

1. Executive Summary

This report represents the close out of the Cool Wirral Partnership Zero Carbon Buildings Taskforce that was established in 2021 to bring together a wide range of stakeholders with an interest in the role of the built environment and infrastructure in reducing carbon emissions and responding to the challenges of climate change adaptation.

Over six meetings the stakeholders undertook a programme of learning, information exchange and action planning to make the most of the opportunity for collaborative working to be the step change required in the sector to contribute to the wider ambitions of the Cool Wirral Partnership.

This report is a record of this collaboration and the legacy of the Taskforce that has established four Task and Finish Groups to take a deeper dive and develop projects and future investments in the sector. The Task and Finish Groups have been taken forward through partnership working and recognising the expertise and influence that exists and that has been catalysed. These Groups are:

- Residential Retrofitting – Coordinated by Magenta Living
- Non-residential Retrofitting – Wirral Council
- Regional Collaboration – Wirral Council
- Nature Based Solutions – Wirral Council

The Zero Carbon Buildings Taskforce brought together a wide range of stakeholders and thanks are extended to all the organisations who participated in the meetings, offered their expertise, and shared learning. The Taskforce has catalysed action in Wirral that extends to the City Region and the partners are keen to work collaboratively in the future with neighbouring councils, the Liverpool City Region Combined Authority, business and third sector to ensure that all opportunities are taken to reduce carbon emissions in the built environment and secure multiple benefits for the wider community.

With thanks to:

Emma Hopkins - Forward planning - Principal Planning Officer, Wirral Council
Mike Cockburn - Assistant Director – Parks & Environment (Interim), Wirral Council
Ed Kingsley – Principal Strategic Housing & Investment Officer, Wirral Council
Jon Daley - Asset Sustainability and Data Manager, Magenta Living
Peter Owen – Chief Executive, Energy Projects Plus

Colin Usher – Architect
Paul Caldwell - Design & Construction Manager, Wirral Council
Cath McGarry – Riverside Housing
Andrew McCausland – Eco Homes Wirral Ltd
Jason Cain – Development Manager, Ion Developments
Jason Abbott – Your Home Wirral and Chair of Wirral Landlords Forum
Luca Biagioni – Liverpool City Region Combined Authority
Gillian Wossick – Liverpool City Region Combined Authority
Micaela Tracey-Ramos – Graduate Apprentice, Wirral Council
Charlotte Glynn – Peel Land & Property
Ian – Lagom Lifestyle
Sean Birkett - Climate Emergency Coordinating Officer, Wirral Council
Clare Rainsford – Sustainability Manager, Onward Homes
Rob Burns – Urban Design & Heritage Specialist, contracted by Wirral Council
Karen Moore - KJM Planning and Management, contracted by Wirral Council
Anthony Spencer – One Vision Housing
Katie Murray - SHIFT

2. Cool Wirral Context and Commission

The climate strategy for Wirral, Cool 2, developed by the Cool Wirral Partnership makes clear that tackling the climate emergency will require the widespread upgrade of existing buildings, different standards for new buildings and changes to energy infrastructure to decarbonise heat, power, and transport. It identifies an ‘early step’ to establish a Zero Carbon Buildings and Infrastructure Task Force to advise the Cool Wirral Partnership on these matters in line with local net zero ambitions.

Wirral Council is a key player in the Cool Wirral Partnership. It has taken the lead role in establishing the new task force. The taskforce’s terms of reference set out a role to:

- Quantify, define, and cost the retrofit changes needed in our existing buildings
- Define appropriate local standards and encourage best practice for new buildings
- Identify, define, and help cost infrastructure needs to support the rapid decarbonisation of heat, power, and transport
- Identify opportunities to realise the changes needed in the built environment

Under the Leaner Use of Energy Strand of the Cool 2 Strategy the built environment and infrastructure sectors are identified as being key areas for investment and raised standards both in terms of existing buildings and new development, alongside opportunities for heat and cooling networks and renewable energy.

