GMCA GREATER MANCHESTER COMBINED AUTHORITY

GREATER MANCHESTER GREEN CITY REGION PARTNERSHIP 2019/20

DATE: **Friday, 18th October, 2019**
TIME: **10.00 am**
VENUE: **Board Room, GMCA, Churchgate House, 56 Oxford Street, Manchester M1 6EU**

AGENDA

1. APOLOGIES

2. CHAIRS ANNOUNCEMENTS AND URGENT BUSINESS

3. DECLARATIONS OF INTEREST 1 - 2

To receive declarations of interest in any item for discussion at the meeting. A blank form for declaring interests has been circulated with the agenda; please ensure that this is returned to the Governance & Scrutiny Officer at the start of the meeting.

4. MINUTES 3 - 12

To consider the approval of the minute of the meetings held on 29 July 2019.

5. IMPLEMENTING THE FIVE YEAR ENVIRONMENT PLAN UPDATE 13 - 20

Report and presentation of Mark Atherton, Assistant Director of Environment, GMCA.

6. PROGRESS WITH CHALLENGE GROUPS 21 - 74

- Low Carbon Buildings (Robin Lawler)
- Energy Innovation (Peter Emery)
- Natural Capital (Anne Selby)
- Sustainable Consumption and Production (Richard Jenkins)
- Communications Energy Transition Region (Phil Korbel)
- Five Year Environment Plan (Carly McLachlan)

7. AIR QUALITY UPDATE

Verbal report of Megan Black, TfGM.

8. LOCAL ENERGY MARKET BID 75 - 94

Presentation of Sean Owen, Energy Lead, GMCA, for information.

9. ENERGY TRANSITION REGION 95 - 144

Report of Sean Owen, Energy Lead, GMCA, for information.

10. DATE AND TIMES OF FUTURE MEETINGS

To agree the future meeting dates for the Committee:

Monday, 20 January 2020, 10:00am
Friday, 20 March 2020, 10:00am
Friday, 24 July 2020, 10:00am

For copies of papers and further information on this meeting please refer to the website www.greatermanchester-ca.gov.uk.
Alternatively, contact the following Governance & Scrutiny Officer:

✉ Kerry.bond@greatermanchester-ca.gov.uk
☎0161 7787009

This agenda was issued 10 October 2019 on behalf of Julie Connor, Secretary to the Greater Manchester Combined Authority, Churchgate House, 56 Oxford Street, Manchester M1 6EU

Greater Manchester Green City Region Partnership

Declaration of Councillors' Interests in Items Appearing on the Agenda

NAME: _____

DATE: Friday 18 October 2019

Minute Item No. / Agenda Item No.	Nature of Interest	Type of Interest
		Personal / Prejudicial / Disclosable Pecuniary
		Personal / Prejudicial / Disclosable Pecuniary
		Personal / Prejudicial / Disclosable Pecuniary
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MINUTES OF THE MEETING OF THE LOW CARBON HUB BOARD HELD ON MONDAY 29 JULY 2019, BOARD ROOM, GMCA, CHURCHGATE HOUSE, 56 OXFORD STREET, MANCHESTER M1 6EU

PRESENT:

Councillor Andrew Western (Chair)	Green City Region Portfolio Holder & Chair (Trafford Council)
Councillor Alan Quinn	Waste & Recycling Committee Representative (Bury Council)
Anne Selby	Chair, Natural Capital Group Representative (Wildlife Trust)
Lee Rawlinson	Environment Agency Representative
Louise Blythe	Private Sector Representative (BBC)
Peter Emery	Private Sector Representative (ENWL)
Bernard Magee (Substitute)	Private Sector Representative (Siemens)
Richard Jenkins	Private Sector Representative (Suez)
Dave Coleman (Substitute)	Private Sector Representative (Cooler Projects)
Robin Lawler	Private Sector Representative (Northwards Housing)
Patrick Allcorn	Central Government Representative (BEIS)

OFFICERS IN ATTENDANCE:

Mark Atherton	GMCA
Megan Black	TfGM
Bryan Cosgrove	City of Trees
Sam Evans	GMCA
Jenny Hollamby	GMCA
Simon Nokes	GMCA

LCHB/26/19 INTRODUCTION AND APOLOGIES FOR ABSENCE

The Chair opened the meeting, welcomed all those present and introductions took place around the table.

Apologies for absence were received from Eamonn Boylan (GMCA), Hisham Elkadi (Salford University), Phil Korbel (Cooler Projects), Chris Matthews (United Utilities), Roger Milburn (Arup), Mark Pilling (Siemens), Kiristina Poole (PHE), Councillor Angeliki Stogia (MCC), James Thompson (Manchester University) and Simon Warburton (TfGM).

