Strategy and its Evidence Base and will help target and prioritise effort and resources to enable Bridgend to realise its vision of a future low carbon decentralised energy system.

- Better targeted retrofit informed by whole system analysis and data to help prioritise what should be done, where and when.
- Developing and testing compelling customer propositions for hybrid heating solutions.
- Overcoming barriers to moving existing homes from gas to heat networks.
- Reducing costs of heat networks in urban centres and overcoming barriers to expansion and connecting existing homes.
- Developing and testing compelling customer propositions for electric heating targeting able to pay/early adopters through council services.

Document Control

This document has been prepared by the Energy Systems Catapult Ltd on behalf of the Energy Technologies Institute LLP and in association with Bridgend County Borough Council. For full copyright and legal information, please refer to the "License / Disclaimer" section at the back of this document.

Type:	SSH Phase 1 - Work Package 2
Title:	Bridgend Local Energy Strategy
ETI Project Number:	SS9016
ETI Project Number:	ESC00048
Version:	Version 2.3
Status*:	FINAL
Restrictions**:	Public
Completion Date:	February 2019
Author	Richard Leach
Reviewer	Richard Halsey
Approver: (Approval Denoted by Signature)	Emma Harrison

* Status defined as follows – Draft: Contains preliminary information only. Released: Contains reviewed and approved content.

** Restrictions defined as follows:
Public: Regarded as "within the public domain".
Confidential: Contains confidential information of the ETI and comprises intellectual property rights, including copyright, belonging to or licensed to the ETI.
Confidential (R): As Confidential, however certain information or data has been removed due to confidentiality, commercial, or license requirements. To request access to the full (Restricted) version, please refer to the document provider Energy Systems Catapult Ltd and / or contact the ETI (www.eti.co.uk).
Restricted: As Confidential, however additional restrictions apply (as detailed in this chapter) due to confidentiality, commercial, or license requirements.

Note that for all documents, copyright, trademark, license, and disclaimer restrictions apply.

Revision History

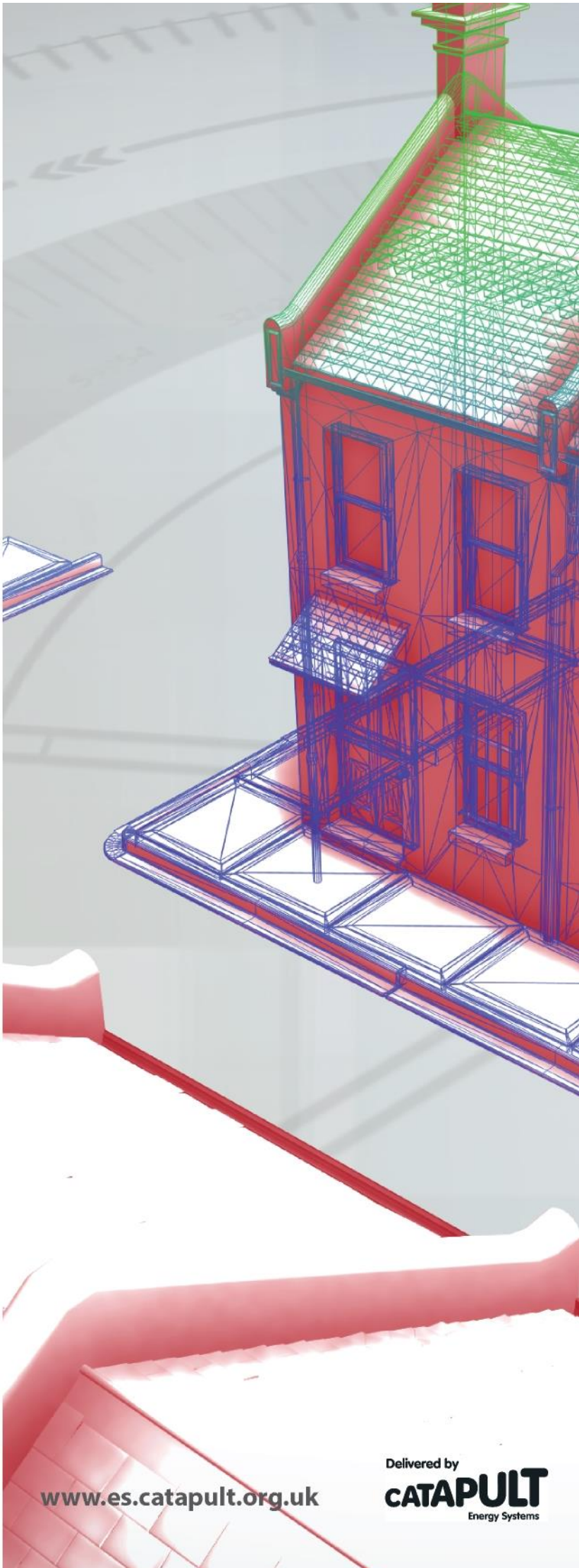
Date	Version	Comments
09/11/2017	0.1	First draft
23/01/2018	0.2	Second draft
05/03/2018	0.3	Draft incorporating GT review comments
23/04/2018	0.4	Draft incorporating RH review comments
08/05/2018	0.5	Draft for approval incorporating internal and KSG comments
10/05/2018	0.6	Draft for ESC approval
15/05/2018	0.7	Draft incorporating EH review comments
16/05/2018	0.8	Approved for ETI review
25/05/2018	1.0	Final, amended for ETI comments
28/06/2018	2.0	Revised following further proof and edit
06/08/2018	2.1	Graphics amendments for ETI comments
12/02/2019	2.2	Additional copyright/footnote information added
01/02/2019	2.3	Updated to Bridgend County Borough Council branding

Copyright & Trademarks

License & Disclaimer

8. If you have not received this document from the ETI or from a party authorised to supply it to you under paragraphs 1 or 2 above, please notify the ETI, return any paper copies to the ETI and delete any electronic copies and note that you do not have permission to use, supply, copy or reproduce this document or its contents in any way, in part or in whole.

Delivered by
CATAPULT
Energy Systems



www.es.catapult.org.uk

Delivered by
CATAPULT
Energy Systems

SSH Phase 2

D37 / D38: Smart Energy Plan – Bridgend County Borough Council

Cyngor Bwrdeistref Sirol
pen-y-bont ar Ogwr
BRIDGEND
County Borough Council

Department for Business, Energy & Industrial Strategy

CATAPULT Energy Systems

Document control

ESC programme name	**Smart Systems and Heat Phase 2**
ESC project number	ESC00106 / ESC00107
Version*	2.0
Status	Approved
Restrictions*	Public
Release date	01/02/2019
External release ID	ESC_SSH2_D37 D38 Smart Energy Plan Bridgend

* Refer to the Information Classification Policy

Review and approval

	Name	**Position**
Author	Charlotte Norton	Local Development Officer, ESC
Reviewer	Richard Leach	Consultant – Local Area Planning, ESC
Reviewer	Louise Kew	Senior Project Manager, ESC
Reviewer	Michael Jenkins	Team Leader Sustainable Development, BCBC
Reviewer	Eleanor Knight	Smart Living Wales, Welsh Government
Reviewer	Frances Gillett	Renewable Energy Project Officer, Welsh Government
Reviewer	Richard Halsey	Business Leader – Modelling, ESC
Approver	Denis Richard	Head of Major Programmes, ESC
Approver	Emma Harrison	Business Leader – Systems Integration, ESC

Revision history

Date	**Version**	**Comments**
30/11/2018	V1.0	Approved for release
01/02/2019	V2.0	Updated to BCBC Branding and Minor Amends

Document protection

Arising IP

Description	Owner	Category
SSH Phase 2 D37 and D38: Smart Energy Plan – Bridgend County Borough Council (this report)	ESC	Public

Background IP

Description	Owner	Category*
Bridgend Local Area Energy Strategy	ETI	Public
D33 & D34 Developing a Smart Energy Project Plan for Bridgend County Borough Council	ESC	Public
Local Area Energy Planning Bridgend County Borough Council Evidence Base 2018	ETI	Public
Energy Transition Plan: Policy and Commercial Insights for Energy System Transformation: Bridgend	ETI	Public
Well-being of Future Generations (Wales) Act 2015 The Essentials	Welsh Government	Public
Wales' Commitment to Tackling Climate Change	Welsh Government	Public
Research Briefing: Low Carbon Heat	National Assembly for Wales	Public
Energy Generation in Wales	Welsh Government	Public
Renewable Energy Planning Database	BEIS	Public
Local Area Summary Statistics Bridgend	Welsh Government	Public

Trademarks, licenses and disclaimers

Description	Owner	Category*
Ordnance Survey map data, license number: 100057254	Ordnance Survey	Open Government License
EnergyPath Network is a registered trademark of the Energy Technologies Institute LLP	ETI	Trademark

Contents

Abbreviations

Abbreviation	Definition
AI	Artificial Intelligence
BCBC	Bridgend County Borough Council
BEIS	Department of Business, Energy and Industrial Strategy
CHP	Combined Heat and Power
DBOM	Design, Build, Operation and Maintenance
DH	District Heating
DP	Deployment Project
EPN	EnergyPath Networks™
ESC	Energy Systems Catapult
ETI	Energy Technologies Institute
EU	European Union
HESG	Homes Energy Services Gateway
HN	Heat Network
HNDU	Heat Network Development Unit
HP	Heat Pump
InP	Innovation Project
LDP	Local Development Plan
RE	Renewable Energy
RSL	Registered Social Landlord
SA	Strategy Activity
SSH	Smart Systems and Heat programme
WG	Welsh Government
WPD	Western Power Distribution

1. Preface

This Smart Energy Plan has been produced as a deliverable of the Smart Systems and Heat Programme Phase 2.

The purpose of the plan is to describe a roadmap of projects and activities that will enable Bridgend County Borough to respond to the challenge of decarbonising heat within the wider energy system.

While this version of the plan is a deliverable of a wider programme of work it should be considered as a live document. The strategy, priorities, objectives, success criteria and project pipeline detailed within this document are driven by BCBC and set against the local context and vision. The intention is that the plan will be adopted by Bridgend County Borough Council and will be updated as further information is gathered; opportunities become available and project scopes are developed.

2. Executive Summary

Bridgend County Borough Council (BCBC) has a vision ***to make Bridgend a decarbonised, digitally connected smart County Borough.*** In doing so it will transition to a low carbon, decentralised energy system that works for its individuals, communities and businesses[1].

Energy Systems Catapult (ESC) has previously worked with BCBC, Welsh Government (WG) and other stakeholders to undertake Local Area Energy Planning in Bridgend[1]. The Strategy has provided insight into the potential pathways for securely and affordably achieving a targeted 95% reduction in emissions (from a 1990 baseline) from Bridgend County Borough's buildings by 2050. This Smart Energy Plan, the "Plan", formally maps out the near-term delivery of the first phase of the Strategy (up to 2025). The Plan is aligned to the Welsh Government's carbon budget periods[2] and identifies the projects and activities to be delivered within the Plan period. Many of the projects and activities are at the early stages of development. As such the Plan should be considered as a live document and updated as further information is gathered or opportunities become available.

In achieving its vision of a decarbonised, digitally connected smart county borough, BCBC aims to:

- **decarbonise the energy sector,**
- **stimulate economic growth,**
- **provide new job opportunities, and**
- **attract new and existing businesses to trial initiatives and grow within the county borough.**

In deploying this Smart Energy Plan, BCBC will put consumers at the heart of their activities to ensure that their needs and well-being are safeguarded throughout the smart energy transition.

The Bridgend local area energy planning, Strategy and Smart Energy Plan development have been delivered under the Smart Systems and Heat programme (SSH). SSH is a collaborative project exploring how to accelerate to market innovations that decarbonise domestic heating. Whilst SSH is focused on decarbonising domestic heating BCBC are committed to decarbonising and developing localised solutions for heat, power and transport (across both domestic and non-domestic sectors). As such, BCBC would like to lead, encourage and facilitate complementary projects focused on decarbonisation of power and transport, alongside heating projects within Bridgend.

Through delivery of the projects and activities, BCBC aims to achieve the following strategic objectives:

- **to be a test bed for new energy system ideas and concepts; providing real-life case studies,**
- **to lead the decarbonisation agenda; by introducing new products and concepts to consumers,**

[1] ETI (2018) *Bridgend Local Area Energy Strategy*
[2] UK CCC (2018) *Reducing UK emissions - 2018 Progress Report to Parliament*. Available at: https://www.theccc.org.uk/wp-content/uploads/2018/06/CCC-2018-Progress-Report-to-Parliament.pdf (Accessed: 26 October 2018)

- **to attract new and existing energy and digitalisation businesses to trial ideas and grow within the county,**
- **to stimulate the local economy and develop employment opportunities through innovation and deployment of low carbon energy projects,**
- **to develop a joined-up approach to the energy transition engaging local academia, communities and businesses.**

Bridgend has already hosted the delivery of some innovative energy projects:

- **The Living Lab:** Energy Systems Catapult has installed a Home Energy Services Gateway in 30 residential properties in Bridgend to monitor energy usage within the home and conduct trials of innovative service offerings, within a real-world environment.
- **FREEDOM:** Wales and West Utilities, Western Power Distribution and PassivSystems delivered the FREEDOM (Flexible Residential Energy Efficiency Demand Optimisation and Management) project in Bridgend, which looked *"…to better understand if hybrid heating systems are technically capable, affordable and attractive to customers as a way of heating homes."*[3]. Reports relating to the FREEDOM project are available on Western Power Distribution's website: https://www.westernpower.co.uk/documents.
- **Local Area Energy Planning:** Energy Systems Catapult have used their EnergyPath Networks™ (EPN) tool to undertake whole systems Local Area Energy Planning of Bridgend County Borough. The outputs of this work have been used to inform a Local Area Energy Strategy[4] to decarbonise emissions from buildings within the county borough by 95% (from a 1990 baseline) by 2050.

Table 1.1 summarises the near-term project/activities planned, and the proposed project locations are provided in figure 1.1.

[3] Western Power Distribution (no date) *FREEDOM.* Available at: https://www.westernpower.co.uk/projects/freedom (Accessed 10 October 2018)

[4] ETI (2018) *Bridgend Local Area Energy Strategy*

Table 1.1: Near-Term Project/Activity Timescales

2018	2019: *FIT scheme closes - UK leaves EU*	2020: *WG carbon target/budget end - Smart meters rolled-out - WG elections*	2021: *RHI planned closure - Current Arbed end date - Local elections*	2022 *UK elections - Current WG RE Support Service end date*	2023 *ERDF funding ends*	2024	2025: *WG elections (if not earlier) - WG carbon budget (2021-25)*
DP1 Bridgend Town Lower Carbon District Heat (DH) Network Phase 1: 1st step to decarbonising Bridgend town.							
	DP2 Bridgend Town Lower Carbon DH Network Phase 2: Build on DP1 business case and extend heat network.						
DP3 Energy Efficiency Projects: Tackle fuel poverty by installing energy efficiency measures in areas in need.							
	InP1 Fully Targeted Retrofit: Understand the benefits of dynamic modelling and performance monitoring and how these can help develop more compelling retrofit offerings for consumers.						
	InP2 Hybrid Heat Pumps and Full Electrification: Build on the success of the FREEDOM project and further explore the role of hybrid heat pumps in the overall decarbonisation of the Bridgend energy system.						
InP3 Caerau Mine Water Gas-to-District Heating Transition: Deliver a demonstrable example of a low carbon DH system which transitions existing residential consumers from gas heating to DH.							
InP4 Affordable Urban Heat Networks (HNs): Establish solutions for reduced HN costs & improved efficiencies.							
	InP5 Electrification of Heat through Energy as a Service: Deliver energy as a service to heating consumers via different electrified heating technology packages and gain insights to assist further roll-out if successful.						
InP6: Intelligent Bridgend Energy System Design: Explore the benefits that arise from integration of heat, electricity & transport systems							
				Activity A Non-Domestic Building Data: Gather data on Bridgend's non-domestic buildings and update the Strategy.			
	Activity B Low & Zero Carbon DH Energy Sources: Identify and investigate potential lower and zero carbon heat sources for DH networks to feed-in to future projects.						
Activity C Planning Policy Alignment with Decarbonisation Strategy: Ensure the new LDP accounts for the Local Area Energy Strategy.							
Activity D Establishing Bridgend as a Centre for Innovation: Effectively market Bridgend as an area to trial innovation projects and stimulate economic growth.							
Activity E Identify Power, Transport and Digitalisation Projects: Develop complementary electricity, transport and digital infrastructure projects alongside the heating projects to ensure that decarbonisation takes place in a joined-up manner.							
				Activity F Scoping Future Delivery Plans: Ensure continual learning to achieve large-scale deployment initiatives.			

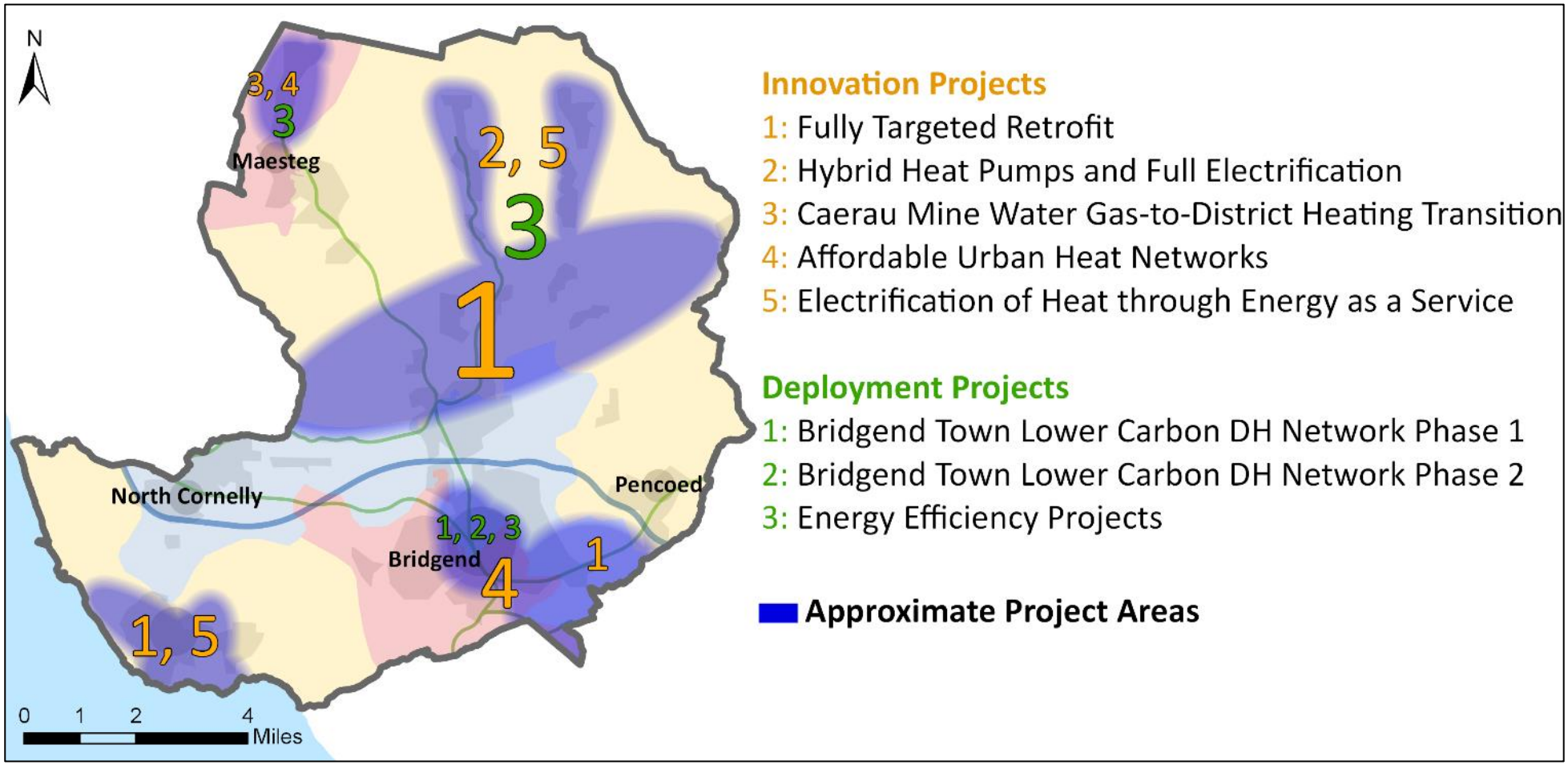


Figure 1.1. Target Project Locations

3. Introduction

BCBC have developed this Smart Energy Plan with support from Energy Systems Catapult (ESC), Welsh Government (WG), the Energy Technologies Institute (ETI) and other stakeholders. It builds on the strategic activities identified in the Local Area Energy Strategy, "the Strategy"[5] and the project details and recommendations provided in the Draft Smart Energy Plan[6]. It focuses on a pipeline of innovation projects that has been established through the work undertaken under the Smart Systems and Heat Phase 2 programme. The strategy, priorities, objectives, success criteria and project pipeline detailed within this document are driven by BCBC and set against the local context and vision. Learning from the innovation projects will be collected and used alongside learning from projects undertaken elsewhere to revisit and update the preferred pathways to decarbonisation for Bridgend and the UK. The projects and activities described in this document will not be driven and delivered by BCBC alone. BCBC will seek to establish the county as a "Centre for Innovation", creating an attractive and supportive environment, in which BCBC will act as an enabler for innovators to introduce and deliver decarbonisation projects, products and concepts to local consumers.

3.1. BCBC's Vision

BCBC has a vision ***to make Bridgend a decarbonised, digitally connected smart County Borough.*** In doing so it will transition from the current national, centralised energy system to a future low carbon, decentralised energy system that works for its individuals, communities and businesses[5].

In achieving this vision, it aims to not only decarbonise the energy sector, but stimulate economic growth; providing new job opportunities to residents and attracting new and existing businesses to trial initiatives and grow within the county borough. This aim aligns with the vision outlined in BCBC's Regeneration Strategy (2008-2021), that; *"By 2021, Bridgend County Borough will be recognised as a self-contained, productive sub-regional economy with a skilled and utilised workforce in a place where people and businesses want to be"*[7].

