



Housing & Land Delivery Board

Date: Wednesday 13 January 2021

Time: 10.00 am **Public meeting** Yes

Venue: This meeting is being held entirely by video conference facilities
[Please click here to view the meeting](#)

Membership

Councillor Mike Bird (Chair)	Walsall Metropolitan Borough Council
Sarah Middleton	Black Country Local Enterprise Partnership
Councillor Sharon Thompson	Birmingham City Council
Councillor George Adamson	Cannock Chase District Council
Councillor Jacqueline Sweetman	City of Wolverhampton Council
Bill Blincoe	Coventry and Warwickshire LEP
Councillor David Welsh	Coventry City Council
Councillor Angus Lees	Dudley Metropolitan Borough Council
Marc Liddeth	Environment Agency
Simon Marks	Greater Birmingham and Solihull LEP
Philip Farrell	Homes England
Councillor David A Wright	North Warwickshire Borough Council
Councillor Julie Jackson	Nuneaton & Bedworth Borough Council
Councillor Matthew Dormer	Redditch Borough Council
Councillor Sebastian Lowe	Rugby Borough Council
Councillor Keith Allcock	Sandwell Metropolitan Borough Council
Councillor Robert Macey	Shropshire Council
Councillor Ian Courts	Solihull Metropolitan Borough Council
Councillor Daren Pemberton	Stratford on Avon District Council
Councillor Jeremy Oates	Tamworth Borough Council
Councillor David Wright	Telford and Wrekin Council
Councillor Peter Butlin	Warwickshire County Council
Kevin Rodgers	West Midlands Housing Association Partnership

Quorum for this meeting shall be at least eight members

If you have any queries about this meeting, please contact:

Contact Carl Craney Governance Services Officer
Telephone 0121 214 7965
Email Carl.Craney@wmca.org.uk

AGENDA

No.	Item	Presenting	Pages
1.	Apologies for Absence (if any)	Chair	None
2.	Notification of Substitutes (if any)	Carl Craney	None
3.	Declarations of Interests (if any) Members are reminded of the need to declare any disclosable pecuniary interests they have in an item being discussed during the course of the meeting. In addition, the receipt of any gift or hospitality should be declared where the value of it was thought to have exceeded £25 (gifts) or £40 (hospitality).	Chair	None
Business Items for Consideration			
4.	Minutes of last meeting [For approval]	Chair	1 - 6
5.	Affordable Housing Delivery Vehicle - Update and Next Steps	Gareth Bradford	7 - 22
6.	Zero Carbon Homes: Charter and Routemap	Gareth Bradford	23 - 66



West Midlands Combined Authority

Housing & Land Delivery Board

Monday 2 November 2020 at 10.00 am

Minutes

Present

Councillor Mike Bird (Chair)
Councillor George Adamson
Bill Blincoe
Councillor Peter Butlin
Councillor Ian Courts
Councillor Matthew Dormer
Philip Farrell
Councillor Julie Jackson
Councillor Angus Lees
Sarah Middleton

Walsall Metropolitan Borough Council
Cannock Chase District Council
Coventry and Warwickshire LEP
Warwickshire County Council
Solihull Metropolitan Borough Council
Redditch Borough Council
Homes England
Nuneaton & Bedworth Borough Council
Dudley Metropolitan Borough Council
Black Country Local Enterprise
Partnership
Birmingham City Council

Councillor Sharon Thompson

In Attendance

Councillor Cathy Bayton

Overview & Scrutiny Committee

Item Title No.

16. Apologies for Absence

Apologies for absence were received from Councillor Keith Allcock (Sandwell), Marc Liddeth (Environment Agency), Councillor Robert Macey (Shropshire), Councillor Jacqueline Sweetman (Wolverhampton), Councillor David Welsh (Coventry) and Councillor David Wright (Telford & Wrekin).

17. Minutes

The minutes of the meeting held on 7 September 2020 were agreed as a correct record.

18. Single Assurance Framework - Impact on Thematic Boards - Terms of Reference and Role

The board considered a report from the Director Housing & Regeneration, Director of Strategy and Head of Governance & Monitoring Officer on how the new Single Assurance Framework would ensure the WMCA would use public money responsibly, both openly and transparently, and achieve best value for money.

The Single Assurance Framework required each thematic board, including the Housing & Land Delivery Board, to undertake a set of core roles to ensure that they were applying the appropriate oversight, support and portfolio development roles required to support the key principles and application of the framework. In addition, the Single Assurance Framework project had been tasked with developing proposals for a consistent role, purpose and approach to each thematic board to help drive effective, clear and accountable decision-making, ensure appropriate political oversight and support for Portfolio Leads and to support the intent to deliver a 'golden thread' from strategic objective through initiation, development, delivery and evaluation within the WMCA. An updated terms of reference for this board were therefore proposed that took account of this work. The Director of Housing & Regeneration indicated that there would be an additional non-voting member of the board appointed by Network Rail from the next meeting.

Resolved:

- (1) The Single Assurance Framework requirements for thematic boards be noted.
- (2) The proposed portfolio improvements for the Housing & Land Delivery Board be noted.
- (3) The amended terms of reference for the Housing & Land Delivery Board be endorsed.

19. Zero Carbon Homes: Programme Update

The board considered a report from the Director of Housing & Regeneration on the proposed approach to producing a 2025 zero carbon homes standard and routemap, as agreed by this board as key deliverables in its 2020/21 business plan.

At its meeting on 27 April 2020, this board agreed that the WMCA would adopt the UK Green Building Council's definition 'Net Zero Carbon Buildings: A Framework Definition' to define zero carbon development in the region and guide the development of the 2025 zero carbon homes standard. It also commissioned a comprehensive programme of work to meet the 2025 commitment. This involved developing a baseline gap analysis, a Zero Carbon Homes Charter and a Zero Carbon Homes Routemap. The first part of this work, to develop a baseline gap analysis, had now been completed and was included within the report. Based on the findings of this work, a draft version of the Zero Carbon Homes Charter would be developed and brought to the next meeting of the board on 13 January 2021.

Councillor Ian Courts stressed the importance of ensuring the cost implications of this ambition were kept under control in order that the support of the construction industry could be retained. Councillor Peter Butlin supported this comment and indicated that reducing the costs of zero carbon manufacturing would be the key challenge to overcome.

Resolved:

- (1) The proposed approach to delivering the zero carbon homes ambition in the 2041 Climate Change Action Plan, which included establishing the current level of low/zero carbon building in the region, producing an agreed zero carbon homes standard routemap to 2025 and launching a zero carbon homes charter be noted.
- (2) The findings of the baseline gap analysis report and its implications for meeting the 2025 zero carbon homes target be noted.
- (3) It be noted that the Zero Carbon Homes Taskforce had now been established, had met on 6 October and 22 October 2020, and that it would directly support the development of the Zero Carbon Homes Charter and routemap over the coming months.

20. Advanced Manufacturing in Construction Routemap

The board considered a report from the Director of Housing & Regeneration on the work undertaken by the Advanced Manufacturing in Construction Officer Working Group and Expert Advisory Group in producing a routemap for accelerating Advanced Manufacturing in Construction in the region as previously commissioned by this board.

The board had previously agreed to the development of a comprehensive Advanced Manufacturing in Construction routemap and strategy, to ensure that it delivered housing and job numbers, but also social value, inclusive growth and environmental benefits. To ensure that the routemap was accessible to those less familiar with the Advanced Manufacturing in Construction sector, but robust enough to inform credible actions, a two-part structure was proposed that would see both an executive summary and detailed report produced. It was intended to formally launch the routemap in winter 2020/21 with appropriate comms and publicity.

The Chair welcomed the report and indicated that he wished to see a critical mass of manufacturing being developed within the West Midlands that might, to some extent, mitigate against the loss of other skilled manufacturing jobs.

Resolved:

- (1) The contents of part 2 of the Advanced Manufacturing in Construction routemap be noted.
- (2) The proposal to explore options for implementing the Advanced Manufacturing in Construction routemap's recommendations in collaboration with the Advanced Manufacturing in Construction Officer Working Group and Expert Advisory Group be agreed.
- (3) The intention to formally launch the Advanced Manufacturing in Construction routemap in winter 2020/21 be noted.

- (4) The Director of Housing & Regeneration, in consultation with the Portfolio Lead for Housing & Land, be given delegated authority to agree the final versions of the Advanced Manufacturing in Construction routemap for publication.

21. Planning Reform: Key Messages

The board considered a report from the Director of Housing & Regeneration on discussions held with local planning authority officials to discuss any regional impacts from the proposed planning reforms, and to identify any consistent messages or points of clarification.

The White Paper 'Planning for the Future' proposed extensive changes to the planning system, covering plan making, development management and development contributions, alongside other related policy proposals. This new system had been devised by an expert panel working with the Ministry of Housing, Communities & Local Government and Treasury officials, and retained local plan making at the heart of the system. The White Paper set out the proposed reforms through three pillars: 'planning for development', 'planning for beautiful and sustainable places' and 'planning for infrastructure and connected places'.

Two workshops were held that identified a number of gaps in the new proposed system, along with a number of unintended consequences. A number of observations were therefore drafted that could have been included within consultation responses to the White Paper.

Councillor Matt Dormer noted that the White Paper proposed the removal of the duty to co-operate, but that this could still happen effectively where planning authorities chose to develop joint local plans with neighbouring councils. Councillor Peter Butlin indicated that he considered the non-delivery of approved planning applications to be a significant problem that needed addressing. He understood that up to a million unbuilt homes had received planning permission, suggesting that planning regulations were not proving to be a hindrance to housing supply. Councillor Ian Courts stressed the importance of properly understanding the economic pressures that influenced developers as this would help improve the supply of housing stock.

Resolved:

- (1) The key issues, messages and points of clarification raised by the Delivery Steering Group to the consultation on the White Paper entitled 'Planning for the Future' which closed on 30 October 2020 be noted.
- (2) It be noted that officials across the region would continue to raise these key messages, issues and points with the Government in different forums, together with the comments made at this meeting.

22. Local Plans: Update on Progress

The board considered a report from the Director of Housing & Regeneration summarising the position on local plans which has been developed with the Local Plans Housing Market Area Group.

The WMCA Housing Deal required the delivery of 215,000 dwellings by 2030/31 in return for up to £350m of investment, including £100m of which would be provided in the form of a Land Fund to accelerate the delivery of new homes. The Housing Deal also required local plans for both constituent and non-constituent local authorities to be progressed in a timely manner and adopted as necessary by 2021 to deliver and accommodate the 215,000 new homes target. To ensure that these targets were met, both local plans and housing land supply were monitored on a regular basis at a regional level.

Although the COVID-19 pandemic lockdown had had an impact on some local plans within the region, particularly where public consultation was needed, it was clear that local authorities had been taking positive steps to make ongoing progress. Those plans which had to be paused were now making their way through the system.

The Chair stressed the importance of the West Midlands region being able to deliver the supply of housing stock that it had agreed to within its Housing Deal.

Resolved:

- (1) The contents of the report that this board commissioned on local plan progression, provided in full collaboration with local authorities, be noted.
- (2) The March 2018 Housing Deal commitment that all reasonable steps were taken to progress local plans to adoption, to keep plans up to date and to ensure the region could demonstrate it was planning for delivery of 215,000 homes to 2031, be noted.

23. Exclusion of the Public & Press

Resolved:

That, in accordance with s100(A) of the Local Government Act 1972, the press and public be excluded from the meeting for the following item of business as it involved the likely disclosure of exempt information relating to the business or financial affairs of any particular person (including the authority holding that information).

24. Affordable Housing Collaborative Delivery Vehicle

The board considered a report from the Director of Housing & Regeneration on the proposals to establish a new Affordable Housing Delivery Vehicle and seeking approval to complete the full business case proposal for a joint venture between the WMCA and six regional housing associations.

In March 2018, the Government's housing deal with the West Midlands agreed that the WMCA would commit to working up a new dedicated partnership proposal to deliver additional affordable homes with the West Midlands Housing Association Partnership. Discussions had been ongoing since between the WMCA, the West Midlands Housing Association Partnership and the National Housing Federation to take forward the proposals for a bespoke affordable housing delivery vehicle that would help secure affordable housing delivery above and beyond those of the housing associations' committed and approved business plans.

The outline business case set out the strategic, commercial, management and financial detail of the proposals. It was now intended to convene a 'shadow board', consisting of representatives from the partners involved, to further develop a full business case for approval. It was expected that the full business case would be submitted for approval during January/February 2021.

The Chair enquired whether other housing associations could join this initiative in the future. The Strategic Delivery Advisor confirmed that this was the case, subject to the WMCA's approval. Councillor Ian Courts enquired whether sufficient sites were available for development under this scheme that had not already been identified for development. The Strategic Delivery Adviser indicated that sites were currently available, and it was expected further sites would come forward over time. The Chair requested that an update report be submitted to a future meeting of this board once it had been up and running for six months.

Resolved:

- (1) The positive progress towards the establishment of a new Affordable Housing Delivery Vehicle by the WMCA with West Midlands Housing Association Partnership, which was agreed in principle by this board in 2019, with a Memorandum of Understanding between the partners agreed by this board in July 2020, be noted.
- (2) It be noted that the next step on the establishment of the vehicle was to complete the outline business case and establish a 'shadow board' to finalise the full business case for board approval in early 2021.

The meeting ended at 10.45 am.

WMCA Housing & Land Delivery Board

Date	13 th January 2021
Report title	Affordable Housing Delivery Vehicle
Portfolio Lead	Councillor Mike Bird, Leader, Walsall MBC
Accountable Employee	Gareth Bradford, Director of Housing & Regeneration (Accountable Director) Pat Willoughby, Head of Policy (Housing & Regeneration) (Accountable SRO) Rob Lamond – Strategic Planning Manager (Report Author)
Report has been considered by	The Affordable Housing Delivery Vehicle has been the subject of several reports to WMCA Housing & Land Delivery Board– these are listed under Section 12 below, and Delivery Steering Group and the relevant meetings of the West Midlands Housing Association Partnership throughout its ongoing development

Recommendation(s) for action or decision:

The Housing & Land Delivery Board is recommended to:

- **Note and endorse** the background, strategic context and rationale for developing a proposal between WMCA and West Midlands Housing Association Partnership for a collaborative Affordable Housing Delivery Vehicle to address the pressing housing affordability challenge of the West Midlands
- **Agree** to the development of a Full Business Case to be prepared for the March 2021 Housing & Land Delivery Board
- **Note** that any WMCA investment into the proposed Affordable Housing Delivery Vehicle would be subject to Investment Board consideration and approval and the robust gateway approval and assurance processes for all investments made via the WMCA's Single Commissioning Framework

1. Purpose

- 1.1 The purpose of this report is to provide the Housing & Land Delivery Board with a comprehensive summary of matters relating to the development of a proposal for an Affordable Housing Delivery Vehicle to address the pressing housing affordability challenge of the West Midlands. This proposal, a proposed joint venture between the WMCA and housing association partners in the region, has been the subject of robust

and detailed assurance and due diligence work throughout its development and has been considered by the Housing & Land Delivery Board on many occasions over the previous two years. Following the update report to Housing & Land Delivery Board in November 2020 the WMCA Overview and Scrutiny Committee “called-in” this report and at its meeting of 23rd November 2020 requested that more information was required before the proposal could be progressed further.

- 1.2 To address these points and to provide the Housing & Land Delivery Board with an easily accessible summary of its previous decisions on the context, rationale and potential benefits of the proposed vehicle, this report sets out details of the proposal itself, the context for affordable housing in the region, the pressing housing affordability challenge the new vehicle seeks to address and proposed next steps
- 1.3 It is important to note that this report recommends the agreement of the Housing & Land Delivery Board only to the *strategic case for establishing* an Affordable Housing Delivery Vehicle (AHDV).
- 1.4 This report does not recommend or seek to recommend any investment by WMCA into the proposed vehicle. Investment into a proposed vehicle would be subject to the approval of a Full Business Case to WMCA Investment Board, in line with the established robust governance and approval process for consideration of all other investments of devolved housing and land funds made by WMCA via its Single Commissioning Framework.

2. Background and timeline

- 2.1 The Housing Deal, agreed by the West Midlands Combined Authority (WMCA) and Government in March 2018, set out a range of measures to support the delivery of new homes. It included ambitious targets to deliver 215,000 new homes by 2031, increasing the annual delivery rate from 10,000 to 16,500. In return, Government agreed to “*work with Housing Associations on new ways to finance and build affordable housing to rent or buy in the West Midlands*”.

WMCA stated that increasing the supply of affordable and social housing is critical to delivering these overall targets. Whilst specific commitments to affordable housing policy and investment were not detailed in the Deal, WMCA made it clear, during negotiations, that this would be a matter to which the Authority would return in due course.

- 2.2 Discussions have been ongoing with the West Midlands Housing Association Partnership (WMHAP) and the National Housing Federation (NHF) ever since the Housing Deal was signed in March 2018. WMHAP is a partnership of circa 30 housing associations across the West Midlands and has represented the sector as a member of the Housing & Land Delivery Board since its formation in 2017. The NHF is the trade body for the housing association sector; they influence, campaign and engage with Government and other organisations on behalf of their membership. Discussions between WMCA, WMHAP and the NHF have focused on developing proposals and ideas for a bespoke affordable housing delivery vehicle to help secure new additional affordable housing. Importantly, **a fundamental concept was that delivery of any new homes should be above and**

beyond those already contained within the committed and approved business plans of the housing associations. From the outset of these discussions, the focus was on a **regional** proposition to help address **regional** conditions and provide **additionality**.

2.3 On September 6th 2018 the Housing & Land Delivery Board was briefed on:

- the existing levels of affordable provision in the region
- the growing affordability challenges in the West Midlands
- the need for the region to be more successful in accessing national affordable housing funds, and
- the potential to encourage national scale providers to deliver a large proportion of their housing in the region.

2.4 As a result, the Board requested that WMCA's Housing & Regeneration Team develop:

- a clear delivery plan for increasing affordable and social housing and attracting new providers
- a strong evidence base linked to the Industrial Strategy and Strategic Economic Plan, and
- a robust proposal to government to deliver significant new supply and quality in return for new investment.

The clear focus for the programme, therefore, would be on accelerated delivery.

2.5 In light of the evidence presented to it and this strategic context, the Housing & Land Delivery Board agreed in **February 2019** that a key part of its cross-cutting affordable housing policy and delivery programme would be the creation of a new "*Affordable Housing Delivery Vehicle*". This decision was subsequently endorsed as a key deliverable for the 2020/21 Housing & Land portfolio by the WMCA Board.

2.6 At its meeting in **November 2019** the Housing & Land Delivery Board approved four underpinning criteria for the development of proposals for an Affordable Housing Delivery Vehicle between WMCA and WMHAP which have guided the work ever since. They were:

1. The vehicle must demonstrate full compliance with the criteria and governance systems set out in the WMCA Single Commissioning Framework (SCF) and all related assurance processes
2. The vehicle must explicitly deliver additional homes overall and especially affordable homes against the SCF affordable housing definition to meet local need on Brownfield land
3. The vehicle must be clearly and demonstrably addressing market failure and providing real added value – i.e. delivering sites that evidently cannot be brought forward by the private sector, public bodies or individual housing associations, as part of a blended pipeline of sites
4. The vehicle must provide an appropriate return on any WMCA investment.

NB Regarding point 4 above it is important to note that this includes social returns and benefits alongside financial returns to be reinvested into further affordable housing delivery.

Progress during 2020

- 2.7 The impact of the Covid-19 pandemic on the regional economy has seen significant consequences for the construction industry, and it is expected that there will be long-term effects on many people's ability to access employment and good quality, affordable homes. At its April 2020 meeting the Housing & Land Delivery Board reaffirmed its views that increasing affordable housing supply was a clear priority for the Board and that the WMCA establishing a collaborative joint venture vehicle with housing associations to deliver more affordable homes from early 2021 could play a significant role in the economic recovery of the region.
- 2.8 It was noted that development of the Affordable Housing Delivery Vehicle proposal had progressed significantly in the months prior to the pandemic, the Housing & Land Delivery Board also received an update at its meeting in April 2020 setting out the next steps. Recognising the significant progress that was being made, a memorandum of understanding (MoU) was subsequently agreed between members of WMHAP and WMCA and approved by the Housing and Land Board in July 2020. The MoU is not a legally binding document however it does demonstrate the parties' joint commitment to the project and shared commitment towards a full business case.
- 2.9 The Housing & Land Portfolio's Covid-19 Economic Recovery Plan, approved by this Board in September 2020, emphasised the crucial role the proposed Affordable Housing Delivery Vehicle between WMCA and WMHAP would play in the delivery of the region's response to the pandemic and the potential for even greater demand for accessible and affordable homes in the coming years.
- 2.10 At Housing & Land Delivery Board in November 2020 a summary paper updating on progress with the proposed Affordable Housing Delivery Vehicle was received, setting out next steps and annexing the Executive Summary of the Draft Outline Business Case as further context for the emerging proposal.
- 2.11 WMCA's Overview & Scrutiny Committee subsequently "*called-in*" this report and at its meeting of 23rd November 2020 requested that more information was required before the vehicle could be approved. Additional information was requested specifically in relation to the market needs the vehicle was addressing; the vehicle's governance and accountability; the impact on consumers; regional context; and the regeneration and reinvestment aims of the vehicle.
- 2.12 To address these points and to provide the Housing & Land Delivery Board with an easily accessible summary of its previous decisions on the context, rationale and potential benefits of the proposed vehicle, **this report sets out details of the proposal itself, the context for affordable housing in the region, the pressing housing affordability challenge the new vehicle seeks to address and proposed next steps.**
- 3.0 **The Context for Affordable Housing and Meeting Regional Needs**

- 3.1 The definition of Affordable Housing used in the National Planning Policy Framework 2019, set out in the text box below, identifies the types of housing products and delivery mechanisms included as “affordable housing” in legislation. It is important to note that “social housing”, i.e. homes provided by housing associations (not-for-profit organisations that own, let, and manage rented housing) or a local council are included within Section (a) “Affordable housing for rent” of this definition – thus **the phrase “affordable housing” does expressly include housing provision which is more usually termed “social housing” in public policy.**

What is Affordable Housing?