Alongside this the need for climate change adaptation is clear, with the built environment being identified as part of the wider solutions including greater flood resilience and coastal defences alongside nature-based solutions and green infrastructure.

To catalyse action and raise awareness in the built environment and infrastructure sectors the Zero Carbon Buildings Taskforce was established to bring together a wide range of stakeholders including:

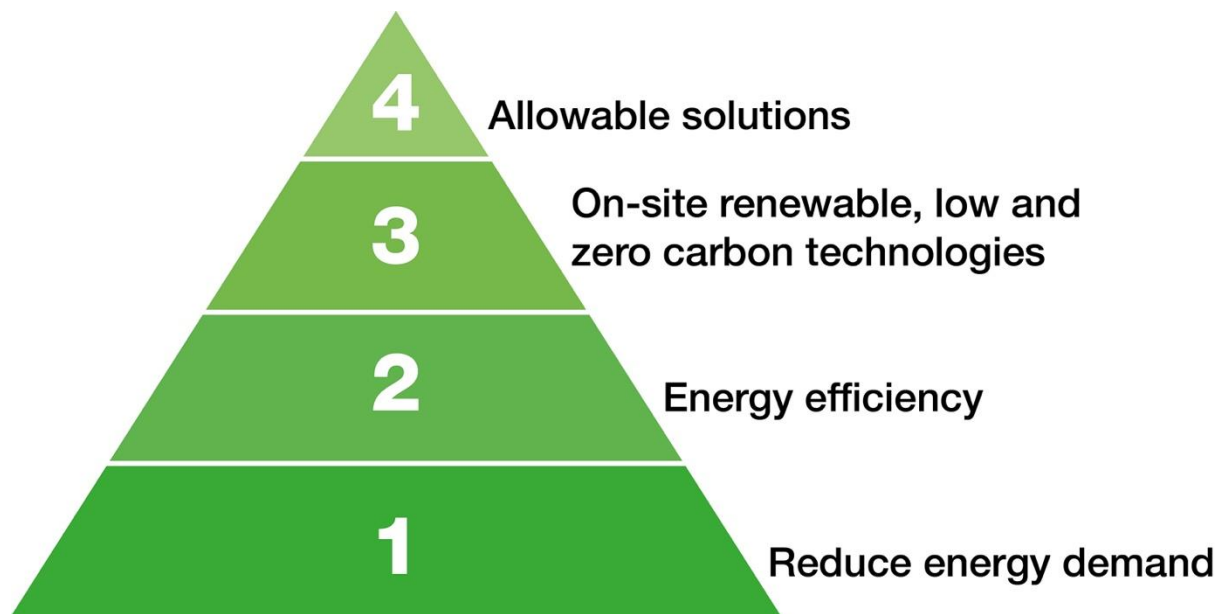
- Local public sector-built environment interests
- Local government and city region representatives
- Private and social residential landlords with properties in Wirral
- Commercial landlords with properties in Wirral
- The third sector
- Developers
- Architects
- Academic interests with expertise in net-zero buildings and infrastructures
- Utility interests

As series of six meetings were held, each covering an aspect of the role of the built environment in reducing carbon emissions and responding to the challenge of climate change adaptation.

APSE Energy were commissioned to facilitate the later meetings after the initial inception meeting which covered some aspects of building retrofitting and galvanised the Taskforce. Timothy David Crawshaw MRTPI FRSA is a multi-disciplinary green urban development consultant with specific knowledge, skills and experience in energy, sustainable transport, green infrastructure, historic buildings, community development and public engagement. Timothy working on behalf of APSE Energy provided the facilitation and is the author of this report. With over twenty years of experience in sustainable development he is also a facilitator, lecturer, and trainer, with excellent interpersonal and communication skills. With both UK and international experience with the United Nations Development Programme, he complements his core planning skills with an astute approach to funding and finance, project management and economic development. Timothy is Chair of the Tees Valley Nature Partnership working with multiple partners and stakeholders in delivering biodiversity net gain, health and wellbeing and supporting economic growth. Timothy is the President of the Royal Town Planning Institute.