3.2. UK Strategy

The UK's Industrial Strategy[8] aims to increase productivity and UK income generation by focusing on four grand challenges:

- Artificial Intelligence (AI) and the Data Economy
- The Future of Mobility
- Clean Growth, and
- Meeting the needs of the Ageing Society

[5] ETI (2018) *Bridgend Local Area Energy Strategy*
[6] Energy Systems Catapult (2017) *Developing a Smart Energy Project Plan for Bridgend County Borough Council*
[7] BCBC (2008) *Fit for the Future Bridgend County Borough's Regeneration Strategy.* Available at: https://www.bridgend.gov.uk/media/1129/fit-for-the-future-bridgend-regeneration-strategy-2008-2021.pdf (Accessed: 15 October 2018)
[8] BEIS (2017) *Industrial Strategy.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf (Accessed: 30 July 2018)

Clean growth refers to *"growing our national income while cutting greenhouse gas emissions"*[9] this will be achieved through development of and a transition to low carbon technologies and more efficient resource use, which is highlighted as *"one of the greatest industrial opportunities of our time"*[10]. As a way of advancing the clean growth challenge, the Industrial Strategy strongly endorses the idea of taking a whole-systems approach to the decarbonisation of energy[10], a concept which has been central to the local area energy planning undertaken to inform Bridgend's Local Area Energy Strategy[11]. Since 1990 the UK economy has grown by two-thirds alongside a 42% reduction in carbon emissions[9] – potentially showing that the two challenges can be met concurrently.

The UK government's objectives through the Clean Growth Strategy[9] are:

1. *"To meet our domestic commitments at the lowest possible net cost to UK taxpayers, consumers and businesses; and,*
2. *To maximise the social and economic benefits for the UK from this transition."*[9]

These objectives mirror BCBC's own objectives for delivery of their local decarbonisation agenda. To meet these objectives innovation is required to develop improved products, processes and services which will cause costs associated with clean technologies to reduce[9]. Whilst Climate Change is a global issue requiring global action, the Clean Growth Strategy acknowledges that "*Local areas are best placed to drive emission reductions through their unique position of managing policy on land, buildings, water, waste and transport"*[9]. This context reinforces the need for BCBC to have a decarbonisation strategy implemented through a series of delivery plans.

3.3. Welsh Strategy

Under the Environment (Wales) Act Welsh Ministers are required to ensure that net emissions in Wales are at least 80% lower than the baseline set in legislation[12]. In 2018, Welsh Government undertook a consultation to gain views on how Wales could reduce greenhouse gas emissions by 45% between 2018 and 2030[13]. The consultation document identifies a large range of actions that could assist with meeting this target[13]. The document identifies the importance of innovation to achieve the emissions targets, and identifies the following specific opportunities:

- *"Buildings: new products and delivery models for low-carbon new-builds and retrofitting*
- *Industry: new technologies and processes, including Carbon Capture Use and Storage (CCUS)*
- *Power: new holistic solutions to reduce energy consumption at source, generate renewable energy and optimise its distribution*
- *Resource management: new processes to optimise the sustainable use of resources and assist our transition to a Circular Economy"*[13]

---

[9] BEIS (2017) *Clean Growth Strategy.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf (Accessed 10 October 2018)
[10] BEIS (2017) *Industrial Strategy.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf (Accessed: 30 July 2018)
[11] ETI (2018) *Bridgend Local Area Energy Strategy*
[12] Welsh Government (2018) *Decarbonisation programme.* Available at: https://gov.wales/topics/environmentcountryside/climatechange/emissions/?lang=en (Accessed: 29 October 2018)
[13] Welsh Government (2018) *Welsh Government Consultation Document Achieving our low-carbon pathway to 2030.* Available at: https://beta.gov.wales/sites/default/files/consultations/2018-08/low-carbon-pathway-to-2030-consultation.pdf (Accessed: 29 October 2018)

Recent target announcements from Welsh Government[14] have put an emphasis on local energy generation and ownership, with:

- 70% of Welsh electricity consumption to be generated from renewable energy by 2030.
- 1 GW of Welsh renewable electricity capacity to be locally owned by 2030.
- Renewable energy projects to include an element of local ownership by 2020.

This prioritisation of local ownership, was driven by the view that it would give rise to more local benefits, including social benefits and financial benefits, e.g. through job creation[14]. This viewpoint echoes BCBC's view that engaging with the decarbonisation agenda can stimulate economic benefits within the local area if it is executed to do so.

3.4. The Smart Systems and Heat Programme

Heating accounts for almost one third of total UK carbon emissions. To achieve the 2050 target of an 80% reduction in carbon emissions, the UK must decarbonise the domestic heating market at the rate of 20,000 homes a week by 2025 – the current rate is less than 20,000 homes a year.

The Smart Systems and Heat (SSH) programme is designed to help innovators address this market failure and unlock the commercial opportunity of low carbon heating, by:

- Addressing the technical, regulatory, economic and social barriers that block new low carbon heat products, services and business models getting to market,
- Establishing a range of platforms, insights and modelling tools to help innovators discover new low carbon heating solutions that consumers value,
- Bringing innovators, businesses, local authorities, networks, policy-makers, regulators and consumers together to create new markets that deliver low carbon heating solutions at scale.

Smart Systems and Heat – Phase 1

The Energy Technologies Institute (ETI) launched the SSH programme and funded Phase 1, which was delivered by the Energy Systems Catapult and its partners.

The Smart Systems and Heat Phase 1 programme has developed software tools to design location-specific smart energy systems. Phase 1 undertook consumer behaviour, technology development, business modelling and supply-chain activities to support the decarbonisation of domestic heat using services that meet consumer needs. Phase 1 worked with Local Authorities to create a small number of project opportunities and roadmaps to support decarbonisation of heat specific to those communities.

Smart Systems and Heat – Phase 2

The Smart Systems and Heat Phase 2 programme aims to establish an open shared 'ecosystem' that brings together a diverse range of organisations, including: energy providers, product companies, networks, policy-makers, regulators and consumers to interact both technically and commercially across physical energy systems, market systems and information systems – to accelerate the decarbonisation of the domestic heating market. Phase 2 is funded through a grant

[14] Welsh Government (2018d) *Locally Owned Renewable Energy – A Call for Evidence.* Available at: https://gov.wales/topics/environmentcountryside/energy/renewable/local-renewable-energy-generation/call-for-evidence/?lang=en (Accessed: 30 July 2018)

agreement with the Department for Business, Energy and Industrial Strategy (BEIS) and builds on the concepts developed in Phase 1 (funded by the ETI).

The initial focus of the Local Area Energy Strategy, developed under the Smart Systems and Heat Phase 1 programme, is on decarbonising domestic heating which is a major contributor to Bridgend County Borough's carbon emissions[15]. Decarbonising heat is critical to achieve a low carbon energy system and is a local and national challenge yet to be addressed. The near complete decarbonisation of domestic heating and hot water is required and there isn't a "one size fits all" solution[15]. Individual homes in different locations have several possible low carbon heating options which need to be considered[15], and decisions need to be made at a local level. As such it is an appropriate challenge for BCBC to focus on. BCBC are, however, committed to decarbonising and developing localised solutions for power and transport as well as heat (across both domestic and non-domestic sectors). As such, whilst the projects and activities outlined within this Plan are primarily focused on decarbonising heat, BCBC would also like to lead, encourage and facilitate complementary projects that address decarbonisation of power and transport within Bridgend.

3.4.1. Work Undertaken to Date

Table 2.2 summarises the major activities undertaken with BCBC to date.

[15] ETI (2018) *Bridgend Local Area Energy Strategy*

Table 2.2: Smart Systems and Heat Programme Progress Timeline

Date:	2016	Jan 2016 – May 2017	December 2017	March 2018
Activity:	**Bridgend Scope Priorities and Constraints:** set the Local Area Energy Planning project scope, stakeholder priorities/ expectations and criteria for decision making, consensus and acceptance.	**Local Area Energy System Modelling:** applied a whole system approach to investigate decarbonisation pathways in the local area, for a given set of constraints and understand cost-effective transition pathways initially focused on decarbonising heat. This identified potential scenarios including a business-as-usual, a world with green gas and a world without green gas in Bridgend.	**Developing a Smart Energy Project Plan for BCBC[16]:** a starting point of a process of engagement, consultation and collaboration to develop a 'Smart Energy Project Plan' to outline a pipeline of domestic heat decarbonisation projects.	**Policy and Commercial Insights for Energy System Transition[17]:** describes policy, economic and commercial perspective of the Local Area Energy Strategy. Quantifies the social benefits that will arise from the Strategy. Makes policy recommendations.
Date:	**May 2018**	**May 2018**	**Current**	**2017 – 2019**
Activity:	**Local Area Energy Planning Evidence Base[18]:** Provides the technical analysis and area specific evidence, summarising the whole systems optimisation analysis and supporting information which has been used to inform future network choices in the local area.	**Local Area Energy Strategy[19]:** provides a long-term framework (2020-2050) for reducing carbon emissions in Bridgend's buildings by 95%, and identifies near-term strategic activities required to progress the Strategy.	**Smart Energy Plan (this document):** builds on the near-term delivery activities identified in the Local Area Energy Strategy and provides a near-term delivery plan (2018-2025).	**The "Living Lab" and Home Energy Services Gateway (HESG):** digital infrastructure installed in 30 homes in Bridgend (79 elsewhere) to monitor energy usage within the home and conduct trials of innovative service offerings, within a real-world environment.

[16] Energy Systems Catapult (2017) *Developing a Smart Energy Project Plan for Bridgend County Borough Council*
[17] ETI (2018) *Bridgend Energy Transition Plan: Policy & Commercial Insights*
[18] ETI (2018) *Local Area Energy Planning Bridgend County Borough Council Evidence Base*
[19] ETI (2018) *Bridgend Local Area Energy Strategy*

3.4.2. The Local Area Energy Strategy

Bridgend piloted a whole system approach to local area energy planning as part of SSH. This investigated cost-effective pathways for reducing carbon emissions from buildings by 95% by 2050 and the near-term activities and innovation opportunities needed to enable this. The assessment of many possible future local energy scenarios was used to identify areas within Bridgend considered at this stage more likely to be suitable for development of district heat, hybrid and electric-heating solutions in combination with different levels of targeted fabric retrofit, as shown in figure 2.1. District heating emerged as the most dominant heat type selected for the more densely populated areas of Bridgend. Where no prevalent form of future network option was identified the areas in figure 2.1 are marked as Electricity/District Heat Mix, these generally follow the route of the M4 and a combination of measures are likely to be required for decarbonisation[20].

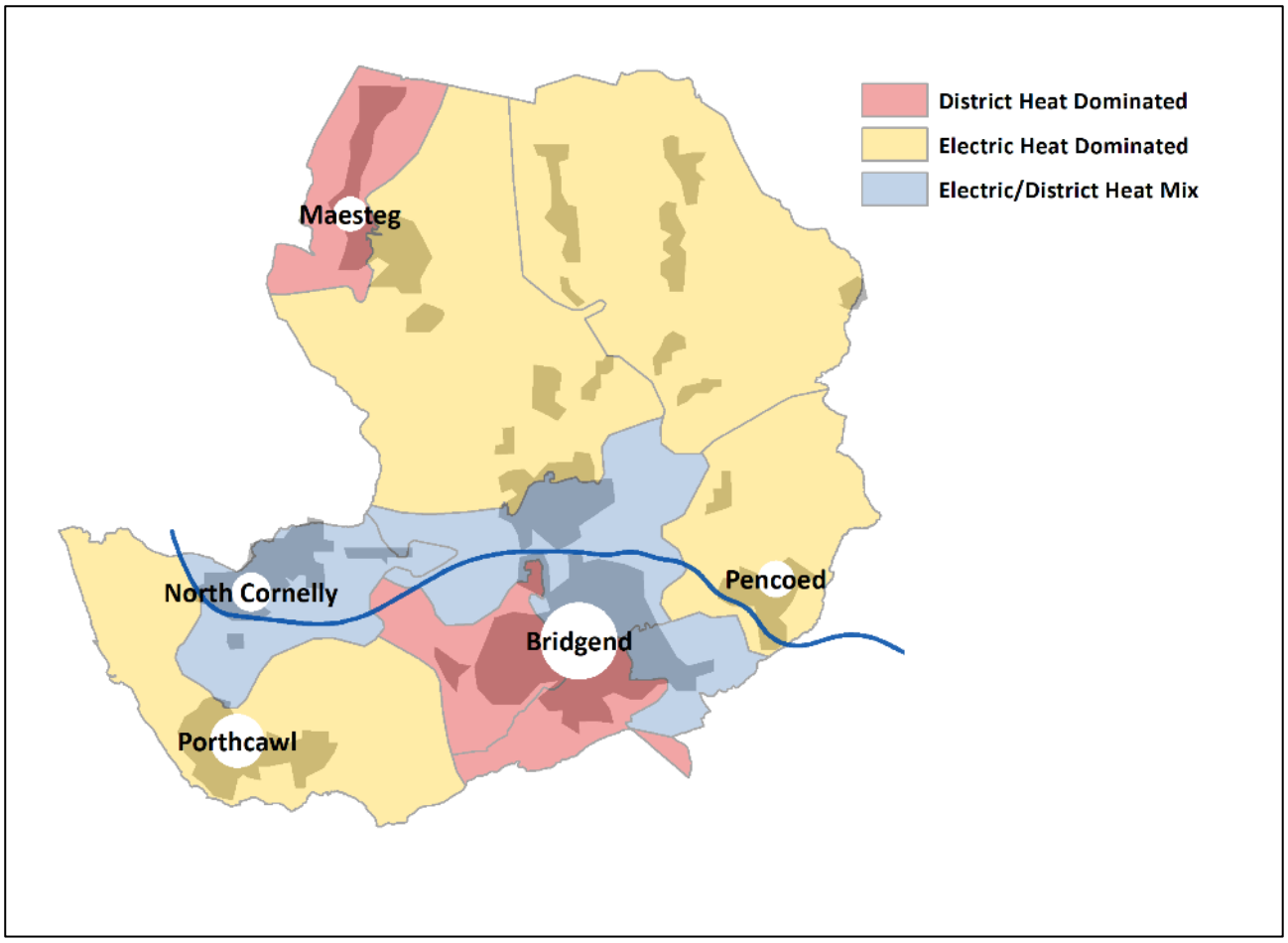


Figure 2.1: Dominant Heating Systems in 2050 by Area

Whilst pre-dominant heating systems have been identified, the Strategy highlights that some uncertainties associated with these decarbonisation options remain, with innovation and market transformation required to overcome these. As such, the Strategy cautions that major decisions on energy network choices should not be made today but should be made following activities that

[20] ETI (2018) *Bridgend Local Area Energy Strategy*

"….test and evaluate - through innovation, development and demonstration - if and how the identified decarbonisation of heat themes can be rolled out at scale…"[20]. This period of testing, development and demonstration needs to take place in the near-term to ensure that sufficient evidence and insights are collected for long-term decisions to be made and overall decarbonisation targets to be achieved.

The Local Area Energy Strategy[21] identified five near-term delivery plan activities to enable Bridgend to start the process of testing through innovation:

- *Deployment of Better Targeted Retrofit:*
- *Developing and testing compelling customer propositions for hybrid heat pumps*
- *Overcoming barriers to moving homes from gas to district heating,*
- *Reducing costs of heat networks in urban centres and overcoming barriers to connecting existing homes to heat networks,*
- *Developing and testing compelling customer propositions for electric heating targeting potential early adopters through council services.*[21]

3.4.3. Smart Energy Plan

This Smart Energy Plan formally maps out the near-term plan (up to 2025) for delivery of the first phase of the Bridgend Local Area Energy Strategy. As mentioned previously, the initial focus of the Strategy is on decarbonising the domestic heating sector, due to the locally distinct nature of this challenge. BCBC are committed to decarbonising and developing solutions for heat, power and transport (across both domestic and non-domestic sectors) and will actively pursue partners and project opportunities to achieve this. The Plan's primary focus is to identify opportunities for innovation projects to deliver on the Strategy's recommended activities and address the following criteria outlined in the report *Developing a Smart Energy Project Plan for Bridgend County Borough Council*[22]:

- Develop projects that:
    - integrate and demonstrate options for decarbonisation of domestic heating or options for decarbonisation of domestic heating alongside other 'connected home' solutions,
    - address domestic heat decarbonisation and future local energy system needs and opportunities that may be relevant in other locations, providing potential for replication and scale-up,
    - experiment with new service offerings;
        - unlocking new consumer value sources and providing the evidence needed for roll-out of new market arrangements which support those offerings,
        - explore the potential impact of new consumer services on upstream parts of the value chain,
    - align to one or more of the five Future Actions that SSH aims to stimulate and support.[22]

[21] ETI (2018) Bridgend Local Area Energy Strategy
[22] Energy Systems Catapult (2017) *Developing a Smart Energy Project Plan for Bridgend County Borough Council*

The Plan aims to establish:

- what BCBC and stakeholders intend to achieve by 2025 to progress towards their vision of a decarbonised and economically productive county borough,
- the challenges and opportunities facing the county borough, which need to be considered when developing and delivering projects,
- a road map detailing specific actions and steps required for delivery of a pipeline of individual, innovation and deployment projects,
- how actions planned in BCBC relate to Energy Systems Catapult's Smart System and Heat programme and how learning from project activities will be used to benefit the energy sector transition of the rest of the UK.

Delivery of the Plan will gather evidence, which will support:

- confident future decision-making regarding network choices and investment,
- de-risking the domestic decarbonisation delivery in Bridgend,
- overcoming barriers to decarbonisation of domestic heating,
- enabling opportunities for future decarbonisation delivery.

3.4.4. Bridgend's Strategic Objectives

BCBC's Smart Energy Plan strategic objectives are:

- to be a test bed for new energy system ideas and concepts; providing real-life case studies,
- to lead the decarbonisation agenda; by introducing new products and concepts to consumers,
- to attract new and existing energy and digitalisation businesses to trial ideas and grow within the county,
- to stimulate the local economy and develop employment opportunities through innovation and deployment of low carbon energy projects,
- to develop a joined-up approach to the energy transition engaging local academia, communities and businesses.

Success criteria, factors, key performance indicators and targets for meeting the strategic objectives within the time frame of the Smart Energy Plan (up to 2025) are provided in table 2.3. These are initial targets which will be reviewed and amended as necessary based on development of specific project plans and BCBC priorities. In order to meet the targets set, BCBC will work with stakeholders and interested parties to enable project delivery. Whilst some projects will be directly driven by BCBC, BCBC's role in other projects will be as an enabler, supporting external organisations to develop, introduce and deliver decarbonisation initiatives to local consumers.

Table 2.3: Innovation Success Criteria, Factors and Measures (up to 2025)

Success Criteria	Success Factor	Key Performance Indicator	Targets
Bridgend considered a leader in taking up new decarbonisation market offerings.	A strong relationship between BCBC and companies introducing new products/consumer offerings, so that BCBC provide development and marketing support to encourage uptake of the offerings.	Number of innovation projects delivered within Bridgend.	**6 innovation projects,** described in section 4 of this document, successfully developed and delivered, with learning, evidence and insights captured and disseminated to the wider energy industry to assist in future project development and successful scale-up.
Bridgend established as a location for trialling new energy concepts.	Establishing Bridgend as a Centre for Innovation and participants successfully recruited to be part of innovation trials.	Number of properties involved in innovation projects.	**3000 buildings** actively participating in innovation or deployment projects, with learning gained from the projects informing larger-scale decarbonisation in future plan periods.
Organisations introducing ideas and concepts within the county borough.	Networking with industry leaders to communicate the benefits of trialling products in Bridgend; an area that hosts diverse geography and demographics, with a supportive local and devolved national government.	Number of different organisations engaged with.	**250 organisations,** actively engaged in discussions regarding this Smart Energy Plan (to 2025) and future energy plans. Engagement activities will be planned through a dissemination plan and actively pursued through the organisation of industry engagement events.
		Number of organisations BCBC has developed and delivered projects with.	**50 organisations,** directly involved in delivery of projects.
		Regular Smart Energy Plan steering group meetings (see section 2.4.6 for details of steering group).	Smart Energy Plan steering group (see section 2.4.6 for details of steering group) meetings held a minimum of **twice per year** to ensure that local stakeholders remain integral to project development and delivery.
A stimulated local economy.	Additional income in the local area, supporting local employment markets.	Level of project funding secured.	**£20M** invested into Bridgend's energy system to support the energy transition.
Learning benefits for BCBC.	Strategy review and future Smart Energy Plans informed by the results of Innovation Projects delivered through this Smart Energy Plan.	Strategy review and future project planning accounting for learning from delivered projects.	Prepare and publish a second Smart Energy Plan for 2025-2030, and review, and update if necessary, the Local Area Energy Strategy considering project findings.
Wider Welsh and UK energy industry	Successful dissemination of project results to the	Delivery of project reports and	Publish publicly available insights reports for each innovation project

aware of learning from projects.	wider industry.	dissemination events.	delivered through the Plan and participate in dissemination events.

3.4.5. 2050 Decarbonisation Target

As per the Local Area Energy Strategy, BCBC are targeting **a 95% reduction (from a 1990 baseline) in emissions resulting from buildings in Bridgend County Borough by 2050**. The near-term delivery plan is focused on innovation activities which will provide learning to help support large-scale decarbonisation in the longer term. As such, a 2025 carbon abatement target is not included as part of the success criteria of this Plan. The purpose of the Plan is to create a route map for gathering evidence on how decarbonisation can be achieved. Therefore, it is considered of greater relevance to work towards a longer-term carbon reduction target (beyond the timescale covered by this Plan), which would be met by implementing the learning from the projects into a transition of business-as-usual activities.

The Local Area Energy Planning work considered different pathways for achieving the 95% reduction in emissions from buildings. Welsh Government is targeting an overall emissions reduction (from a 1990 baseline) of 80% by 2050. Targeting a greater reduction for buildings' emissions will allow for higher emissions from sectors which may be more difficult to decarbonise, e.g. agriculture. Figure 2.2 provides an illustrative carbon emissions reduction projection for achieving a 95% emissions reduction from Bridgend's buildings by 2050 (based on a 1990 baseline) generated through the future energy planning work undertaken by ESC. Numerous projection pathways are possible, but this particular illustration suggests that decarbonisation of buildings could start with decarbonisation of the national electricity mix, with in-home building emissions (largely a result of domestic heating) undergoing large-scale decarbonisation from approximately 2030 onwards. This progression pathway allows for a relatively small reduction in emissions from domestic buildings in the near term (~5% reduction in emissions between 2020 and 2030). Learning from innovation projects deployed within this time period would be integrated into large-scale deployment activities from 2030 onwards, when larger emissions reductions are projected (~80% reduction in emissions from domestic buildings between 2030 and 40).