The National Planning Policy Framework, updated by HM Government in February 2019, defines affordable housing as:

Housing for sale or rent, for those whose needs are not met by the market (including housing that provides a subsidised route to home ownership and/or is for essential local workers); and which complies with one or more of the following definitions:

(a) Affordable housing for rent: meets all of the following conditions: (a) the rent is set **in accordance with the Government's rent policy for Social Rent or Affordable Rent**, or is at least 20% below local market rents (including service charges where applicable); (b) the landlord is a registered provider, except where it is included as part of a Build to Rent scheme (in which case the landlord need not be a registered provider); and (c) it includes provisions to remain at an affordable price for future eligible households, or for the subsidy to be recycled for alternative affordable housing provision. For Build to Rent schemes affordable housing for rent is expected to be the normal form of affordable housing provision (and, in this context, is known as Affordable Private Rent).

(b) Starter homes: is as specified in sections 2 and 3 of the Housing and Planning Act 2016 and any secondary legislation made under these sections. The definition of a starter home should reflect the meaning set out in statute and any such secondary legislation at the time of plan-preparation or decision-making. Where secondary legislation has the effect of limiting a household's eligibility to purchase a starter home to those with a particular maximum level of household income, those restrictions should be used.

(c) Discounted market sales housing: is that **sold at a discount of at least 20% below local market value**. Eligibility is determined with regard to local incomes and local house prices. Provisions should be in place to ensure housing remains at a discount for future eligible households.

(d) Other affordable routes to home ownership: is housing provided for sale that provides a route to ownership for those who could not achieve home ownership through the market. It includes **shared ownership, relevant equity loans, other low cost homes for sale (at a price equivalent to at least 20% below local market value) and rent to buy** (which includes a period of intermediate rent). Where public grant funding is provided, there should be provisions for the homes to remain at an affordable price for future eligible households, or for any receipts to be recycled for alternative affordable housing provision, or refunded to government or the relevant authority specified in the funding agreement

- 3.2 When the WMCA’s Single Commissioning Framework was approved in March 2019, it included a specific minimum requirement for all schemes in which WMCA invests through devolved housing or land funds to achieve a **minimum of 20% affordable housing using the national definition of affordable housing**. This is a core component of all funding agreements between WMCA and developers under the SCF to ensure that public investment into housing delivery secures social value and community benefits. It is quite rare for a public body to set a “minimum” affordable housing requirement rather than just a target to seek to achieve.
- 3.3 The Housing and Land Board remained concerned that the national definition of affordable housing when applied through the SCF didn’t take sufficient account of the wide diversity of housing affordability levels across the region. At its meeting in July 2019 the Board commissioned the WMCA team to develop a more regionally bespoke definition to further increase the provision of affordable housing and the effectiveness of that provision in meeting specific local needs identified through the local plan process. This new definition would frame the work of the new Affordable Housing Delivery Vehicle.

In January 2020, the Housing & Land Delivery Board approved the adoption of a new landmark **Regional Affordable Housing Definition**¹. This definition (which is wider than that applied nationally and much more locally targeted) would be applied through the WMCA’s Single Commissioning Framework on all sites invested in or acquired by the Combined Authority. This regional approach to affordability was developed in collaboration with the WMCA Homelessness Taskforce and was identified as a key objective in the Housing & Land portfolio’s “*Affordable and Accessible Housing*” workstream of its 2019/20 Business Plan. The Regional Definition was intended to act as a trailblazer nationally for a bespoke regional approach to affordable housing provision, demonstrating the added value in practice of a definition linked directly to **local** incomes and market needs, rather than just market prices for housing (which are the basis of the national definition of affordable housing).

Current Delivery and Challenges: Affordable Housing Delivery across the Region 2019/20

- 3.4 The West Midlands has seen significantly increased delivery of total new homes in recent years, with the most recent data showing an annual total of over 16,500 in 2019/20 – equating to a doubling of supply in six years.² Increasing the supply of affordable homes in the region continues to be a considerable challenge for all actors in the sector. Table 1 below sets out the official HM Government data for totals of each type of affordable housing delivered in the WMCA geography during 2019/20, with an overall total of 3,272 affordable homes in the region during the year.

¹ See <https://www.wmca.org.uk/news/west-midlands-becomes-first-region-to-re-define-affordable-housing/>

² Source data: MHCLG <https://www.gov.uk/government/statistical-data-sets/live-tables-on-net-supply-of-housing>

Dwelling Completions 2019/20						
Local Authority	Social Rent	Affordable Rent	Intermediate Rent	Shared Ownership	Home Ownership	Total Additional Affordable Dwellings
Birmingham	163	170	0	96	28	457
Cannock Chase	46	46	0	16	0	108
Coventry	15	111	0	73	0	199
Dudley	43	195	0	26	0	264
North Warwickshire	0	6	0	42	0	48
Nuneaton and Bedworth	22	188	0	19	10	239
Redditch	11	39	0	27	0	77
Rugby	82	106	0	111	0	299
Sandwell	0	60	0	0	0	60
Shropshire	19	138	0	59	12	228
Solihull	62	38	49	58	0	207
Stratford-on-Avon	186	127	0	208	31	552
Tamworth	0	17	0	10	0	27
Telford and Wrekin	59	173	0	88	0	320
Walsall	0	0	0	11	0	11
Wolverhampton	2	150	0	24	0	176
TOTALS	710	1,564	49	868	81	3,272

Table 1: Source: <https://www.gov.uk/government/statistical-data-sets/live-tables-on-affordable-housing-supply>, Tables 1006-1009

Longer Term Delivery of Affordable Housing Delivery (2010/11-2019/20)

- 3.5 The annual total figures for affordable housing completions for 2019/20 shown in Table 1 above reflect a fairly consistent level of annual delivery in the region over recent years. As illustrated by Figure 1 below, the total new affordable homes in the region has remained at a fairly static level over the past decade, with an annual average of circa 3,400.

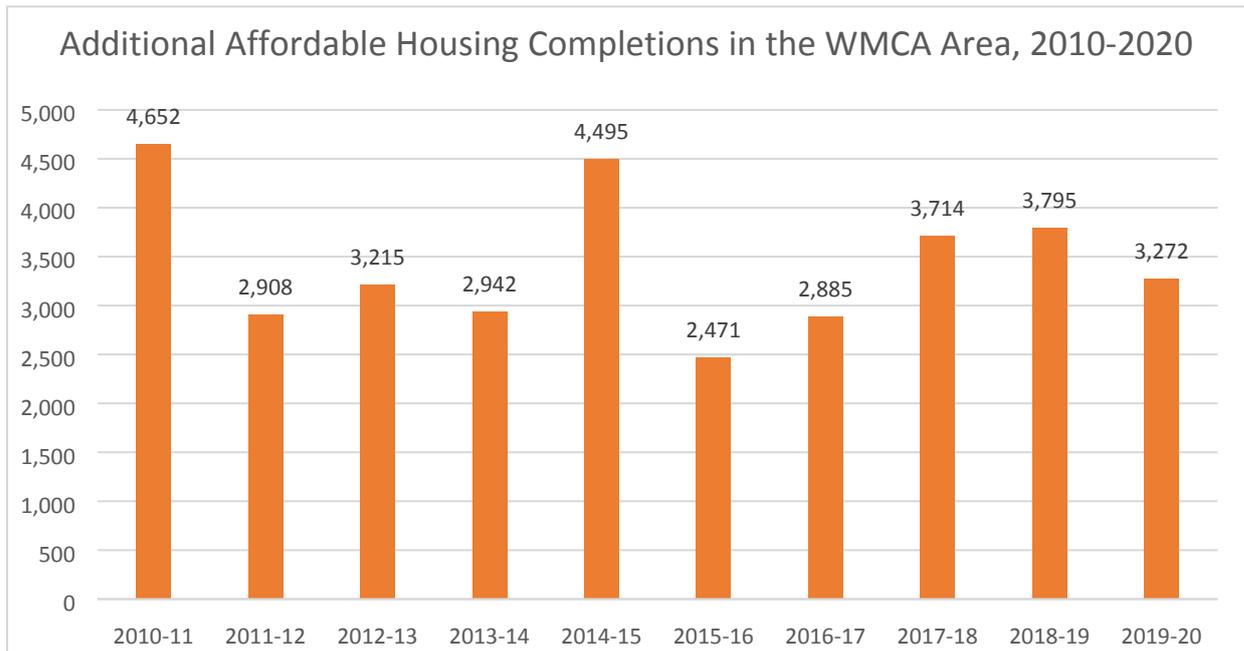


Figure 1: Source: <https://www.gov.uk/government/statistical-data-sets/live-tables-on-affordable-housing-supply>, Table 1008C

Affordable Housing Delivery Challenges

- 3.6 Across a region as diverse as the WMCA area there are clearly differing market conditions, housing needs and supply factors. There are a number of key constraints on increasing the supply of affordable housing that meets local needs in our region, including:
- Land supply constraints which hinder affordable housing delivery, especially on brownfield sites close to major new and existing transport corridors
 - Nationally imposed funding formulas and rules (e.g. the HM Treasury imposed 80/20 rule for Homes England funding for land acquisition and enabling infrastructure) that hinder ability for the region to attract the funding it needs and deploy bespoke solutions site by site
 - National Benefit Cost Ratio assessments in business cases which take minimal account of local factors or wider benefits of growth. This tends to favour lower cost greenfield/Green Belt land and brownfield supply in high value housing markets over former industrial sites in regions such as the West Midlands
 - Many organisations (Councils, Housing Associations, Homes England, Combined Authority) with differing roles and responsibilities for affordable housing policy and delivery
 - Viability challenges for affordable homes on shovel ready projects to which funding can quickly be directed
- 3.7 The complex reasons for this situation are multi-faceted and include remediation costs, access to appropriate land opportunities, viability, planning considerations and access to Government funding. **In addition, wide disparities in local incomes and market**

prices have been exacerbated and amplified by the impact of Covid19, and further bolster the need for the new and innovative responses to the challenges ahead.

Dwelling type and mix

- 3.8 The current make up of the regional housing stock is illustrated in Figure 2 below, with the majority of dwellings being owner-occupied. The private rented sector accounts for a further 17% of the total, followed by housing association stock (10%) and local authority housing (8%).

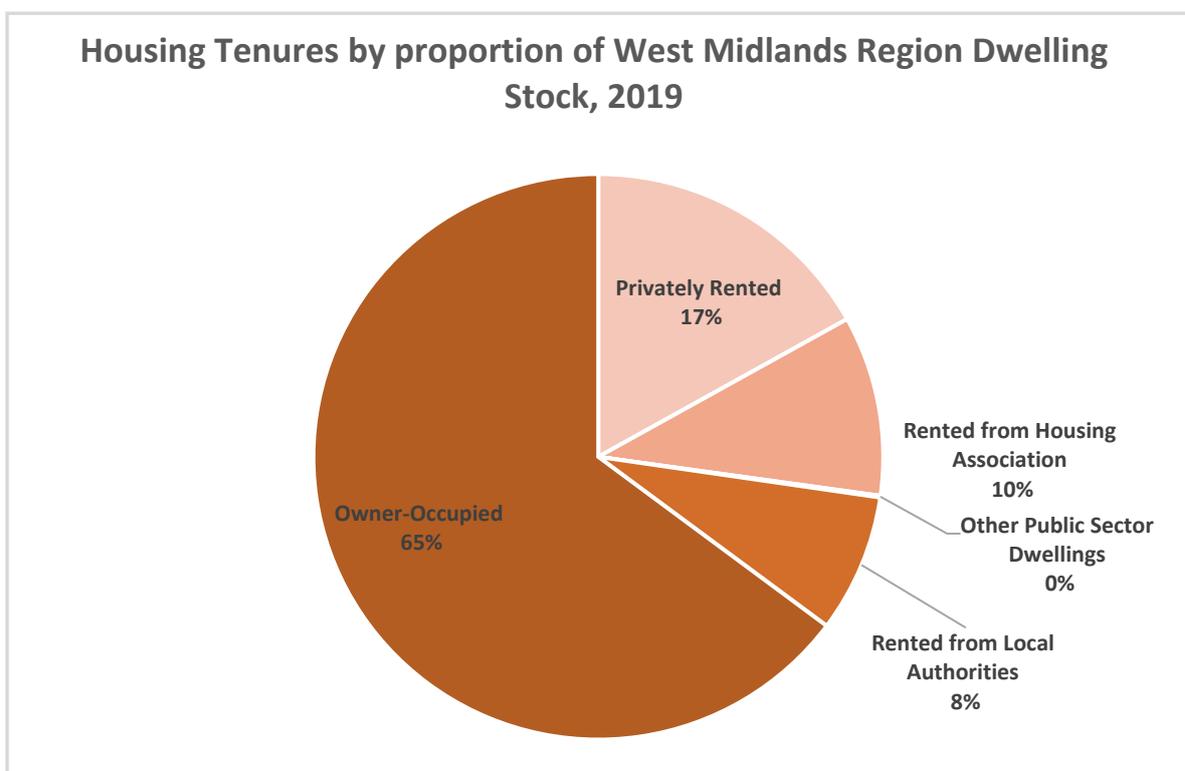


Figure 2:Source: - <https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants>, Table 109

- 3.9 During recent decades there has been a fundamental shift in housing tenures in the region, with the housing association proportion increasing from 2.7% in 1991 to 10% in 2019. Conversely the percentage of homes rented from local authorities has declined from over 23% to 8% in the same period.
- 3.10 The current delivery of affordable housing (including social housing) in the West Midlands is provided by a mixed market of local authorities, housing associations and the private sector. Through its National Affordable Homes Programme, administered by Homes England, HM Government provides grant funding to support the capital costs of developing affordable housing for rent or sale.

- 3.11 **The factors identified above set out a compelling rationale for adopting a bespoke approach towards the supply of affordable housing in the West Midlands.** The need and requirement for more affordable homes in the region remains absolutely clear. Housing affordability is getting worse (as measured by house price to income ratio), the issue is not equally distributed across the region (e.g. Coventry's house prices are increasing at some of the fastest rates in the country), and the house price to income ratios of, for example, Stratford-upon-Avon are very different to those of parts of Birmingham. Affordability has significant consequences for issues such as the cost of living, productivity, social mobility, and access to employment. The context for this situation is complex and multi-layered, and therefore requires a multi-faceted approach.
- 3.12 **It is precisely these types of challenges and issues which were the foundation to the work that has taken place under the Housing and Land Board in developing the case for the Affordable Housing Delivery Vehicle** and its co-development with a collective of housing associations (under the collective banner of WMHAP) to WMCA to explore the opportunities for a collaborative regional approach.

The Roles of Housing Associations

Housing associations provide homes and support for almost six million people around England. They offer **social homes, shared ownership homes, some market homes to rent and buy and essential supported and specialist housing.**

They also invest in community services and regeneration, provide support to vulnerable people and **reinvest all their income into delivering their social purpose.**

Social homes

The most common type of home housing associations provide is social rented and affordable rented housing, which are offered to people on lower incomes at a subsidised rent.

Social rented homes are usually rented at about 50% of the average local market rent and affordable rented homes are rented at around 80% of the local market rent.

Housing associations also provide quality homes to rent or buy at market rates.

They put all the proceeds from the rent and sale of these homes into delivering their social purpose, either by building more social and affordable homes or by investing in their local communities.

Building new homes

Housing associations build thousands of new homes for communities around the country. In 2018/19, they built more than 45,000 homes, nearly a third of all new homes in England.

This includes more than 5,000 homes for social rent, more than 19,000 homes for affordable rent, and more than 14,000 homes for shared ownership.

How housing associations invest their money

Housing associations are not-for-profit organisations set up to provide affordable homes and support local communities.

They do not make profits for shareholders. Instead, they invest all the income they make into delivering on their social purpose.

4.0 The Proposed Approach

- 4.1 As noted in Section 2 above, the development of a proposal for a joint delivery vehicle with housing associations has been the subject of many reports to the Housing & Land Delivery Board since 2018 and its grounded in the pressing need to address the well understood housing affordability challenges in our region. The concept of a joint venture

delivery vehicle was initiated in the context of the March 2018 Housing Deal and has been progressed substantially from the initial proposal from regional housing associations made to the WMCA. Importantly, it seeks to provide a mechanism to deliver additional affordable homes which will sit alongside (rather than replicate) those which are applied by housing associations individually – **providing genuine additional affordable homes.**

- 4.2 The current concept, agreed in principle by Housing & Land Delivery Board in November 2019, looks to bring together the combined expertise and resources of several of the largest housing associations within the region who are forming a dedicated Limited Liability Partnership known as West Midlands Housing Association Partnership Investments (WMHAPI). The affordable homes developed by the partnership will be available for “offtake” by any of the WMHAP members, not solely the investing partners.
- 4.3 This partnership will seek to harness the resources and expertise of the largest housing associations (which would be investing their own funds in the vehicle) to establish a direct delivery vehicle capable of intervening across the West Midlands and with the objective of creating new homes and communities to contribute towards the region’s social and economic growth.
- 4.4 The proposed vehicle provides a delivery mechanism whereby WMCA establishes multiple benefits including:
- it maintains influence over the quality, delivery and community benefits of developments through this vehicle
 - it recycles investment into further schemes, **and**
 - it implements policy objectives centred on design, construction, brownfield development, affordable housing and promoting inclusive growth.

In line with the direction of travel indicated by the Housing & Land Delivery Board in 2019 and April 2020, the proposed model ensures that WMCA is an **equal partner** in the joint venture and therefore shares equally in financial returns of the vehicle whilst also sharing the development risk. Accordingly the WMCA would nominate 50% of the Board members of the proposed vehicle and would have equal voting rights on decisions made. ***It is important to note that the proposed approach seeks to generate revenue for further investment into future housing schemes in our region, thus maximising and multiplying the public investment into any site.***

- 4.5 Through leveraging significant investment and expertise from the investor partners in the West Midlands Housing Association Partnership Investments, in combination with assets and/or investment from the WMCA, the proposed Affordable Housing Delivery Vehicle has the potential to play a significant role in the delivery of more affordable and high quality homes in the region, which will then be “off taken” by Registered Providers. ***It is important to note that the AHDV business model does not propose that the vehicle maintains or owns any housing stock itself.***

- 4.6 All properties developed will be disposed either on the open market to the general public or targeted households or to principal Registered Providers and other members of the West Midlands Housing Association Partnership to secure additional affordable housing. This will ensure that local housing associations with a relevant presence in the area are able to participate in, and benefit from, the outcomes of the proposal. The criterion of a minimum of 20% affordable homes (including social rent, affordable rent and shared ownership dependent on market conditions) included within the SCF will be applied to all schemes delivered by the vehicle, in accordance with local planning policies. **NB in areas where local planning conditions set a higher than 20% threshold for affordable homes, the vehicle will work within the local requirements.**
- 4.7 In order to test the concept and delivery model of the AHDV proposal, financial and development modelling work on real (but anonymised) site information has been undertaken in order to gain a much better understanding of the range of options for delivery, operating margins and recycling of investment from the proposed vehicle. This ensures that the very real challenges encountered in developing genuine, brownfield sites can be assessed and levels of risk and opportunity calculated and inform the detailed full business case and operating model for the vehicle.
- 4.8 Further work is now underway by WMHAP and WMCA to develop a Full Business Case (FBC) for inclusion on agenda for the March 2021 Housing & Land Delivery Board.

Next steps

- 4.9 **A Full Business Case (FBC) for the Affordable Housing Delivery Vehicle**, currently in development, is planned to be submitted to **WMCA Housing & Land Delivery Board in March 2021.**
- 4.10 **The proposed FBC will be based upon detailed strategic, economic, financial, commercial and management assessment and appraisal of the development model, in line with the due diligence and governance processes for all investment cases made to Investment Board. It will need to achieve all the “success criteria” set out by the Housing and Land Board and full compliance with the Single Commissioning Framework, and WMCA Single Assurance Framework as noted above in this report in order to progress further for any investment, subject to Investment Board governance processes.**

5 Financial Implications (*)

- 5.1 There are financial implications from the Affordable Housing Collaborative Delivery Vehicle. A detailed financial appraisal of the vehicle will need to be completed to fully understand all financial and tax implications to the WMCA. This appraisal will be completed in due course as part of the Full Business Case and any subsequent Investment Board process.
- 5.2 Any subsequent funding to set-up or fund the vehicle must follow The Single Commissioning Framework as it provides a single set of criteria and governance systems that will be applied to all applications for available devolved WMCA Housing, Land and Property Development funds, together with a consistent process and timelines for decision.
- 5.3 WMCA investment in any proposed Affordable Housing Collaborative Delivery Vehicle and subsequent projects, due diligence, feasibility or studies would be governed and administered through the Single Commissioning Framework, WMCA Single Assurance Framework, Commission Pathway and in line with the accounting and taxation policies of the WMCA and HMRC.

6. Legal Implications (*)

- 6.1 Section 113A(1)(a) of the Local Democracy, Economic Development and Construction Act 2009 gives WMCA a power of competence appropriate for the purposes of carrying-out any of its functions. Part 4 of The West Midlands Combined Authority Order 2016 (2016 No 653) confers that the functions relating to any economic development and regeneration in the constituent councils are exercisable by WMCA. Part 3 of The West Midlands Combined Authority (Functions and Amendment) Order 2017 confers functions corresponding to the functions of the Homes and Communities Agency has in relation to the combined area. Paragraph 10 (2) (a) of the 2017 Order confers the function of improving the supply and quality of housing to the Combined Authority, 10 (2) (b) to secure the regeneration or development of land or infrastructure in the combined area, 10 (2)(c) to support in other ways the creation, regeneration or development of communities in the combined area or their continued well-being and 10 (2)(d) confers the function of contributing to the achievement of sustainable development and good design.
- 6.2 It is noted that the development of the business case and the formation of a new Affordable Housing Delivery Vehicle is being supported through external legal support. Legal input will continue to be required at the relevant stages involving putting in place appropriate governance structures and legal processes and agreements. Any co-investments including grant and/or loan funding from WMCA will need to comply with the criteria and governance systems set out in the WMCA Single Commissioning Framework and will need to be considered on a case by case basis.