3. Summary of the Meetings

The six meetings were arranged to provide a logical framework for discussions with accumulated knowledge and baseline research informing later stages and discussions. Starting with the analysis of the existing building stock, through new development and the Local Plan, renewable and low carbon energy and finally nature-based solutions and offsetting opportunities. This logical approach was based on the energy hierarchy and provided a framework for understanding and shared learning.



The energy hierarchy

Meeting 1 – Taskforce Establishment and Baseline Data (Pre-APSE Energy Involvement) 22/06/21

This meeting established the Taskforce, and the Terms of Reference (ToR) were presented.

The report of the Energy Saving Trust regarding the building retrofitting baseline and potential in the Wirral was presented and discussed. Both the residential and non-residential sectors were discussed and in summary the findings of the report are detailed below:

Residential Sector

- The Wirral has a higher proportion of larger homes than the rest of the NW
- There is a higher proportion of older homes, with greater challenges in terms of retrofitting
- Higher proportions of private ownership with less ability to secure improvements through regulations
- There is no direct Council owned housing stock
- A higher-than-average proportion of solid wall construction properties
- Good levels of loft insulation
- A high dependence on gas heating with the associated challenges of decarbonisation

Non-Residential Sector

- Wirral has more shops than the NW and England
- There are fewer offices and workshops and hotels
- With a greater proportion of shops, Wirral also has a slightly higher proportion of smaller commercial buildings

- There is a higher proportion of commercial buildings heated by electricity at around half
- Gas heating is still prominent, particularly in hotels and non-residential institutions such as hospital
- Air conditioning is limited
- There are slightly fewer buildings in the lower energy use per m2 category and slightly more in the medium categories
- Wirral has fewer commercial buildings highly rated (A and B) and with low ratings (E-G) than national and regional averages, but more rated C and D

Building retrofit as a programme was explored later in meeting 3 and 4 based on this baseline understanding.

Meeting 2 – Local Plan, Regeneration and District Heating – 17/11/21

This meeting was focussed on raising new standards in new development in Wirral in the context of the emerging Local Plan and the regeneration of Birkenhead.

Karen Moore of KJM Planning provided an overview of the emerging Local Plan Policies that have been included in the Submission Draft subsequently agreed in March 2022. The Local Plan has an ambitious compact growth emphasis that makes use of previously developed land and avoids the extensive use of green field sites.

Overall, the direction of travel was considered fundamentally sustainable, with a reduction in carbon emissions from transport being an anticipated outcome.

The local plan can be accessed [here](#).

Emma Hopkins – Principal Planning Officer at Wirral Council provided an update on the development of the Wirral Heat Network identifying partnerships and interconnectivity with the private sector, including Peel Holdings. With a heat source based on the docks the district heating network is still in development.

Further discussions regarding underground waste and recycling management were discussed alongside the need to encourage low and zero carbon development.

Recommendations following the meeting included:

- Consideration of a Local Development Order to support the heat network and grant permitted development rights for above and below ground infrastructure in existing areas and protections from new development compromising efficient corridors.
- Planning Policy that mandates connection to the heat network where this exists and a trigger point for a new energy centre if no connection available.
- A review of current design guidance to check that fabric first opportunities and matters such as orientation, prevailing wind, existing and proposed green infrastructure and the urban heat island effect are being addressed early in the design process.

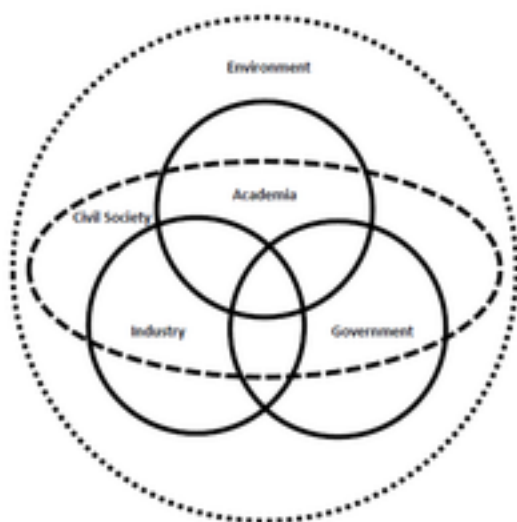
- Wider engagement regarding the heat network alongside the technical appraisal and detailed design.
- Prioritisation of detailed design and feasibility for difficult to treat properties regarding retrofitting, skewed to areas of deprivation / proximity to the heat network and with a consideration of funding and finance.