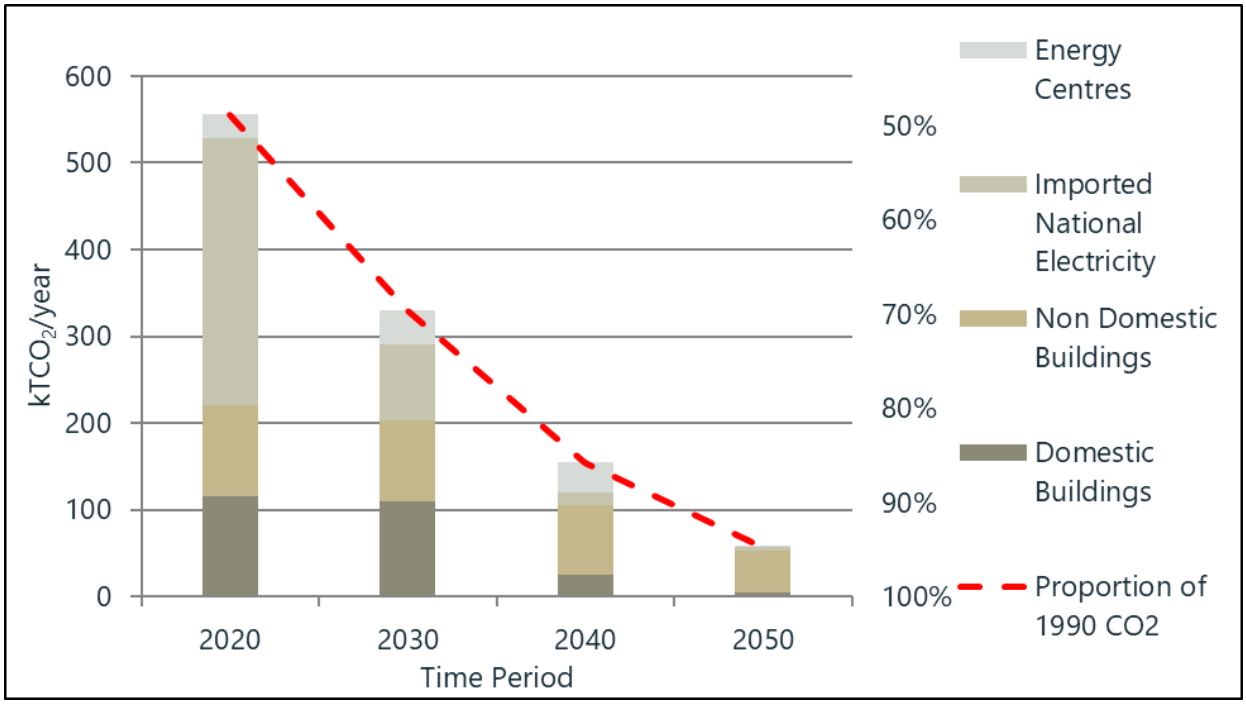


Figure 2.2: Illustrative Carbon Emissions Projection to Decarbonise Bridgend's Buildings by 95% by 2050 (based on a 1990 baseline)

In addition to the emissions sources represented in figure 2.2, BCBC will need to deploy measures which reduce emissions from the transport sector, along a similar trajectory. Welsh Government have proposed that local authority planning departments will need to set local renewable energy deployment targets[23]. These targets are to be based on the perceived capacity of the local area rather than the area's needs[23]. To inform these targets an up-to-date renewable energy assessment and energy opportunities plan will need to be established. BCBC's Local Development Plan (LDP) is due to be updated with a new plan to be adopted in 2021[24]. An activity identified to be undertaken within this Plan is for the BCBC Sustainable Development Team to work with the Planning Team on the updated LDP and ensure that the insights provided by the Smart Energy Plan and Local Area Energy Strategy are considered.

3.4.6. Stakeholders and Steering Group

The development and delivery of the Smart Energy Plan has a wide range of stakeholders. A Smart Energy Plan steering group has been established to provide a forum for sharing ideas, collecting feedback and ensuring that local stakeholders are aware of BCBC's plans. The first Steering Group meeting was held on the 10th September 2018. During the meeting the Strategy and initial project ideas were presented to attendees with opportunities for discussion around both elements. Meeting attendees were fully engaged in the discussions and supportive of the project ideas.

[23] Welsh Government (2018) *Draft Planning Policy Wales: Edition 10.* Available at: https://beta.gov.wales/sites/default/files/consultations/2018-02/ppw-restructure-draft-ppw_en.pdf (Accessed: 10 October 2018)
[24] BCBC (2018) *Bridgend County Borough Council Report to Council 20 June 2018, Report of The Corporate Director – Communities, Bridgend Replacement Local Development Plan (LDP) Delivery Agreement, pp.145-149*. Available at: http://democratic.bridgend.gov.uk/documents/g3214/Public%20reports%20pack%2020th-Jun-2018%2015.00%20Council.pdf?T=10&LLL=0 (Accessed: 13 September 2018)

BCBC are intending to hold an industry event to introduce the Strategy and project ideas to potential private sector project partners and provide an opportunity for potential partners to introduce their services and products. Table 2.1 summarises the main project stakeholders – with the steering group members identified with an Asterix.

A range of private sector partners would need to be engaged with BCBC for successful development and delivery of projects, including:

- Energy Service Providers: providing new energy service offerings to consumers,
- Technology providers: trialling and demonstrating low carbon technologies,
- Installers: ensuring that system installation is undertaken efficiently and to a high standard,
- Digital Service Providers: providing integration of home monitoring devices, monitoring platforms and energy systems to enable insight on energy use and flows within the home and remote control of the home energy system.

Table 2.1: Smart Energy Plan Stakeholders

Group	Stakeholder	Stakeholder Interest
Public Sector	BCBC*	Primary stakeholder looking to achieve their vision for the county and the strategic objectives outlined in section 2.4.4.
	Welsh Government*	Welsh Government is interested in the development of a Smart Energy Plan and proposed pilot projects in Bridgend to see energy improvements within Bridgend itself and facilitate wider learning for the energy transition across the rest of Wales.
	Cardiff Capital Region City Deal	A 20 year-long, £1.2 billion investment programme covering ten local authorities (Bridgend, Merthyr, Torfaen, Caerphilly, Blaenau Gwent, Monmouthshire, Newport, Cardiff, Vale of Glamorgan, Rhondda Cynon Taf). Matching UK and Welsh Government funding with private sector finance to develop strategic opportunities to create and safeguard jobs and stimulate the economy; providing added value to the investment. The deal has several key themes; BCBC lead on the Energy theme.
	Cwm Taf Local Health Board*	Cwm Taf is due to become Bridgend's local health board in April 2019. The Princess of Wales and Glynrhyd hospitals in Bridgend have large heat demands. Warmer homes could lead to health benefits for residents.
Utilities	Wales and West Utilities*	Local gas DNO. A key partner on the development and delivery of innovative gas heating projects.
	Western Power Distribution*	The local electricity DNO. A key partner on the development and delivery of innovative electric heating projects.
	Dwr Cymru	Local not-for-profit water supplier. Waste water has been identified as a possible district heating heat source, and the potential for utilising the sewer network for provision of fibre networks has been identified elsewhere in the UK[25].
Housing Associations	Valleys to Coast*, Wales & West Housing*, Linc Cymru*, Hafod*	Interested in providing sustainable, low-cost energy solutions for their tenants.
Not-for-Profit	Energy Systems Catapult*	The Smart Energy Plan projects and activities incorporate tools, concepts and learning that has been generated through SSH. The plan implements the first phase of the Local Area Energy Strategy and the activities are informed by ESC's Local Area Energy Planning. ESC will remain engaged in these activities in a manner appropriate to each project.
Industry	Technology & Energy Service Providers, Digital Platform Developers	Interested in providing and developing products and consumer propositions to enable company growth.
	Local Supply Chain	Potential to be involved in installation and maintenance opportunities, enabling economic growth and job provision.

[25] SSE (2018) *SSE Enterprise Telecoms, Three UK and Telefónica UK (O2) have agreed to support further fibre rollout in London*. Available at: http://sse.com/newsandviews/allarticles/2018/09/sse-enterprise-telecoms,-three-uk-and-telefonica-uk-have-agreed-to-support-further-fibre-rollout-in-london/ (Accessed: 02 October 2018)

Academia	Cardiff University*	Cardiff University have contributed to the development of the Caerau Mine Water project and the Welsh Government's Smart Living Wales' Fair Futures project (with Energy Systems Catapult).
Community	Residents & Community Groups	Potential project participants and eventual consumers.

4. Local Challenges and Opportunities

Routes to decarbonisation are shaped by local context and will give rise to a wide range of local impacts. As such, it is important to understand local circumstances when developing a plan, to ensure that opportunities are exploited, and problems are not exacerbated.

4.1. Political/Legal Factors

Located within a devolved nation; Bridgend is governed by UK, Welsh and local policy.

4.1.1. Well-Being and Sustainable Development

The Well-Being of Future Generations Act (Wales) is focused on improving the social, cultural, economic and environmental well-being of Wales. It places a duty on public bodies to consider the long-term impact of decisions and work in a joined-up manner to ensure that all aspects of sustainable development are considered and delivered upon for people today and in the future[26]. The goals of the Act are summarised in figure 3.1.

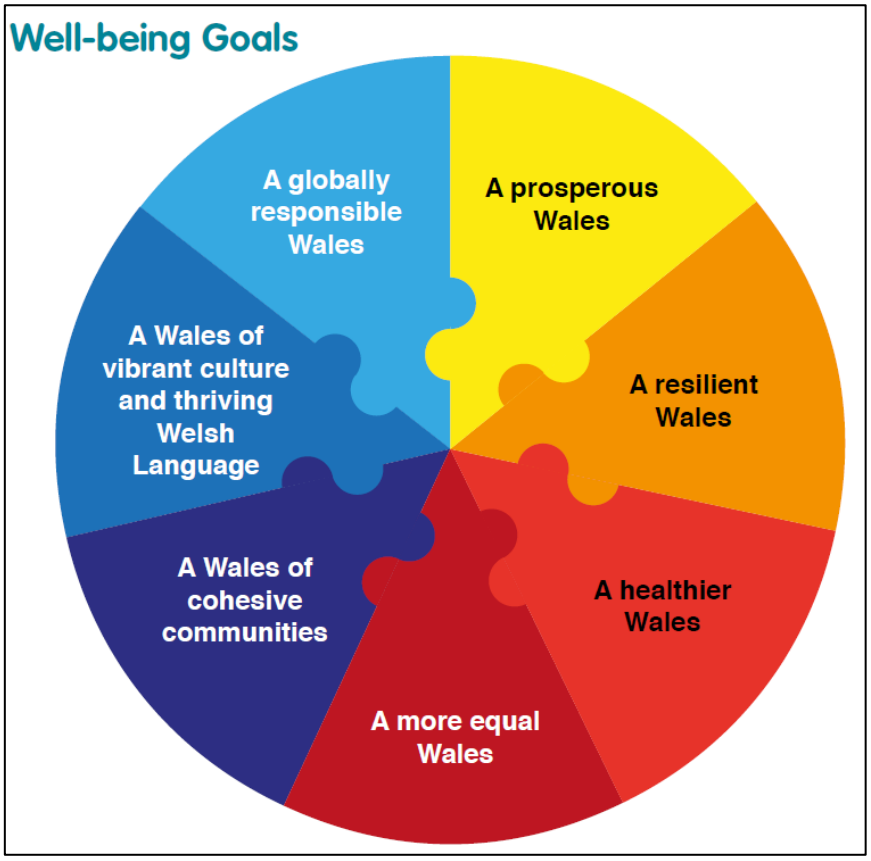


Figure 3.1: Well-Being of Future Generations Act – Well-Being Goals[26]

In fulfilling, their legal duties with respect to the Act, BCBC need to work towards achieving these goals when developing the county's energy objectives. In this way, decarbonisation projects cannot just focus on the inherent environmental benefits that will arise from decarbonisation, but work to ensure that additional benefits are derived, for example by stimulating economic growth and

[26] Welsh Government (2015) *Well-being of Future Generations (Wales) Act 2015 The Essentials* https://gov.wales/docs/dsjlg/publications/150623-guide-to-the-fg-act-en.pdf (Accessed: 15 October 2018)

leading to a more prosperous economy, delivering higher levels of comfort and better living environments to improve the health and well-being of the county's citizens and consulting with local communities to ensure that they are able to influence developments that happen in their local area. In addition to the Well-Being Goals the Act sets out five ways of working (see table 3.1) and 46 Well-Being Indicators to monitor progress towards the goals. The projects developed within this Plan will need to take account of the Well-Being Act and ensure that both the demonstration projects and future roll-out opportunities enable BCBC to deliver on its duties under the Act and improve the well-being of Welsh citizens. Table 3.1 summarises how the projects encompass the five ways of working.

Table 3.1: Well-Being Act Five Ways of Working

Long-term	**Integration**	**Involvement**	**Collaboration**	**Prevention**
"The importance of balancing short-term needs with the needs to safeguard the ability to also meet long-term needs."[27]	*"Considering how the public body's well-being objectives may impact upon each of the well-being goals, on their objectives, or on the objectives of other public bodies."*[27]	*"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."*[27]	*"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."*[27]	*"How acting to prevent problems occurring or getting worse may help public bodies meet their objectives."*[27]
BCBC's energy projects will need to be suitable for the long-term needs of citizens, focusing on long-term, rather than short-term carbon targets, and providing long-term jobs in addition to short-term deployment opportunities.	The projects will need to consider each of the seven goals and ensure that no detrimental impact on any of the goals arises from project implementation. The steering group provides a forum for communicating the objectives and ensuring they align with others' objectives.	BCBC will need to communicate their energy strategy and Smart Energy Plan publicly. Projects will be targeted at a cross-section of the local population; rather than one demographic.	BCBC will seek to form partnerships with different public, private and academic bodies to deliver the Smart Energy Plan and have established the Smart Energy Plan Steering Group to facilitate this.	By acting today and taking a whole system planning approach to decarbonisation, BCBC are aiming to make the most cost-effective transition in a planned, strategic manner.

[27] Future Generations Commissioner for Wales (2018) *Well-Being of Future Generations (Wales) Act.* Available at: https://futuregenerations.wales/about-us/future-generations-act/ (Accessed: 30 July 2018)

4.1.2. Planning

Planning Policy Wales (Wales' national planning policy) is currently being revised, with the consultation document indicating that the new edition may require local authorities to assess the potential for renewable energy developments in their area and set local targets[28]. BCBC's Local Development Plan (LDP) was published in 2013, with the following vision:

"By 2021, Bridgend County Borough will be transformed to become a sustainable, safe, healthy and inclusive network of communities comprising strong, interdependent and connected settlements that can offer opportunities for an improved quality of life and environment for all people living, working, visiting and relaxing in the area.

The catalysts for this transformation will be:

- *a successful regional employment, commercial and service centre in Bridgend*
- *a vibrant waterfront and tourist destination in Porthcawl*
- *a revitalised Maesteg*
- *a realisation of the strategic potential of the Valleys Gateway; and*
- *thriving Valley communities."*[29]

This vision echoes some of the objectives of the Well Being of Future Generations Act, with a clear emphasis that developments need to lead to improvements in the quality of life of those within the county borough. When developing energy projects which deliver on this vision, how the projects impact on local people, as consumers, workers and residents should be considered and taken into account when selecting target locations and demographics for the project.

4.1.3. Carbon Targets and Decarbonisation of Heat

Decarbonisation of the energy consumption within Bridgend County Borough will contribute to the legally binding national targets stipulated in the UK Climate Change Act and Environment Act (Wales); to reduce greenhouse gas emissions by 80% by 2050, against baseline levels,[30,31] see figure 3.2.

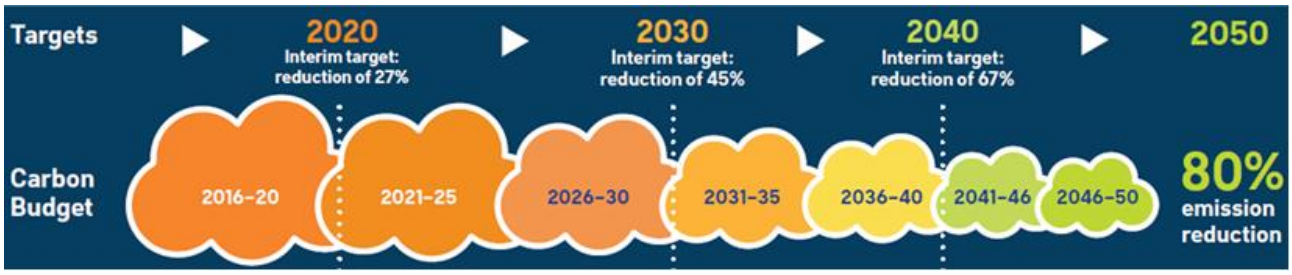


Figure 3.2: Environment Wales (Act) requires Welsh Government to set Interim Targets and Carbon Budgets to the 2050 Target – due to be announced by the end of 2018[32]

[28] Welsh Government (2018) *Draft Planning Policy Wales: Edition 10.* Available at: https://beta.gov.wales/sites/default/files/consultations/2018-02/ppw-restructure-draft-ppw_en.pdf (Accessed: 10 October 2018)
[29] BCBC (2013) *Local Development Plan.* Available at: https://www.bridgend.gov.uk/media/1899/written-statement.pdf (Accessed: 30 July 2018)
[30] Welsh Government (2016) *Environment Act (Wales).* Available at: http://www.legislation.gov.uk/anaw/2016/3/contents (Accessed: 30 July 2018)
[31] Climate Change Act (2008) Available at: http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf (Accessed: 17 October 2018)
[32] Welsh Government (2018)

In its research briefing, Low Carbon Heating, the National Assembly for Wales highlighted the increased challenge faced by Wales to meet the UK energy and emission targets due to a higher proportion of emissions arising from "big emitters", including refineries, steel works and power stations[33]. To achieve the overall energy reduction target of 80% the UK CCC advised that emissions from buildings within Wales will need to be reduced by 85% to allow for higher emissions from other sectors (e.g. Agriculture)[33], see figure 3.3.

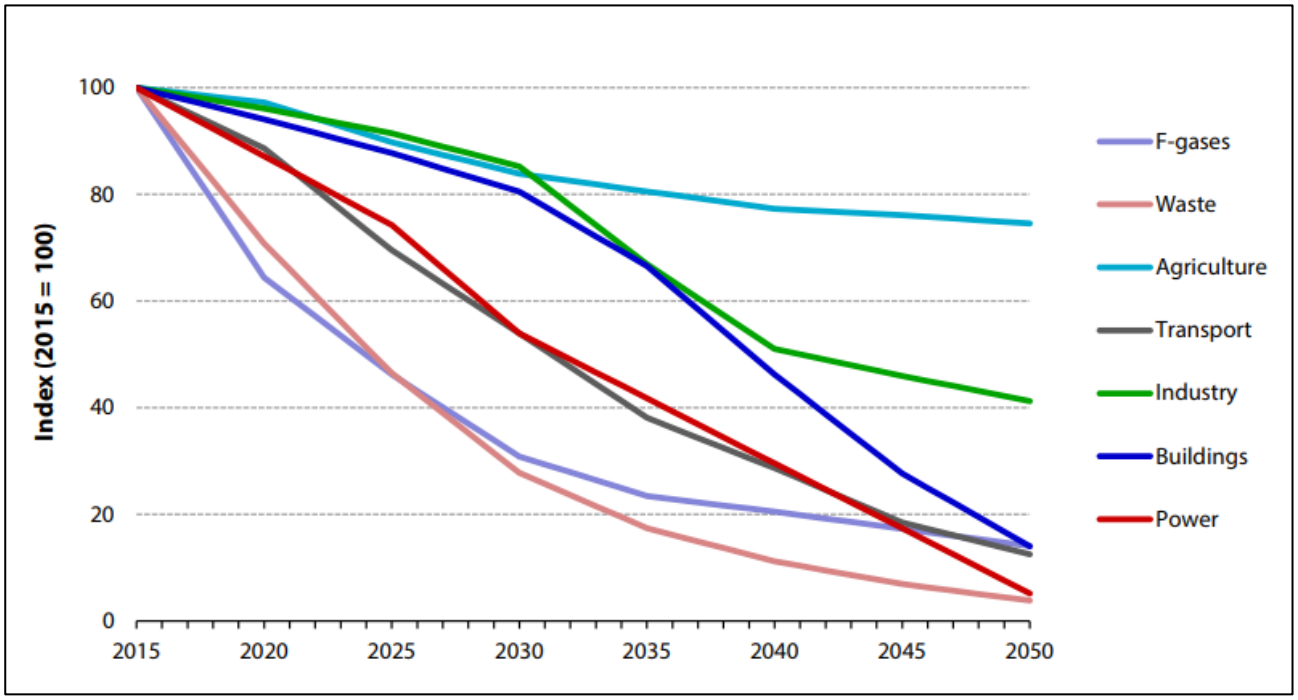


Figure 3.3: Emissions Reduction Projections advised by UK CCC for Wales[33]

Bridgend County Borough itself, hosts a number of manufacturing facilities and businesses. Whilst the Bridgend Local Area Energy Strategy focuses initially on the decarbonisation of domestic heating, it acknowledges that the Strategy will need to evolve to include decarbonisation of the non-domestic buildings, industry and transport[34]. In delivering this Smart Energy Plan, BCBC will engage with local stakeholders to understand their individual energy needs, and any plans that they have for future energy developments, so that these can be integrated within the wider plans which focus on the domestic sector, where appropriate.

Heating accounts for almost one third of UK carbon emissions. To meet the overall targets these emissions will need to be largely eliminated. Whilst tangible progress has been made in decarbonising the electricity sector, there has been little progress with respect to decarbonising the heating sector with just 4% of homes in the UK using low carbon heating[35]. The UK CCC have

[33] National Assembly for Wales (2018) *Research Briefing: Low Carbon Heat*. Available at: http://www.assembly.wales/research%20documents/18-042%20-%20low%20carbon%20heat/18-042-web-english.pdf (Accessed: 30 July 2018)
[34] ETI (2018) *Bridgend Local Area Energy Strategy*
[35] ETI (2015) *Consumer Challenges for Low Carbon Heat.* Available at: https://www.eti.co.uk/insights/smart-systems-and-heat-consumer-challenges-for-low-carbon-heat (Accessed: 10 October 2018)

advised UK government that alongside higher standards for new buildings, low carbon heating systems and energy efficiency improvements need to be installed in existing homes[36,37].