7. Impact on Delivery of Strategic Transport Plan

N/A

8. Equalities Implications (*)

- 8.1 A full Equalities Impact Assessment is being completed in parallel with the development of the Full Business Case for the AHDV. This will assess the potential impacts of the proposed AHDV and any mitigations required.

9. Inclusive Growth Implications

- 9.1 The proposed Delivery Vehicle would operate via the WMCA's Single Commissioning Framework which includes Inclusive Growth outcomes including affordable housing, use of local labour and suppliers, and quality of design and placemaking as part of the key criteria for investment of Combined Authority funds.
The proposed Vehicle will establish key outcomes and measures relating to Inclusive Growth as part of the business case.

10. Geographical Area of Report's Implications

The report covers the whole of the WMCA area.

11. Other Implications

12. Schedule of Background Papers

06.09.2018 Housing & Land Delivery Board - Social Housing Green Paper Update and Response

21.02.2019 Housing & Land Delivery Board – Housing Affordability: Update and Proposal to HM Government

04.11.2019 Housing & Land Delivery Board – Affordable Delivery Vehicle: Update

27.04.2020 Housing & Land Delivery Board – Affordable Housing Delivery Vehicle Update

06..07.2020 Housing & Land Delivery Board – Affordable Housing Delivery Vehicle Update

04.11.2020 Housing & Land Delivery Board - Affordable Housing Collaborative Delivery Vehicle: Progress Update

Note; (*) denotes mandatory field



Housing & Land Delivery Board

Date	13 January 2021
Report title	Zero Carbon Homes Charter and Routemap
Portfolio Lead	Councillor Mike Bird, Leader, Walsall Council
Accountable Employees	Gareth Bradford, Director of Housing & Regeneration, WMCA Patricia Willoughby, Senior Reporting Officer, WMCA Rachel-Ann Atterbury, Report Author
Report has been considered by	An earlier report on the Zero Carbon Homes Programme was considered by the Housing & Land Delivery Board at its meeting on 2 nd November 2020, and by the officers of the Delivery Steering Group at its meeting on 9 th December 2020.

Recommendation(s) for action or decision:

The Housing & Land Delivery Board is asked to:

- 1) **Consider and agree** the principles and format of the Zero Carbon Homes Charter as set out in Appendix A-in readiness for publication.
- 2) **Consider and agree** the contents of the Zero Carbon Homes Routemap as set out in Appendix B- in readiness for publication.
- 3) **Agree** the proposal to formally launch the Zero Carbon Homes Charter and Routemap in early 2021 (date TBC)
- 4) **Note** the excellent support from local authority officers on the Zero Carbon Homes Working Group and industry experts on the Zero Carbon Homes Taskforce in formulating the charter and routemap.
- 5) **Delegate** to the Director of Housing & Regeneration, in consultation with the Portfolio Holder for Housing & Land, authority to agree the final versions of the charter and routemap (ready for publication)

1.0 Purpose

- 1.1 The purpose of this paper is to update the Housing & Land Delivery Board on the excellent progress being made under the Zero Carbon Homes Work Programme of the Board.
- 1.2 This is work led and developed by WMCA working closely throughout with our regional Zero Carbon Homes (ZCH) Officer Working Group and an independently chaired ZCH Expert Taskforce. The focus of this work in 2020 has been producing a ZCH Charter and Routemap – agreed by the Board as key portfolio business plan deliverables for 2020/21. Draft final versions of both the Charter and Routemap have been considered and supported by the groups above and are attached to this report as Appendices A and B for discussion and agreement by this Board with the intention that both documents should be published in the first quarter of 2021 as set out in the 2020/21 Portfolio Business Plan.

2.0 Background

- 2.1 In January 2020, the Combined Authority launched its 2041 Climate Change Action Plan (WM2041) including a commitment to delivering a ZCH standard by 2025. At the same time, the Housing & Land Delivery Board agreed that a major deliverable for the Housing & Land Portfolio in 2020/21 was to establish a clear ZCH standard for new homes in the region, alongside a Charter and Routemap to achieving it with supporting guidance to enable the industry to meet the ambitious 2025 target. The Board commissioned WMCA officers to take forward this work during the year in partnership with local councils and the private sector.
- 2.2 In April 2020, the Housing & Land Delivery Board agreed that WMCA would adopt the UK Green Building Council's (UKGBC) '[Net Zero Carbon Buildings: A Framework Definition](#)' to define zero carbon development in the region and guide the development of the 2025 ZCH standard. As a reminder, the UKGBC's framework defines net zero carbon in terms of emissions in three ways: construction, operation and whole life.
- 2.3 There is general agreement within the industry that the third part of the definition, meeting net zero **whole life** carbon, is currently aspirational. This ambition cannot be delivered at this stage because it requires us to address **all** aspects of a building's carbon footprint. As such, it places demands upon new development which cannot be implemented in the timescale required. The benefit of the UKGBC's framework definition, however, is that it identifies the steps required to shift towards whole life net zero carbon, allowing clear progress to be made, whilst at the same time demonstrating the scale of the overall ambition.
- 2.4 Alongside UKGBC's definition framework, the Housing and Land Delivery Board agreed a defined phased programme of work to meet the 2025 commitment at its April meeting.

Following the Board meeting, officers appointed Useful Projects to co-develop and co-ordinate the workplan, programme and activities to accelerate the move towards zero carbon development in the region. Additionally, WMCA assembled a ZCH Taskforce and Officer Working Group to oversee, steer and review the programme as it developed.

- 2.5 When complete, the programme would deliver the three outputs agreed by the Board at the outset, including the Baseline Gap Analysis report (Output 1) discussed and endorsed by Housing & Land Delivery Board at its November 2020 meeting as well as a ZCH Charter and Routemap (Outputs 2 and 3 considered by the Board today).

3.0 Output 2: ZCH Charter

- 3.1 The second agreed output of this programme of work was the production and publication of a ZCH Charter which would frame the commitment by WMCA and its partners, and the objectives for, net ZCH in the region. In this regard, the document would be vision-setting with a focus on delivering associated benefits such as whole life cost savings, supply chain opportunities and social value. The Charter structure broadly follows that of the Regional Design Charter, in both its appearance and hierarchy of themes and principles. Similarly, the ZCH Charter is expected to be included in the Single Commissioning Framework, setting out the desirable features of new low and zero carbon development on all projects supported financially by WMCA.

- 3.2 Based on findings from Output 1 (the Baseline Gap Analysis) and workshops with the Officer Working Group and Taskforce, a final draft of the Charter has been prepared for consideration and agreement by the Board today. This draft is included in Appendix A.

4.0 Output 3: ZCH Routemap

- 4.1 The third agreed output of this programme of work was the production and publication of a ZCH routemap, included in Appendix B. The routemap provides an implementation plan for meeting the Charter's aspirations, as well as other short and medium-term goals to meet the 2025 commitment. The routemap is not binding on WMCA or its partners and does not include financial commitments or hold legal status. Instead, the recommendations for action will be used to guide future policy development, with full financial and legal implications considered on a case by case (and site by site) basis. Additionally, monitoring and reviewing protocols are included in the routemap to ensure WMCA's actions are sufficiently aspirational to meet the target whilst still deliverable on the ground.

- 4.2 As previously stated, delivering net zero whole life carbon across all development sites by 2025 would not be achievable within this timeframe. Approaches to this element of the definition are still being developed by UKGBC and will need to be taken on board as the work progresses. For this reason, therefore, the routemap sets out a timeframe for

achieving net zero emissions for each element of the definition framework (operational, embodied, whole life). This means the definition of 'ZCH' in terms of the West Midlands approach will also naturally evolve over time. This timeframe is set out on p.6 of the routemap.

- 4.3 Based on findings from Output 1 and input from the Taskforce, it is suggested that **WMCA's initial focus should be on meeting net zero emissions in operation** (i.e. by 2025). Steps towards achieving net zero embodied and whole life emissions would remain clear ambitions to be delivered over the coming decade and the timescale for their achievement would be reviewed on a regular basis and reported to this Board. One of the clear benefits of prioritising reductions in operational emissions now is that it will reduce the need to retrofit in the future. There are also significant benefits to the occupier in terms of limiting fuel poverty and improved health and wellbeing.
- 4.4 Following conversations with both the Taskforce and Officer Working Group, five 'enablers' deemed necessary to deliver WMCA's aspirations to 2025 and beyond are identified in the Routemap. Each enabler includes a key objective, setting out a 'vision' for WMCA's role in delivering net-zero carbon development, in line with our long term (2041) commitment to net zero. These enablers and their key objectives are listed below:
- 1. Policy and Lobbying**
WMCA will build national and regional support for the delivery of ZCH and the local infrastructure required to facilitate low-carbon development.
 - 2. Governance and Delivery Processes**
WMCA will ensure it has the right governance processes and resources allocated to lead and support the implementation of this routemap, while fostering a joined-up approach.
 - 3. Financial Capital**
WMCA will support a better alignment between available financial capital and projects and business that deliver ZCH, ensuring that investment decisions are made based on whole life value created.
 - 4. Human Capital**
WMCA will accelerate the provision of zero carbon skills and build capacity of the formal education sector, while engaging with communities to ensure they reap the socio-economic benefits of zero carbon growth.
 - 5. Infrastructure, Innovation and Technology**
WMCA will ensure infrastructure is future-proofed and innovation is maximised with the use of low-carbon technologies accelerating a transition to zero-carbon and supporting a resilient, green regional economy.

- 4.5 Actions for each enabler have also been identified with a programme covering the immediate term (beginning in 2021), short term (beginning in 2022-25) and medium to long term (2025 onwards) determined for each. Underpinning these enablers are a series of case studies demonstrating best practice delivery.
- 4.6 For ease and accessibility, a key is included in the routemap which identifies relevant stakeholders for each action, enabling partners to easily establish where they may be involved in or impacted by the proposed actions. Additionally, all key targets and milestones are identified on a timeline, which will be overlaid with other national and regional targets, including those in related WMCA and national policy and those put in place by industry leaders.

5.0 Next Steps

- 5.1 Members of the Housing & Land Delivery Board are asked to consider and comment upon the content of both the Charter and Routemap attached as Appendices A and B. Following the meeting further revised drafts will be prepared for publication. Members are also asked to agree that authority to agree any minor changes (which do not affect the overall purpose or sense of the documents) should be delegated to the Director of Housing & Regeneration, in consultation with the Portfolio Holder for Housing & Land. WMCA will look to formally launch the routemap in early 2021 with an appropriate communications strategy and publicity.
- 5.2 In the meantime, in collaboration with the officer working group and expert advisory group, WMCA will begin to explore options for implementing the priority actions for 2021 within the routemap.

6.0 Financial Implications

- 6.1 There are no direct financial implications from the information contained in the report. The Single Commissioning Framework provides a single set of criteria and governance systems that will be applied to all applications for available devolved WMCA Housing, Land and Property Development funds, together with a consistent process and timelines for decision.
- 6.2 WMCA investment in any proposed Zero Carbon Homes projects, due diligence, feasibility or studies would be governed and administered through the Single Commissioning Framework, WMCA Single Assurance Framework, Commission Pathway and in line with the accounting and taxation policies of the WMCA and HMRC.

Legal Implications

- 7.1 Section 113A(1)(a) of the Local Democracy, Economic Development and Construction Act 2009 gives WMCA a power of competence appropriate for the purposes of carrying-out any of its functions. Part 4 of The West Midlands Combined Authority Order 2016 (2016 No 653) confers that the functions relating to any economic development and regeneration in the constituent councils are exercisable by WMCA. Part 3 of The West Midlands Combined Authority (Functions and Amendment) Order 2017 confers functions corresponding to the functions of the Homes and Communities Agency has in relation to the combined area. Paragraph 10 (2) (a) of the 2017 Order confers the function of improving the supply and quality of housing to the Combined Authority, 10 (2) (b) to secure the regeneration or development of land or infrastructure in the combined area, 10 (2)(c) to support in other ways the creation, regeneration or development of communities in the combined area or their continued well-being and 10 (2)(d) confers the function of contributing to the achievement of sustainable development and good design.
- 7.2 It is noted that the purpose of this Report is to update the Housing & Land Delivery Board on the progress being made on the Zero Carbon Homes Work Programme and the launch of the Zero Carbon Homes Charter and Route Map which will accelerate the move towards zero carbon development in the region. It is further noted that the Charter is expected to be included in the Single Commissioning Framework as a consideration for WMCA's investment decisions. Hence any requirements or issues/implications arising from this will need to be reflected and adequately covered in the various Gateway stages and in the funding agreements on a case by case basis.

8.0 Equalities Implications

- 8.1 There is no equality impact in relation to these reports.

9.0 Inclusive Growth Implications

- 9.1 The ZCH programme will seek to improve the performance of residential properties across the region as part of wider transition to a more resilient, people-centred low carbon economy. Improving building performance means addressing some of the key impacts of deprivation, such as fuel poverty, reduced levels of comfort and higher risk of disease related to poor air quality. It will also involve limiting exposure to future climate risks. This means that a key output and measure of the programme would be the degree to which it reduces climate inequities related to housing.
- 9.2 Additionally, the programme would seek to provide new opportunities for local residents and businesses to prosper, through the creation of a low and zero carbon pipeline that brings with it new employment, upskilling and growth opportunities across the region.



10.0 Geographical Area of Report's Implications

10.1 The ZCH routemap and charter would inform WMCA investment and policy decisions across the whole geography of the WMCA area, including the 3 LEPs and non-constituent Member authorities.

11.0 Other Implications

11.1 There are no other implications.

12.0 Schedule of Background Papers

12.1 There are no background papers.

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West Midlands Zero Carbon Homes Charter

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The West Midlands Zero Carbon Homes Charter frames WMCA and its partners' commitment and long-term objectives to deliver zero carbon homes in the region. It is aimed at developers, housebuilders and other stakeholders involved in delivering housing within the region.

In this Charter, we set out our aspirations for a more sustainable future for the West Midlands. By embracing these principles, we can build a region which drives zero carbon development and innovation, future proofs our economy and enables our communities to prosper for years to come.

1 Zero Carbon Developments

Principle 1

Zero Carbon Regional Ambition

All developments in the West Midlands region are net zero carbon, contributing to sustainable place-making. Developers work with partners to deliver high-quality, zero-carbon homes that celebrate the region's unique character.

Principle 2

Sustainable Growth

Development proposals maximise green space provision, prioritise sustainable density and connectivity, and focus on transit-oriented development with a shift to active travel and low-carbon modes of transport. New developments build resilient new communities whilst supporting existing ones.

2 Zero Carbon Homes

Principle 3

Fabric-First and Passive Design

New homes require little to no heating through the use of passive design principles, delivering socio-economic benefits to home occupiers. Developers adopt a fabric-first approach and optimise orientation to achieve low space heating demand, and use heat recovery methods to reduce hot water demand.

Principle 4

Decarbonised Heat and Power

Electric-led systems are complemented with investments in renewable energy generation and battery storage, to create and support new smart, dynamic energy networks. Through the use of low-carbon technologies, a supply of low-carbon energy is provided at a competitive price, ensuring local energy resilience.

Principle 5

Embodied Carbon

Developers work to reduce whole-life embodied carbon and minimise waste, through the use of advanced manufacturing construction technologies and low-carbon construction materials. Design proposals include whole-life embodied carbon measurements to inform decision-making throughout project lifecycle.



4 Building Local Expertise

Principle 8

Supporting Supply Chains

WMCA and its partners support regional supply chains in building their capacity to deliver zero carbon homes through procurement, early engagement, investment in training and upskilling, and the use of innovations and new technologies.

Principle 9

Collaboration and Knowledge-Sharing

Knowledge schemes, industry forums and learning feedback loops are set up to encourage knowledge-sharing and improve future delivery. Financial resources are pooled to support delivery of innovative schemes across the region.

6 Future-Proofing Economic Sectors

Principle 11

Low Carbon Policy and Finance

An enabling policy landscape contributes to longer-term capacity-building of the West Midlands' economic sectors, supporting reskilling, new jobs and a transition to a low-carbon, competitive economy. The region works with the financial sector to support a green new deal for the West Midlands.

Principle 12

Innovation-Led

New housing developments support low carbon innovation hubs and demonstrator projects to showcase opportunities for local businesses. Innovative financing mechanisms and delivery processes further maximise innovation potential, providing an opportunity to build an innovation-led, resilient regional economy.

5 Enabling Communities

Principle 10

Community Engagement and Stewardship

Communities are meaningfully engaged throughout a project lifecycle. Community ownership is encouraged through co-design and community-led approaches, maximising social value. They have a stake in decentralised energy systems, reaping their wider benefits and gain a better understanding of using new technologies.

Homes Fit for the Future

Principle 6

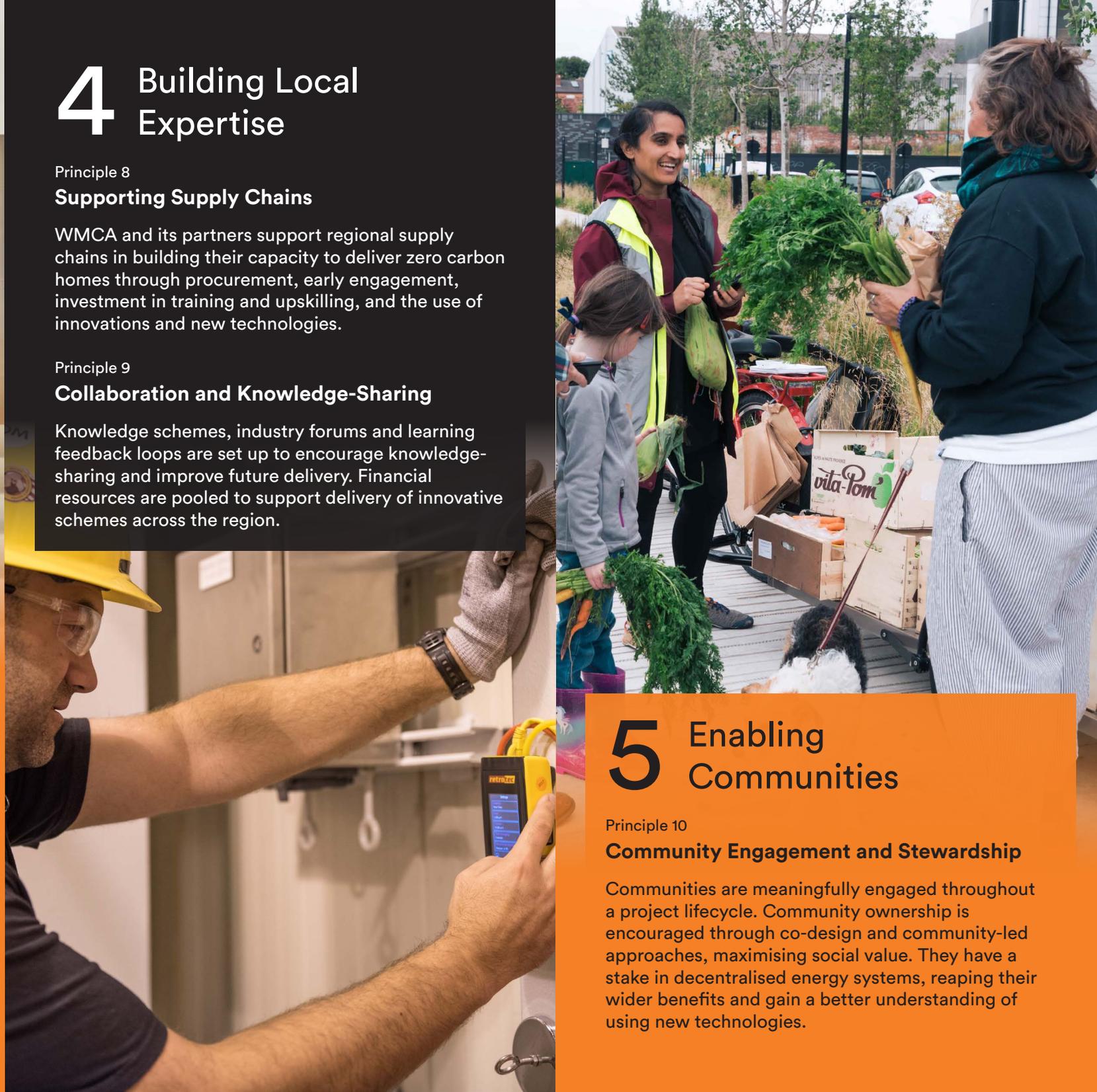
Climate Responsive

New homes are climate resilient, ensuring adaptability to climate change's adverse impacts. Environmental modelling is used to optimise design and layout, maximising thermal comfort, health and well-being.

Principle 7

Life Cycle Design

Development proposals are centred around holistic business cases, adhering to cradle to grave and Circular Economy principles. Reuse and disassembly are prioritised with a 'building in layers' approach. Homes are multi-functional, designed for flexible use, residents' changing needs and lifelong occupation.



West Midlands Zero Carbon Homes Routemap



Introduction

In July 2020, the West Midlands Combined Authority (WMCA) declared a climate emergency and set a challenging 80-year carbon budget. Our goal is to achieve net zero carbon emissions by 2041 and deliver zero-carbon homes in the region by 2025.

Our Zero Carbon Homes Routemap sits alongside our Zero Carbon Homes Charter. It sets out programmes of action over the short, medium and long-term which will allow us, and our partners to meet our ambitious target and deliver the Charter's principles.

We will seek to be as collaborative and innovative as possible in our approach. Partnerships across the region and throughout the supply chain are required to ensure new housing helps deliver clean and inclusive growth.

WMCA's role in delivering this ambition is three-fold:

- We need to deploy our funding in ways that secure positive outcomes on the ground.
- We need to broker new relationships across industry, creating a culture of collaboration and innovation in the West Midlands, and growing our zero-carbon housing sector.
- We must bring our partners along with us, working closely with our local and national public, private and third sector stakeholders to develop a single voice on the approach and commitment to delivering zero-carbon homes at scale in the region.