Of the above, a number of these suggestions have been taken forward and pending the Local Plan Examination and Adoption some may form a part of future guidance or Design Codes (as envisaged in the upcoming planning reforms).

Meeting 3 – Housing Retrofit – 26/01/22

This meeting focussed on the multiple stacked benefits of housing retrofits not just for carbon reduction but also for health and wellbeing and economic growth.

Based on the theory of the quadruple helix of public, private academic and the third sector / community collaborations the structure of the meeting was based on technology, funding and finance, stakeholder engagement and academic partnerships.



The quadruple helix of innovation

The technical challenges of retrofitting were discussed as well as the need for effective community consultation and the need to secure innovative financing mechanisms.

Opportunities

- Formal academic links with local and regional universities with expertise in this area
- Innovative financing mechanisms
- Supply chain development
- Building on the good work by Magenta Living regarding stakeholder engagement and tenant relationships
- Deep retrofit including waste management, green infrastructure and flood and water management

Challenges

- Securing investment in the private rented sector
- Technical barriers
- Dealing with difficult to treat historic buildings

As an outcome of the discussions a Residential Retrofitting Task and Finish Group was proposed and being led by Jon Daley of Magenta Living. In addition, a community engagement programme was proposed and is being developed by Peter Owen of Energy Projects Plus.

Meeting 4 – Non-Domestic Retrofit – 02/03/22

This meeting was focussed on non-domestic retrofitting and the role of anchor institutions providing leadership.

The UK Green Building Council was represented by Nathan Huck who outlined their work and emerging reports into the potential for non-residential building retrofit highlighting the challenges of a lack of standardisation in the sector. The UKGBC have recently published this [report](#):

Mike Cockburn of Wirral Council provided up on the Cool Business initiative through the Chamber of Commerce and opportunities to coordinate actions and make good use of existing assets.

Timothy Crawshaw outlined the Energy Services Company model to securing investments in the non-residential sector. <https://e3p.jrc.ec.europa.eu/node/190>

Jon Daley highlighted the need for the creative re-use of existing buildings and highlighted several initiatives where spaces have been re-purposed. Opportunities to deliver social infrastructure were highlighted.

Keith Keeley outlined the role of the Local Plan in facilitating compact growth models and the development of a District Heating network that would support the sustainable re-use of existing historic buildings that may be difficult to treat.

An outcome of the discussion was the establishment of a Non-residential Buildings Retrofit Task and Finish Group led by Mike Cockburn bringing together anchor institutions within a wider estate rationalisation initiative.

Meeting 5 – Regional Approaches and Renewable Energy – 12/04/22

This meeting focussed on regional collaboration, the work of the Liverpool City Region and the NW Energy Hub alongside best practice approaches to energy mapping and renewables.

Sean Maher of the LCRCAs gave an overview of the LCR Pathways to Net Zero (2022) [Document](#) recently published describing the process of development and consultation.

Luca Biagioni of the LCRCAs described the LCR Solar Together Project

- iChoosr are the preferred partner and service provider
- The project offers a cost-effective solution for the installation of Solar PV, battery storage and EV charging infrastructure through a collective buying mechanism for individual homeowners
- 16-35% discounts can be secured in previous rounds in other parts of the country
- Estimated 2.4MW total installation, saving 15kT of CO₂

Timothy Crawshaw discussed several exemplar regional approaches:

GMCA Spatial Energy Plan can be accessed [here](#)

Reference to London Energy Transition Initiative regarding embodied and operational carbon, including the Climate Emergency [Design Guide](#)

Offsetting and nature-based solutions for local carbon offsetting in a [report](#) from Imperial College

London Plan [Energy Planning Guidance](#) and Offsetting Guidance

Jon Daley via video described the work of the Social Housing Decarbonisation Fund:

- Partnership of 9 organisations
- Working closely with local authorities
- Partnered with Turner and Townsend
- Jon described the process of bidding into BEIS
- £11.1M – 1250 homes
- Great tips for working together were outlined

An outcome of the discussion was the need to actively engage with the Liverpool City Region Combined Authority to secure finance and the expertise of the North West Net Zero Hub.