A Renewable Energy Assessment undertaken to help inform the Local Development Plan for Bridgend[38] identified that there was the potential to generate 38% of Bridgend's electricity demand from renewable electricity by 2020, but only 2% of Bridgend's heat demand from renewable sources by 2020[39]. The assessment states that the extent of renewable energy technology deployment is likely to be determined by the technical maturity, commercial viability and institutional and infrastructural support for the technologies considered[39]. This Plan seeks to tackle some of the barriers which have traditionally reduced the deployment of low carbon heating measures. As such, it is the purpose of this plan to increase the potential uptake within the county borough far above that forecast within the Renewable Energy Assessment[39].

In terms of the barriers that have traditionally reduced uptake of renewable heating technologies, consumer propositions, technical factors and economic issues all need to be addressed. Whilst heating in the UK is predominantly based on fossil fuels, a consumer does not necessarily demand this should be the case. They are more concerned with the result of a comfortable home[36]. To transition away from fossil fuels new low-carbon heating systems and energy efficiency measures need to be attractive to consumers and provide them with increased comfort or retain existing comfort levels at a reduced cost[36]. Alternatively, higher carbon options would need to be sufficiently penalised to ensure that lower carbon options become economically attractive.

4.2. Environmental Factors

Bridgend County Borough stretches approximately 20 km from east-to-west and contains diverse natural and human geography; with valley communities in the north, coastal areas to the south and a mix of urban, rural and industrial environments[38], see figure 3.4. This diverse geography provides a good representation of the geography of Wales as a whole, providing opportunity for the roll-out of lessons learned.

[36] UK CCC (2016) *Next steps for UK heat policy.* Available at: https://www.theccc.org.uk/wp-content/uploads/2016/10/Next-steps-for-UK-heat-policy-Committee-on-Climate-Change-October-2016.pdf (Accessed: 01 October 2018)
[37] UK CCC (2018) Reducing UK emissions - 2018 Progress Report to Parliament. Available at: https://www.theccc.org.uk/wp-content/uploads/2018/06/CCC-2018-Progress-Report-to-Parliament.pdf (Accessed: 26 October 2018)
[38] BCBC (2013) *Local Development Plan.* Available at: https://www.bridgend.gov.uk/media/1899/written-statement.pdf (Accessed: 30 July 2018)
[39] BCBC (2011) Local Development Plan 2006-2021 Renewable Energy Assessment and Energy Opportunities Plan. Available at: https://www.bridgend.gov.uk/media/2055/sd115.pdf (Accessed: 15 October 2018)

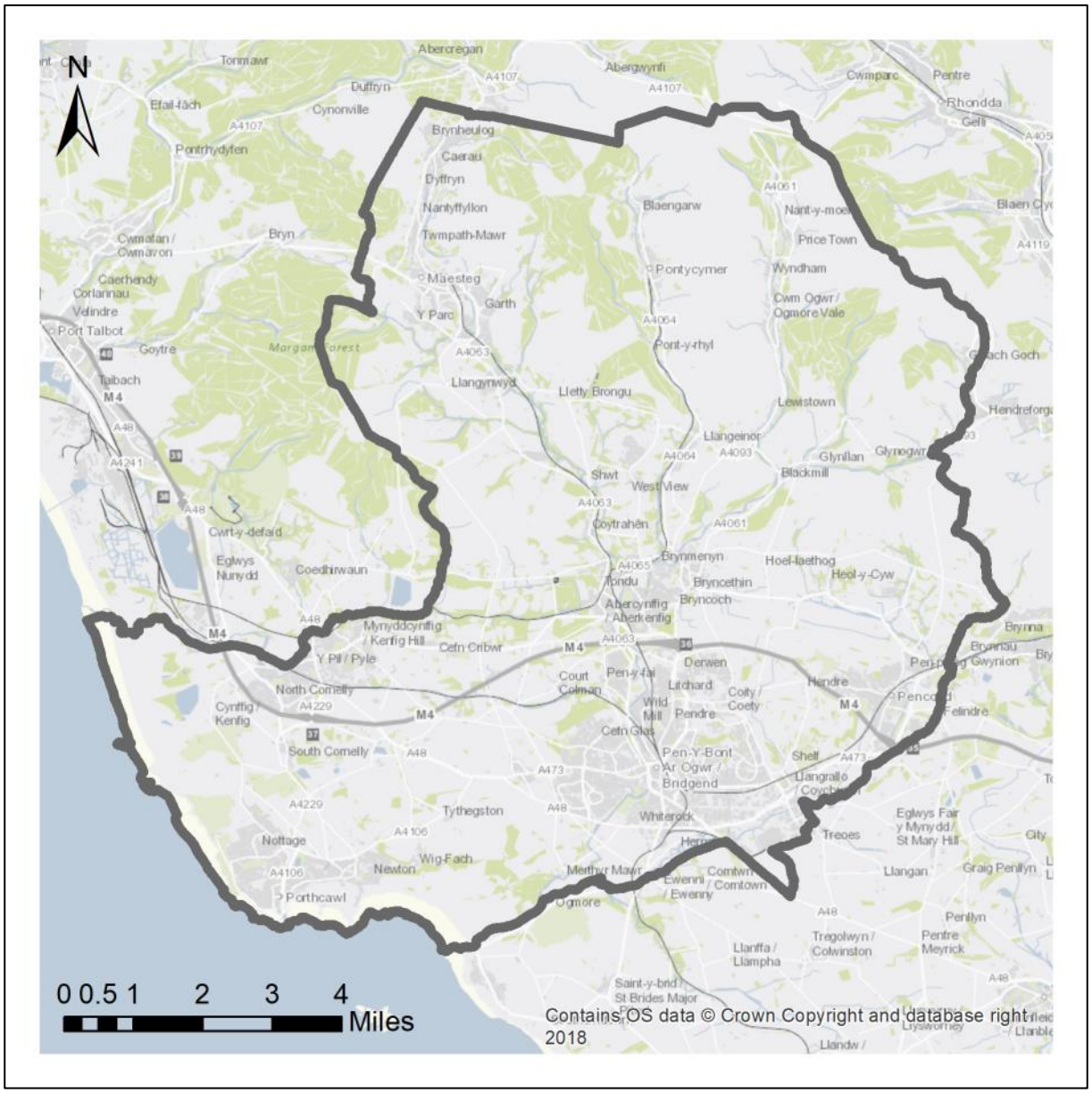


Figure 3.4: Map of Bridgend

(OS data © Crown copyright and database right 2018)

The population of Bridgend County Borough is approximately 140,000, with most residents living in the three main towns; Bridgend (33%), Maesteg in the Llynfi Valley (16%) and the seaside town of Porthcawl (12%)[40]. It is served by major transport infrastructure, with the M4 crossing the county borough (providing a risk of poor air quality) and the mainline rail link providing easy access to Cardiff, Swansea and the south of England. Owing to its natural geography, the area has attracted renewable electricity developments, predominantly in the form of wind and solar PV (see figure 3.5).

[40] BCBC (2014) *Bridgend County Borough Profile – 2014.* Available at: https://business.bridgend.gov.uk/media/1008/bridgend-county-borough-profile-january-2014.pdf (Accessed: 19 October 2018)

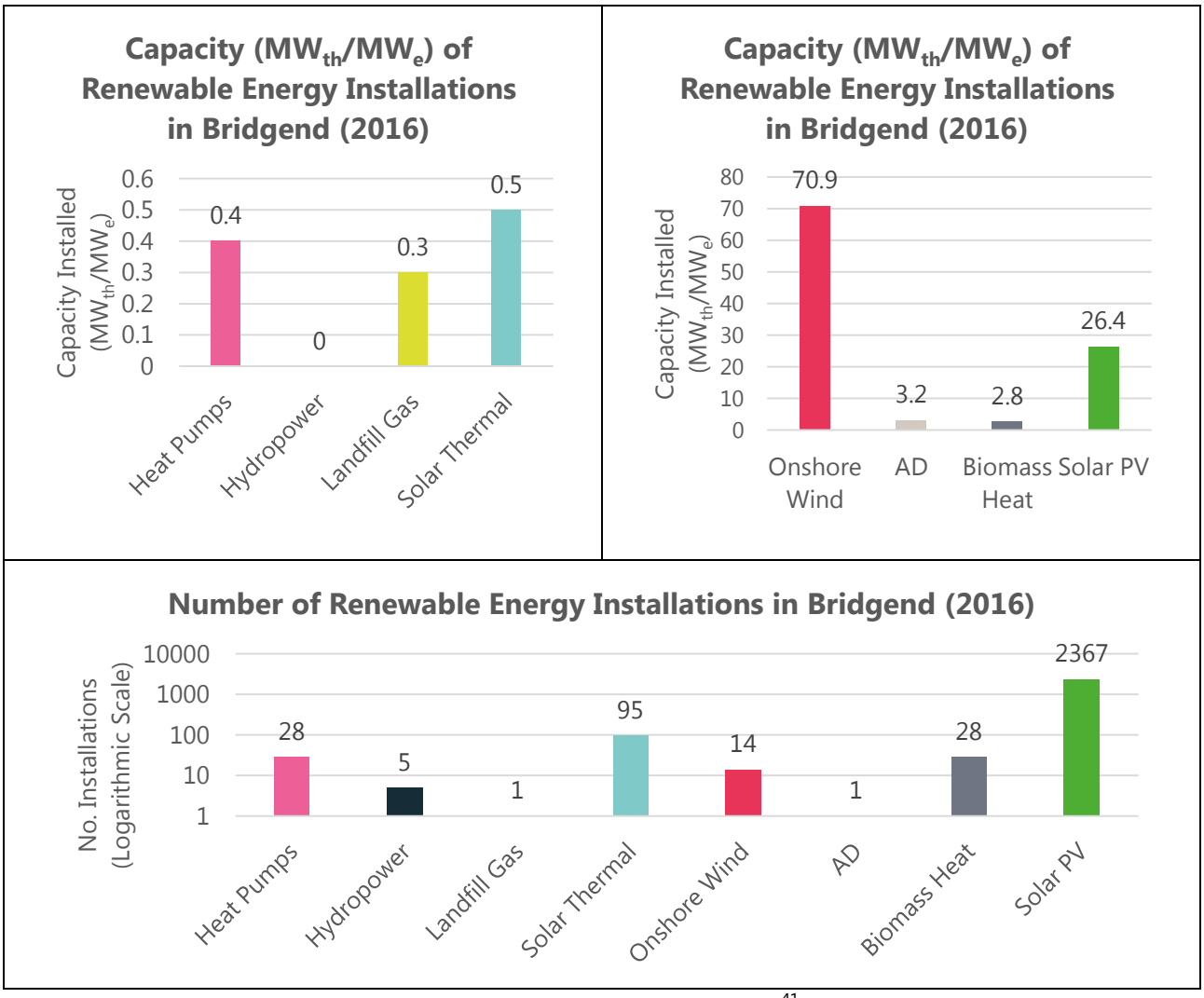


Figure 3.5: Renewable Energy Developments in Bridgend (2016)[41]

[41] Welsh Government (2016) *Energy Generation in Wales*. Available at: https://gov.wales/docs/desh/publications/171207-energy-generation-in-wales-en.pdf (Accessed: 17 September 2018)

4.3. Social Factors

4.3.1. Health

Cold homes have been found to have a significant negative impact on health[42,43]. Whilst the causes are unknown, the 2014 life expectancy in Bridgend was below the 2016 Welsh and UK national averages (Welsh male: 78.4 years, Welsh female: 82.4 years, UK male: 79.2 years, UK female: 82.9 years), with Bridgend having one of the lowest life expectancies of the Welsh Local Authorities (see figure 3.6)[44,45]. Within the *Bridgend Energy Transition Plan: Policy & Commercial Insights* it is estimated that £5M of health benefits associated with provision of warmer homes will arise from deployment of the Local Area Energy Strategy up to 2050[46].

[42] Age UK (2012) *The cost of cold.* Available at: https://www.ageuk.org.uk/Documents/EN-GB/Campaigns/The_cost_of_cold_2012.pdf?dtrk=true (Accessed: 31 July 2018)
[43] Marmot Review Team (2011) *The Health Impacts of Cold Homes and Fuel Poverty.* Available at: https://friendsoftheearth.uk/sites/default/files/downloads/cold_homes_health.pdf (Accessed: 15 October 2018)
[44] Office for National Statistics (2017) *National life tables, UK: 2014-2016.* Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/bulletins/nationallifetablesunitedkingdom/2014to2016#life-expectancy-at-birth (Accessed: 30 July 2018)
[45] Welsh Government (2014) *Local Area Summary Statistics Bridgend.* Available at: https://gov.wales/docs/statistics/2014/141218-local-area-summary-bridgend-en.pdf (Accessed: 30 July 2018)
[46] ETI (2018) *Bridgend Energy Transition Plan: Policy & Commercial Insights*

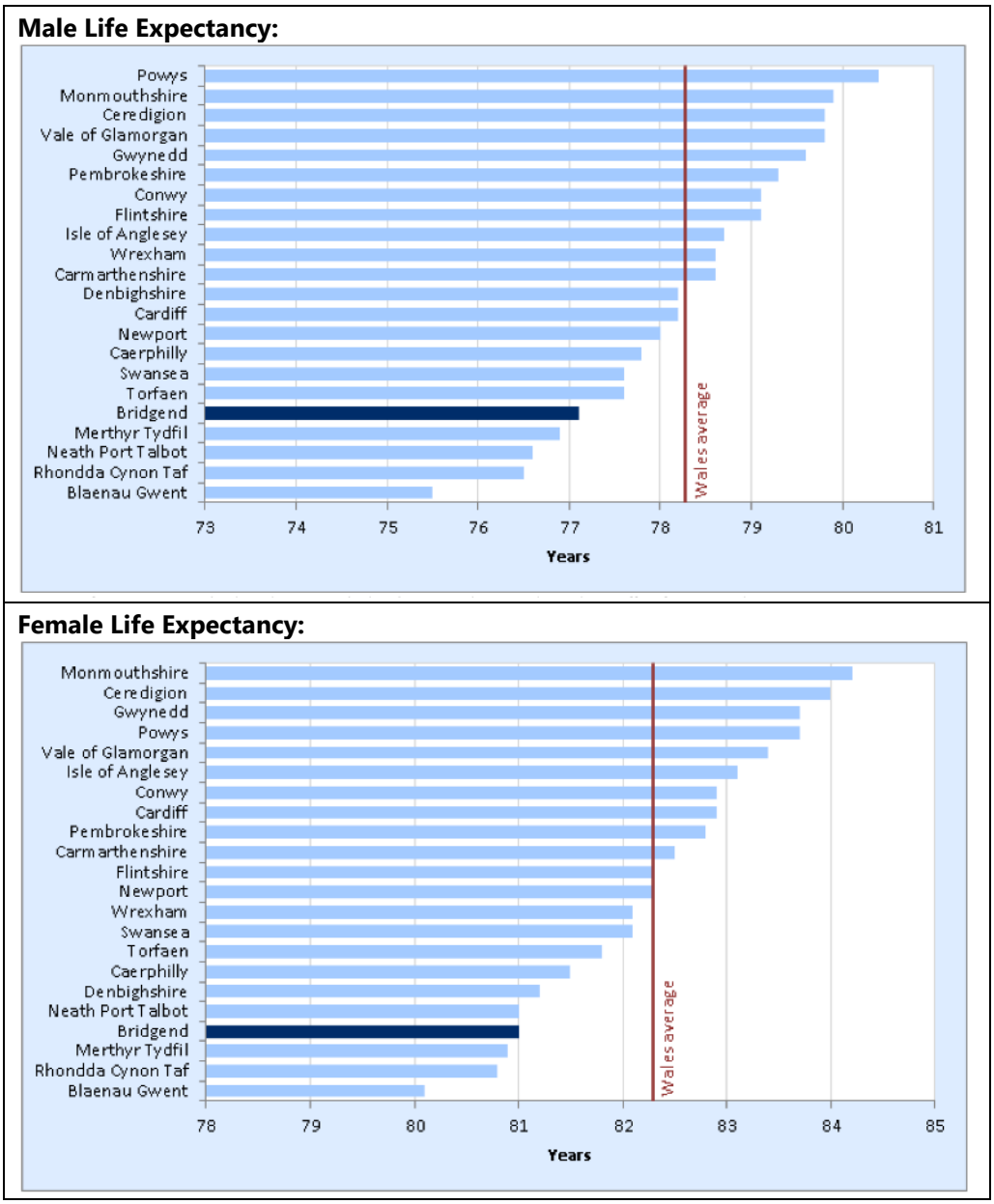


Figure 3.6: Life Expectancy in Wales, 2014[47]

4.3.2. Deprivation

Many communities within the county borough (especially within the valley areas) are among the most deprived in Wales, with the area's employment opportunities located outside the areas of higher deprivation[48]. The South Wales Valley communities have unique challenges arising from the end of coal-mining in the region and the economy, standard of life and levels of skills and education lag behind the rest of Wales[49]. The valleys area in Bridgend coincides with incidence of fuel poverty, with additional smaller areas of fuel poverty located further south in the county

[47] Welsh Government (2014) *Local Area Summary Statistics Bridgend.* Available at: https://gov.wales/docs/statistics/2014/141218-local-area-summary-bridgend-en.pdf (Accessed: 30 July 2018)
[48] BCBC (2013) *Local Development Plan.* Available at: https://www.bridgend.gov.uk/media/1899/written-statement.pdf (Accessed: 30 July 2018)
[49] Welsh Government (2017) *Our Valleys, Our Future.* Available at: https://gov.wales/docs/dsjlg/publications/comm/170720-our-valleys-our-future-env2.pdf) (Accessed: 30 July 2018)

Borough, see figure 3.7. The greatest areas of fuel poverty are concentrated in the valleys communities of Nant-y-Moel, Pontycymmer, Caerau and Blaengarw[50].

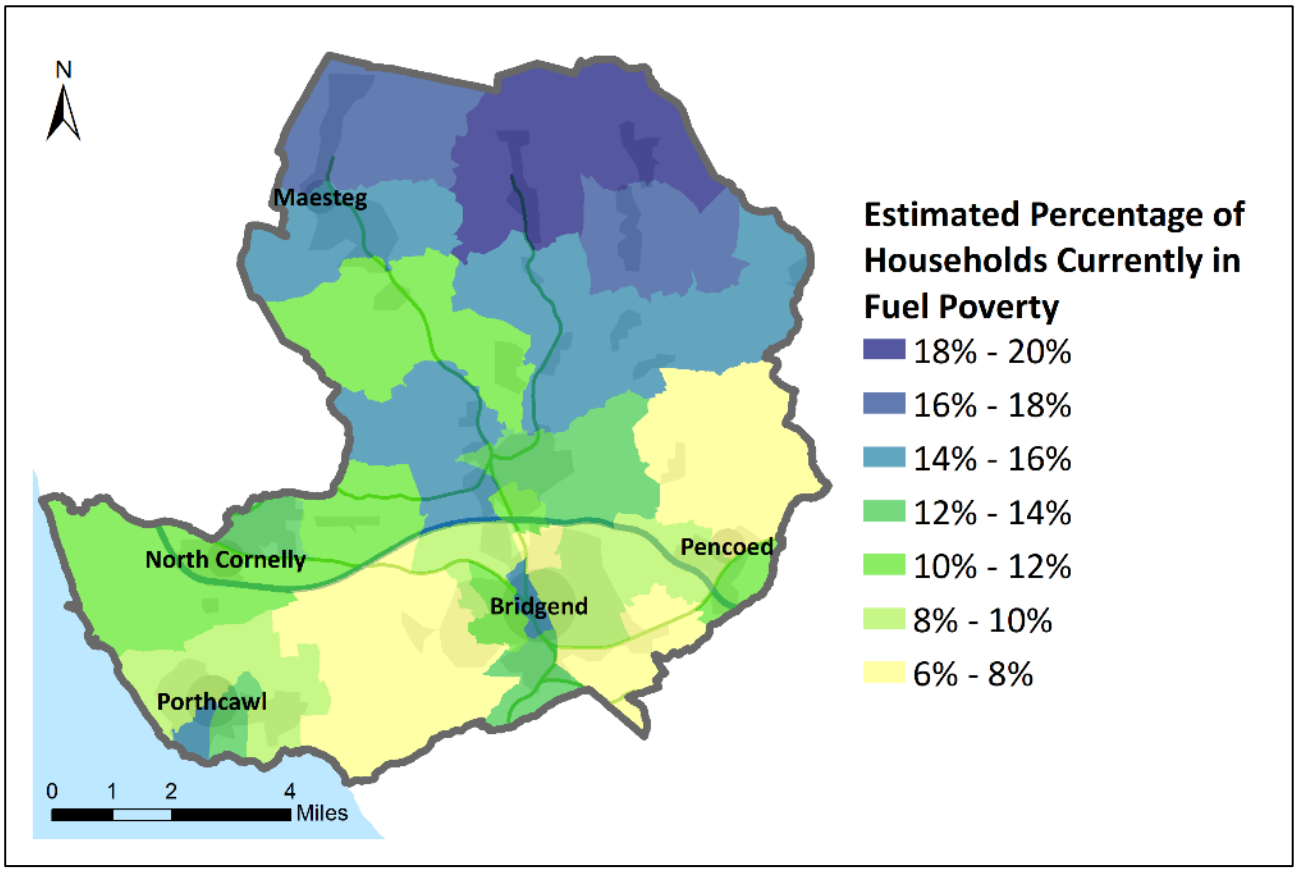


Figure 3.7: Map of Fuel Poverty

The prevalence of deprivation within valley communities is not unique to Bridgend, but common across the whole of the ex-industrial communities of South Wales Valleys[51]. To help remedy this situation, the Welsh Government launched the Valleys Task Force in 2017, who are working with local communities to develop activities, which aim to provide:

- high quality jobs and the skills to fulfil them,
- improved public services,
- the opportunity to make the most of the Valleys' unique environment, culture and heritage so they can be enjoyed more widely by local people and visitors alike.[51]

4.3.3. House Ownership

The majority of homes in the county borough are owner occupied (76%) with 10% privately rented and 14% social housing[50]. The greatest proportion of Bridgend's housing stock was built between 1965-1979, with approximately 21% built pre-1914 and over 20% built between World War 1 and 2[50].