Integral to our approach will be ensuring new residential development, no matter its use, tenancy or construction type, supports healthy, resilient communities.

Cover image credit: +Home 2030 by igloo, Mawson Kerr and Useful Projects



Eco-Vicarage by Associated Architects: First homes to have been awarded Zero Carbon Level 6 under the UK Code for Sustainable Homes and Passivhaus accreditation in Worcester.

Purpose This Routemap is an action plan rather than a strategy. It sets out how we will achieve the principles of our Zero Carbon Homes Charter. It provides programmes of action along five key enablers, proposing specific timescales and identifying best practice to guide us on our journey to zero-carbon homes.

The Routemap has been designed this way to allow us to remain agile, adapt and change focus based on the progress being made, as well as other factors such as availability of funding and/or technological advancements.

Process The Routemap has been co-developed with West Midlands local authorities, including an Officer Working Group and the Low-Carbon Officer Group, as well as with a task force of industry leaders. It is informed by a baseline gap analysis produced by Useful Projects in October 2020 as well as by our Zero Carbon Homes Charter.

Audience This Routemap is aimed at all those involved in delivering zero carbon housing products and services in the region, including policy-makers, developers, educational and Research and Development (R&D) institutions and the regional supply chain.

In particular, this Routemap sets out clear actions for stakeholders involved in delivering residential development on land that WMCA owns, acquires or invests in.



Wooton Wawen by Waterloo Housing Group: A passivhaus affordable housing development in Warwickshire with superior levels of insulation and built with high-quality materials.

Implementation This is a live document which will be reviewed on an annual basis in order to evaluate our progress and determine our next steps. The Routemap will evolve through time and is aligned with other policy priorities including delivering high-quality, affordable homes and accelerating the uptake of advanced manufacturing in construction..

Structure This Routemap is structured around five key enablers. They set out how we and our partners can accelerate the delivery of zero carbon homes by:

- Creating an enabling policy landscape which builds certainty and consistency around the approach to delivering zero-carbon homes in the region - **Policy and Guidance Enabler**.
- Adopting collaborative governance models and delivery processes to maximise resources and enhance knowledge-sharing- **Governance and Delivery Processes Enabler**.
- Aligning investments to support the delivery of zero-carbon homes and demonstrating the cost effectiveness of doing so- **Financial Capital Enabler**.
- Building our capacity, regional skills and expertise in zero-carbon homes- **Human Capital Enabler**.
- Facilitating the deployment of zero-carbon technologies to build an innovation-led green economy- **Technology, Innovation and Infrastructure Enabler**.

How to Navigate this Routemap

This Routemap focuses on five key enablers. For each enabler, we have provided a summary of actions being undertaken, WMCA's commitment, a programme of action, and best practice case studies. Additionally, further notes, guidance and resources for each enabler are presented at the back of the report. Key themes also underpin the enablers, providing anchoring values for our work in delivering zero-carbon homes.

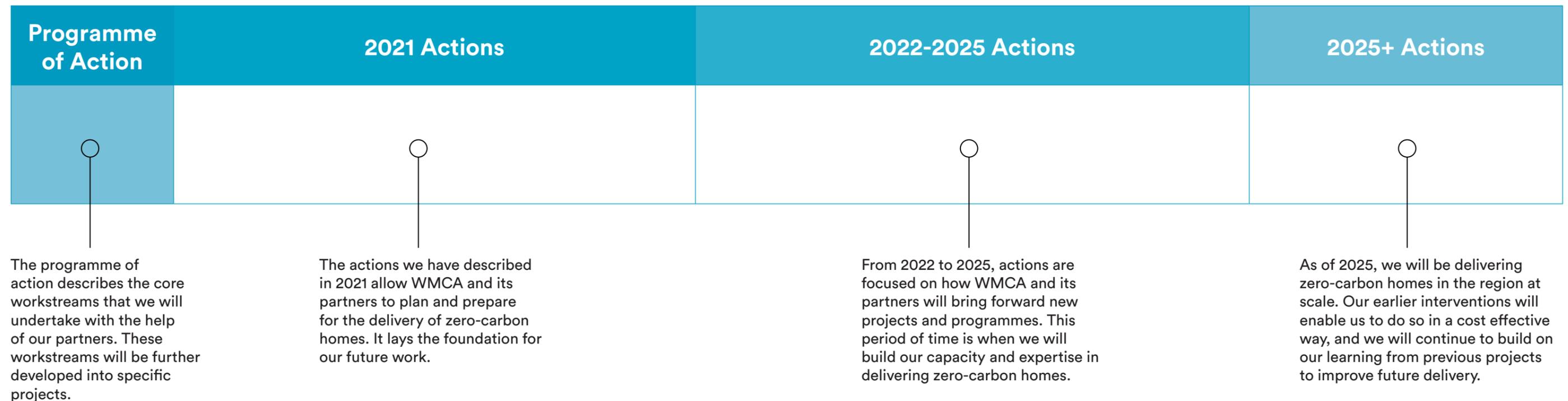
Key Themes Underpinning the Five Enablers



Knowledge-Sharing / Collaboration / Community-Engagement / Capacity-Building / Innovation

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Using the Programme of Action Tables



Zero Carbon Homes Charter

This Routemap will support us to meet the aspirations set out in our Zero Carbon Homes Charter. The Charter frames our commitment and long-term objective to deliver zero carbon homes in the region.

The Charter helps us in building a region that drives zero carbon development and innovation, in future proofing our economy and in enabling our communities to prosper for years to come.

It consists of twelve principles which we encourage all those involved in delivering homes in the West Midlands to embrace.

The Zero Carbon Homes Charter principles are:

- Principle 1: Zero Carbon Regional Ambition
- Principle 2: Sustainable Growth
- Principle 3: Fabric-First and Passive Design
- Principle 4: Decarbonised Heat and Power
- Principle 5: Embodied Carbon
- Principle 6: Climate Responsive
- Principle 7 Life Cycle Design
- Principle 8: Supporting Supply Chains
- Principle 9: Collaboration and Knowledge Sharing
- Principle 10: Community Engagement and Stewardship
- Principle 11: Low Carbon Policy and Finance
- Principle 12: Innovation-Led

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Enablers

Charter Principles

1. Zero Carbon Regional Ambition
2. Sustainable Growth
3. Fabric First and Passive Design
4. Decarbonised Heat and Power
5. Embodied Carbon
6. Climate Responsive
7. Life Cycle Design
8. Supporting Supply Chains
9. Collaboration and Knowledge Sharing
10. Community Engagement and Stewardship
11. Low Carbon Policy and Finance
12. Innovation-Led

Enabler 1
Policy &
Guidance

Enabler 2
Governance
& Delivery
Processes

Enabler 3
Financial
Capital

Enabler 4
Human Capital

Enabler 5
Technology
Innovation &
Infrastructure



The matrix above shows how the Routemap's enablers support the delivery of the Zero Carbon Homes Charter.

This Routemap does not assign specific actions directly against the Charter's principles because the programmes of work identified in this document involve cross-cutting actions which will enable multiple principles to be delivered.



The Zero Carbon Homes Charter sets our ambition for the region across six themes and 12 principles. You can find the full document on our [website](#).

Sustainable Co-Benefits

Delivering zero-carbon homes will provide numerous tangible socio-economic benefits that will help build more resilient, healthier communities as well as support a transition to a low-carbon economy.

Quantifying these co-benefits is a key step in building compelling whole-value business cases that demonstrate the potential for long-term cost effectiveness in building zero-carbon homes.

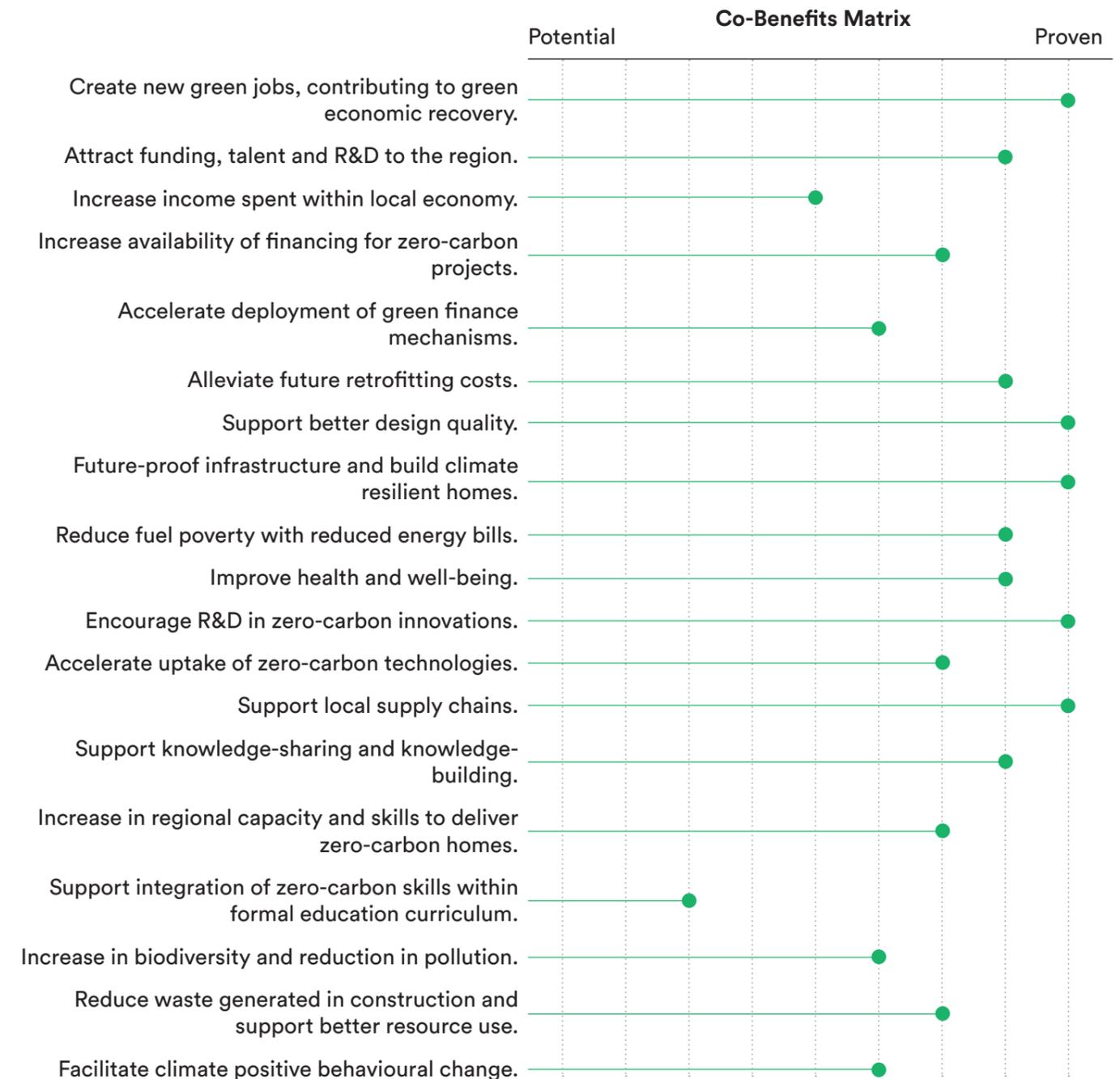
Articulating these added benefits will help us balance the initial added cost of delivery with the positive impacts on inclusive growth, environmental protection and economic prosperity for the region.



Air tightness testing is a crucial performance test when building passive design homes.



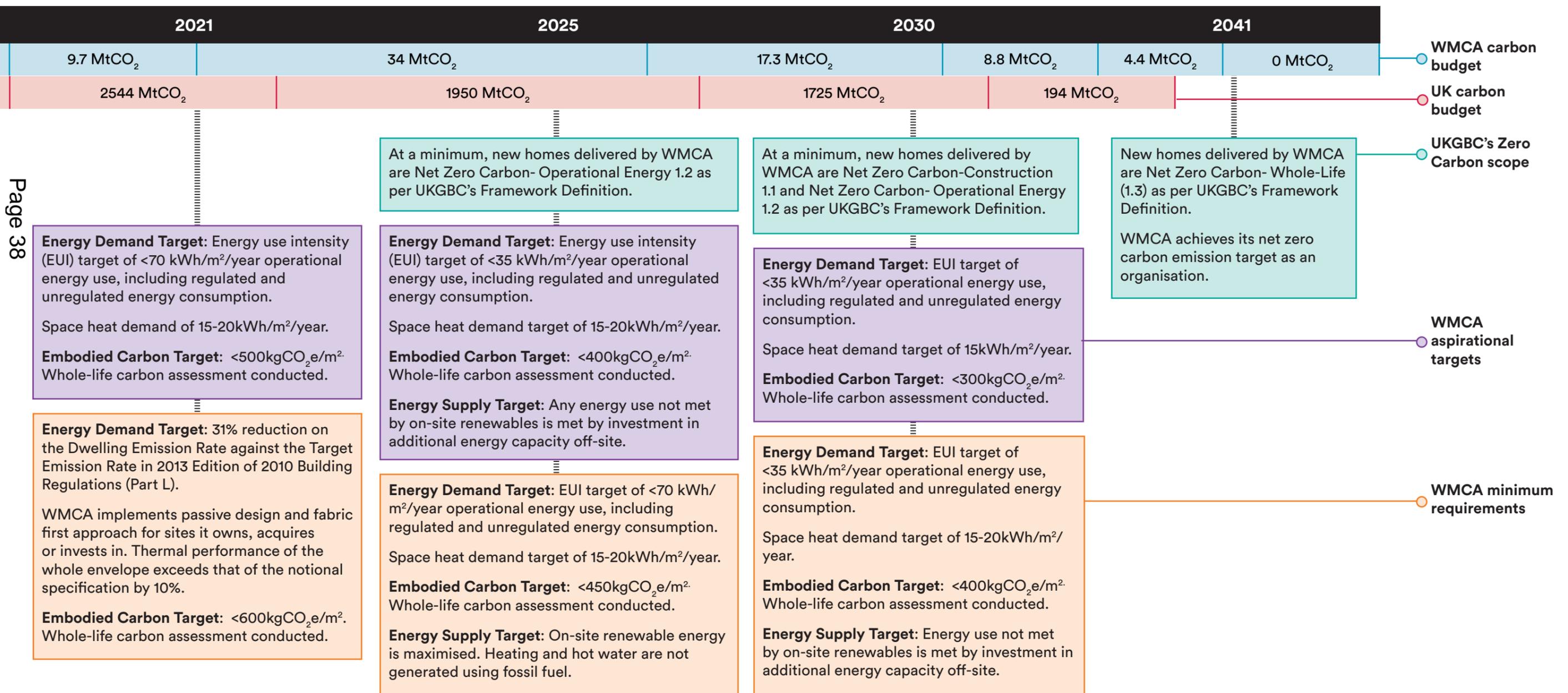
Zero-carbon homes deliver several tangible co-benefits and help build healthier, inclusive and more resilient communities.



Zero Carbon Definition and Targets

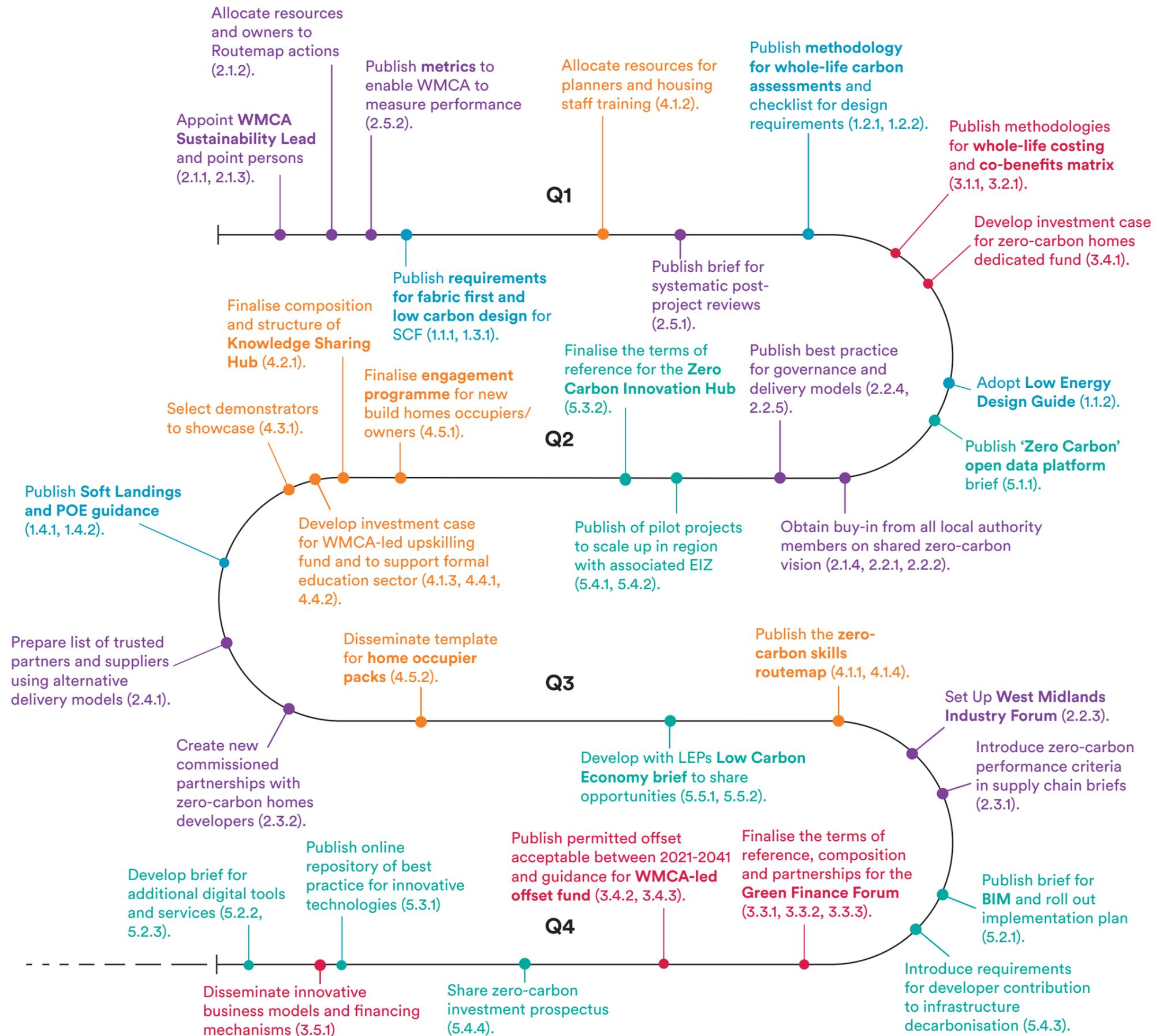
WMCA has adopted UK Green Building Council's (UKGBC) framework definition for a net zero carbon building:

When the amount of carbon emissions associated with a building's embodied and operational impacts over the life of the building, including its disposal, are zero or negative.



2021 Routemap

This Routemap provides a detailed sequence of priority actions identified within the Routemap for 2021. This page shows how time-specific actions from different programmes across the five enablers complement and dovetail with one another.

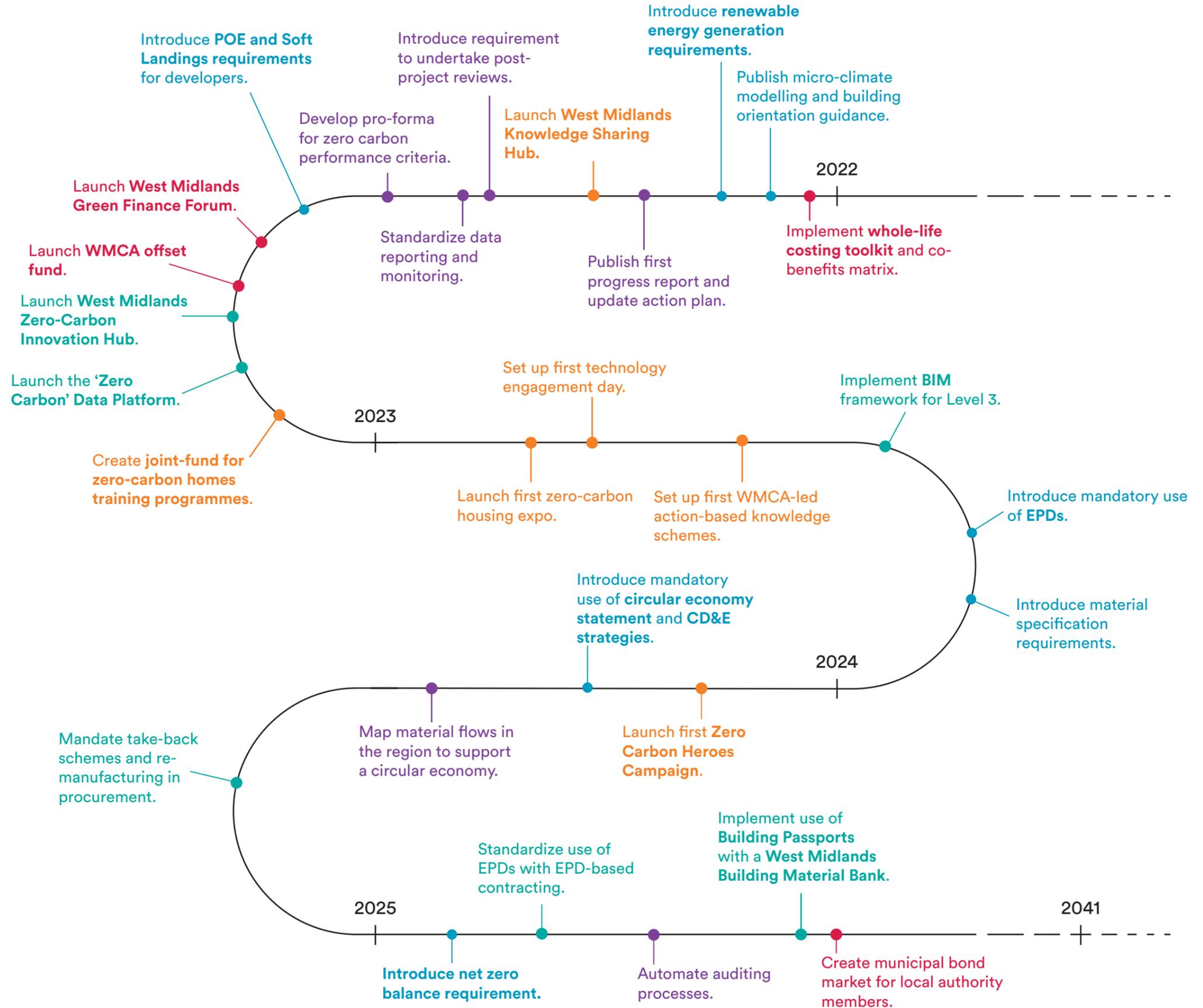


2022 – 2025

Routemap

This Routemap provides a selection of key actions from 2022 to 2025. This page shows how selected actions, set across the five enablers, complement one another to help us reach our 2025 zero-carbon homes target.