Meeting 6 – Nature Based Solutions and Bringing it All Together – 26/05/22

This meeting was focussed on nature-based solutions to climate change in terms of mitigation and adaptation, alongside the close out of the Taskforce.

Timothy Crawshaw provided an overview of nature-based solutions delivered through intertidal habitats, seagrass, carbon capture gardens, urban tree planting, flood risk management and landscape scale approaches (see case studies).

Neil Thomas of Wirral Council provided an overview of natural flood management in Wirral. Neil discussed catchment-based approaches, SuDS and natural flood management.

Mike Cockburn presented the Wirral Tree Hedgerow and Woodland Strategy. This strategy includes the carbon sequestration potential of the tree planting programme in partnership with Magenta Living.

Katie Murray of SHIFT described the use of the SHIFT tool for carbon reporting for a variety of public and private sector clients. Providing baseline data and modelling for biodiversity net gain alongside carbon capture the SHIFT tool allows organisations to measure their performance in terms of offsetting and biodiversity.

Timothy Crawshaw trailed the content of this report.

It was agreed that the Taskforce would have sight of the draft report.

4. Key Learning Points

In creating the Zero Carbon Buildings Taskforce and through the series of meeting a series of learning points were observed that reflect the progress made through the series of meetings and to disseminate the 'learning by doing' process. In summary the main learning points were:

a) Establishing a baseline understanding is essential

Each Taskforce meeting was focussed on knowledge sharing and bringing all partners up to speed with the technical issues. There were a lot of technical terms and considerations and the presentations assisted in giving a broad overview. Overall, through questions, answers and comments stakeholders were enabled to participate. The first meeting and reports were essential in setting the baseline the meetings progressed in a logical order in line with the energy hierarchy as an embedded concept.

b) Development of a 'Community of Practice' with a legacy

A culture of enquiry and collaboration was established with a motivated and supportive culture already in place. Through the meetings most comments and suggestions were supportive and collaborative. The enthusiasm of the group was clear and there was a genuine desire to make progress and find solutions.

c) Cross sector working facilitating innovation and collaboration however greater community representation would have added value

The Taskforce brought together a diverse group of multi-sector actors. At a professional and expertise level this mix was balanced and was the beginnings of the establishment of the Quadruple Helix as described above, however greater community involvement and engagement would have added value and the Task and Finish Groups should address this deficiency.

d) Devolved leadership

A refreshing characteristic of the Taskforce was the willingness of partners to contribute knowledge and expertise and use their own networks to identify speakers and best practice. Task and Finish Groups have benefitted from participation and at least one has been taken over by a non-Council representative, Magenta Living.

e) Establishment of Task and Finish Groups for key themes

Recognising the complexity of the issues discussed and the size of the challenge it was decided early in the process that the legacy of the Taskforce would be a series of targeted Task and Finish Groups under the ongoing supervision of the Cool Wirral Partnership. The value of the Taskforce was in identifying the multi-agency actors operating in the built environment and identifying these – with leads identified and widening the reach of the Partnership deep into the built environment and infrastructure sector.

f) Recognition of the need for cross-border and regional partnerships

Early in the life of the Taskforce the need for cross-border working and regional collaboration was identified as a means to securing investment and delivery at scale. Whilst Wirral as a geography is suitable for innovation and pilots the opportunity to work with others and not reinvent the wheel was a strength of the Taskforce.