[50] ETI (2018) *Bridgend Local Area Energy Strategy*
[51] Welsh Government (2017) *Our Valleys, Our Future.* Available at: https://gov.wales/docs/dsjlg/publications/comm/170720-our-valleys-our-future-env2.pdf) (Accessed: 30 July 2018)

4.3.4. Community Energy Engagement

Community energy activity in Bridgend has increased in recent years due to the efforts of BCBC, local people and Welsh Government and EU funded programmes.

"Reach", Bridgend's European funded Rural Development Programme, has made great efforts over the past two years to:

- offer residents home energy advice and provide a sign-posting service to national resources,
- encourage and support residents to collaborate and develop community energy projects,
- provide tailored, expert support to a flag-ship community energy project.[52]

Local sustainability charity, Sustainable Wales, held a series of events in 2017 to encourage the local community to come together and start developing energy projects. As a result of these events an unincorporated sub-group of Sustainable Wales, Porthcawl Community Energy has been set up.

BCBC will engage with the Reach programme during project development, to secure their support for participation with wider consumer engagement and recruitment and to help inform the development process of proposals.

The Energy Company Obligation and Welsh Government's Arbed programmes have resulted in approximately 400 homes in Bridgend receiving energy efficiency measures installed since 2009.

BCBC has undertaken an extensive programme of community engagement in Caerau, focused on a mine water district heating scheme that is under development (explained further in section 4). This engagement has included public exhibitions, articles in newsletters, attendance at community meetings and events, social media activity, school workshops and involvement in detailed house assessments. Through this extensive engagement, project champions from the local community have naturally emerged and are intended to form part of an ongoing, wider Caerau Community Advisory Group. Associated with this engagement, Cardiff University has led qualitative, longitudinal interview studies with 25 Caerau residents, monitoring and understanding experiences and views of the energy system and how this changes as propositions are tested within the village, e.g. targeted retrofits. Learning from the results of this work should be considered when progressing the future project activity. SPECIFIC[53] and Cardiff Metropolitan University undertook detailed whole house assessments as part of Caerau Mine Water Project Feasibility Study, working with 10 Caerau householders to gain a sound understanding of the energy efficiency of the housing stock within Caerau as well as the compatibility of the current heating systems to utilise heat pump technology and demand management techniques.

4.4. Technical Factors

4.4.1. Gas Network Coverage

The gas network within Bridgend, operated by Wales and West Utilities is extensive, with 97% of the ~62,000 domestic properties within the county borough served by the network[54]. This is far

[52] BCBC (2018) *Bridgend County Energy Challenge.* Available at: https://www.bridgendenergy.co.uk/ (Accessed: 30 July 2018)
[53] SPECIFIC Innovation and Knowledge Centre is an academic and industrial consortium led by Swansea University, with strategic partners Akzo Nobel, NSG Pilkington, Tata Steel and Cardiff University. It is funded by the Engineering and Physical Sciences Research Council, Innovate UK and the European Regional Development Fund, through the Welsh Government.
[54] ETI (2018) *Bridgend Local Area Energy Strategy*

higher than the 2016 national average of 83% in Wales and 86% in Great Britain[55]. Figures 3.8 and 3.9 show the distribution of off-gas properties within the county borough.

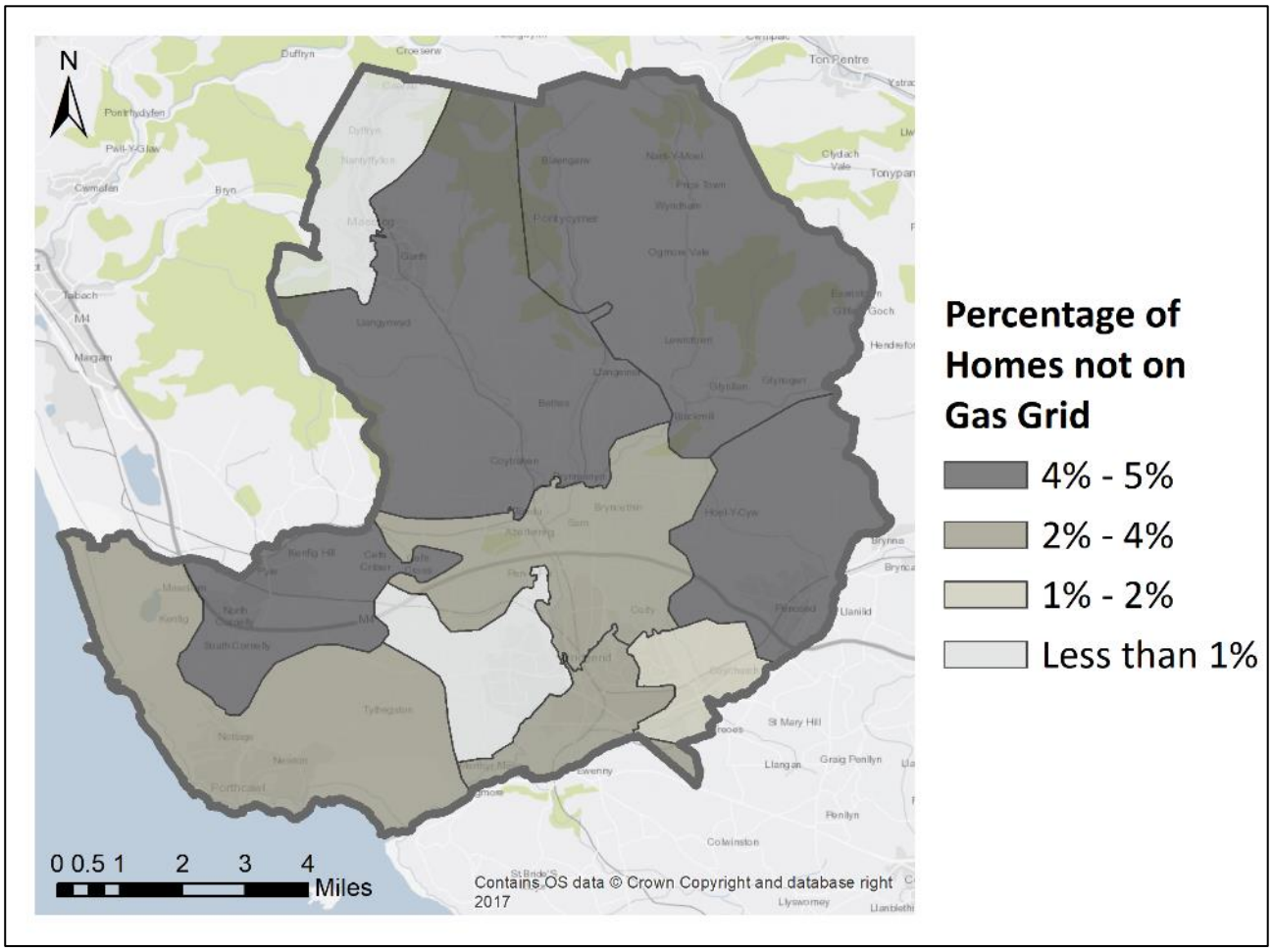


Figure 3.8: Percentage of Off-gas Homes in Different Areas of Bridgend

(OS data © Crown copyright and database right 2018)

[55] BEIS (2018) *LSOA estimates of households not connected to the gas network.* Available at: https://www.gov.uk/government/statistics/lsoa-estimates-of-households-not-connected-to-the-gas-network (Accessed: 30 July 2018)

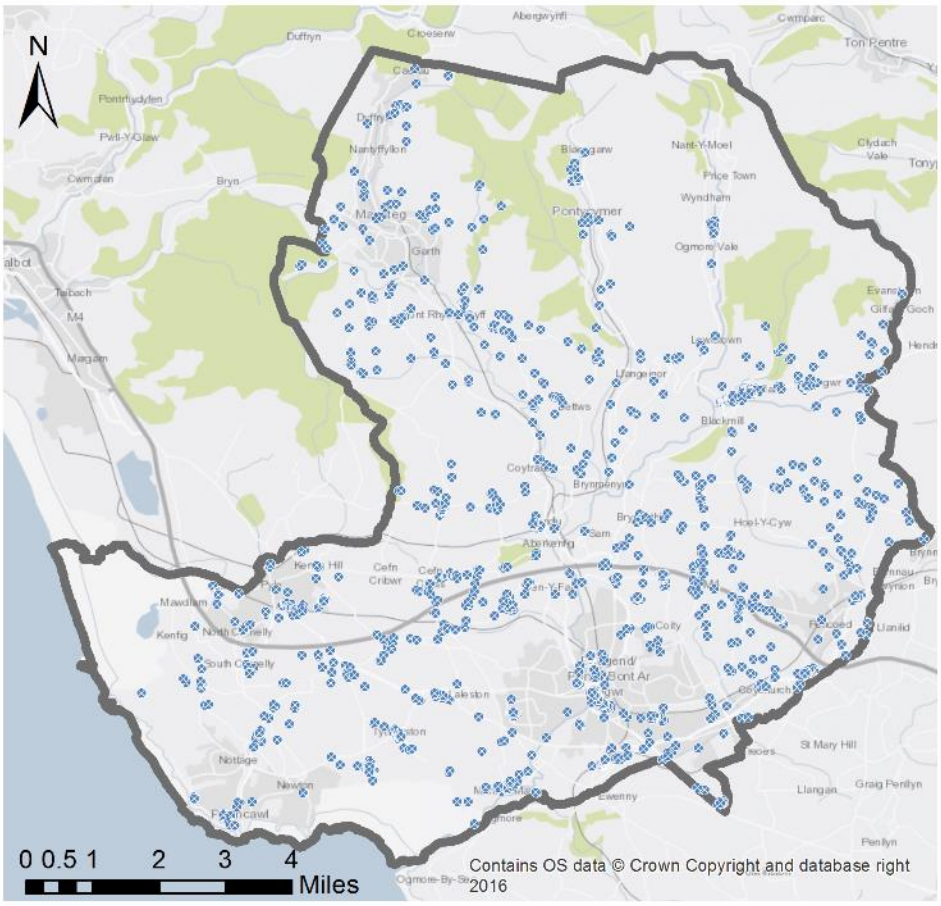


Figure 3.9: Location of Off-gas Homes in Bridgend

(OS data © Crown copyright and database right 2018)

4.4.2. Electricity Network Constraints

The electricity distribution network in Bridgend is operated by Western Power Distribution (WPD). As per much of South Wales, the distribution network is constrained with respect to generation connections[56]. This increases the likelihood of export restrictions or expensive additional generation connections, due to network reinforcement requirements. Increases in electrical loads through electrification of heating and transport may cause constraints and reinforcement requirements with respect to demand connections. The Local Area Energy Planning work undertaken by Energy Systems Catapult has accounted for the costs and requirements to upgrade the electricity network to meet the forecast demand increases.

4.4.3. Digitalisation

[56] Western Power Distribution (no date) *Distributed Generation EHV Constraint Maps.* Available at: https://www.westernpower.co.uk/Connections/Request-network-location-plans/Distributed-generation-EHV-constraint-maps.aspx (Accessed: 30 July 2018)

The UK Government's Industrial Strategy highlights the productivity benefits that artificial intelligence (AI) and data analytic technologies can provide[57]. It identifies the energy sector as one of the six priority business sectors to be targeted for rapid AI adoption to enable more efficient use of energy and resources and provide more integrated energy provision across heat, power and transport[58]. The internet of things and a need for new consumer business models will help to drive the installation and use of digital infrastructure within the energy industry.

The Smart Systems and Heat Phase 1 and 2 programmes developed software tools to design a smart energy experimental platform (the Home Energy Services Gateway or HESG). A number of consumer behaviour, technology development, business modelling and supply-chain activities were also undertaken to understand how energy can be delivered as a service, by providing consumers with the experience they desire (i.e. a comfortable home) rather than a product that they do not necessarily understand (a unit of energy)[59]. The platform was deployed in approximately 100 properties in the UK, including 30 within Bridgend, to monitor and understand energy usage within individual homes and how this data can be used to help develop propositions which will improve consumer service whilst lowering carbon emissions. The gateway now provides a "living lab" of connected homes, which can be used by innovators to test new concepts and products.

BCBC recognise that digitalisation does not only offer opportunities for the energy sector and have ambitions for the infrastructure developed for their heating projects to be built upon to provide wider benefits to their residents. Digital Master Planning undertaken for BCBC has set out key areas that would benefit from digitalisation within the county borough and the major steps required for development. Sectors to be targeted include buildings, health and social care and transportation. BCBC will aim to increase digitalisation of the county borough alongside each of the innovation and deployment projects deployed.

4.5. Economic Factors

4.5.1. Employment

The economy of Bridgend is more reliant on the manufacturing sector than Wales as a whole, with Ford, Sony and Rockwool production facilities located within the county borough[60,61]. Understanding of the energy needs of this sector may identify opportunities for developing wider local energy generation and use infrastructure centred on large energy loads, to provide investment certainty.

[57] BEIS (2017) *Industrial Strategy.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf (Accessed: 30 July 2018)
[58] BEIS (2017) *Industrial Strategy.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf (Accessed: 30 July 2018)
[59] ETI (2018) *Local Area Energy Planning Bridgend County Borough Council Evidence Base*
[60] BCBC (2010) *Employment Land Review*. Available at: https://www.bridgend.gov.uk/media/1163/employment-land-review.pdf (Accessed: 30 July 2018)
[61] BCBC (2013) *Local Development Plan.* Available at: https://www.bridgend.gov.uk/media/1899/written-statement.pdf (Accessed: 30 July 2018)

Current employment rates in Wales are 74%, slightly lower than the UK rate of 75.7%[62]. In 2013 the employment rate in Bridgend was 72.1% and the gross disposable income per household in 2012 was lower than the Welsh average, see figure 3.10[63].

[62] Office of the Secretary of State for Wales (2018) *Welsh employment rates at record high.* Available at: https://www.gov.uk/government/news/welsh-employment-rates-at-record-high (Accessed: 10 October 2018)
[63] Welsh Government (2014) *Local Area Summary Statistics Bridgend.* Available at: https://gov.wales/docs/statistics/2014/141218-local-area-summary-bridgend-en.pdf (Accessed: 30 July 2018)

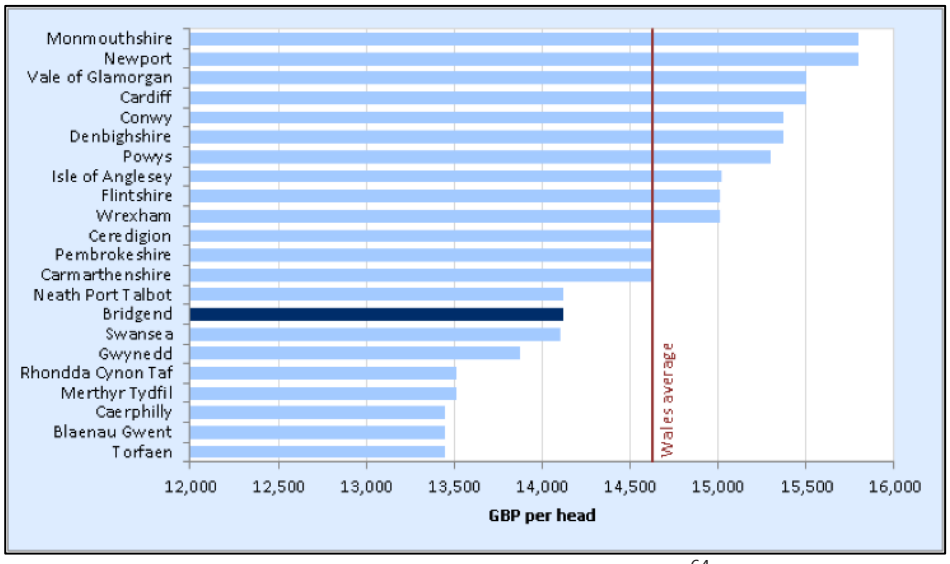


Figure 3.10: Gross Disposable Income per Head, 2012[64]

The UK Industrial Strategy identifies the transition to a cleaner economy as *"one of the greatest industrial opportunities of our time"*[65]. Innovate UK's schemes return an average of £7.30 Gross Value Added to the economy for every £1 invested[66]. The Welsh Government Warm Homes Arbed EU scheme achieved a Welsh Local Multiplier of £2, meaning that for £1 spent on the contract £2 was reinvested in the Welsh Economy[67]. More than 430,000 UK jobs in low carbon businesses and their supply chains have already been created and *"the UK low carbon economy could grow by an estimated 11 per cent per year between 2015 and 2030 – four times faster than the rest of the economy"*[68]. By implementing this plan with a local focus and securing investment into a series of projects in the local area, Bridgend and its citizens are more likely to directly benefit from this projected growth.

4.5.2. Energy Support Programmes

Welsh Government Smart Living Programme

The Welsh Government's Smart Living Programme provides support to develop innovative energy solutions that are place-based and needs-led[69]. The programme is working with twelve projects to test energy innovations, with the learning used to enable future roll-out of the energy transition across Wales.

---

[64] Welsh Government (2014) *Local Area Summary Statistics Bridgend.* Available at: https://gov.wales/docs/statistics/2014/141218-local-area-summary-bridgend-en.pdf (Accessed: 30 July 2018)
[65] BEIS (2017) *Industrial Strategy.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf (Accessed: 30 July 2018)
[66] Innovate UK (2017) *Innovate UK: 10 years shaping the future.* Available at: https://www.gov.uk/government/publications/innovate-uk-10-years-shaping-the-future (Accessed: 19 November 2018)
[67] Ricardo Energy and Environment (2017a) *Evaluation report - ARBED 2 European Regional Development Fund (ERDF) programme 2012-2015.* Available at: https://gov.wales/docs/desh/publications/171106-welsh-government-warm-homes-arbed-eu-project-final-report-en.pdf (Accessed: 10 October 2018)
[68] BEIS (2017) *Clean Growth Strategy.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf (Accessed 10 October 2018)
[69] Welsh Government (2016) *Smart Living Internet of Life.* Available at: https://gov.wales/docs/det/publications/161019-smart-living-en.pdf (Accessed 10 October 2018)

Two of the twelve projects are located in Bridgend[70]:

- **Bridgend Smart Systems and Heat:** The Welsh Government Smart Living Programme are providing additional support to the activities of the Smart Systems and Heat programme to ensure that the benefits of the programme are maximised[70].
- **Smart Living Wales' Fair Futures Project**: The Welsh Government is working with Cardiff University and Energy Systems Catapult to understand how issues of vulnerability can be addressed in a future low carbon energy system[71].

Welsh Government Energy Support Service

The current Welsh Government Energy Support Service, launched in 2018, is a four-year programme which brings together two previous support services; Green Growth Wales and the Local Energy Service to provide a single point of service for support for public sector and others to develop renewable energy and energy efficiency projects[72]. The Service provides both technical and funding support to renewable energy projects in Wales[73].

Welsh Government Warm Homes Programme

The Welsh Government Warm Homes Programme includes the Arbed and Nest schemes, and funds energy efficiency improvements for low income households and those living in deprived communities[74]. Whilst Nest is concerned with individuals, the Arbed Scheme works with Local Authorities to deliver area-wide energy efficiency deployment[74]. Grant funding is provided for the measures, and the focus of both programmes is remediation of fuel poverty, rather than focusing on decarbonisation or regeneration. The third phase of Arbed was launched in June 2018 and will run for at least three years. The programme is managed by a newly formed company, Arbed am Byth, which is a joint venture between the Energy Saving Trust and Everwarm.

EU Rural Development Programme

The EU-funded Rural Development Programme is a 7-year programme of support for those living and working in rural areas. It provides funding for projects which align with the European Rural Development Priorities:

- *"fostering knowledge transfer and innovation in agriculture, forestry, and rural areas*
- *enhancing farm viability and competitiveness of all types of agriculture in all regions and promoting innovative farm technologies and the sustainable management of forests*
- *promoting food chain organisation, including processing and marketing of agricultural products, animal welfare and risk management in agriculture*
- *restoring, preserving and enhancing ecosystems related to agriculture and forestry*
- *promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors*

---

[70] Welsh Government (2018) *Welsh Government Smart Living Initiative.* Available at: https://www.cse.org.uk/downloads/reports-and-publications/policy/renewables/welsh-govt-smart-living-initiative-english-version-july-2018.pdf (Accessed: 15 October 2018)
[71] Energy Systems Catapult (2018) *Fair Futures.* Available at: https://es.catapult.org.uk/projects/fair-futures/ (Accessed: 15 October 2018)
[72] Welsh Government (2018) *Written Statement - Launch of the Welsh Government Energy Service.* Available at: https://gov.wales/about/cabinet/cabinetstatements/2018/launchofwges/?lang=en (Accessed: 15 October 2018)
[73] Welsh Government (no date) *Welsh Government Energy Service.* Available at: http://localenergy.gov.wales/en/ (Accessed: 15 October 2018)
[74] Welsh Government (2017) *Warm Homes Programme.* Available at: https://gov.wales/topics/environmentcountryside/energy/efficiency/warm-homes/?lang=en (Accessed: 30 July 2018)

- *promoting social inclusion, poverty reduction and economic development in rural areas."*[75]

Within Bridgend the Rural Development Programme is working with the Centre for Sustainable Energy to develop community energy projects and raise awareness of energy efficiency in the home[76].

[75] Welsh Government (2018) *Welsh Government Rural Communities – Rural Development Programme 2014-2020.* Available at: https://gov.wales/topics/environmentcountryside/farmingandcountryside/cap/ruraldevelopment/wales-rural-development-programme-2014-2020/?lang=en (Accessed 10 October 2018)

[76] BCBC (2018) *Bridgend County Energy Challenge.* Available at: https://www.bridgendenergy.co.uk/ (Accessed: 30 July 2018)

5. Near-term Project Delivery Plan (up to 2025)

This section describes:

- the three deployment projects (DP) within the project pipeline,
- the key priority innovation projects (InPs), which have been developed based on the five near-term Strategy Activities (SA) identified within the Strategy[77],
- additional complementary activities to be pursued alongside specific projects.

Following a description of the projects, a timeline is provided to set the project delivery alongside one another in the near-term (up to 2025). As the projects are developed and discussed with funders and partners a priority hierarchy will be established, and the delivery timescales may need to be updated. Learning from each of the projects will be used to develop more projects and enable further roll-out of decarbonisation technologies and as additional project opportunities are identified these will be pursued alongside the projects described here.