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Routemap Enabler Key:

- Policy and Guidance
- Governance and Delivery Processes
- Financial Capital
- Human Capital
- Technology Innovation and Infrastructure

Enabler 1:

Policy & Guidance

Summary:

WMCA will set clear policies supporting the delivery of zero-carbon homes within the region. We will go beyond national standards and become a leader in supplying zero-carbon homes.

An enabling policy environment is required to build certainty amongst our partners, the industry and the supply chain. Clear region-wide policies and guidance will allow for improved delivery processes and will provide clarity and certainty.

We will first implement requirements that encourage a fabric-first approach and passive design, in line with recommendations from industry experts such as London Energy Transformation Initiative (LETI) and Royal Institute of British Architects (RIBA).

We will also work to reduce embodied carbon and to maximise renewable energy. As we grow our expertise, we will implement stronger zero-carbon requirements for new homes on our sites.

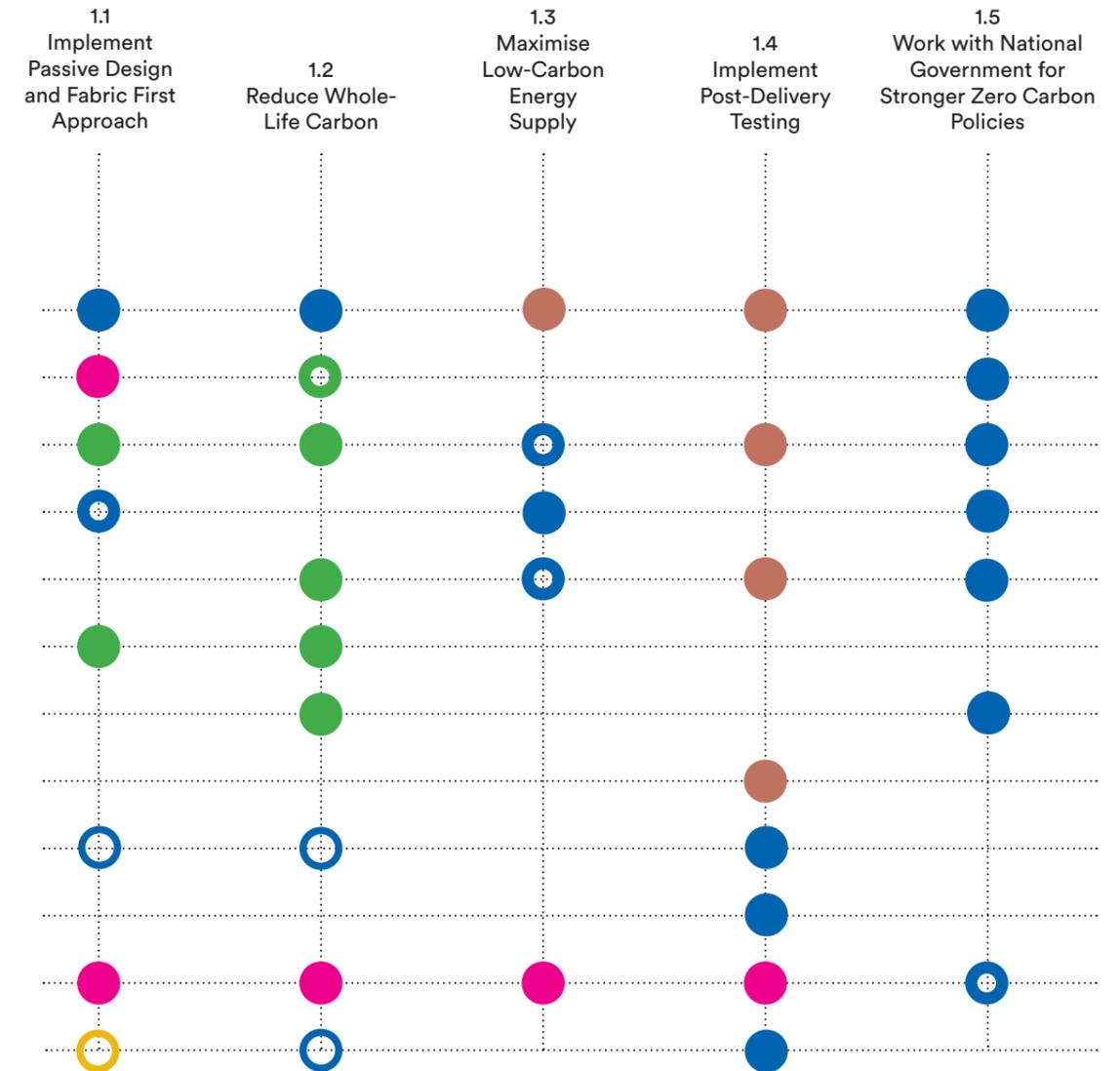
We are also committed to leverage our role and scale as a regional authority to influence national policy and to advocate for stronger standards and additional funding for the region.

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Programme of Action

Charter Principles

1. Zero Carbon Regional Ambition
2. Sustainable Growth
3. Fabric First and Passive Design
4. Decarbonised Heat and Power
5. Embodied Carbon
6. Climate Responsive
7. Life Cycle Design
8. Supporting Supply Chains
9. Collaboration and Knowledge Sharing
10. Community Engagement and Stewardship
11. Low Carbon Policy and Finance
12. Innovation-Led



Audience:

- Developers and Designers
- Policy-Makers
- R&D and HEFE Institutions
- Construction Supply Chain
- WMCA
- All

Key:

Programme of action:
→

○ ○ ○

Strength of correlation with Charter



Adopting passive design standards reduces operational energy and delivers socio-economic benefits to home occupiers.

Policy & Guidance

WMCA Commitment

We will work with local and national partners to set new, aspirational policies that delivers our zero carbon targets. In doing so, we will seek to build a consistent, transparent and supportive policy framework that enables all those delivering housing in the region to join us on our zero-carbon transition.

Programme of Action	2021 Actions	2022-2025 Actions	2025+ Actions
1.1. Implement Passive Design and Fabric First Approach	<p>1.1.1 Introduce passive design and fabric first requirements within WMCA Single Commissioning Framework (SCF).</p> <p>1.1.2 Develop and adopt a WMCA Low-Energy Design Guide to achieve passive design and fabric first requirements on sites WMCA owns, acquires or invests in.</p>	<ul style="list-style-type: none"> - Produce and publish micro-climate modelling and building orientation guidance. - Facilitate co-development of passive design and fabric first guidance amongst WMCA local authority members (See Enabler 2.1). - Share data on zero-carbon homes to make the case for zero-carbon home targets above building regulations. 	
1.2. Reduce Whole-Life Carbon	<p>1.2.1 Introduce mandatory whole-life carbon assessments based on RICS guidance to measure whole-life carbon on sites WMCA owns, acquires or invests in.</p> <p>1.2.2 Develop checklist of measures and design requirements to be applied on sites WMCA owns, acquires or invests in, in order to reduce whole-life carbon.</p>	<ul style="list-style-type: none"> - Introduce mandatory use of Environmental Product Declarations for sites WMCA owns, acquires or invests in. - Introduce mandatory use of circular economy statements and Construction Demolition & Excavation (CD&E) strategies for sites WMCA owns, acquires or invests in. - Introduce specification requirements for low embodied carbon, reused, recycled materials and responsible sourcing for sites WMCA owns, acquires or invests in. 	<ul style="list-style-type: none"> - Require appointment of a principal contractor to monitor and report on 'as constructed' embodied carbon on sites WMCA owns, acquires or invests in.
1.3. Maximise Low-Carbon Energy Supply	<p>1.3.1 Introduce requirement for electric-led solutions and smart systems on sites WMCA owns, acquires or invests in.</p> <p>1.3.2 Support the recommendations of the upcoming 'Energy Infrastructure for Zero Emission Vehicles Strategy' where it applies to residential development for sites WMCA owns, acquires or invests in.</p>	<ul style="list-style-type: none"> - Review and update the regional energy strategy to ensure appropriate infrastructure is in place to service new demand from electrically-heated homes. - Introduce renewable energy generation requirement on-site and/or on buildings as a condition of WMCA housing investment. - Support investments in low-carbon energy infrastructure and technologies on sites WMCA owns, acquires or invests in. 	<ul style="list-style-type: none"> - Introduce requirement for a net zero balance on sites WMCA owns, acquires or invests in. Any energy not met by on-site renewable is met by investments in additional renewable capacity off-site.
1.4. Implement Post-Delivery Testing	<p>1.4.1 Develop and publish region-wide guidance for Soft Landings.</p> <p>1.4.2 Develop and publish region-wide guidance for Post Occupancy Evaluation (POE) (See Enabler 4.5.2 for home information pack).</p>	<ul style="list-style-type: none"> - Implement region-wide reporting framework for POE and Soft Landings (See Enabler 5.1). - Implement system with partners for continual review of POE and Soft Landing data to inform future delivery. - Introduce requirement for developers to conduct POE and Soft Landings for sites WMCA owns, acquires or invests in (See Enabler 4.5.2). 	<ul style="list-style-type: none"> - Digitise and automate Soft Landing and POE processes.
1.5. Work with National Government for Stronger Zero Carbon Policies	<p>1.5.1 Work with national government to support a move towards stronger building regulations standards.</p> <p>1.5.2 Advocate for additional funding to plug the zero-carbon homes skills gap.</p> <p>1.5.3 Advocate for more control over energy infrastructure in the West Midlands (See Enabler 5.4).</p>	<ul style="list-style-type: none"> - Support West Midlands local authorities in adopting zero-carbon requirements where they aspire to do so. - Engage with the planning inspectorate to assist member local authorities in negotiating in favour of zero-carbon homes. - Work with MHCLG to ensure zero-carbon standards remain a priority within planning reforms. - Collaborate with other regions to effect change in zero-carbon policies. - Encourage private developers to adopt WMCA zero-carbon targets and requirements. 	

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Enabler 1:

Policy & Guidance

Best Practice

QUALITY CHECKLIST		Minimum Requirement	Net Zero-Carbon by 2050	Net Zero-Carbon by 2030
En.1	Operational Energy (KWh/m2/y)	146	< 70	< 0 - 35
En.2	Embodied Carbon (kgCO2e/m2)	1000	< 450	< 300
En.3	Space Heating Energy Demand (KWh/m2/y) of net living space	54.26	25	15
En.4	Airtightness (air changes/ hr @ n50)	5	3	≤ 0.6
En.5	Ventilation Strategy (m3/hr/person)	Natural - extract fans	Mechanical - with extract fans	Mechanical Heat Recovery (30)
En.7	What is the on-site reduction in CO2 emissions against Building Regulations Part	0-34%	35%-50%	≥ 50%



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HGGT, Sustainability Checklist

How to use policy-making to drive sustainable place-making:

The Harlow and Gilston Garden Town (HGGT) is a large-scale development between East Hertfordshire, Epping Forest and Harlow District Council together with Hertfordshire and Essex County Councils. The five partner authorities have all declared a climate emergency and have developed Sustainability Guidance, and an associated checklist, to support sustainability across the development.

The guidance is aimed at developers, design teams, consultants and contractors to help them guide their development and design proposals. It is also aimed at local authority officers and decision-makers guiding them in the assessments of planning applications, through the use of the checklist provided. The guidance and its checklist can be used during masterplanning, pre-application, planning application and post-planning since the guidance includes tools for POE and ongoing monitoring requirements.

The Checklist indicates the quality of development in line with the Garden Town’s standards using a red/amber/green (RAG) approach. Red represents the minimum requirements compliant with policy and building regulations but not with climate declaration targets. Amber requirements are compliant with being net zero by 2050. Green requirements meet HGGT’s goal, and climate declarations’ targets of net zero by 2030. The checklist is applied to various environmental sustainability themes including energy efficiency, carbon reduction and renewable energy.

LBN, Low-Energy Design Strategy

How to embed passivhaus standards in a local authority’s housing delivery and reduce the cost uplift:

In response to its climate emergency declaration, London Borough of Newham (LBN) Council employed an in-house Sustainability Lead to lead on the development of a Low-Energy Design Strategy. The strategy targets full passivhaus certification for all new housing development sites directly delivered by the council.

To overcome nervousness around additional costs, the Sustainability Lead first proposed a ‘passive principles’ solutions, looking to achieve as close as possible to the passivhaus standard. This opened the door to pursuing the strategy further leading to more in-depth research on costs and feedback from experience contractors which proved the case for targeting the full standard.

It was discovered that by learning from their experience, councils can deliver passivhaus homes at no extra capital cost when compared to minimum standard homes, as is the case with Exeter City Council.

Since Newham Council had no expertise delivering passivhaus homes, the Sustainability Lead presented a conservative estimate of a 10% cost uplift. Costed options for mitigating the initial cost uplift were presented including: income from capitalised fuel bill savings, reduced carbon offset payments, subsidy from the carbon offset fund, operational and maintenance savings demonstrated through a whole-life cost analysis.

UKGBC, New Build Playbook

How to set region-wide carbon and energy demand targets:

In January 2021, UKGBC will be publishing its updated ‘New Build Playbook’. The policy handbook is a resource for local authorities looking to set zero-carbon requirements for new homes. The handbook focuses on several key areas to reduce carbon dioxide emissions within new homes including:

- Reducing energy demand;
- Reducing embodied carbon;
- Measuring in-use performance;
- Low-carbon energy supply; and
- Zero-carbon balance which addresses residual emissions.

This playbook sets pragmatic minimum targets local authorities should aim for as well as aspirational requirements for those wishing to accelerate the delivery of zero-carbon homes. The playbook provides a communal approach for local authorities in the West Midlands to use in setting their zero-carbon targets and planning guidance. Setting communal targets across the region will help push the zero-carbon agenda, will ensure there is a consistency of messages across members, and will encourage private developers.

Enabler 2:

Governance & Delivery Processes

Summary:

WMCA will develop and implement governance and delivery processes that support and accelerate the completion of zero-carbon homes in the region. This will in part be done by promoting collaborative and at-scale approaches that support a cost-effective volume of zero-carbon homes being delivered.

Collaborative governance models also aim to break the siloes which currently exist across the supply chain and within WMCA. Collaborative approaches and processes will be used to pool resources and effect change on a larger scale.

We will ensure we have the right governance and appropriate resources and skills allocated to implement this Routemap and support local authorities in the region.

We will improve monitoring processes to ensure better compliance with zero-carbon homes targets and set requirements.

Community-led approaches will also be encouraged ensuring local communities reap the socio-economic benefits generated through building zero-carbon homes.

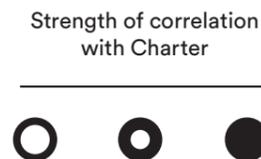
Programme of Action



Audience:

- Developers and Designers
- Policy-Makers
- R&D and HEFE Institutions
- Construction Supply Chain
- WMCA
- All

Key:



Alternative delivery models and new methods of construction such as Modern Methods of Construction can accelerate the delivery of zero-carbon homes.

Governance & Delivery Processes

WMCA Commitment

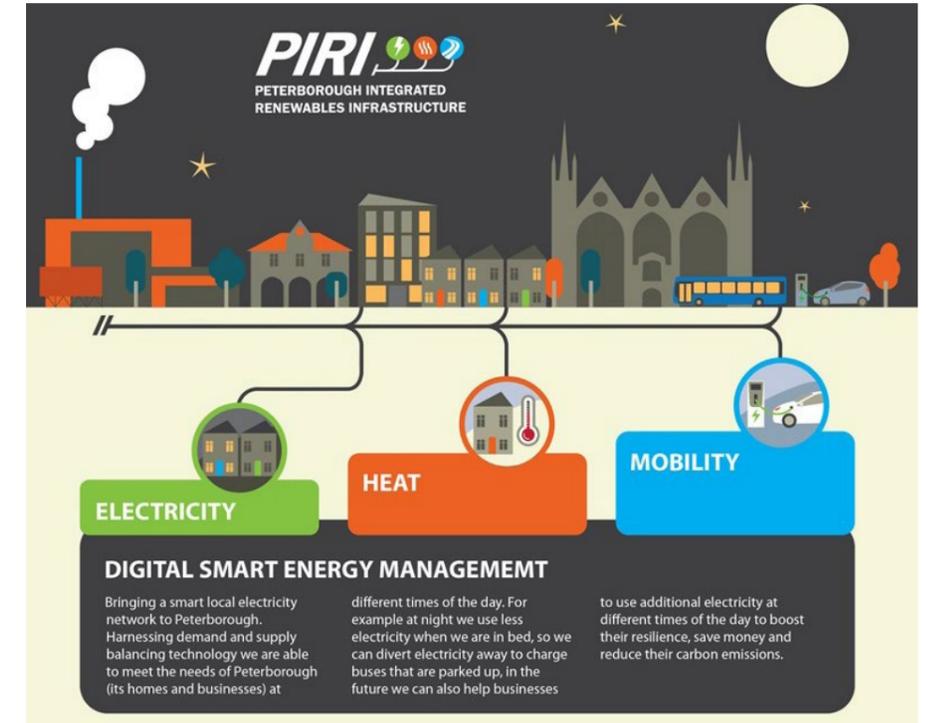
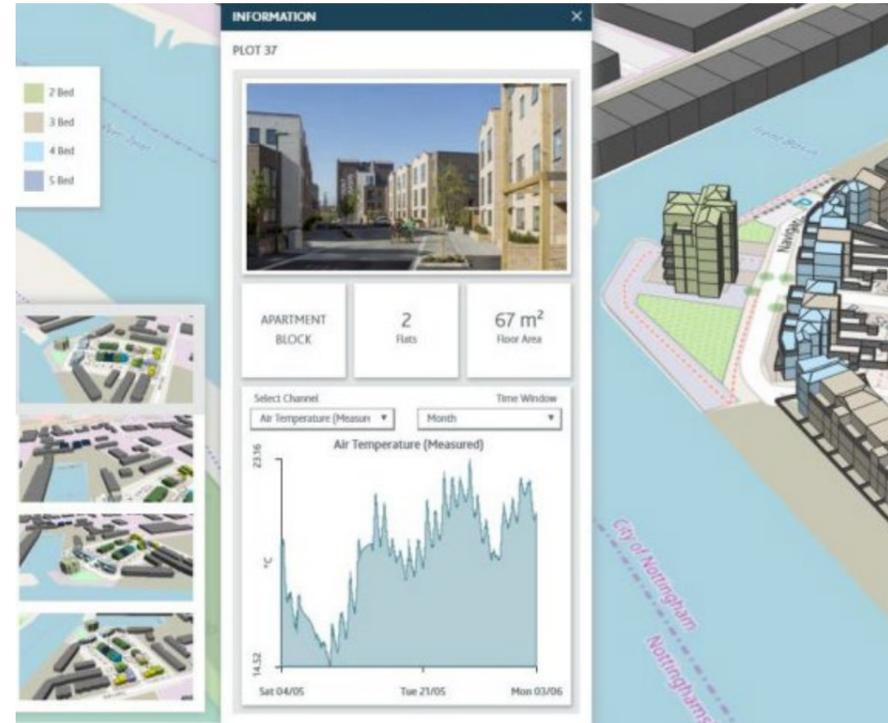
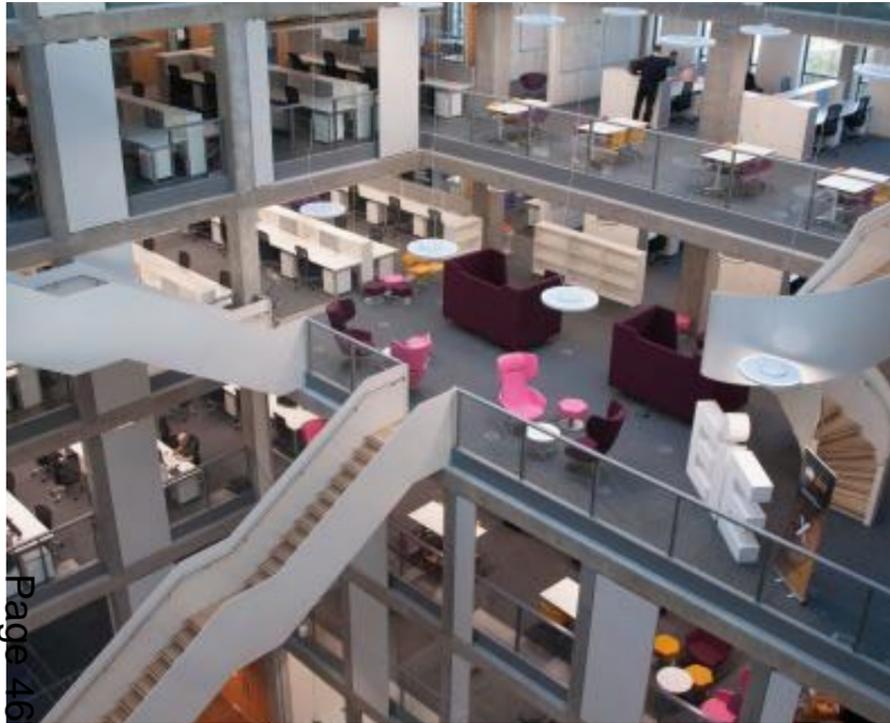
We will embed the actions in this Routemap and associated Charter into our decision-making processes. We will grow both our own and our partner's capacity to consider carbon-related implications within our funding, auditing and reporting processes, and support region-wide collaboration to deliver zero-carbon homes.