5. Case Studies and Resources

For each of the meeting themes there were either referenced in the meeting or exemplars that were identified through discussion, a selection of these are identified below illustrating the potential for similar actions and knowledge transfer to inform future innovation and the work of the Task and Finish Groups.

[Establishing a Baseline](#)

The Greater Manchester Spatial Energy Plan

This evidence base provides a comprehensive assessment of the potential for renewable and low carbon energy across the GMCA region. Based on publicly accessible information including EPC data and heat mapping alongside an analysis of the potential for heat networks the Plan identifies Opportunity Areas. The Greater Manchester Spatial Framework

provides the statutory context for the development of Local Plans, alongside the strategic policies. As a successor the [Spatial Energy Plan](#) GMCA have developed a [Smart Energy Plan](#), seeking to innovate in the energy space it is unlikely that this progress would be made towards securing investment without a strong baseline understanding the development of a statutory framework.

Whilst Wirral has baseline data, mapping this across the area in terms of the whole sector ranging from building energy performance, the heat network and potential waste heat and fuel poverty will inform future policy and the expansion of the heat network where feasible.

Local Plan, Guidance and Local Development Orders

Leeds District Heating Local Development Order

Leeds City Council have adopted a Local Development Order to deliver the Energy Masterplan granting planning permission for various works associated with the district heating Network. The [LDO](#) permits the development of a district heating network, including pipes, cables and wires, heat exchange equipment, street furniture, informational signage, and ancillary engineering works, subject to conditions.

An LDO may be a means to providing certainty in the future development of the Wirral Heat Network.

Design Guidance

Upcoming changes in the planning system may result in the need to develop a borough wide design code. The [National Design Guide](#) and [National Model Design Code](#) have provision for higher standards of fabric energy efficiency, and these can be part of any future design code.

The Birkenhead Design Guide is current being elaborated and provides an opportunity to integrate energy efficiency measures.

In terms of historic building there is guidance that could be calibrated to the local context. Whilst in need of updating, the Cornwall Improving Energy Efficiency in Historic Cornish Buildings [guide](#) is comprehensive.

A holistic approach to building design has been developed by the London Energy Transition Initiative [Climate Emergency Design Guide](#) that could form the basis on future local and regional design guidance, complementary to the Local Plan.

Housing Retrofit

There are several innovative approaches to housing retrofit that whilst can be developed on an individual basis standardisation is a worthwhile goal. Projects such as this Victorian house is an [exemplar](#), however it remains a one-off.

At scale terraced housing stock was reimagined by Urban Splash at [Chimney Pot Park](#).

This [report](#) provides a comprehensive overview of the Retrofit for the Future programme across a wide range of building types.

Non-residential Retrofit

The non-residential sector is diverse and takes many forms – building re-use and adaptation crossing over with residential projects and mixed-use schemes. There are clear opportunities to harness the assets of public sector and anchor institutions in terms of the rationalisation of the estate and the efficient use of assets, allied to retrofitting.

The UK Green Building Council have recently published [guidance](#) on both deep and light retrofitting of commercial buildings.

This [resource](#) showcases several projects across a range of building types and ages, however there are few public sector examples. Financing remains challenging for the public sector, with a few mechanisms being available including Energy Services Companies (ESCO), however the market remains underdeveloped.

Regional Approaches

There are several opportunities for regional collaboration and wider participation in energy markets as highlighted in the meeting that took place. Of note are the opportunities for local authorities to generate revenue streams through renewable energy projects, despite the constraints of green belt and landscape designations.

Warrington Borough Council partnered with Gridserve to develop [two off-site solar farms](#), one near York and the other near Hull.

There are five [Net Zero Hubs](#) across England, with a variety of projects, collaborations and initiatives that could be applied to the Cool Wirral context and into the wider region.

Of these the [Midland Net Zero Hub](#) is leading a project to secure carbon savings across the public estate.

Nature Based Solutions

Whilst nature-based solutions to carbon emission mitigation are will only deliver modest reductions through sequestration, their role in adaptation and other co-benefits are well established concepts. Additional planning requirements including Biodiversity Net Gain and Nutrient Neutrality are opportunities to harness the power of nature and nature recovery through [Local Nature Recovery Strategies](#).