In the near-term BCBC will also continue to take forward the other, non-project specific activities identified and recommended in the Bridgend Local Area Energy Strategy:

- collect detailed and robust data for the non-domestic buildings in Bridgend to allow the Local Area Energy Strategy to be updated to encompass non-domestic building planning,
- identify suitable sources of low and zero carbon heat to decarbonise the heat supplied to heat networks where gas is initially used,
- evaluate planning policy to ensure that it is supportive of the decarbonisation strategy. [77]

One of BCBC's key aims of the energy transition is to use it to stimulate economic growth and job creation within the county borough. Through the SSH activities BCBC has sought to establish Bridgend County Borough as a Centre for Innovation, focused around the energy transition and digital transformation. As a Centre for Innovation, Bridgend will be viewed by potential energy innovators as an ideal area to develop ideas, test products and market offerings, and invest in skills, jobs and infrastructure. A series of activities will be required to ensure that Bridgend is widely recognised as a Centre for Innovation and the opportunity for additional project development (outside of those identified), economic growth and job creation are maximised.

The two most progressed projects under development by BCBC are:

- Deployment Project 1: Bridgend Town Lower Carbon District Heat Network:
  - All the feasibility work associated with this project has been undertaken and the Outline Business Case is complete.
  - Funding and support for the project development was secured from Welsh Government, HNDU and internal BCBC resource.
  - Capital funding applications are being pursued and the project is likely to start construction late 2019 or in 2020.
- Innovation Project 3: Caerau Mine Water Gas-to-District Heat Network:
  - A detailed feasibility study for this project has been undertaken and the project is progressing to the commercial business modelling stage.
  - Significant community engagement has been undertaken in the local area, including public exhibitions, articles in newsletters, attendance at community meetings and events, social media activity, school workshops and detailed house assessments.

[77] ETI (2018) *Bridgend Local Area Energy Strategy*

- A grant offer of approximately £6.5M has been made by ERDF, and discussions are underway with other funders to secure, in principle, the remaining match funding required for the project delivery. The business plan submitted to the Welsh European Funding Office provides more details regarding the scheme, albeit the project has developed substantially since the drafting of this document. Project development has been supported by funding secured from HNDU, BCBC and Welsh Government.

In addition to the projects being pursued by BCBC, Wales and West Utilities, Western Power Distribution and PassivSystems have delivered the FREEDOM (Flexible Residential Energy Efficiency Demand Optimisation and Management) project in Bridgend. The FREEDOM project's research objectives are *"…to better understand if hybrid heating systems are technically capable, affordable and attractive to customers as a way of heating homes."*[78]. The final report for the FREEDOM project was published in October 2018 and *"The project successfully demonstrated that hybrid heating systems were able to maintain consumer comfort across a broad range of housing types, ages and sizes, with consumers from a range of socio-economic groups … without making any changes to the existing wet heating system that was being used for the gas boiler and with no thermal improvements to the property"*[79].

As mentioned in section 3.4.3 the Home Energy Services Gateway, a smart energy experimental platform, has been deployed in 30 properties within Bridgend, to monitor and understand energy usage within individual homes and how this data can be used to support propositions which will improve consumer service whilst lowering carbon emissions. The gateway now provides a "living lab" of connected homes, which can be used by innovators to test new concepts and products.

Bridgend are also the focus of a project within ESC's Fair Futures Programme, which looks to better understand the opportunities for reducing energy vulnerability faced by consumers as the energy system transforms through decarbonisation and digitalisation. This particular project was commissioned by Welsh Government and is delivered by Cardiff University and Energy Systems Catapult. The project aims to explore how consumer needs and vulnerabilities experienced by households in Bridgend could inform the design of consumer-centred innovation in a future low carbon energy system.

[78] Western Power Distribution (no date) *FREEDOM.* Available at: https://www.westernpower.co.uk/projects/freedom (Accessed 10 October 2018)
[79] Freedom Project (2018) *Freedom Project Final Report* Available at: https://www.westernpower.co.uk/downloads/12221 (Accessed 15 October 2018)

5.1. Deployment Projects – Project Summaries

5.1.1. Deployment Project 1: Bridgend Town Lower Carbon District Heat Network

District heating offers an efficient method of providing energy to a local area. The Local Area Energy Planning undertaken by Energy Systems Catapult identified district heating as the dominant heating method to achieve cost-effective decarbonisation of heating in Bridgend town[80]. Detailed feasibility and initial design work has been undertaken to determine the most appropriate configuration of an initial district heating scheme within the town and an Outline Business Case has been prepared and signed off by BCBC Cabinet for its development. The project is currently undergoing final project design, prior to completing the funding package and undertaking procurement for the Design, Build, Operation and Maintenance (DBOM) contract.

The initial district heat network will be based on a gas CHP plant, but will look to transition to a lower carbon heat source in due course. The project will provide an initial heat network, which could be extended in the future, to enable further decarbonisation. The project will provide energy to public, residential and commercial buildings in Bridgend town centre in a more efficient manner, progressing BCBC's decarbonisation agenda. It also provides the opportunity for digitalisation to be integrated into the scheme and a heat as a service offering to be introduced.

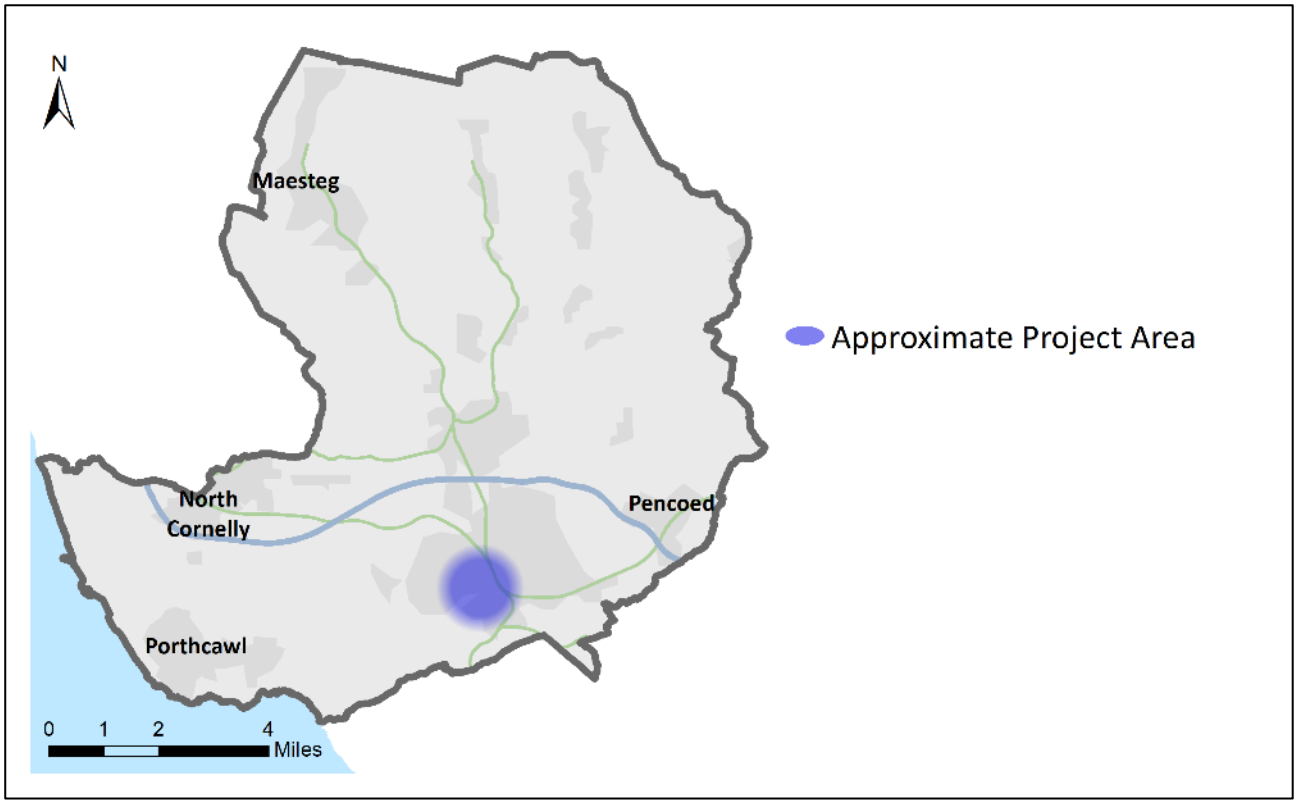


Figure 4.1: Initial Project Target Area

[80] ETI (2018) *Bridgend Local Area Energy Strategy*

5.1.2. Deployment Project 2: Bridgend Town Lower Carbon District Heat Network Phase 2

Deployment Project 1: Bridgend Town provides the first step in the decarbonisation of Bridgend town. This initial heat network can be added to and extended by developing additional networks to transition the whole area to a district heating energy system by 2050, as outlined in the Strategy. Alternative heat network locations and configurations were considered within the feasibility work undertaken for Deployment Project 1. This will be revisited to identify an appropriate location for the next phase of the Bridgend Town Heat Network, with necessary partners identified and secured. The potential to extend the network to existing residential areas will be informed from the consumer insights gained through Innovation Project 4. The additional heat network will build on the business case established for the initial Bridgend Town Heat Network and further progress BCBC's decarbonisation agenda for Bridgend town.

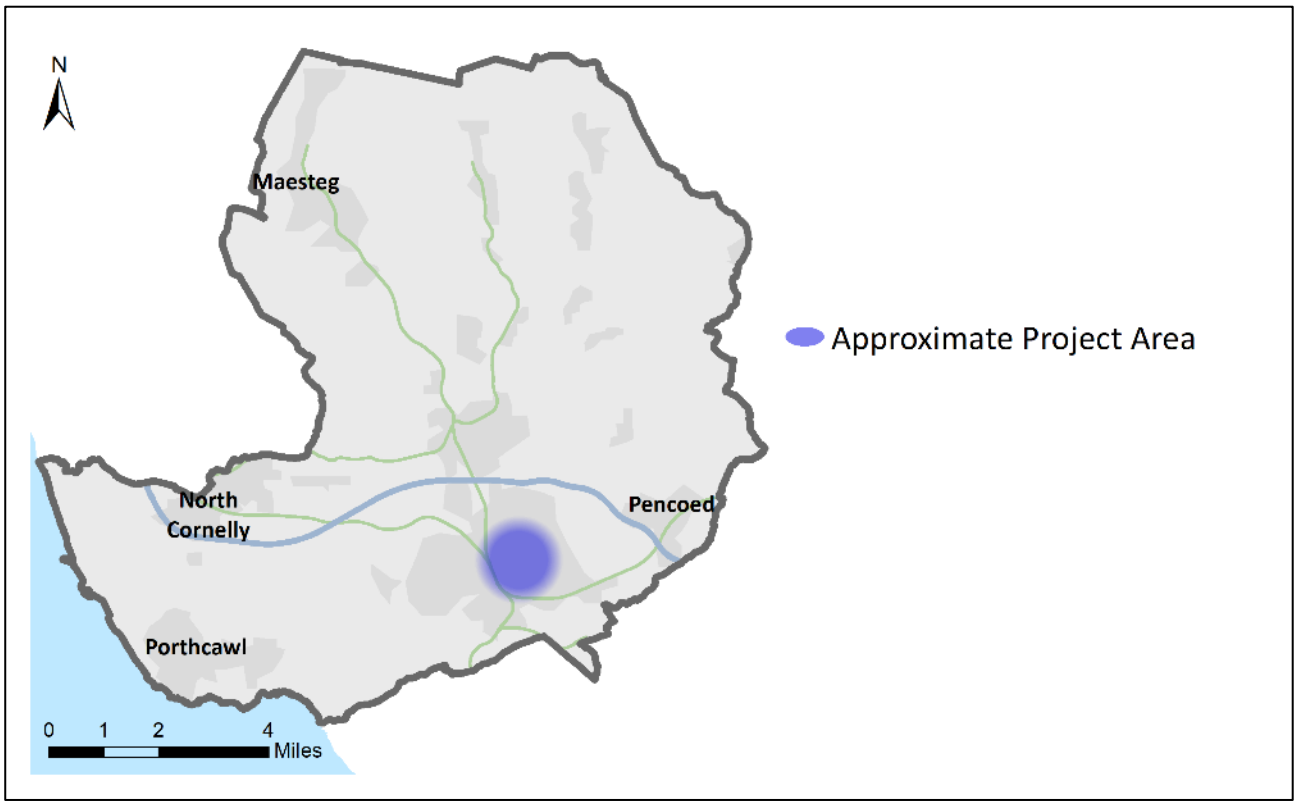


Figure 4.2: Likely Project Target Area

5.1.3. Deployment Project 3: Energy Efficiency Projects

The Welsh Government's Area Based Initiative under the Warm Homes Scheme; Arbed, is being delivered by Arbed am Byth. *"The aim of the scheme is to help eradicate fuel poverty by identifying and installing where appropriate energy efficiency measures in properties in areas of severe fuel poverty across Wales"*[81]. Arbed am Byth are working with the Welsh Local Authorities via the Carbon Trust to identify a pipeline of projects. Once the projects are identified, the scheme will be publicised in the areas targeted, and households interested will have their buildings surveyed. Suitable measures will be identified and installed and following installation the properties will be resurveyed to ensure that the measures are installed correctly.

BCBC will work with Arbed am Byth to develop a pipeline of projects, which will look to target areas experiencing fuel poverty with energy efficiency measures. The Local Area Energy Strategy has identified areas which would most benefit from retrofit, and areas which are affected by high levels of fuel poverty[82]. These two elements do not necessarily interact. The Arbed programme criteria is to target areas in severe fuel poverty, as such these areas will be prioritised but consideration of where there is most scope for retrofit deployment and measures that are most cost effective will be considered to maximise the benefit of the scheme's deployment.

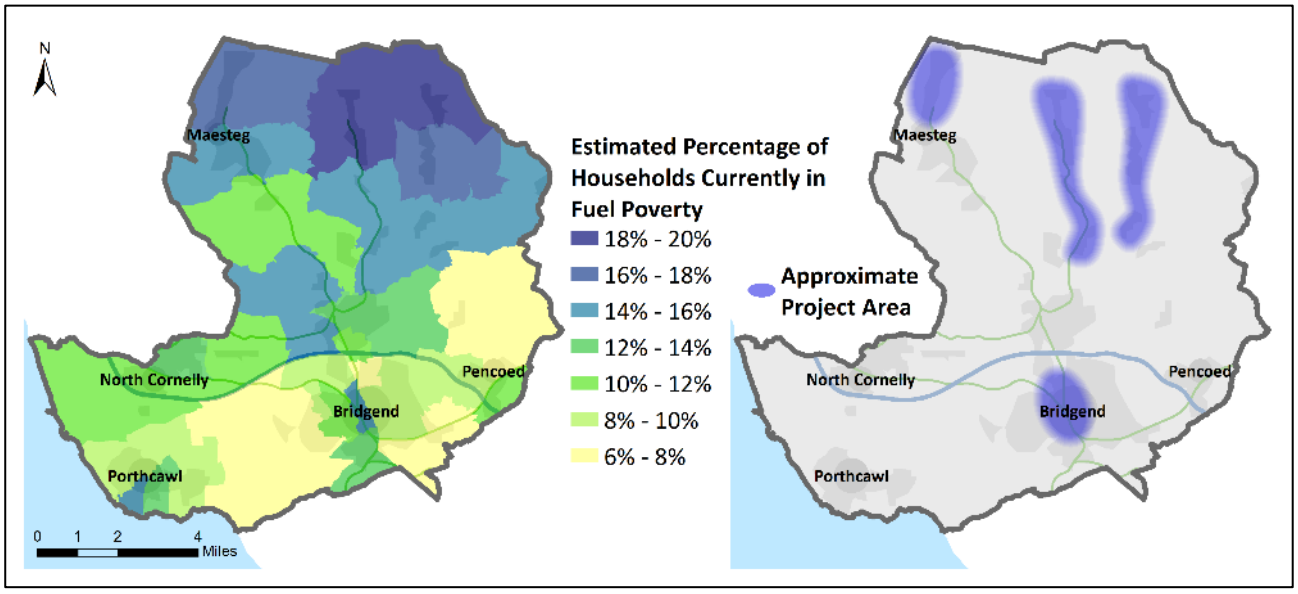


Figure 4.3: Percentage of Households currently in Fuel Poverty and Areas Likely to be targeted by the Project

[81] Arbed am Byth (2018) *Helping to Warm Homes across Wales.* Available at: http://www.arbedambyth.wales/index.html (Accessed: 15 October 2018)
[82] ETI (2018) *Bridgend Local Area Energy Strategy*

5.2. Innovation Projects

This section describes BCBC's evolving innovation developments. The projects are at different stages of development, and BCBC are looking to engage with public and private partners to further shape, develop and ultimately deliver the projects. These projects will provide learning opportunities for all participants and will help inform further progression of the decarbonisation agenda within Bridgend. Section 4.2.7 summarises how the projects relate to SSH, the Local Area Energy Strategy, local context and the overall UK energy transition.

5.2.1. Innovation Project 1: Fully Targeted Retrofit

Improving building energy efficiency is a key opportunity for reducing carbon emissions[83]. Whilst deep retrofit of UK housing stock is technically feasible the cost would be similar to rebuilding the entire stock[84]. Targeting an appropriate mix of measures on specific housing and occupants provides more cost-effective decarbonisation[84]. This project looks to test this assertion by:

- Targeting areas that have been identified through the local area energy planning as having the greatest proportion of properties that would benefit from additional insulation (see figure 4.4), and
- Using dynamic modelling to fully understand energy flows within the dominant building types and identify the most cost-effective energy efficiency measures for a given budget and heating system.

The impact of installed measures on the properties will be monitored and analysed to consider development of new consumer offerings and business models, building on the following objectives of **Strategy Activity 1**:

- *Identify new business models that can self-finance wide scale deployment; this could involve providing integrated solutions incorporating other measures alongside retrofit. Reducing dependency on public grants.*
- *Focus on: developing and delivering new retrofit service offers and business models that also improve quality of homes/comfort; defining target areas and consumer segments; and adopting a means of performance contracting to ensure outcomes rather than measures are achieved.*[83]

[83] ETI (2018) *Bridgend Local Area Energy Strategy*
[84] ETI (2016) *Housing Retrofits – A new start.* Available at: https://www.eti.co.uk/insights/housing-retrofits-a-new-start (Accessed: 4 September 2018)

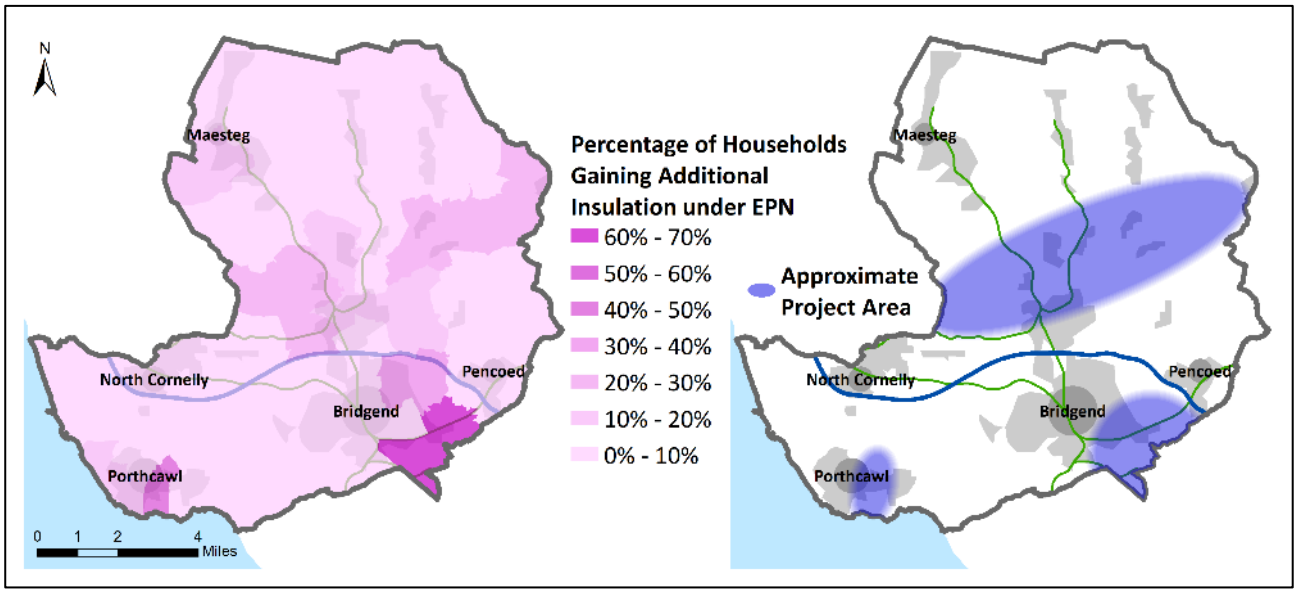


Figure 4.4: Proportion of Households identified as benefiting from Additional Insulation and Project Target Areas[85]

[85] ETI (2018) *Bridgend Local Area Energy Strategy*

5.2.2. Innovation Project 2: Hybrid Heat Pumps and Full Electrification

As mentioned above, Bridgend hosted the FREEDOM (Flexible Residential Energy Efficiency Demand Optimisation and Management) project, which looked *"…to better understand if hybrid heating systems are technically capable, affordable and attractive to customers as a way of heating homes."*[86]. *"The project successfully demonstrated that hybrid heating systems were able to maintain consumer comfort across a broad range of housing types, ages and sizes, with consumers from a range of socio-economic groups … without making any changes to the existing wet heating system that was being used for the gas boiler and with no thermal improvements to the property"*[87].

BCBC would like the success of the FREEDOM project to be built upon within Bridgend and the role of hybrid heat pumps in the overall decarbonisation of the Bridgend energy system as opposed to full electrification to be further explored.

Project areas that are currently being considered with respect to this include:

- The suitability of hybrid heating systems within a non-domestic environment, with an assessment of BCBC's own estate considering this,
- The potential for hybrid heating systems to be utilised as a transition technology within areas in which local area energy planning identified full electrification to be the most cost-effective heating system for 2050,
- The optimum housing fabric conditions and market environment to minimise carbon emissions when utilising a fully smart hybrid heating system.