Programme of Action	2021 Actions	2022-2025 Actions	2025+ Actions
2.1. Enhance WMCA Governance Processes	<p>2.1.1 Appoint a central Sustainability Lead within WMCA.</p> <p>2.1.2 Allocate resources and owners for actions in the Routemap.</p> <p>2.1.3 Work with local authority members to nominate a sustainability point person.</p> <p>2.1.4 Embed Zero Carbon Homes Charter ambitions in WMCA decision-making processes.</p>	<ul style="list-style-type: none"> - Produce annual progress report to monitor progress against actions in the Routemap and update programmes of action. - Include zero-carbon targets and requirements within WMCA procurement briefs, tender evaluation processes and investment decisions. 	
2.2. Maximise Collaborative Processes	<p>2.2.1 Engage with all local authority members and partners to obtain buy-in for Zero Carbon Homes Charter and actions in the Routemap.</p> <p>2.2.2 Identify collaborators and partners to deliver the zero-carbon homes vision.</p> <p>2.2.3 Set up the West Midlands Industry Forum to share best practice, lessons learned and data.</p> <p>2.2.4 Identify best practice in collaborative governance and delivery models through stakeholder engagement sessions.</p> <p>2.2.5 Identify best practice in community-led governance and delivery models through community engagement sessions.</p>	<ul style="list-style-type: none"> - Use convening powers to connect potential consumers and buyers with developers and supply chains through the Industry Forum. - Facilitate creation of cross-sector partnerships through the Industry Forum. - Work with local authorities and developers to facilitate community-led processes through the use of novel engagement tools. 	
2.3. Improve Supply Chain Engagement Processes	<p>2.3.1 Introduce zero-carbon performance criteria within briefs to supply chains and communicate early on with supply chains during development process.</p> <p>2.3.2 Form partnerships with developers committed to delivering high-quality zero-carbon homes.</p>	<ul style="list-style-type: none"> - Use the Industry Forum to encourage a two-way dialogue with supply chain. - Develop a pro-forma for development partners to ensure supply chains are embedding and reporting on zero-carbon performance criteria. 	
2.4. Scale Up Alternative Delivery Models	<p>2.4.1 Prepare a list of trusted partners and suppliers experienced in using alternative delivery models and research scope of opportunity for the region in using these models.</p> <p>2.4.2 Leverage public procurement to encourage alternative delivery models such as joint ventures, community-build models, land trusts and innovative partnership models.</p>	<ul style="list-style-type: none"> - Update procurement guidance regularly to continue to encourage alternative delivery models including joint ventures and community-led models. - Support set up of Advanced Manufacturing in Construction (AMC) and Modern Methods of Construction (MMC) factories. - Identify opportunities for using Circular Economy principles and cradle to grave approach within delivery processes. - Map material flows in the region to encourage circular economy approach. 	<ul style="list-style-type: none"> - Broker relationships between symbiotic businesses in the region.
2.5. Implement Auditing and Reporting Processes	<p>2.5.1 Develop brief to include systematic post-project reviews as part of delivery processes.</p> <p>2.5.2 Select clear metrics against which WMCA will benchmark its performance.</p>	<ul style="list-style-type: none"> - Standardize data reporting and monitoring across the combined authority. - Introduce requirement to undertake systematic post-project reviews to ensure continual feedback, learning and improvement. - Define specific roles and responsibilities across the supply chain to increase accountability on zero-carbon performance. 	<ul style="list-style-type: none"> - Automate auditing mechanisms to improve compliance and verification.

Enabler 2:

Governance & Delivery Processes

Best Practice



Test Bed, University of Edinburgh

How sustained cross-sector partnerships can drive innovation:

The University of Edinburgh began a cross-sector collaboration project aiming to create a step-change in emissions reductions from the built environment, as well as to improve how building projects are designed, managed and implemented through early-stage decisions and better on-going management of building performance.

The university is working with innovative technology companies, leading industry and public sector organizations. The project seeks to demonstrate the benefits of establishing sustained and effective partnerships between businesses, academics and the public sector in accelerating a transition to a low-carbon economy.

The University will also act as a living laboratory, testing digital tools such as Integrated Environmental Solutions' new Digital Twin technology, as well as advancing data analysis, modelling and simulation. They will maximise opportunities for wider take up of innovative solutions developed during the project through stakeholder engagement and communications.

Project Scene, Nottingham

How to innovate with community-led energy schemes:

Project SCENE (Sustainable Community Energy Networks) looks to accelerate the adoption of Community Energy Systems within a housing development in the Nottingham Trent Basin.

The project hosts the largest community energy battery, and includes solar photo-voltaic (PV) panels, local thermal energy production as well as distribution and storage. The project will also advance development in home-smart technology, add communal electric vehicle facilities, a car sharing scheme and a ground source heating.

The project was successful in part by bringing together all the companies involved in the energy supply chain with the potential buyers of the 120 homes on site. This level of engagement and collaboration was supported by the development of novel consumer engagement tools. In addition to testing new models for community energy schemes, the project is also exploring new business models and preparing templates that can be tested on larger-scale housing development schemes.

PIRI Project, Peterborough

How to use cross-sector collaboration to reap the benefits of a whole-system approach:

The Peterborough Integrated Renewables Infrastructure (PIRI) project combines a next generation heat network, electricity network and electric vehicle (EV) infrastructure. This council-led scheme is the largest smart city regeneration project in the UK.

Led by Peterborough City Council, the two-year project is a partnership between SSE Enterprise, Element Energy, Cranfield University, Smarter Grid Solutions and Sweco UK.

By combining technical expertise from various sectors and industries, this project successfully brings together energy generation, demand and storage, thereby unlocking efficiencies not deliverable under our existing, traditional energy systems. The project advocated a 'whole-system' approach to energy by integrating all socio-technical elements into one solution. Taking a holistic perspective means that greater benefits can be achieved, including finding a balance between environmental gains and commercial viability.

Enabler 3:

Financial Capital

Summary:

There is an unprecedented availability of financing options with public and private investors increasingly seeking out opportunities to invest in sustainable projects.

However the routes connecting financial capital with sustainable projects are not clear, in part due to a lack of data on the performance of zero-carbon technology and projects.

To help address this disconnect, we will convene green finance expertise and provide a brokering role between financial stakeholders and zero-carbon homes developers and supply chains.

This approach needs to be underpinned by better performance data as well as using whole-life value appraisal to inform our investment decisions, and those of our partners.

We will engage investors and build stronger partnerships with the financial sector, supporting the deployment of innovative financial mechanisms which can support the delivery of zero-carbon homes.

We will ensure our investments match our commitment to deliver zero-carbon homes and that we spend our money in ways that support decarbonisation and the delivery of wider social value and benefits.

Programme of Action

Charter Principles

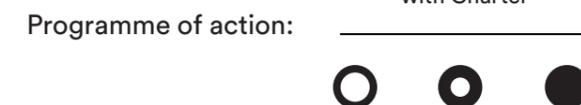
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10. Community Engagement and Stewardship
11. Low Carbon Policy and Finance
12. Innovation-Led



Audience:

- Large Green Circle: Developers and Designers
- Large Pink Circle: Policy-Makers
- Large Yellow Circle: R&D and HEFE Institutions
- Large Light Blue Circle: Construction Supply Chain
- Large Brown Circle: WMCA
- Large Blue Circle: All

Key:



Innovative financing mechanisms and new business models can help fund the delivery of zero-carbon homes.

Financial Capital

WMCA Commitment

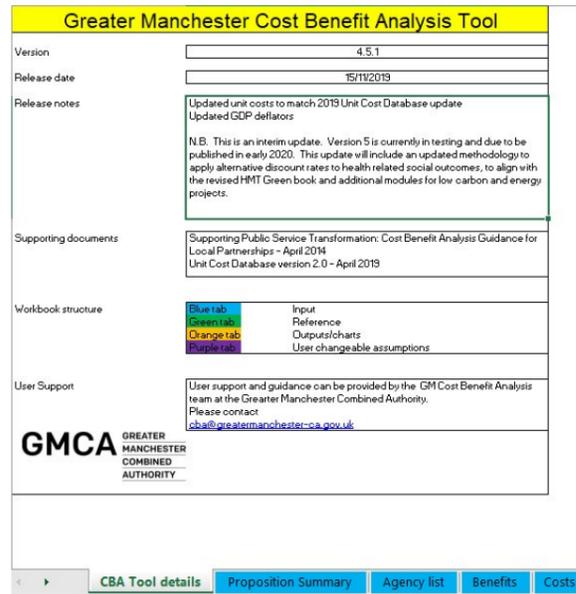
We will identify and implement new approaches to more accurately reflect the benefits of delivering zero-carbon homes, and the implications of failing to do so. We will leverage new and existing funding to accelerate building zero-carbon homes and achieve the economies of scale required to delivery them in the long term.

Programme of Action	2021 Actions	2022-2025 Actions	2025+ Actions
3.1. Adopt Whole-Life Costing	3.1.1 Develop a common methodology to demonstrate whole of life cost-effectiveness of zero-carbon homes.	<ul style="list-style-type: none"> - Implement whole-life costing across WMCA with the help of a toolkit and guidance, and support members to do the same where they choose to. - Launch training for local authority members to better embed whole-life costing in their organisations' decision-making processes. - Collect real-time data to refine and update whole-life costing methodology. 	
3.2. Develop a Co-Benefits Matrix	3.2.1 Develop a co-benefit matrix to quantify the additional socio-economic benefits provided through the delivery of zero-carbon homes.	<ul style="list-style-type: none"> - Implement the co-benefit matrix. - Embed co-benefits matrix in business case development, tendering and procurement processes. - Quantify cost of inaction to inform decision-making processes. - Collect real-time data to refine and update co-benefits matrix. 	
3.3. Launch Green Finance Forum	<p>3.3.1 Create terms of reference for a Green Finance Forum to broker relationships between investors and project developers and share financing insights.</p> <p>3.3.2 Determine composition of the Green Finance Forum through stakeholder engagement sessions.</p> <p>3.3.3 Identify partners in setting up Green Finance Forum through stakeholder engagement sessions.</p>	<ul style="list-style-type: none"> - Launch the West Midlands Green Finance Forum. - Share financial data through the open data platform (See Enabler 5.1) to support further investment in zero-carbon projects and technologies. - Assist regional businesses in developing projects that match investors' funding requirements and support the delivery of zero carbon homes. 	<ul style="list-style-type: none"> - Encourage regional businesses to develop financial structures that allocate funds for zero-carbon R&D innovations and pilot scaling up.
3.4. Fund the Uplift	<p>3.4.1 Develop an investment case for a zero-carbon homes dedicated fund and include zero-carbon criteria in the Single Commissioning Framework.</p> <p>3.4.2 Determine how much carbon offset is permitted between 2021 and 2041.</p> <p>3.4.3 Assess feasibility of setting up a West Midlands carbon offset fund managed by WMCA to pool resources across all local authorities and invest in larger zero-carbon schemes.</p>	<ul style="list-style-type: none"> - Test the capacity of smaller regional businesses and house builders in delivering zero carbon homes and support them accordingly. - Explore alternative development finance options for zero-carbon homes through a series of cross-sector stakeholder workshops. - Launch a WMCA performance-based offset fund. 	
3.5. Enable Green Finance in the West Midlands	3.5.1 Identify opportunities to use innovative business models and financing mechanisms through engagement sessions with investors.	<ul style="list-style-type: none"> - Partner with financial stakeholders to accelerate the use of green finance mechanisms. - Support mechanisms for leasing equipment within the construction industry. - Create financial incentives to attract low-carbon businesses to the region. - Work with mortgage brokers and insurance companies to increase demand for zero-carbon homes. - Support the inclusion of a premium, as well as a discount, on green loans. 	<ul style="list-style-type: none"> - Explore potential of creating a municipal bond market open to all WMCA local authority members.

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Financial Capital

Best Practice



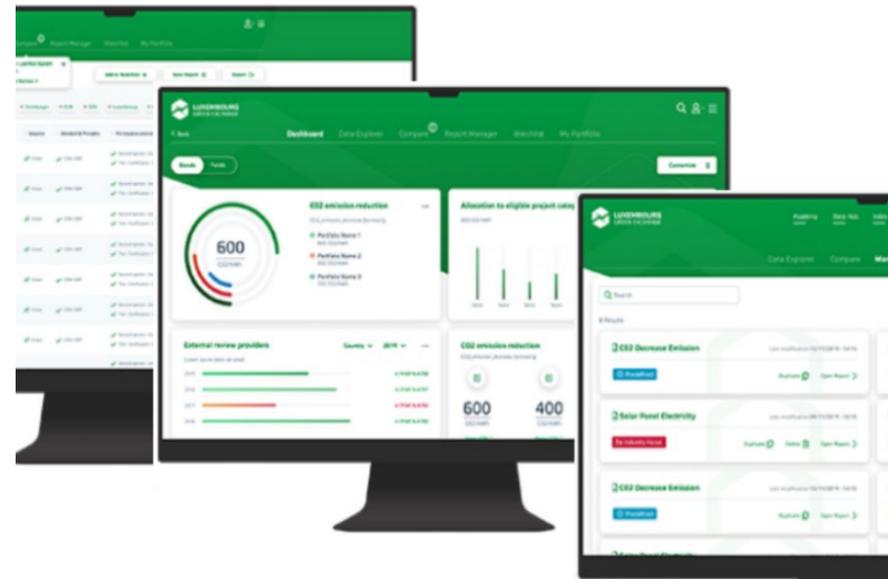
Cost Benefit Analysis, GMCA

How to a cost benefit analysis tool can support new investment and partnership models:

The Greater Manchester Combined Authority (GMCA) Research Team has pioneered the development of a cost benefit analysis (CBA) methodology to articulate the fiscal, economic and social value of sustainable interventions.

The CBA model can be used to understand the value for money provided by an intervention and the extent to which new deliver models might generate savings and improved outcomes compared to business as usual. The model measures the economic benefits for individuals and businesses as well as the social benefits in terms of improved health and well-being.

The tool provides a way to compare interventions that may otherwise not be easily comparable. It also introduces the concept of equitability of funding by showing the money flows between organizations that invest in an intervention and those that derive the benefits. It can inform the development of new investment models that can support zero-carbon projects, as well as support new partnership approach with better risk and benefits sharing. The model includes an Excel workbook, a guidance and a unit cost database of more than 800 cost estimates.



LGX Data Hub

How to use open data to accelerate investments in zero-carbon projects

The Luxembourg Stock Exchange (LuxSE) launched LGX DataHub, a unique centralised database of structured data on a vast range of green, social and sustainable securities. The platform is aimed at helping asset managers and investors in building sustainable investment strategies and reporting on their investments.

Issuers of sustainable securities disclose an extensive amount of sustainability data points. These data points are made available in different and often incompatible formats and the data is spread over multiple sources. Identifying, extracting and structuring this data is a time-consuming and resource-intensive exercise.

By providing a centralised repository where relevant data has been aggregated in a consistent manner, the LGX Data Hub facilitates analysis and reporting, as well as comparisons of the impact of different sustainable investments. Such an initiative improves and increases trust and confidence amongst investors, which in turns accelerates sustainable finance.

These types of platforms can be used to share data on the performance of sustainable projects and zero-carbon technologies, increasing the appetite of private investors in investing in these type of ventures.



Service Cost Model, Netherlands

How to accelerate the deployment of service cost models:

Homeowners of a private apartment building in Assen secured finance to achieve their net zero energy target The homeowner association is the first in the Netherlands to have achieved a financing that is building-linked. Securing such finance has been easier for social housing association in the Netherlands, thanks to a regulatory tool that allows landlords to charge extra service costs to tenants of a zero-carbon building, usually through an energy plan.

The private tenants explored various building-linked financial solutions. The best one involved linked the mortgage to an object rather than an individual. The homeowner association would take the loan to retrofit the entire apartment complex and then collect the loan repayments through service costs that residents pay to the association. The only issue is that no banks had experience offering long-term loans to homeowner associations.

Eventually Triodos Bank offered a 30-year loan to the homeowner association bringing the loan repayment costs down to the residents' current energy bills. Since this success, more homeowner associations are seeking similar financial services with their local councils facilitating conversations with financial stakeholders and pushing for a broader rolling out of the service cost model for retrofit and new build.

Enabler 4:

Human Capital

Summary:

Building the skills and capacity of the supply chain and other supporting sectors and industries is at the heart of accelerating the delivery of zero-carbon homes and reducing the existing cost uplift.

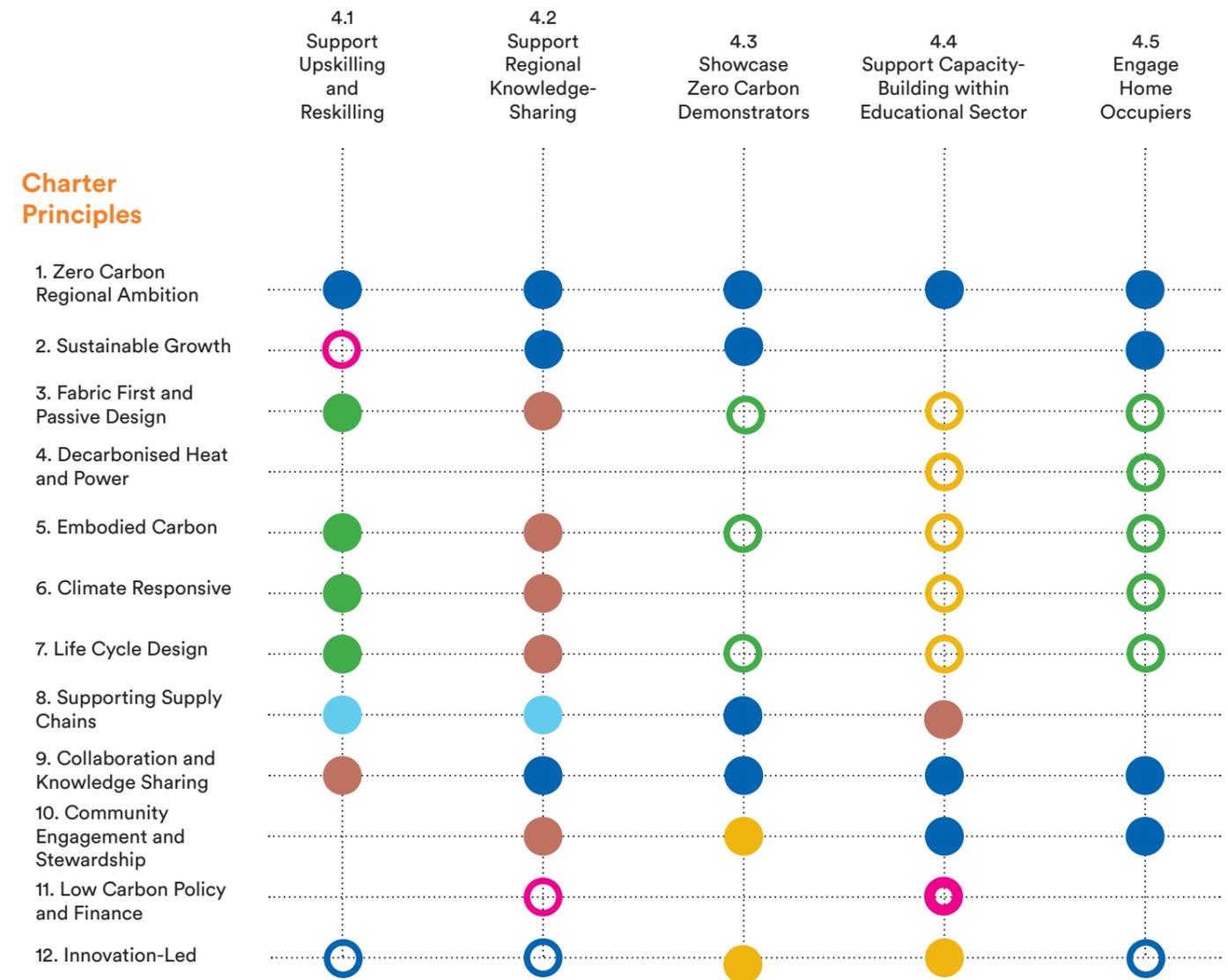
With an estimated 300,000 new roles needed for retrofit alone, WMCA will support upskilling, reskilling and job creation within the zero-carbon built environment sector. We wish to accelerate the provision and uptake of zero-carbon skills and to support knowledge-sharing and capacity-building across the zero-carbon homes supply chain.

We will advocate for making zero-carbon an essential part of the formal educational curriculum in order to bring on board the next generation of built environment professionals on our journey to zero-carbon homes.

Engaging communities and homeowners is also fundamental to the success of delivering zero-carbon homes. Doing so will create demand for high quality new homes and ensure home owners and occupiers understand the technologies in their homes.

Crucially, engagement and knowledge-building will ensure that communities reap the socio-economic benefits of zero-carbon homes.

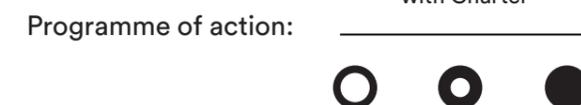
Programme of Action



Audience:

- Developers and Designers
- Policy-Makers
- R&D and HEFE Institutions
- Construction Supply Chain
- WMCA
- All

Key:



Upskilling and reskilling are necessary to reduce the costs and accelerate the delivery of zero-carbon homes whilst future-proofing our educational sector.

Human Capital

WMCA Commitment

We will upskill planners and housing staff, local businesses, home occupiers and the supply chain to ensure the region has the capacity and expertise to build high-quality zero-carbon housing products. We will address the known skills gap, and attract new talent to the zero-carbon construction sector.