Wirral has a very specific geography that provides opportunities within the intertidal zone for carbon sequestration, coastal flood management and habitat creation. Examples of projects that deliver these objectives include:

The Port Clarence and Greatham South Flood Alleviation [Scheme](#) – delivering flood protection for 350 homes and 32 businesses and 50 hectares of new habitat created for local wildlife.

Close by the intertidal zone of the Tees the Tees Estuary Intertidal [Habitat Creation](#) seeks to soften the edge between the terrestrial and the aquatic environment.

[Seagrass](#) provides opportunities to sequester carbon whilst also delivering habitat creation opportunities and improving coastal flood management.

On land carbon [capture gardens](#), either as a meantime use or integrated into the redevelopment of previously developed land can be highly effective carbon sinks.

6. Task and Finish Group Route Map

The Task and Finish Groups proposed are at various stages of development. Each Group should develop a work plan and KPIs relevant to the subject and scope. It is anticipated that activity will increase from Q4 2022 following this Report.

7. Regional Collaboration

Regional collaboration is already in place via the LCRC and through initiatives around solid waste management and low carbon retrofit. This collaboration, as discussed in Meeting 5 needs to be continued. The lead for regional collaboration is to be Mike Cockburn of Wirral Council. As identified in the meeting and as headline of the Taskforce regional collaboration is key to innovation and delivery at scale and pace.

8. Responding to the Challenge

Ambitious targets in the buildings and infrastructure sectors are required to meet the challenge of the Climate Emergency. In terms of energy efficiency, retrofitting and the transition from gas to electricity and low carbon heat there are significant challenges and hurdles. The Energy Saving Trust baseline reports provide recommendations that should form the basis of targets:

In the Residential Sector

- Adopt a fabric-first approach to retrofits
- Prioritise owner occupied homes
- Support the adoption of heat pumps
- Leverage GHG LAD (now known as “Sustainable Warmth Fund”) funding for primary measures
- Develop a separate approach to tackle flats
- Do not wait for new technologies to act
- Promote and explore funding schemes such as SHDF, Sustainable Warmth Competition, Heat Network Funds or Boiler Upgrade Schemes

Recommendations for targets include:

- a) The development of a comprehensive technical suite of measures for the key building archetypes in the Wirral by mid 2023.
- b) A comprehensive cross-sector public engagement and awareness raising campaign in the residential sector by early 2023
- c) Financing mechanisms identified for private owner occupiers, tenants, and landlords by the end of 2023
- d) Exemplar and pilot projects developed across each key housing archetype by mid 2023
- e) Market ready technical and financial mechanisms by end 2024

In the Non-residential Sector

- Improve energy efficiency through retrofit measures
- Switch to low- and zero-carbon technologies
- Exploit district heating opportunities
- Prioritise interventions by planning use class
- Lead by example (eg public buildings)

- Capitalise on funding opportunities

Recommendations for targets include:

- a) A strategy to rationalise the public estate (possibly through the One Public Estate programme) across the local anchor institutions by mid 2023
- b) Plan for the expansion of the district heating network to reach the historic core of Birkenhead by mid 2023
- c) Develop grant and financing mechanisms by the end of 2023
- d) A comprehensive survey and business engagement by mid 2023
- e) Market ready technical and financial mechanisms by end of 2024

It is assumed that the Local Plan, once adopted, will have its own monitoring and review mechanisms.

Based on the [Baseline](#) natural capital assessment for the Liverpool City Region the potential for nature-based solutions should be identified in terms of carbon sequestration and projects identified with the appropriate financing mechanism.

Recommendations for targets include:

- a) Project development by end 2023
- b) Financing mechanisms and internal carbon market development by end 2024
- c) Pilot projects by end 2024

9. Reporting Mechanisms

Each of the Task and Finish Groups should report directly to the Cool Wirral Partnership on progress regularly and carbon reduction performance annually.