The local area energy planning results identified the greatest average number of hybrid heat pumps in the Ogmore and Garw valleys, with fully electrified heating systems also identified nearby[88]. As such, it is intended that these areas will be targeted initially for further domestic hybrid heat pump deployment.

This project will focus on the following objectives of **Strategy Activity 2:**

- *Understand value of hybrids – is it transition technology or a long term 2050 solution.*
- *Develop and test compelling customer propositions that are attractive to customers so they buy-in to the transition.*
- *Build on the FREEDOM Project.*
- *Consider benefits of hybrid v electrification, potentially alongside fabric improvement.*
- *Provide further evidence on potential role of hybrid solutions before making energy network decisions*.[88]

[86] Western Power Distribution (no date) *FREEDOM.* Available at: https://www.westernpower.co.uk/projects/freedom (Accessed 10 October 2018)
[87] Freedom Project (2018) *Freedom Project Final Report* Available at: https://www.westernpower.co.uk/downloads/12221 (Accessed 15 October 2018)
[88] ETI (2018) *Bridgend Local Area Energy Strategy*

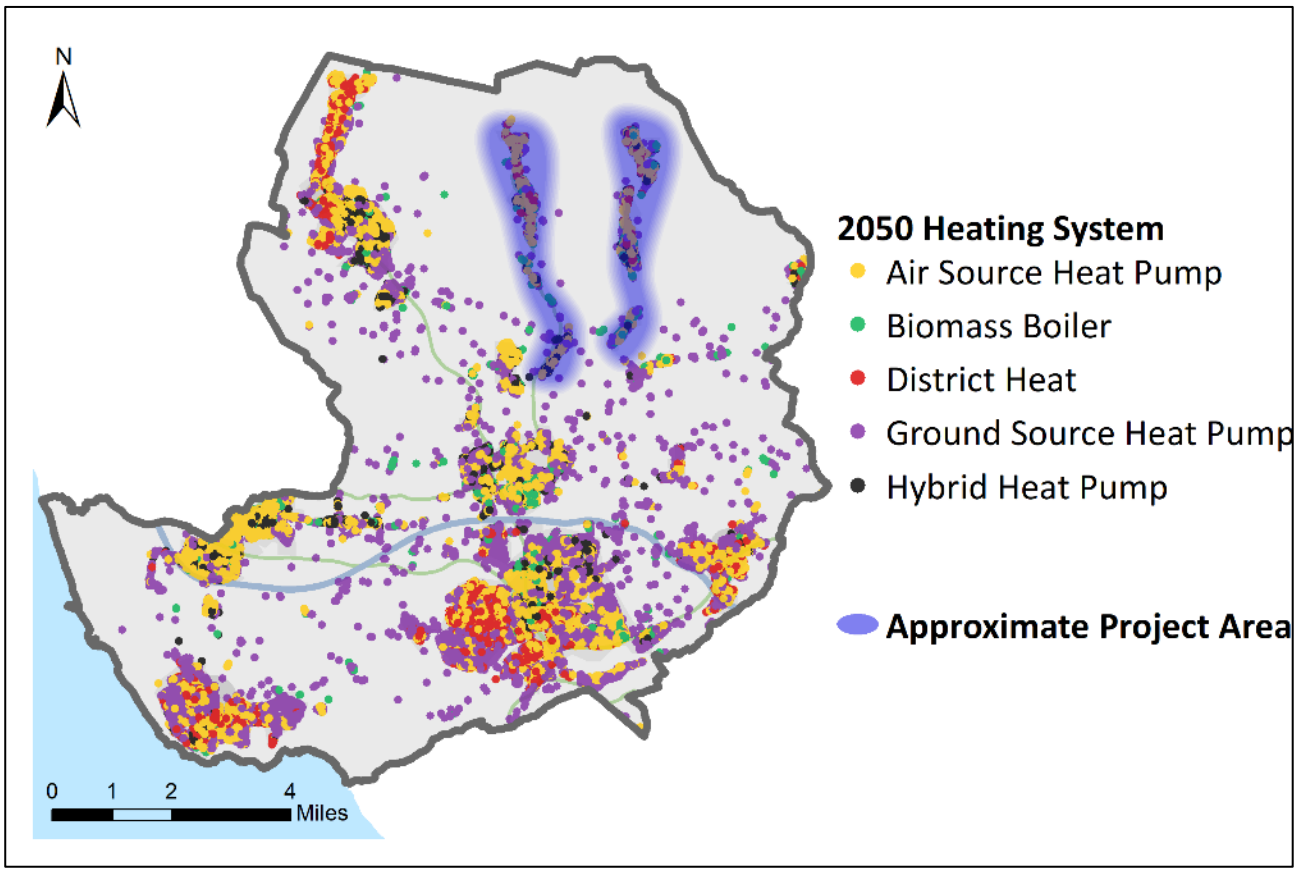


Figure 4.5: Heating Systems Identified from the Local Area Energy Planning under the Green Gas Scenario and Project Target Areas

5.2.3. Innovation Project 3: Caerau Mine Water Gas-to-District Heating Transition

The Upper Llynfi Valley has been identified as a potential area for district heating (DH). Feasibility work has been undertaken and an Outline Business Case prepared for a scheme that utilises the water resources held within the historic mine workings beneath the village to provide a low carbon heating system. Water within the old mine-workings is flowing at a raised temperature, measured at 20ºC. The scheme will pump the mine water to an Energy Centre at the surface and use a heat exchanger to extract the heat from the water and transfer it to a clean water supply which would be transported through a district heating network to residents' properties. Heat pump technology will increase the water temperature, so it is suitable for the residents' heating systems.

The majority of Caerau residents are connected to the gas network and use individual gas boilers to provide their heating requirements. Whilst DH offers an efficient method of providing energy to a local area the market for heat networks in the UK is immature and extending DH schemes to residential areas is difficult[89]. The Caerau mine water project provides an opportunity to gain technical and consumer insights relating to the delivery of heating via a low carbon district heat network to existing low-rise properties.

The project will encompass all objectives associated with **Strategy Activity 3:**

- *Understand insights from Caerau Heat Network scheme to identify barriers and opportunities to extend the scheme [...]*
- *Provide key learning to inform other potential residential retrofit schemes to similar groups of housing.*
- *Focus on understanding aspects such as:*
    - *Successful consumer engagement methods. Considering aspects such as the social demographic.*
    - *Commercial considerations. Key actual cost and economic data can be assessed to understand the financial implications of retrofitting heat networks to existing low rise residential areas.*
    - *Consumer's experience – what are the key aspects to focus on to encourage further uptake?*[90]

[89] AECOM (2017) *Reducing the capital cost of district heat network infrastructure.* Available at: https://d2umxnkyjne36n.cloudfront.net/teaserImages/Reducing-the-capital-cost-of-district-heat-network-infrastructure.pdf?mtime=20171103092304 (Accessed 10 October 2018)

[90] ETI (2018) *Bridgend Local Area Energy Strategy*

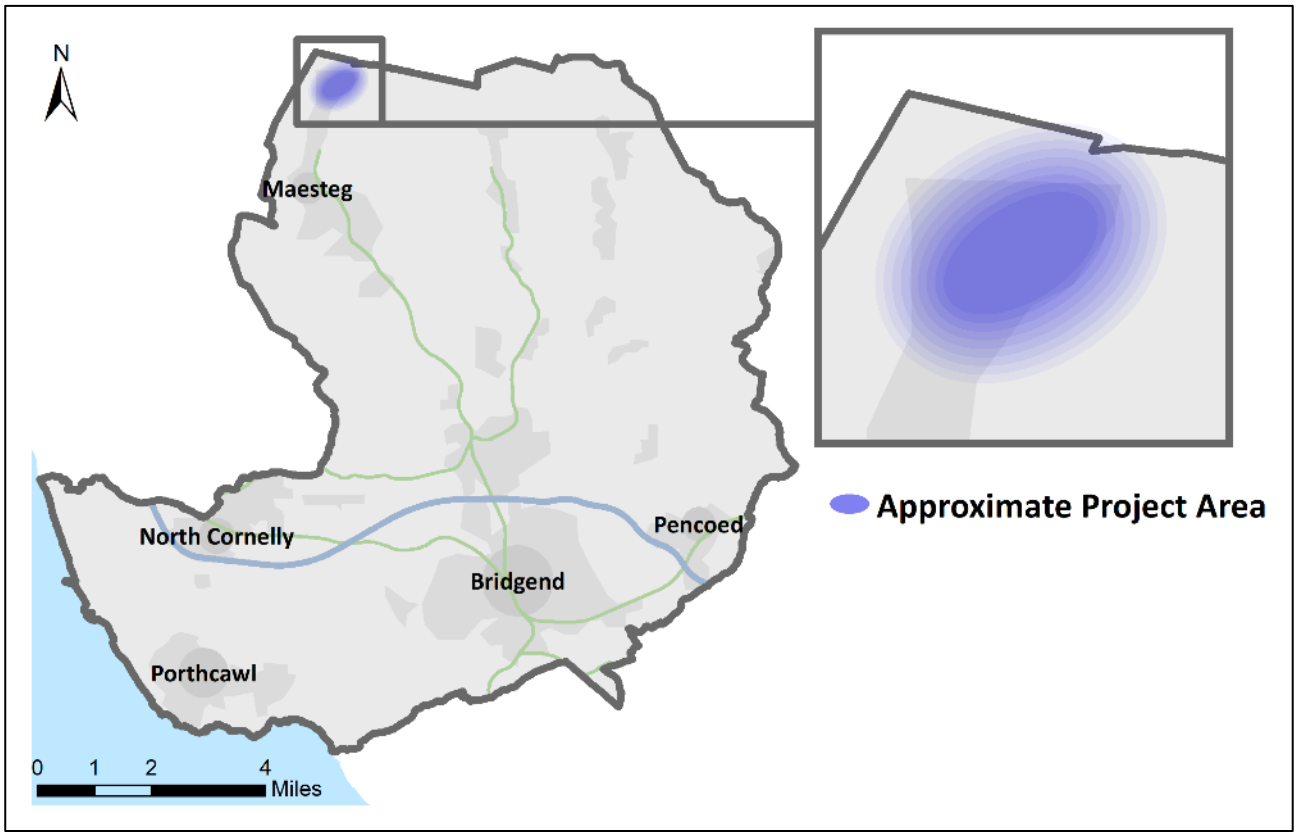


Figure 4.6: Project Target Area

5.2.4. Innovation Project 4: Affordable Urban Heat Networks

"Modern and accessible infrastructure…is essential to our future growth and prosperity"[91], however productivity growth in the construction sector has been slower than other sectors of the economy, which has an impact on infrastructure performance[92]. Whilst DH offers an efficient method of providing energy to a local area, the capital cost of DH networks is a major barrier to their development. ETI has identified the potential for 30-40% reduction in the capital cost of networks through the delivery of eight route maps[93]. This work was theoretical in nature, identifying high cost areas that have the largest potential for cost reductions. It identified specific gaps in the market where innovation efforts should be focussed to provide maximum benefit and value for money. This project looks to work with industry partners and build on the work undertaken for the ETI[93] and investigate additional innovation potential through the role of digitalisation to reduce the costs associated with urban heat networks and increase their overall cost efficiencies.

The project would develop innovative construction methods, products and delivery mechanisms, which reduce costs and increase efficiencies and test these in a real-world district heat network, to demonstrate the value provided and learn lessons for further development.

The project would focus on the following objectives of **Strategy Activity 4:**

- *Assess options of reducing cost of heat networks; focusing on proposed Bridgend Town Centre scheme. Utilising resources such as ETI Heat Infrastructure Development project: Reducing the capital cost of district heat network*[93].
- *Provide insights relevant to other potential comparable urban centre schemes.*
- *Consider aspects relevant to extending from urban centres to existing residential areas.*
- *Focus on overcoming barriers to connecting existing homes to heat networks.*[94]

[91] BEIS (2017) *Industrial Strategy.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf (Accessed: 30 July 2018)
[92] Infrastructure and Projects Authority (2018) *Transforming Infrastructure Performance.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664920/transforming_infrastructure_performance_web.pdf (Accessed: 15 November 2018)
[93] AECOM (2017) *Reducing the capital cost of district heat network infrastructure.* Available at: https://d2umxnkyjne36n.cloudfront.net/teaserImages/Reducing-the-capital-cost-of-district-heat-network-infrastructure.pdf?mtime=20171103092304 (Accessed 10 October 2018)
[94] ETI (2018) *Bridgend Local Area Energy Strategy*

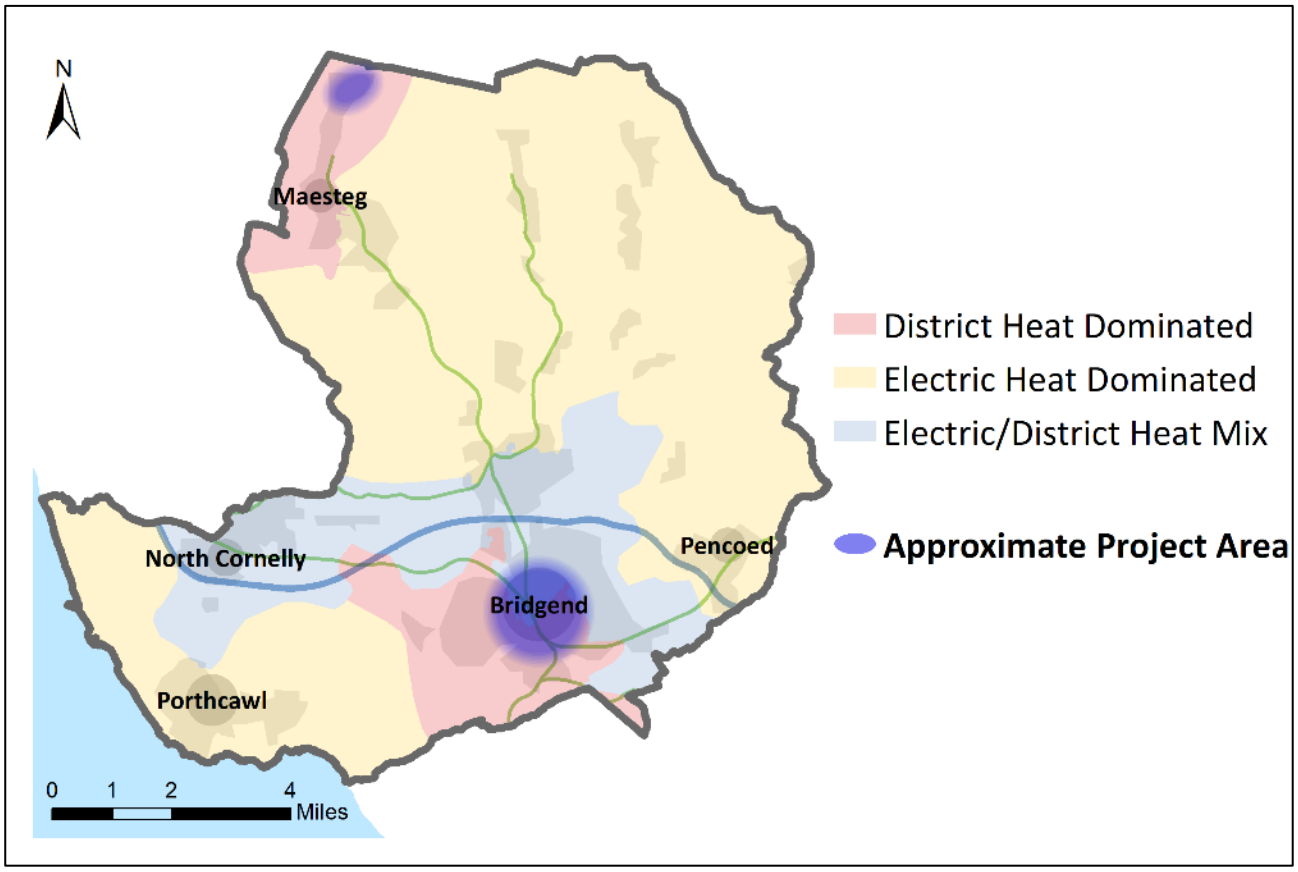


Figure 4.7: Dominant Heating Systems in 2050 by Area and Potential Project Target Areas

5.2.5. Innovation Project 5: Electrification of Heat through Energy as a Service

Electrified heating has been identified as the predominant cost-effective decarbonised heating system for much of Bridgend's valley and coastal areas[95]. Decarbonisation of domestic heating requires a significant change to the current energy retail sector, selling energy as a service is a potential solution that has been identified which this project will test[96]. A market that sells energy as a service would see consumers buying the experience they want; a comfortable home when they require it, rather than buying the individual components that provide that experience (e.g. boilers, radiators, gas, electricity, insulation, etc.). This project would look to introduce electrified heating solutions, utilising different energy service propositions to recruit participants. Technical insights in to providing the service promised and consumer insights regarding satisfaction levels with respect to the service provided will help to develop further propositions and determine if this is a viable way of transitioning consumers to an electrified heating solution.

BCBC are interested in testing a range of different electric heating technology packages, to understand the practicalities of different options and the home-environments in which they are most suited.

The project will target areas identified within the Local Area Energy Strategy[95] for predominantly electrified heating, but will look to include a range of housing types, demographics and geographical locations to understand how:

- different home environments affect the technical operation of delivering heat as a service via electrified solutions,
- different consumers respond to the energy as a service concept.

In addition to testing different technology packages this project will look to test different approaches to recruiting consumers, including through:

- the domestic heating supply chain,
- council services,
- partnerships with Registered Social Landlords.

The project will focus on the following objectives of **Strategy Activity 5:**

- *Develop and test compelling customer propositions that are attractive to customers so they buy-in to the transition.*
- *Develop new forms of service provision as different approaches will be needed for different areas and consumer segments.*
- *Establish partners and test approaches through council services such as social care.*
- *Consider targeting perceived early adopters in coastal areas*.[95]

[95] ETI (2018) *Bridgend Local Area Energy Strategy*
[96] ETI (2018) *How can people get the heat they want at home without the carbon?* Available at: https://www.eti.co.uk/insights/how-can-people-get-the-heat-they-want-without-the-carbon (Accessed: 15 October 2018)

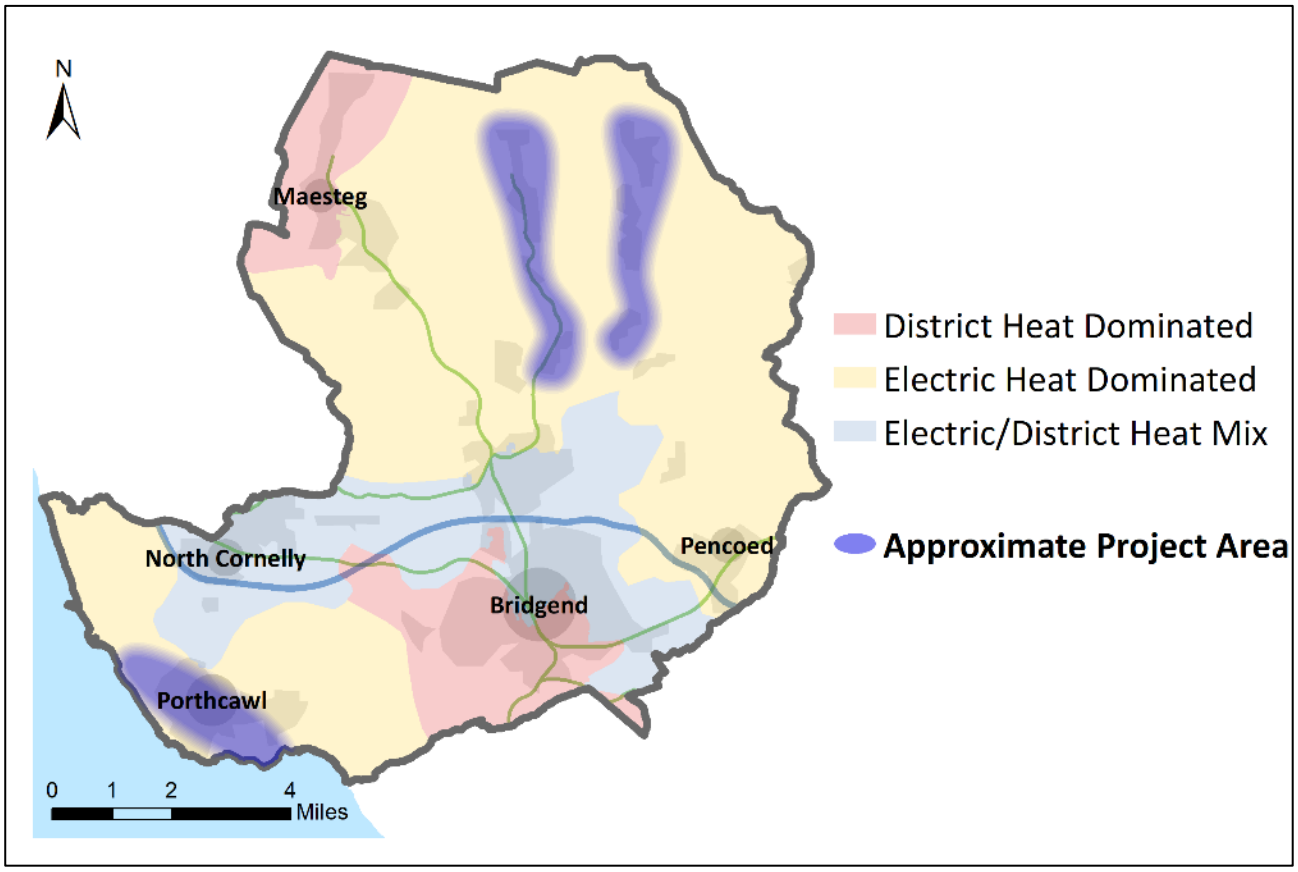


Figure 4.8: Dominant Heating Systems in 2050 by Area and Potential Project Target Areas

5.2.6. Innovation Project 6: Intelligent Bridgend Energy Systems Design

The Industrial Strategy promotes a "whole systems approach" to decarbonisation and clean growth and looks to *"…position the UK as a leader in clean and efficient power, transport and heat through an integrated approach to decarbonising these increasingly connected systems."*[97]. BCBC are supportive of this approach and would like to maximise the benefits that the heat projects under development within the county borough and the operational electricity projects in and around Bridgend County Borough can offer by integrating energy generation/use for transport, power and heat.