Programme of Action	2021 Actions	2022-2025 Actions	2025+ Actions
4.1. Support Upskilling and Reskilling	<p>4.1.1 Develop and publish a skills routemap to identify skills gaps related to delivering zero-carbon homes.</p> <p>4.1.2 Allocate resources for WMCA and local authority members' planners and housing staff to improve knowledge of zero-carbon terms.</p> <p>4.1.3 Develop an investment case for a WMCA-led fund to invest in zero-carbon expertise required for specific projects.</p> <p>4.1.4 Identify opportunities in using subsidized training programmes.</p>	<ul style="list-style-type: none"> - Create a joint-fund for zero-carbon homes training programmes, in according with the zero-carbon skills routemap and in collaboration with educational providers. - Facilitate the creation of new roles, and required training, to support the delivery of zero-carbon homes. - Develop the evidence base on the true cost of delivering zero carbon homes to enable local authority members better negotiate with developers on viability issues. 	<ul style="list-style-type: none"> - Identify further opportunities for targeted upskilling and reskilling programmes.
4.2. Support Regional Knowledge-Sharing	<p>4.2.1 Determine the composition and structure of a West Midlands Knowledge Sharing Hub, working with regional educational providers and other partners.</p>	<ul style="list-style-type: none"> - Launch the West Midlands Knowledge-Sharing Hub to share data, provide training and encourage knowledge-sharing on zero-carbon homes. - Set up WMCA-led action-based knowledge schemes on delivering zero-carbon homes. - Encourage developers to set up training facilities on large-scale developments. - Support knowledge-transfer partnerships between different businesses and sectors, brokering relationships between stakeholders. 	
4.3. Showcase Zero-Carbon Demonstrators	<p>4.3.1 Identify partners to showcase zero-carbon technologies, tools and innovations in regional university and colleges.</p>	<ul style="list-style-type: none"> - Advertise demonstrators being showcased in regional universities and colleges. - Share knowledge from demonstrators with partners and across the supply chain to improve future delivery. 	
4.4. Support Capacity-Building within Educational Sector	<p>4.4.1 Identify formal education courses where zero-carbon training could be embedded or strengthened thanks to WMCA's support.</p> <p>4.4.2 Call for formal education system to include necessary zero-carbon skills and climate sciences.</p>	<ul style="list-style-type: none"> - Support upskilling of trainers in pivotal built environment courses to build capacity. - Create new zero-carbon development opportunities to accelerate demand to accelerate the demand for existing zero-carbon courses and trainings. - With partners, engage with primary and secondary schools to communicate zero-carbon aspirations with younger generations. 	
4.5. Engage with Home Occupiers	<p>4.5.1 Develop engagement programmes for new built residential homes occupiers and owners.</p> <p>4.5.2 Create and disseminate a template for home occupier information packs (See Enabler 1.4). Engage with communities to ensure packs are designed with end-users in mind.</p>	<ul style="list-style-type: none"> - Set up a zero-carbon housing expo to increase understanding and create demand for zero-carbon homes. - Set up technology engagement days and/or open-hous events to increase home occupiers' understanding of technology interface in zero-carbon homes. - Launch Carbon Heroes Campaign to celebrate community-based success stories and best practice. 	

Human Capital

Best Practice



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West London Construction Academy

How to address the built environment skills shortage:

Berkeley Skills Academy is one of the country's first pop-up construction academies which aims to tackle the UK's building skills crisis and stop the exodus of talent from the construction industry.

The state-of-the-art West London Construction Academy is situated on Berkeley's 88-acre regeneration site in Southall and was delivered in partnership with West London College. Southall Waterside is a large-scale development that is scheduled to deliver thousands of homes alongside new retail and community facilities over the next 30 years.

By locating the new training facility in the heart of the site, students can directly progress from the classroom to construction of the site, providing the skills necessary to meet the demands of delivery. The training facilities include a site cabin for classroom-based learning and a warehouse structure for practical training.

This model of skills learning can be replicated on other sites and helps showcase opportunities within the construction industry.



Design for the Future Living, BCU

How educational institutions can create new courses to provide necessary zero-carbon skills:

Birmingham City University (BCU) has launched a new BA(Hons) course called Design for Future Living. This course is a collaboration with MOBIE and aims to explore innovative ideas, new design methods, advanced technologies and entrepreneurial skills in order to critique, challenge and disrupt traditional thinking around the idea of 'home' and to develop radical alternatives.

BCU's long-term ambition is to continue to build the postgraduate offer in the area of future living, supporting better design and innovation around zero-carbon homes and homes fit for the future. Within the School of Architecture & Design and the School of Engineering and the Built Environment, the BCU already have ongoing research and consultancy projects, working in partnership with housing providers and local government organisations. These projects have explored low-carbon self-build homes, design for manufacture and assembly, building life cycle analysis, overheating and indoor air quality, as well as retrofit.

These type of courses and research initiatives play a key role in ensuring the next generation of built environment professionals have the necessary skills to drive the delivery of zero-carbon homes.



Housing Fair, Finland

How to engage home owners and occupiers with zero-carbon homes and their technologies:

Every year, for four weeks in July and August, the annual Housing Fair of Finland takes place. The event is one of the largest housing and living exposition in the world and showcases the ongoing and future trends in building and interior design.

The Housing Fair is set up in actual newly built residential areas, where homes with fully completed interior designs and new technologies are on display for communities to view and interact with. The houses are built for families who move in and live there after the Fair.

The needs of different demographical groups are taken into consideration at the planning stage and a wide range of building, renovation, interior design and landscaping solutions are presented every time. In 2020, the Fair focused on the future of housing showcasing 41 houses.

This event is a great example of how communities can be engaged in the development of zero-carbon homes. It also helps future home owners and occupiers to experience zero-carbon homes as well as to interact and get a better understanding of the technologies used in them.

Enabler 5:

Technology, Innovation & Infrastructure

Summary:

Delivering zero-carbon homes at scale will require investment in innovative technologies and digital tools as well as wider infrastructure that support zero-carbon growth.

Regional supply chains and businesses will need to bring forward a wider range of zero-carbon products and services, from digital platforms to servicing of new technologies, which contribute to the provision of zero-carbon homes.

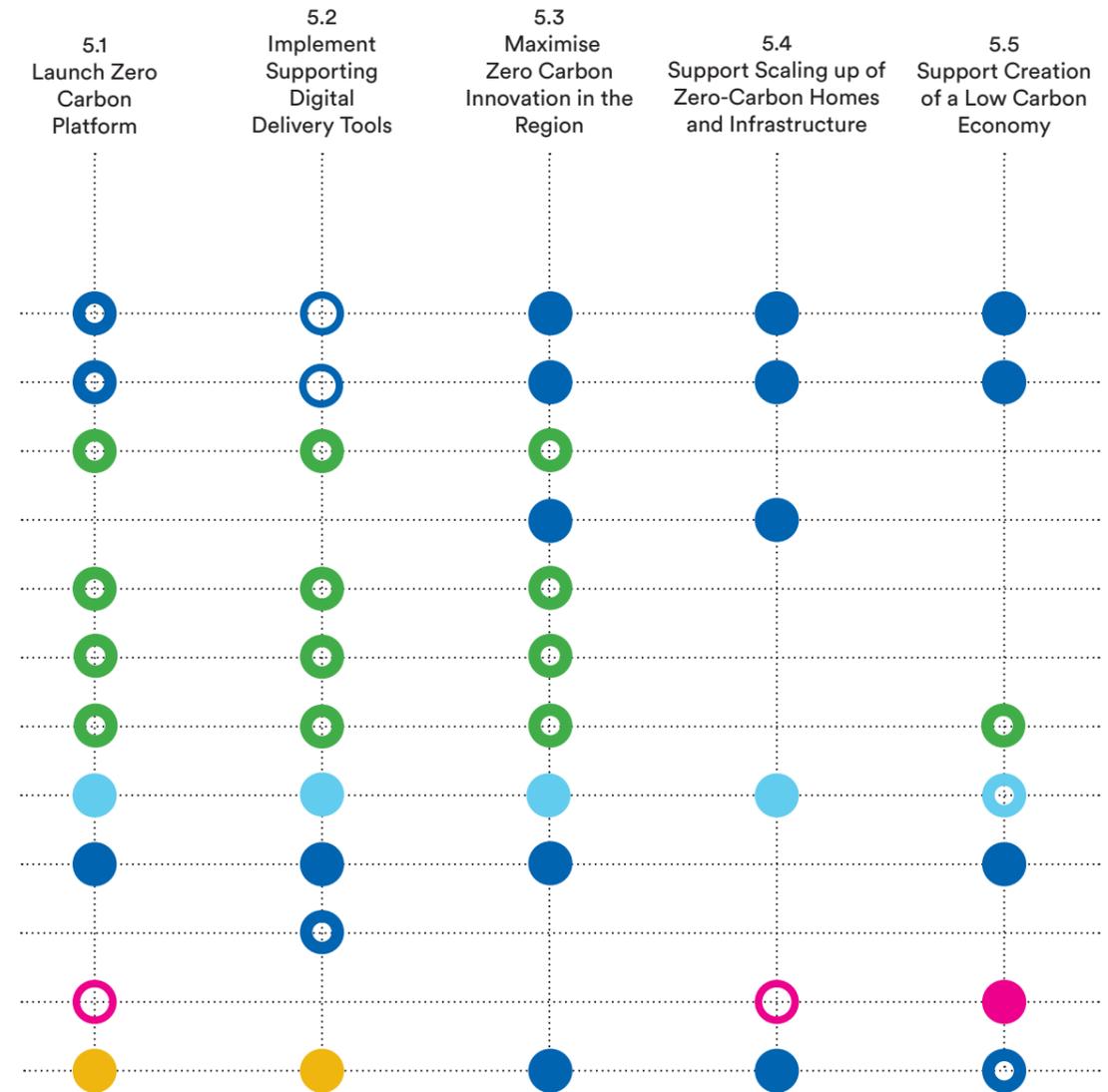
WMCA will ensure infrastructure is continually decarbonised, innovation is maximised, and zero-carbon technologies work to accelerate the transition to zero-carbon homes.

WMCA will also explore ways to stimulate the continual growth of a zero-carbon economy that can underpin and further support the delivery of zero-carbon homes in the West Midlands.

Programme of Action

Charter Principles

1. Zero Carbon Regional Ambition
2. Sustainable Growth
3. Fabric First and Passive Design
4. Decarbonised Heat and Power
5. Embodied Carbon
6. Climate Responsive
7. Life Cycle Design
8. Supporting Supply Chains
9. Collaboration and Knowledge Sharing
10. Community Engagement and Stewardship
11. Low Carbon Policy and Finance
12. Innovation-Led



Audience:

- Developers and Designers
- Policy-Makers
- R&D and HEFE Institutions
- Construction Supply Chain
- WMCA
- All

Key:



Building zero-carbon homes will require investment in large-scale low carbon infrastructure particularly for energy and transport.

Technology, Innovation & Infrastructure

WMCA Commitment

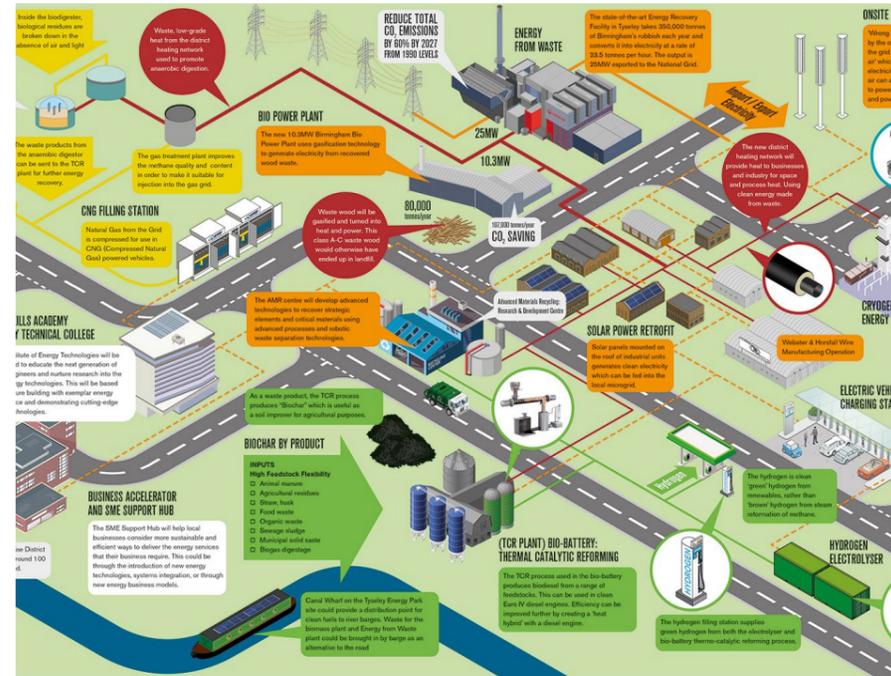
We will prioritise zero-carbon growth and boost the international competitiveness of the region in zero-carbon development. We will use our funding and land to support and showcase innovation and accelerate the drive towards digital skills and tools which will put this region at the forefront of the global net zero carbon transition.

Programme of Actions	2021 Actions	2022-2025 Actions	2025+ Actions
5.1. Launch Zero Carbon Platform	5.1.1 Develop a brief to create the 'Zero Carbon' open data platform which will integrate all data relevant to the delivery of zero-carbon homes (See Enablers 1.1, 1.2, 1.4, 2.2, 2.5, 3.1, 3.2, 3.3, 4.2 and 5.4).	- Launch the West Midlands 'Zero Carbon' data platform.	
5.2. Implement Supporting Digital Delivery Tools	5.2.1 Develop a brief for Building Information Management (BIM) aiming to move from BIM Level 2 to BIM Level 3. 5.2.2 Develop a brief for digital delivery tools that support life cycle tracking of materials. 5.2.3 Engage with built environment industry stakeholders to identify the scope of other digital delivery services and innovations that can support delivering zero-carbon homes.	- Implement BIM from design to operation moving to Level 3. - Signpost existing database of EPDs for materials and components that support zero-carbon homes in the region. - Provide a list of preferred materials and products, with their associated EPDs, to be used in the region.	- Standardize the use of EPDs through EPD-based contracting. - Use Building Passports and set up a West Midlands Building Material Bank.
5.3. Maximise Zero-Carbon Innovation in the Region	5.3.1 Work with Local Enterprise Partnerships (LEPs) and local authorities to build an online repository of best practice with insights on innovative technologies and processes successfully used. 5.3.2 Develop and adopt terms of reference to establish a Zero-Carbon Innovation Hub, including how it will be delivered.	- Set up the West Midlands Zero-Carbon Innovation Hub. - Encourage the use of innovative zero-carbon technologies and processes on sites WMCA owns, acquires and invests in. - Support R&D and innovation in low-embodied materials and circular economic processes.	
5.4. Support Scaling up of Zero-Carbon Homes and Infrastructure	5.4.1 Identify existing pilot projects with potential for scaling up. 5.4.2 Identify potential of scaling up zero-carbon homes in Energy Innovation Zones (EIZ) or new dedicated housing and energy innovation zones. 5.4.3 Introduce requirements for developers to contribute to decarbonisation of large-scale infrastructure on WMCA sites in order to support the delivery of zero-carbon homes. 5.4.4 Develop and share a zero-carbon investment prospectus to match investors' interests with zero-carbon homes projects.	- Scale up existing pilot projects. - Invest in pilot projects across the region to give all local authority members experience in delivering zero carbon homes. - Use pilot projects to strengthen zero-carbon homes assembly and manufacturing skills in the region. - Support the development of further expertise within existing regional governance structures to ensure large-scale energy infrastructure is appropriate and future-proofed.	
5.5. Support the Creation of a Low-Carbon Economy	5.5.1 Develop and deliver with LEPs a Low Carbon Economy brief to communicate the scale and types of opportunities for businesses in the region. 5.5.2 Work with the LEPs and the West Midlands Growth Company to broker relationships between supply chains and developers.	- Support a West Midlands circular economy with reuse networks and robust disassembly processes. - Mandate take-back schemes and re-manufacturing in procurement.	- Create regional material loops to retain waste at its highest value in the zero-carbon homes supply chain.

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Technology, Innovation & Infrastructure

Best Practice



DfMA, Knowledge-Based Tools

How to use digital tools to scale up zero-carbon homes delivery:

The Design for Manufacture and Assembly (DfMA) house team from the West Midlands has developed a proof-of-concept knowledge-based engineering (KBE) tool to evaluate the life cycle cost and CO₂ emissions of offsite products. The tool measures the performance of various house design choices and offsite production systems, which in turn enables designers to choose which option will achieve the largest reduction in CO₂ emissions for the lowest life cycle costs.

The KBE tool links data extracted from BIM models and performance data sheets including operational energy performance data, repair, replacement, service and maintenance cost plans. It can provide general outputs, such as overall costs and carbon performance, as well as detailed outputs of a home's performance broken down by elements, activities and resources.

This tool showcases how digital solutions can improve decision-making early on during the development process, helping demonstrate the cost-effectiveness of zero-carbon homes whilst also driving innovation in delivery processes.

EIZ, Tyseley Energy Park, Birmingham

How to use EIZ to accelerate innovations in zero-carbon technologies:

The concept of the Energy Innovation Zone (EIZ) was born in the West Midlands, with its annual energy bill of £10 billion providing a platform to accelerate innovations in low-carbon energy. Energy Capital is working with the Department of Business, Energy and Industrial Strategy to scale up the implementation of EIZs and is trialling several energy innovation zones in the region. This includes Tyseley and Birmingham's EIZ.

Birmingham City Centre will undergo massive redevelopment over the next 15 years. It aims to transition to low-carbon mobility options but lacks space to build substantial clean energy transport refuelling infrastructure, including hydrogen and electric vehicle charging points.

Part of the solution is to use some of the industrial land available at Tyseley Energy Park to produce clean energy for the city centre and local communities and power a new clean transport refuelling infrastructure. The EIZ will become a hub for clean technology and will help entrepreneurs and low-carbon businesses develop innovative products whilst remaining competitive and attracting funding to the region.

LEO, Low Carbon Hub

How to accelerate community-led energy innovations:

Low Carbon Hub is a social enterprise which aims to encourage community-led energy systems and is driving innovations in community energy.

One example of an innovation project supported by the Low Carbon Hub is LEO (Local Energy Oxfordshire). LEO is one of the most ambitious, wide-ranging innovative and holistic smart grid trial being conducted in the UK.

The project seeks to improve current understanding of how opportunities can be maximised and unlocked to transition to a smarter, flexible electricity system and how homes and communities can realise this benefit. The project creates conditions which could replicate the electricity system of the future.

It provides insights into how Distribution System Operators will need to function in the future, how markets can be unlocked and supported, how to create new investment models for community engagement and how to support the development of a skilled community that can reap the benefit from new energy systems.

Conclusion

This Routemap includes numerous actions that will support WMCA and our partners to realise our ambition of delivering zero carbon homes by 2025. By leveraging our funding and land in ways which support zero carbon development and the enabling policy framework required to underpin, we hope to make zero carbon homes the norm in this region.

Initially, implementation of the Routemap will focus on the actions for 2021, which aim to set the right conditions to deliver zero carbon homes. This includes building and enhancing our technical capacity, growing our expertise and improving and demonstrating the cost-effectiveness of zero carbon housing products.

The Routemap has been deliberately designed to ensure that there is ongoing scope to modify and adapt our approach. This means we can celebrate any new opportunities, respond to external changes, and continue to innovate and lead in achieving inclusive, clean growth.



Completed passivhaus residential scheme in Callaughtons Ash by Architype in Shropshire as part of a social housing development.



Passivhaus scheme plan for Bournville in Birmingham by Greenbox Associates.

Governance Process The Zero Carbon Homes Routemap is a WMCA-wide document, developed under the governance of the Housing and Land Delivery Board. Its successful implementation is reliant on all WMCA staff embracing it and embedding zero-carbon homes principles within their work. The delivery of this Routemap also requires partnership and collaboration between and within member local authorities and other key partners.

Monitoring Process We will develop an editable programme tracker, which will take the format of an Excel workbook. This workbook will include a framework to monitor progress against a set of Key Performance Indicators (KPIs). The latter will go beyond CO₂ emissions, ensuring we capture the whole-life value brought through zero-carbon homes.

Due Diligence Delivering zero-carbon homes will need us to review some of our priorities. As part of our due diligence processes, including those already embedded in the Single Commissioning Framework, we will ensure that delivering zero-carbon homes has no unintended consequences, and balance its benefits and impacts with those of other socio-economic drivers such as affordability, design quality, job creation and retention and more. WMCA will continue to seek to align and integrate these priorities to maximise co-benefits wherever possible.

Review Process This Routemap is a live document which will require updating over its lifetime. We will review this document on an annual basis, or more regularly where appropriate e.g. in response to national guidance or new funding opportunities. This review will:

- Report on progress made in achieving planned actions and determine what is 'on' and 'off' track.
- Review internal or external changes that could affect the Routemap and its programmes of actions.
- Determine new actions to be undertaken, including highlighting any new opportunities that may arise. Any proposed actions will have to be properly evaluated and costed based on clear criteria which takes into account the whole-life value of an action.
- Provide a series of recommendations on how to accomplish next set of actions.
- Update the trackers and prepare a timeline of next year's actions.