Councillor Alan Quinn, the appointed representative from Waste & Recycling Committee for the 2019/20 Municipal Year from Bury Council was welcomed to his first meeting of the Low Carbon Hub Board (the Board).

James Thompson (Manchester University) who was leaving his position and was unable to attend the meeting, was thanked for his support and valuable contributions over the last two years. The Chair looked forward to welcoming his replacement to the next meeting.

The Chair explained that he had been appointed as the Portfolio Lead for the Green City Region and Chair of the Board for the 2019/20 Municipal Year. His priorities for this year were rapid decarbonisation over the next five years, stimulating energy innovation, developing a more circular economy and creating a greener City Region, which was more resilient to climate change.

The Board was provided with a copy of the revised Climate Emergency Declaration recommendation that was agreed at the GMCA meeting on 26 July 2019.

LCHB/27/19 DECLARATIONS OF INTEREST

There were no declarations received in relation to any item on the agenda.

LCHB/28/19 MINUTES OF THE MEETING HELD ON 15 MARCH 2019

RESOLVED/-

That the minutes of the meeting held on 15 March 2019 be approved as a correct record.

LCHB/29/19 MISSION BASED APPROACH - PRESENTATION

It was explained that following approval of the 5 Year Environment Plan in March 2019, an indicative budget of £1m (over three years) had been identified to initiate actions which, would support its delivery.

The report provided an overview of how the indicative budget, from retained business rates, might be utilised to deliver a Mission Based Approach to achieve the challenge of carbon neutral living within the Greater Manchester (GM) economy by 2038.

It was reported that the GMCA and Local Authorities (LAs) could not deliver the 5 Year Environmental Plan in isolation. Work was needed with partner organisations to achieve its goals. The GMCA's role would be a convenor and also to demonstrate leadership of the public estate. In addition to allocating funding for communications, establishing a GM Environment Fund (the Fund) and establishing a mechanism for the collective procurement of photovoltaic (PV)/battery technologies, the primary task would be to build capacity to accelerate actions.

The GMCA's Assistant Director of Environment provided the Board with a presentation about delivery of the 5 Year Environmental Plan, which covered:

- Environmental threats and challenges – opportunities for GM.
- Early decarbonisation and increased innovation.
- Reduction measures.
- 5 Year Environmental Plan performance.

- Environment Team performance overview.
- Taking action together.
- Green City Region integrated governance.
- Natural Capital Group Terms of Reference.
- Indicative GMCA budget.
- External funding.
- Green City Region websites.

The Board discussed the report and presentation, the main points referred:

- To provide more detail, the Board asked that there be a rolling programme of deep dives into the key themes.

- A Member asked about buildings and reducing carbon, the GM's Plan for Homes, Jobs and the Environment (formerly known as the Greater Manchester Spatial Framework (GMSF)) building standards and sustainable drainage and onshore wind. It was explained that onshore wind had not been banned but there were challenges obtaining planning permission. The 5 Year Environmental Plan had accounted for buildings and reducing carbon. Should the GMSF be approved, it was envisaged there would be an uplift of building regulations. There would also be a step shift in the next couple of years towards carbon neutrality.

- An Officer asked if funding for the development of a GM Local Energy Market (GM LEM) was from the Prospering from the Energy Revolution funding call. It was reported that funding for Phase 1 (Scoping Study) had been secured but a bid would be submitted for Phase 2 (Development of a GM LEM).

- The relevant sections of the GMCA website would be rebranded to the Green City Region Partnership (GCR Partnership).

- The National Energy White Paper could potentially experience delays due to the change in Government leadership.

- The Challenge Groups would be supported by the existing governance arrangements, such as the Natural Capital Group.

- It was agreed that Professor Andy Gibson, Manchester University's Pro-Vice Chancellor would be invited to join the GCR Partnership.

RESOLVED/-

1. That the Board supported the intention to utilise a Mission Based Approach.

2. That it be noted that the GMCA had been asked to release £1m from the retained business rates reserve (over 2019/20 to 2021/22) to support the implementation of the 5 Year Environment Plan and delegated individual expenditure decisions within this £1m to the GMCA Treasurer, in consultation with the Portfolio Leader and Lead Chief Executive for the Green City Region and included approval of any consequent grants to Districts from this money where appropriate.

3. That Professor Andy Gibson, Manchester University's Pro-Vice Chancellor be invited to join the GCR Partnership.

LCHB/30/19 PERFORMANCE REPORT QUARTER 1 2019/20

The GMCA's Assistant Director of Environment's report provided the Board with the usual update on progress of the Low Carbon Hub for the first Quarter of 2019/20.