BCBC views digitalisation as essential to achieving this aim and will look to improve digital infrastructure alongside the energy projects developed to ensure that projects are future-proofed for further development and to enable additional service offerings to be introduced in the future which will provide further benefits to Bridgend's citizens; from smarter more efficient energy provision to mobility services and more responsive health care needs. As such, BCBC are interested in working with partners who not only work in the energy space but operate in the digitalisation industry to achieve the vision of becoming a *decarbonised, digitally connected smart County Borough*.

This specific project will develop a design and concept proposal for how to use digitalisation capabilities to integrate the three energy vectors (transport, heat and electricity) at a local level to:

- improve cost and resource efficiencies,
- enhance consumer experience,
- start to explore the potential benefits of a fully digitalised energy system.

[97] BEIS (2017) *Industrial Strategy.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf (Accessed: 30 July 2018)

5.2.7. Innovation Project Relationship with SSH and the Local Context

Table 4.1 summarises how the individual projects take forward the concepts developed within SSH, the Bridgend Local Area Energy Strategy[98] and how the project activities relate to both local context and the UK energy transition as a whole.

Table 4.1: Innovation Project Relationship with SSH, UK Energy Transition, Local Context and Local Area Energy Strategy

Innovation Project	Elements that Interact with SSH	Potential learning/outcomes for the UK energy transition	Relationship with Local Context	Interaction with Bridgend Local Area Energy Strategy
Innovation Project 1: Fully Targeted Retrofit	Tests whether full understanding of building fabric and energy flows can enable more cost effective retrofit measures to be identified. **Project tackles:** Economic barriers to low carbon heating.	Potential to: • Make public funded energy efficiency programmes more cost effective. • Lead to the development of attractive retrofit consumer offerings for able to pay market. By targeting a variety of areas in Bridgend County Borough the project will cover the diverse geography, housing types and demographics present in Bridgend, providing insights relevant to Wales as a whole.	Installation of retrofit measures doesn't just provide the potential for energy and cost savings, but can also provide: • Health benefits • Building improvements • Area regeneration. Therefore, the project feeds into BCBC's aspiration of delivering "*…an improved quality of life and environment for all people…in the area.*"[99]. Aims to provide insight for public programmes targeted at relieving fuel poverty (due to high fuel poverty prevalence in the valleys) and consumer models targeted at the able-to-pay market (due to presence of more affluent areas, which would benefit from retrofit).	Aims to provide the evidence/insight required to begin delivery of some of the objectives associated with Strategy Activity 1, specifically: • Building on data regarding housing retrofit • Identifying new, self-financing business models • Identifying consumer segments.[98]

[98] ETI (2018) *Bridgend Local Area Energy Strategy*
[99] BCBC (2013) *Local Development Plan.* Available at: https://www.bridgend.gov.uk/media/1899/written-statement.pdf (Accessed: 30 July 2018)

Innovation Project 2: Hybrid Heat Pumps and Full Electrification	Further understanding of the role of hybrid heat pumps as opposed to fully electrified heat pump systems, and whether hybrid heating systems are a useful transition technology. **Project tackles:** Social barriers to low carbon heating.	Will provide insight which will help inform the transition to hybrid or fully electrified heating systems in other areas.	97% of properties in Bridgend are connected to the gas network, so it is important to identify suitable methods of transitioning from gas to electric heating systems.	Project will achieve the following Strategy Activity 2 objectives: • Providing further evidence on role of hybrids and their value as a transition or long-term technology. • Developing and testing attractive consumer propositions. • Considering the benefits of hybrid systems versus full electrification.[100]
Innovation Project 3: Caerau Mine Water Gas-to-District Heating Transition	Will provide real consumer insight relating to the transition from gas-to-district heating in existing properties. **Project tackles:** Social and technical barriers to low carbon heating.	Will provide understanding of the potential for mine water to provide an energy source for district heating schemes, relevant to the whole South Wales coalfield and other coalfields across the UK. Consumer insights may help to develop future consumer propositions for new heat networks or heat network extensions.	Two areas of Bridgend County Borough have been identified for wide-scale district heating within the Strategy[98]. These areas are served by the gas network, therefore methods for encouraging transfer to district heating are required. The project will identify and start to break down the barriers to low carbon heating, which resulted in the low forecast of low carbon heat generation potential from the Local Development Plan Renewable Energy Assessment[101]. Local ownership of the scheme contributes to Welsh Government's aspiration for locally owned local energy generation and	The two areas identified for DH in the Strategy are predominantly served by the gas network. Understanding how to encourage consumers in these areas to transition to DH will be imperative to implementing the Strategy. It will specifically fulfil Strategy Activity 3 objectives to: • Identify barriers and opportunities to extend planned DH schemes, and • Provide learning for other potential residential retrofit schemes to similar

[100] ETI (2018) *Bridgend Local Area Energy Strategy*
[101] BCBC (2011) *Local Development Plan 2006-2021 Renewable Energy Assessment and Energy Opportunities Plan.* Available at: https://www.bridgend.gov.uk/media/2055/sd115.pdf (Accessed: 15 October 2018)

			helps to achieve the Well-Being of Future Generations goal of a Resilient Wales.	housing groups.[100]
Innovation Project 4: Affordable Heat Network	Tests and furthers work undertaken for the ETI[102] regarding lowering the cost of district heat networks. **Project tackles:** Economic barriers to low carbon heating.	Findings may provide replicable solutions for lowering district heat network costs elsewhere. There are six district heating projects under development in Wales which would benefit from the project findings, as well as other projects across the UK[103].	Whilst district heating is identified as the most cost effective domestic heating carbon reduction measure in two areas of Bridgend[104], the high capital cost provides an obstacle to deployment. This project will generate insight for project extensions due to be developed over the long-term towards 2050. As such it delivers on the Well Being of Future Generations Act's Long-Term way of working.	Findings will help to achieve the following objective within Strategy Activity 4: • *"Assess options of reducing cost of heat networks; focusing on proposed Bridgend Town Centre scheme. Utilising resources such as ETI Heat Infrastructure Development project: Reducing the capital cost of district heat networks."*[104]

[102] AECOM (2017) *Reducing the capital cost of district heat network infrastructure.* Available at: https://d2umxnkyjne36n.cloudfront.net/teaserImages/Reducing-the-capital-cost-of-district-heat-network-infrastructure.pdf?mtime=20171103092304 (Accessed 10 October 2018)
[103] HNDU (2018) *Local Authorities Supported by HNDU*. Available at: https://www.gov.uk/guidance/heat-networks-delivery-unit#local-authorities-supported-by-hndu (Accessed: 10 October 2018)
[104] ETI (2018) *Bridgend Local Area Energy Strategy*

Innovation Project 5: Electrification of Heat through Energy as a Service	Test and gather consumer insights on the Energy as a Service concept. **Project tackles:** Economic, social and technical barriers to low carbon heating.	May provide a model for an Energy as a Service consumer proposition which can be used to roll-out other heat/energy services and technology solutions in addition to that tested in the project.	The Strategy identified electric heating as the predominant cost-effective heating decarbonisation solution for much of Bridgend, however the gas network serves 97% of domestic properties. As such, compelling consumer propositions to encourage residents to switch from gas to electric heating will need to be established.	This project delivers on the following Strategy 5 objectives: • *"Develop and test compelling customer propositions that are attractive to customers so they buy-in to the transition.* • *Develop new forms of service provision as different approaches will be needed for different areas and consumer segments."*[104]
Innovation Project 6: Multi-Vector Integration	Aims to fully integrate a "whole-systems" approach into projects that are in development or are operational. **Project tackles:** Economic and social barriers to low carbon heating and other energy vectors.	Provides a test case for a BEIS' aim to *"…position the UK as a leader in clean and efficient power, transport and heat through an integrated approach to decarbonising these increasingly connected systems"*[105]	Integrates local energy generation and uses, to provide a more integrated approach to energy delivery and distribution within the local area.	Builds on the Strategy's aspiration *"to evolve to consider carbon emissions from other sectors such as transportation"*[106].

[105] BEIS (2017) *Industrial Strategy.* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf (Accessed: 30 July 2018)
[106] ETI (2018) *Bridgend Local Area Energy Strategy*

5.3. Other Near Term Deliver Non-Project Specific Activities

The other non-project specific activities are summarised in table 4.2.

Table 4.2 Additional Non-Project Specific Activities to be undertaken in the Near-Term (up to 2025)

Activity	Activity Details
Additional Activity A: Non-Domestic Building Data	The Strategy has focused initially on decarbonisation of BCBC's domestic buildings. Bridgend also hosts over 5000 non-domestic buildings, which will need to be decarbonised to meet Wales' carbon targets. To evolve the Strategy to include measures for tackling decarbonisation of the non-domestic buildings, BCBC will collect detailed and robust data for these buildings so that they can be assessed, and appropriate decarbonisation approaches can be identified and implemented.
Additional Activity B: Low and Zero Carbon DH Energy Sources	BCBC are looking to transition two areas of Bridgend to district heating. Whilst there are plans to fuel some DH areas with gas CHP plants initially, BCBC will look to transition these to lower/zero carbon heat sources in due course. This activity will identify and investigate different potential low carbon heat sources, through feasibility studies and stakeholder engagement. Findings from this activity are expected to lead to the development of future projects which may be undertaken under this plan or future plans beyond 2025.
Additional Activity C: Planning Policy Alignment with Decarbonisation Strategy	BCBC are currently starting to prepare a new Local Development Plan (LDP), which will set out the priorities and objectives of the Corporate Plan in terms of land use[107]. BCBC need to undertake a variety of steps to develop and adopt the new LDP, including reviewing the current LDP, compiling an Evidence Base, and drafting and receiving feedback on pre-deposit and deposit versions of the plan[107]. The new LDP is currently scheduled for adoption Summer/Autumn 2021[107]. The BCBC Sustainable Development Team will feed into this process to ensure that any potential barriers to the Local Area Energy Strategy are reduced and opportunities are maximised. Additionally, the BCBC Sustainable Development Team should work with the BCBC Planning Team when establishing a local renewable energy target to ensure that the insights provided by the Smart Energy Plan and Local Area Energy Strategy are taken into account.
Activity D: Establishing Bridgend as a Centre for Innovation	A variety of activities will be undertaken to ensure that Bridgend is viewed by the wider industry as a Centre for Innovation and an ideal area to trial innovation projects and encourage economic growth and job creation. Activities will include engagement (through a variety of media) with industry stakeholders about BCBC's near-term and long-term activities and objectives, to encourage: • companies to partner with BCBC on innovation projects (both those outlined in this plan and additional project ideas that the external parties may wish to pursue themselves), • supply-chain companies to invest in skills that would be useful for ongoing projects and the overall energy transition in Bridgend, • companies to invest in Bridgend as an area that will be at the forefront of the changing energy market.
Activity E: Identify Power, Transport and	BCBC are committed to decarbonising and developing localised solutions heat, power and transport (across both domestic and non-domestic sectors). BCBC are aware that these three sectors impact each other, and that complementary business models and

[107] BCBC (2018) *Bridgend County Borough Council Report to Council 20 June 2018, Report of The Corporate Director – Communities, Bridgend Replacement Local Development Plan (LDP) Delivery Agreement, pp.145-149.* Available at: http://democratic.bridgend.gov.uk/documents/g3214/Public%20reports%20pack%2020th-Jun-2018%2015.00%20Council.pdf?T=10&LLL=0 (Accessed: 13 September 2018)

Digitalisation Projects	technical solutions may be able to be developed to increase the benefits and impact of any single vector energy solution proposed. BCBC will integrate decarbonisation of power and transport and digitalisation where possible into the heating projects proposed and pursue project ideas with external partners to accelerate progression in these additional areas. Potential project areas include electrification of transport, local electricity market development associated with peer-to-peer trading and direct/indirect Power Purchase Agreements and development of mixed technology generation and storage assets.
Activity F: Scoping Future Delivery Plans	The Bridgend Local Area Energy Strategy suggested that there would need to be a series of relatively short-term (5 year) delivery plans that would detail activities undertaken and evidence collected before major area-based decisions could be made with certainty[108]. As such, during the delivery of the Smart Energy Plan time will need to be dedicated to planning activities and projects that will be undertaken during the next phase of the Strategy delivery and re-evaluating decarbonisation pathways based on insight from innovation projects. This will ensure a process of continual learning to gather evidence and insights that will enable confident decision-making regarding energy systems investments and future large-scale deployment of decarbonisation initiatives.

5.4. Near-Term Decarbonisation Road Map

Table 4.3 provides the anticipated timescales for each of the project activities. The Smart Energy Plan is a live document and many of the projects and activities are currently at the early stages of development, as such the steps and timescales are likely to require updating as further information is acquired. Additionally, as further opportunities are identified, the pipeline will be added to.

Figure 4.9 provides a map which illustrates the anticipated targeted areas for the projects alongside the dominant 2050 decarbonisation heating technologies identified via local area energy planning. As per the timescales, this may be subject to change during project/activity development.

[108] ETI (2018) *Bridgend Local Area Energy Strategy*

Table 4.3: Near-Term Project/Activity Timescales

2018	2019: *FIT scheme closes - UK leaves EU*	2020: *WG carbon target/budget end - Smart meters rolled-out - WG elections*	2021: *RHI planned closure - Current Arbed end date - Local elections*	2022 *UK elections - Current WG RE Support Service end date*	2023 *ERDF funding ends*	2024	2025: *WG elections (if not earlier) - WG carbon budget (2021-25)*
DP1 Bridgend Town Lower Carbon District Heat (DH) Network Phase 1: 1st step to decarbonising Bridgend town.							
	DP2 Bridgend Town Lower Carbon DH Network Phase 2: Build on DP1 business case and extend heat network.						
DP3 Energy Efficiency Projects: Tackle fuel poverty by installing energy efficiency measures in areas in need.							
	InP1 Fully Targeted Retrofit: Understand the benefits of dynamic modelling and performance monitoring and how these can help develop more compelling retrofit offerings for consumers.						
	InP2 Hybrid Heat Pumps and Full Electrification: Build on the success of the FREEDOM project and further explore the role of hybrid heat pumps in the overall decarbonisation of the Bridgend energy system.						
InP3 Caerau Mine Water Gas-to-District Heating Transition: Deliver a demonstrable example of a low carbon DH system which transitions existing residential consumers from gas heating to DH.							
InP4 Affordable Urban Heat Networks (HNs): Establish solutions for reduced HN costs & improved efficiencies.							
	InP5 Electrification of Heat through Energy as a Service: Deliver energy as a service to heating consumers via different electrified heating technology packages and gain insights to assist further roll-out if successful.						
InP6: Intelligent Bridgend Energy System Design: Explore the benefits that arise from integration of heat, electricity & transport systems							
				Activity A Non-Domestic Building Data: Gather data on Bridgend's non-domestic buildings and update the Strategy.			
	Activity B Low & Zero Carbon DH Energy Sources: Identify and investigate potential lower and zero carbon heat sources for DH networks to feed-in to future projects.						
Activity C Planning Policy Alignment with Decarbonisation Strategy: Ensure the new LDP accounts for the Strategy.							
Activity D Establishing Bridgend as a Centre for Innovation: Effectively market Bridgend as an area to trial innovation projects and stimulate economic growth.							
Activity E Identify Power, Transport and Digitalisation Projects: Develop complementary electricity, transport and digital infrastructure projects alongside the heating projects to ensure that decarbonisation takes place in a joined-up manner.							
				Activity F Scoping Future Delivery Plans: Ensure continual learning to achieve large-scale deployment initiatives.			

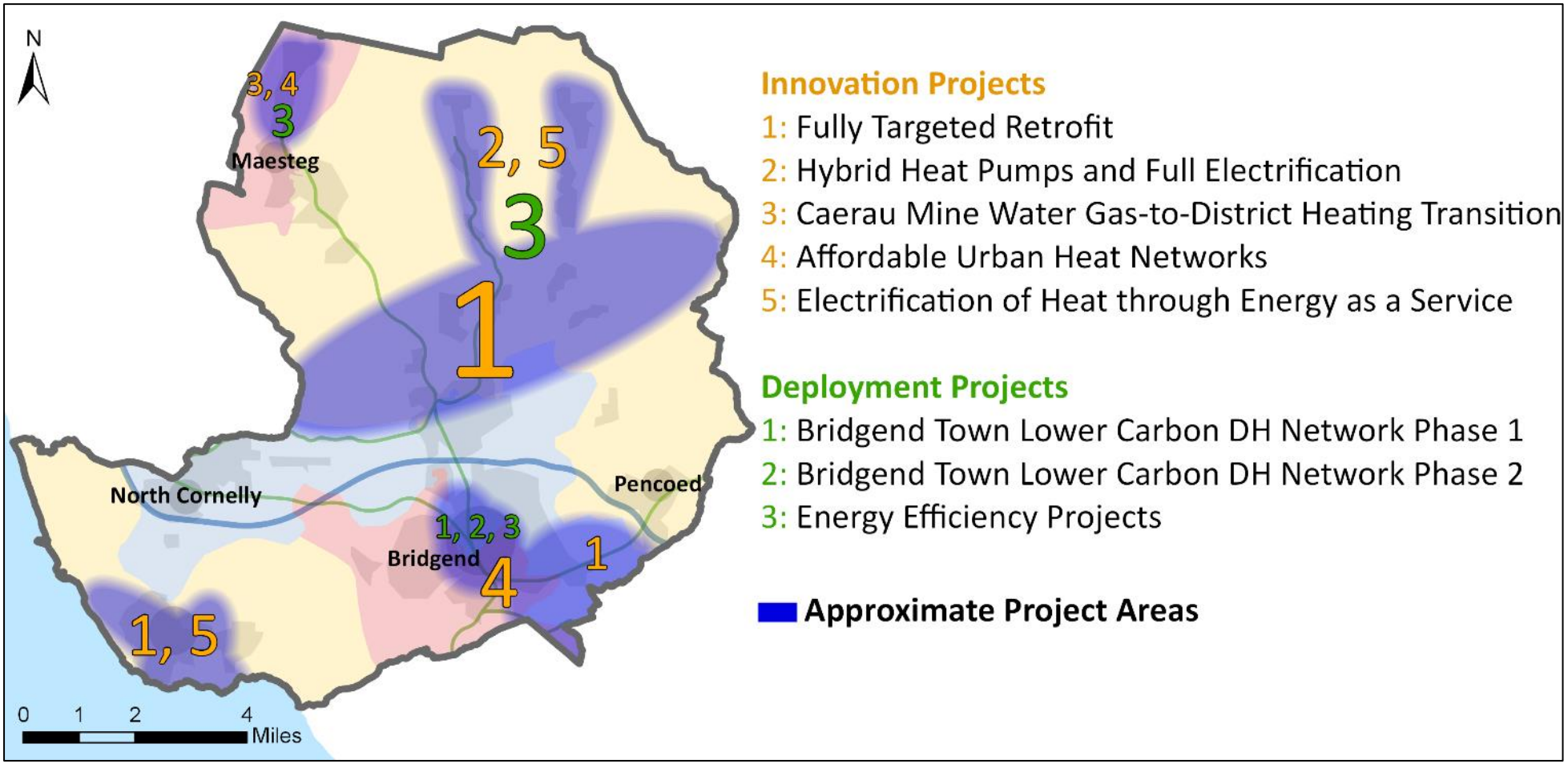


Figure 4.9: Target Project Locations

6. Conclusions

BCBC have developed this Smart Energy Plan with support from Energy Systems Catapult, Welsh Government, ETI and other stakeholders. The strategy, priorities, objectives, success criteria and project pipeline detailed within this Plan are driven by BCBC and set against the local context and vision. Implementation of the Plan will progress BCBC towards an aspiration of a decarbonised, digitally connected and economically productive county borough. It provides a project pipeline of three deployment projects, six innovation projects and six additional activities, which aim to support the decarbonisation of the local energy system. The Plan looks to exploit the opportunities provided by the UK Clean Growth and Industrial strategies and the aspirations of Welsh Government to increase locally-owned renewable energy generation within Wales. The projects are set within the local context of an area with mixed geography, a range of housing types and its own economic and social challenges, within a devolved nation with its own set of targets, legal commitments and support mechanisms.

A series of strategic objectives and success criteria have been established with suggested targets (see section 2.4), which can be used to focus activities and against which the success of the Plan can be evaluated.

The project pipeline within the Smart Energy Plan is primarily focused on activities related to the decarbonisation of domestic heating, due to its relationship with local decision-making. BCBC are committed to decarbonising and developing localised solutions for heat, power and transport (across both domestic and non-domestic sectors) and will look to exploit opportunities for addressing these energy vectors in delivery of the Plan. Additionally, BCBC will pursue opportunities for progressing the digitalisation agenda within Bridgend, recognising that this provides opportunities for delivering additional benefits to consumers, beyond the energy transition.

The innovation projects identified provide learning which will help to further decarbonise the local energy system and provide interested parties with relevant information for the decarbonisation of the UK. Presentation of development and delivery timescales associated with the innovation projects alongside deployment projects and other planned activities, assists in communicating the scope of work required by BCBC's Sustainable Development Team and the level of investment and support required to enable delivery of the suite of work identified. The target areas for the projects have been determined following Local Area Energy Planning undertaken by Energy Systems Catapult and the ETI and analysis used to inform the Local Area Energy Strategy. The target areas are spread across the county borough, with maps provided in section 4 identifying the target locations.

By developing Bridgend as a Centre for Innovation, BCBC hopes to attract companies and investment to the area, which could help to provide jobs and training opportunities for local people. By engaging with local industry stakeholders, BCBC aims to ensure that they will be well-positioned to benefit from the activities underway.

The Smart Energy Plan is a live document, subject to change and updates as further information becomes available and opportunities arise. Delivery of the projects identified according to the timescale provided, is dependent on securing the necessary funding at the necessary time. If this is not achieved, the timescales provided in the road map may need to be revised. It is advised that the projects are developed as far as possible to ensure that they are ready to be launched as soon as suitable funding is identified and secured. It is anticipated that BCBC will formally adopt the

Smart Energy Plan and assume responsibility for its continued development throughout the near-term delivery period (until 2025).

Energy Systems Catapult supports innovators in unleashing opportunities from the transition to a clean, intelligent energy system.

Energy Systems Catapult
7th Floor, Cannon House
18 Priory Queensway
Birmingham
B4 6BS

es.catapult.org.uk
info@es.catapult.org.uk
+44 (0)121 203 3700

This page is intentionally left blank