Additional Resources

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Policy & Guidance

Programme of Action	Notes and Guidance	Additional Resources
1.1. Implement Passive Design and Fabric First Approach	<ul style="list-style-type: none"> - Low-Energy Design Guide can help set passive design and fabric first engineering requirements, minimum energy benchmarks for different typologies. Elements in the design guide should reflect the energy hierarchy, and include regulated and unregulated emissions. - Micro-climate modelling and orientation guidance should support adopting fabric first passive design approaches. - Sharing data on zero-carbon homes can help with viability negotiations. - The Sustainability Lead will collate relevant planning documents to assist with the creation of shared fabric first and passive design guidance. Guidance will sit alongside a suite of planning documents at the local level. 	<ul style="list-style-type: none"> - Information on massing and orientation for passive design (as well as other information on building a passivhaus home) can be found here. - For more information on passivhaus, please visit the Passivhaus Trust's website. - Find out more about building low-energy and passivhaus buildings Making 'Net Zero' Happen. - The CCC Housing Fit for the Future report may also be of interest. - You can find more information about Eco-Vicarages by Associated Architects here and about Wooton Wawen here. Find information about Architype's passivhaus scheme here and about Bournville here.
1.2. Reduce Whole-Life Carbon	<ul style="list-style-type: none"> - Lifecycle design principles include lean design, building in layers, design for disassembly and support smart resource management. - The checklist will be user-friendly to assist officers in their decision-making processes. - Whole-life carbon assessments should inform decision-making throughout project lifecycle. Assessments will follow the RICS methodology. - To address whole-life carbon, low-carbon transport also needs to be prioritised including: investments in public transport, prioritising active travel solutions within the transport hierarchy, encourage transit-oriented and car free development and include requirements for EV charging infrastructure as a condition of WMCA's housing investment. 	<ul style="list-style-type: none"> - UKGBC's Net Zero Carbon Buildings: A Framework Definition is available here. - LETI's climate emergency design guide can be accessed here and its embodied primer here. - RIBA Climate 2030 Challenge can be accessed here. - RICS Methodology for Whole Life Cycle Assessment can be found here. - More information about the circular economy can be found on the Ellen McArthur Foundation's website. - ICE database providing embodied carbon of various materials can be found on this website (link to a Google Drive). - Information on the Healthy Streets approach can be found here. - Transit-oriented development can also offer some insights for New Vista Homes. More information can be found here.
1.3. Maximise Low-Carbon Energy Supply	<ul style="list-style-type: none"> - The management and maintenance of energy infrastructure needs to be taken into account. - Electric led solutions such as Air Source Heat Pumps and Ground Source Heat Pumps should complement passive design solutions. - Smart systems will consider co-location of decarbonised transport solutions to encourage a whole-system approach to decarbonisation. - Energy systems solution should complement zero-carbon transport solutions and be coordinated at a regional level. 	<ul style="list-style-type: none"> - Examples of low-carbon energy supply can be found on the UK 100 website. This is a great resource to learn about other projects and best practice.
1.4. Implement Post-Delivery Testing	<ul style="list-style-type: none"> - POE and Soft Landings should test for occupiers' thermal comfort and ensure new homes perform as they were designed to. - POE and Soft Landings will allow for continual learning and improvements. Data should be collected through shared open data platform and reviewed with partners, members and supply chains to capture and share lessons learnt. This can be done through the West Midlands Industry Forum (See Enabler 2.2). - Digitising POE and Soft Landing will make the processes more open and transparent. This is subject to GDPR. 	<ul style="list-style-type: none"> - Information on Soft landing can be found in Government Soft Landings. - Information about how Soft Landings can help bridge the gap can be found here. - Information on POE can be found on the BRE website and the RIBA website which includes useful guidance.
1.5. Work with National Government for Stronger Zero Carbon Policies	<ul style="list-style-type: none"> - The outcome of the Future Homes Standards and other planning reforms is of particular interest to this Routemap. - Funding to plug the skills gap could also help increase the capacity of the formal education system in regards to built environment skills. 	<ul style="list-style-type: none"> - Information on the Future Homes Standard can be found here. - More information on the Future Homes Task Force can also be found here. - You can read the 2020 Energy White Paper here.

Governance & Delivery Processes

Programme of Action	Notes and Guidance	Additional Resources
2.1. Enhance WMCA Governance Processes	<ul style="list-style-type: none"> - Sustainability Lead will work with local authority’s point persons to develop guidance, set targets, and gather data. The Sustainability Lead will work collaboratively with the Environment Team, Energy Capital and Transport for the West Midlands to ensure joined-up thinking. - A key aim is to ensure a joined-up approach across the combined authority. - Coordination amongst services within the combined authority and across local authorities will also be required. 	<ul style="list-style-type: none"> - Green Alliance has produced a report The Local Climate Challenge: A New Partnership Approach. One of its key recommendation is that a single point of contact within central government is appointed to assist local authority on their carbon neutral journey.
2.2. Maximise Collaborative Processes	<ul style="list-style-type: none"> - The Charter acts as a shared vision for the region. We will seek buy-in and support from all those involved in building houses including housing associations. - The Industry forum will ideally take a ‘hub and spoke’ avoiding duplications with other forums in the region and linking up with wider initiatives to maximise impact. It should be used to determine what the supply chains can deliver and what support they require. - The Industry Forum will share data on cost uplifts, carbon savings, co-benefits delivered and cost-effective delivery models. Aggregating this data will provide insights on the supply and delivery cost of zero carbon homes as well as the impact of scale on cost. It will help us challenge false conceptions around the cost uplift of zero carbon homes. - Collaborative models such as joint ventures will support risk-sharing and knowledge-building. - Community-led models such as Community-Interest Companies (CIC) co-design and land trust delivery will be encouraged. We will also encourage local communities to take a financial stake in zero-carbon projects in the region. Novel engagement tools and methods should include using 3D models, virtual reality. 	<ul style="list-style-type: none"> - Kate Raworth’s Doughnut Economics model is one of the frameworks used by local authorities to frame their sustainable aspirations and the delivery of their climate actions. This is useful to create shared vision that also take into account social value. - An overview of alternative delivery models can be found here.
2.3. Improve Supply Chain Engagement Processes	<ul style="list-style-type: none"> - Early engagement with supply chains is essential to improve delivery and should be done as early as possible in the development process. - Creating new commissioned partnerships with developers focused on delivering zero carbon homes will provide a pipeline for new units and opportunities for local supply chains to grow. 	<ul style="list-style-type: none"> - Examples of industry forums include: Zero Carbon Forum, the Delivery Hub and C40 Cities Low-Carbon Districts Forum. - Edinburgh Procurement Pathfinder is exploring how to bring sustainability and carbon impact focus to the University of Edinburgh’s procurement and construction activity, driving increased sustainability throughout the supply chain.
2.4. Scale Up Alternative Delivery Models	<ul style="list-style-type: none"> - Alternative delivery models include AMC, MMC, off-site construction, using cradle-to-grave approach, embedding circular economy principles to name a few. - Alternative delivery models also include land trust, community-led models, community build, Community Interest Company, community-led energy projects, joint ventures and other innovative partnership models. 	<ul style="list-style-type: none"> - Information on adopting circular economy principles and the building in layers approach can be found in UKGBC’s Circular Economy Guidance for Construction Clients. - A circular economy actor and resource map was produced by UKGBC and can be found here. - A Designing for Circularity Primer was produced by the Greater London Authority (GLA) and a Circular Economy Statement Guidance is currently under consultation. You can find more information here.
2.5. Implement Auditing and Reporting Processes	<ul style="list-style-type: none"> - Post-project review is critical to ensure continual learning and improvement. This ties in with implementing POE and Soft Landing processes. Data from post-project review will be shared at the forum. 	<ul style="list-style-type: none"> - Examples of common methodology, reporting framework and tools include Carbon Disclosure Project, Tyndall Carbon Budget Tool and SCATTER Cities, resources which are free to public sector organisations.

Financial Capital

Programme of Action	Notes and Guidance	Additional Resources
3.1. Adopt Whole-Life Costing	<ul style="list-style-type: none"> - Whole-life costing will help balance additional capital expenditures (CAPEX) with long-term operational savings (OPEX). Whole-life costing will help us move away from looking at built cost only. This then needs to be reflected in procurement and tender processes. - Our whole-life costing toolkit should capture evidence and data from existing zero-carbon projects to provide a more informed view on performance and viability of these schemes. It will help in developing holistic business cases. 	<ul style="list-style-type: none"> - Climate Change Committee Report on the cost uplift of delivering zero carbon homes can be found here. - UKGBC's report Building the Case for Net Zero can be found here. - Useful Project's Finance Climate Action report contains tips and advice on using whole-life costing.
3.2. Develop a Co-Benefits Matrix	<ul style="list-style-type: none"> - A co-benefit matrix will provide a communal way of quantifying the financial value of the benefits delivered by zero-carbon homes. - To develop this matrix we will work with members, partners and regional universities. - The matrix will ensure whole-life value of zero carbon projects is measured and informs decision-making processes. It will align with other WMCA policy priorities such as affordable housing and advanced manufacturing in construction. 	<ul style="list-style-type: none"> - The National TOMS Framework 2020 can be found here. - Ashden's report on climate actions' co-benefits can be found here. - A report on delivering social value in new development can be found here.
3.3. Launch Green Finance Forum	<ul style="list-style-type: none"> - In identifying the composition of the forum, we will look at the skills and perspectives requires as well as participants willing to collaborate such as finance advisors, investors and suppliers of zero-carbon technologies. We will also evaluate if The Green Finance Forum should be a branch of a wider forum and connect with existing scheme. - The Green Finance Forum will provide advice on how to structure their assets and investments as well as provide networking opportunities between financial stakeholders, developers, and the zero carbon supply chain. - It will also share data with potential investors and funders on zero-carbon technologies and other solutions that are performing well and represent an interesting investment. - The Green Finance Forum will apply to both new build homes and retrofitting work. 	<ul style="list-style-type: none"> - A report on delivering social value in new development can be found here. - Examples of existing Green Finance Forum include: The Green Finance Institute, and the OECD Forum on Green Finance and Investment. - Edinburgh Pathfinder is a good example of bringing investors local government and innovators together.
3.4. Fund the Uplift	<ul style="list-style-type: none"> - When exploring the potential of setting up a WMCA carbon offset fund, taking into account any administrative requirements. If we decide to set a performance-based offset fund, it will allow us to pool financial resources across the region and re-invest them in regional zero-carbon projects. 	<ul style="list-style-type: none"> - Milton Keynes has set up a pioneering carbon offset fund which can serve as a best practice for WMCA. - A report on setting carbon price can be found here.
3.5. Enable Green Finance in the West Midlands	<ul style="list-style-type: none"> - Of particular interest to us is to explore Service Cost Models. This would also be beneficial for our retrofitting efforts. - We would like to accelerate the uptake of green and social bonds, green mortgages and green insurances. - We want to create a Green New Deal for the West Midlands which will create new jobs and help attract businesses that are involved in creating components required in zero-carbon homes. 	<ul style="list-style-type: none"> - Find out more about reinventing retrofit in Green Alliance's report. - See the report on sustainability reporting standards. - Tideway is an excellent example of an organisation embracing the opportunities of green bonds with its Green Bond Framework.

Human Capital

Programme of Action	Notes and Guidance	Additional Resource
<p>4.1. Support Upskilling and Reskilling</p>	<ul style="list-style-type: none"> - The skills routemap will align with our retrofitting workstream. It will build on other research conducted on this topic including: CITB research Building Skills for Net Zero as well as the Sustainability West-Midlands Low Carbon Environmental Goods & Services study. The skills routemap will map existing training, courses and programmes in the region. As part of the process we will also engage with the supply chain and industry to determine existing and missing skills. - The short term fund is designed to provide zero-carbon expertise whilst expertise within the region is built and the cost of delivering zero-carbon homes is on par with traditional homes. - The joint-fund will be created between regional industries, local authorities and educational providers to invest in strategic built environment training programmes. Money from the offset fund could also be used in the long-term. - Targeted training will focus on: design skills (circular, passive etc.), predictive environmental modelling, EPDs, as well as passive design, air tightness and insulation techniques. - Support new roles will include: supporting apprenticeships, recognising the importance of operations and facilities managers, and facilitating reskilling for these new roles. Reskilling should also focus on people looking to transition away from carbon-intensive built environment sectors. 	<ul style="list-style-type: none"> - Guidance and a template to conduct a skills survey as well as additional guidance to build local authorities' capacity to respond to the climate crisis can be found in Pathways to Climate Action. - The Big Rig: Low Carb scheme is a good example of reskilling people within the zero-carbon construction industry through action-based learning. - The West Midlands benefits from existing collaboration between education providers and housing providers. An example is the DfMA's factory-assembly social homes. - Another relevant case study is the MOBIE Northumbria Homes for the Future Innovation Centre. - Another interesting case study is The Marches Centre of Manufacturing & Engineering (MCMT) Career Day. They hosted one of the largest Career Day for engineering and manufacturing. This event engaged young people and mature learners to explore the latest apprenticeship opportunities available in the country.
<p>4.2. Support Regional Knowledge-Sharing</p>	<ul style="list-style-type: none"> - The Knowledge Sharing Hub will be linked to the Zero Carbon Platform (See Enabler 5.1) and will allow us to aggregate data on the true cost-uplift and other tangible benefits of zero-carbon homes. - The Knowledge Sharing Hub will encourage multi-disciplinary knowledge-sharing as well as upskilling across all sectors and all levels of a organisation. 	<ul style="list-style-type: none"> - Examples of other Knowledge Sharing Hubs includes the Commonwealth Secretariat's Education Hub as well as the Knowledge Hub a digital tool for public sector collaboration.
<p>4.3. Showcase Zero-Carbon Demonstrators</p>	<ul style="list-style-type: none"> - Demonstrators can help future home occupiers get more familiar with zero-carbon technologies that will be in their homes. 	<ul style="list-style-type: none"> - A nature-based solutions Living Lab is being set up at Salford University or the Living labs at the University of Bristol.
<p>4.4. Support Capacity-Building within Educational Sector</p>	<ul style="list-style-type: none"> - The aim is to build volumetric capacity within the formal education system to support upskilling of younger generations working within the built environment. 	<ul style="list-style-type: none"> - Resource on support formal education in mainstreaming low-carbon skills.
<p>4.5. Engage with Home Occupiers</p>	<ul style="list-style-type: none"> - The home occupier template will include information on maintenance and replacements. It will help ensure home occupiers understand their homes as well as the technologies in it. 	<ul style="list-style-type: none"> - The Finnish Housing Fair attracts more than 250,000 visitors every year and showcases latest trends and technologies within the housing industry. - Research on views and attitudes of home occupiers towards zero carbon homes.

Technology, Innovation & Infrastructure

Programme of Action	Notes and Guidance	Additional Guidance
5.1. Launch Zero Carbon Platform	<ul style="list-style-type: none"> - The 'Zero Carbon' open data platform will allow us to share all data relevant to the West Midlands' zero-carbon journey. We will share data relevant to the Industry Forum, Green Finance Forum, Knowledge-Sharing Hub and Zero Carbon Innovation Hub. - The use of digital platform will help relieve burden from local authority members and remove layers of unnecessary bureaucracy. It is possible that the platform will integrate with existing platforms. - We will ensure it is a robust, flexible and open access platform. - When sharing data we will take commercial sensitivity into account. 	<ul style="list-style-type: none"> - Carbon Disclosure Project offers an initial database of data and insights and a network of like-minded organisations.
5.2. Implement Supporting Digital Delivery Tools	<ul style="list-style-type: none"> - Digital delivery tools should facilitate sharing data, monitoring process as well as smart resource use (including energy management). - Promoting the use of smart systems provides us with more opportunities to collect data on zero-carbon homes. 	<ul style="list-style-type: none"> - Insights on the BIM Framework can be found here. - Digital tools can help bring sustainability to scale as explore here.
5.3. Maximise Zero-Carbon Innovation in the Region	<ul style="list-style-type: none"> - The Zero Carbon Innovation Hub will incubate and accelerate promising new technologies and attract R&D, as well as businesses, to the region. Innovation challenges could be held every year. The Zero Carbon Innovation Hub will link with other hubs and initiatives in the UK. - When developing innovation-led knowledge scheme theme include: passive house standards and delivery, battery storage optimisation, heat pump and network options, smart energy management and AI. 	<ul style="list-style-type: none"> - An example of a project aiming to maximise smart solutions includes Zero Carbon Rugeley. More information can be found here. Another example Regional Energy System Operator. You can learn more about it here. - Also of interest is the Home of 2030 challenge; a design competition created to drive innovation in the provision of affordable, efficient and healthy green homes for all. - Another relevant case study is the EIT Climate-KIC accelerator.
5.4. Support Scaling up of Zero-Carbon Homes and Infrastructure	<ul style="list-style-type: none"> - Scaling up projects will allow to share knowledge on best delivery models, procurement routes, cost uplift, carbon savings and co-benefits delivered. - Scaling up pilot projects can demonstrate how zero-carbon homes can be the norm and support setting higher benchmarks for the region. - It will be necessary to include infrastructure for zero-carbon transport. This includes charging infrastructure on site and ensuring that there is enough capacity at the local electricity substation to provide sufficient power for charging. - Future-proofing energy infrastructure equires close working with distribution network operators. 	<ul style="list-style-type: none"> - Some tips on scaling up innovation projects can be found here. - EIZ can help with scaling up projects. Energy Capital's EIZ can be explored here.
5.5. Support Creation of a Low-Carbon Economy	<ul style="list-style-type: none"> - The Low Carbon Economy Brief will highlight opportunities for business growth from professional and construction services to innovation projects and technologies. 	<ul style="list-style-type: none"> - PwC has produced a low carbon economy index in 2019.

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Glossary



Workers in the Walsall Local Homes Factory.



Workers in the Walsall Local Homes Factory.

Alternative Delivery Models: An alternative delivery model can be a different way of managing, collaborating and contracting, or it can involve the establishment of a completely new organisation that could be wholly, or partly owned by the parent body or a completely independent enterprise. They range from small community-based initiatives, employee led spin outs (large and small), local authority companies, to substantial multi-stakeholder partnerships involving private and public sector organisations.

Building Information Modelling: Building information modelling is a process supported by various tools, technologies and contracts involving the generation and management of digital representations of physical and functional characteristics of places.

Building Passport: A Building Passport is a securely stored, online & up-to-date record of the physical attributes of a building through its life cycle.

Carbon Budget: An emissions budget, carbon budget, emissions quota, or allowable emissions, is an upper limit of total carbon dioxide emissions associated with remaining below a specific global average temperature.

Circular Economy: A circular economy is based on the principles of designing out waste and pollution, keeping products and materials in use and regenerating natural systems.

Cradle to Grave: A boundary condition associated with embodied carbon, carbon footprint and LCA (Life Cycle Assessment) studies. It includes the cradle to site results but also includes the GHG (GreenHouse Gas) emissions associated with the in use of the material or product (maintenance) and the end of life (disposal, reuse, recycling).

Demonstrator: In this Routemap, demonstrator refers to new technologies, innovations and tools relevant to zero-carbon homes. Pilot projects refer specifically to zero-carbon home schemes that have been or are being delivered in the region.

Embodied Carbon: Embodied carbon means all the CO₂ emitted in producing materials. It's estimated from the energy used to extract and transport raw materials as well as emissions from manufacturing processes.

Energy Innovation Zones: Energy Innovation Zones (EIZs) are designed to stimulate clean energy innovation to drive productivity, exports and growth. Unlike existing approaches, they will work not only to demonstrate new technologies, but also to turn them into fully commercial propositions.

Energy Use Intensity: Energy Use Intensity (EUI) can be defined as the measurement of a building's annual energy consumption relative to its gross square-footage.

Environmental Product Declaration: An Environmental Product Declaration (EPD) is a transparent, objective report that communicates what a product is made of and how it impacts the environment across its entire life cycle.

Fabric First Approach: A 'fabric first' approach to building design involves maximising the performance of the components and materials that make up the building fabric itself, before considering the use of mechanical or electrical building services systems

Life Cycle Design: Life-Cycle Design is the environmentally sound design of products based on the whole life cycle starting from exploitation and processing of raw materials, preproduction, production, distribution, to use and returning materials back into the industrial cycles.

Material Banks: Material(s) banks are repositories or stockpiles of valuable materials that might be recovered. If those materials replace primary resources used during the construction, operation or refurbishment of buildings and their parts, the need for primary resource mining, for example, of rare earth elements, can be eliminated.

Modern Methods of Construction: Wide term embracing a range of offsite manufacturing and on-site techniques that provide alternatives to traditional house building. MMC ranges from whole homes being constructed from factory-built volumetric modules, through the use of innovative techniques for laying concrete blockwork on-site.

Zero Carbon: The Routemap uses UKGBC's definition of zero carbon focusing on operational and embodied carbon dioxide (CO₂) emissions. Net zero carbon means operational and embodied CO₂ emissions are reduced as much as possible, with the remainder offset to achieve a net balance. Low-carbon refers to construction, design and operational strategies to reduce operational or embodied carbon as much as possible.

Passive Design: In passive solar building design, windows, walls, and floors are made to collect, store, reflect, and distribute solar energy in the form of heat in the winter and reject solar heat in the summer.

Photovoltaic (PVs): A photovoltaic (PV) cell, commonly called a solar cell, is a non-mechanical device that converts sunlight directly into electricity.

Post Occupancy Evaluation: Post-Occupancy Evaluation (POE) is the process of obtaining feedback on a building's performance in use. The value of POE is being increasingly recognised, and it is becoming mandatory on many public projects.

Social Value: The additional, wider benefits that can be created by organisations and projects, for individuals, communities and local businesses.

Soft Landings: The term 'soft landings' refers to a strategy adopted to ensure the transition from construction to occupation is enhanced and that operational performance is optimised.

Space Heating Demand: The amount of active heating input required to heat a building usually expressed in kWh/m²/yr. It is often calculated using building energy software applications such as PHPP, Deap or Sap.

Whole-Life Costing (WLC): Whole life costing is an investment appraisal and management tool which assesses the total cost of an asset over its whole life. It takes account of the initial capital cost, as well as operational, maintenance, repair, upgrade and eventual disposal costs.

Acknowledgments

Zero Carbon Homes Task Force

WMCA would like to thank the members of our Zero Carbon Task Force for their inputs in creating this Routemap:

- Julie Hirigoyen, UKGBC Chief Executive (Chair)
- John Alker, UKGBC Director of Policy and Places
- Paul King, Lendlease Managing Director Sustainability & Social Impact
- Adam Willetts, Urban Splash
- Kevin Rodgers, Citizen Housing Chief Executive
- Cheryl Hiles, Energy Capital
- Marcos Navarro, Natwest Director (Housing Finance)
- Dominic Brindley, Natwest
- Rita Singh, Kingspan Head of Public Affairs
- Franco Cheung, Birmingham City University
- Simon McWhirter, Active Building Centre Head of Engagement
- Sandra Squires, CITB
- Tim Carey
- Tim Stidwill, Cundall Structural Engineering Partner
- Mark Barry, Architype

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Homes in Walsall by Accord.



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