RESOLVED/-

1. That the Board noted on the progress outlined in the report and the latest position set out in the dashboards attached to the report at Annex 01 (Environment Team Performance Overview) and Annex 02 (5 Year Environment Plan Performance).

2. That the Board was content with the dashboards as a means of updating the Board on progress, risks and issues and agreed that regular deep dives on the key themes be provided.

LCHB/31/19 GOVERNANCE CHANGES AND TERMS OF REFERENCE

It was reported that delivery of the Mission Based Approach would require a number of changes to the existing governance structures and consequential changes to then Terms of Reference. The proposed changes to governance structures and Terms of reference required to begin delivery of the 5 Year Environment Plan were outlined in the report.

RESOLVED/-

1. That the Board noted the proposed transition from Low Carbon Hub Board to the GCR Partnership and approved the revised Partnership's revised Terms of Reference for the 2019/20 Municipal Year.

2. That the proposed governance structure for the Mission based Approach (Minute LCHB/29/19 Mission Based Approach, Annex 02 Green City Region – Integrated Governance refers) be endorsed.

3. That the Board agreed to the Partnership's Board Members to Chair and Deputy Chair the proposed Challenge Groups. The following nominations were agreed at the meeting:

a) Communication Challenge Group
(Engaging and communicating with all stakeholders)
Louise Blythe (BBC) Chair and Phil Korbel (Cooler Projects) Deputy Chair

b) Low Carbon Buildings Challenge Group
(Reducing emissions through post-meter actions)
Robin Lawler (Northwards Housing) Chair and *Deputy Chair required

c) Natural Capital Challenge Group
(Ecosystem services and natural adaptation)
Anne Selby (Wildlife Trust) Chair and Chris Matthews (United Utilities) Deputy Chair

d) Sustainable and Consumption and Production (SCP) Challenge Group
(More with less)
Richard Jenkins (Suez) *Deputy Chair required

e) Energy Innovation Challenge Group
(Reducing emissions through pre-meter action)
Peter Emery (ENWL) Chair and *Deputy Chair required

*It was suggested that the University Representatives might want to fulfil the Deputy Chair roles.

4. That the Board approved the revised Terms of Reference for the Natural Capital Group for the 2019/20 Municipal Year and confirmed Anne Selby (Wildlife Trust) as Chair and Chris Matthews (United Utilities) as Vice- Chair.

5. That the Board agreed that similar Terms of Reference should be developed for the other proposed Challenge Groups: SCP, Low Carbon Buildings, Energy Innovation and Communications for agreement at the next GCR Partnership meeting in October 2019.

LCHB/32/19 COLLECTIVE PV/BATTERY PROCUREMENT

The Board considered a report that presented an opportunity for a Solar PV Collective Purchasing pilot across the GM's ten Districts. The proposal aimed to support GM's achievement of the Green Summit aspiration for the City Region to be carbon neutral by 2038, through the increased uptake of local renewable generation. The proposal would complete one of the 5 Year Environment Plan actions to: examine the potential to establish a GM collective solar PV/battery purchase to drive up residential uptake.

The Board was asked to discuss how their organisations could help support the procurement and disseminate the broader message about local renewable generation.

The Board discussed the report, the main points referred to:

- Members and Officers welcomed and supported the proposal.

- It was clarified that the scheme would best suit domestic households and small businesses. The scheme would also appeal to churches and schools but this was dependent on type of building and size.

- A business case for residents to help them understand recovery would be beneficial. There could be other renewables.

- An Officer enquired about supply chain issues. It was suggested that there would only be a problem if the scheme moved outside GM.

- It was clarified that there would be one manufacturer and local installers would be used for fitting. The manufacturer would guarantee the equipment and liability would be the responsibility of the local installer.

- Officers asked about a GM framework for electrical vehicle leasing. It was explained that this work could potentially take place next year.

- A Member suggested that domestic heating and air source heat pumps needed to be emphasised in spatial planning work.

- The GMCA's Assistant Director of Environment would provide the Board will an update on the low cost loan option next time.

- An Officer highlighted issues with rateable values. ENWL was happy to get involved and would ensure that infrastructure was available should three or four streets join the scheme.

- Further thoughts and comments should be forwarded to the GMCA's Assistant Director of Environment outside of the meeting.

RESOLVED/-

1. That the Board noted the contents of the report.

2. That the contractual requirements were being finalised and that the GMCA had been asked to delegate approval to GMCA Treasurer, in consultation with the Portfolio Lead, to proceed with the appointment of a Solar PV Collective Purchasing partner, commencing with the pilot in September 2019 be noted.

3. That Officers will forward their comments and suggestions to the GMCA's Assistant Director of Environment outside of the meeting.

LCHB/33/19 DRAFT BUILDING RETROFIT REPORT

The report had been drafted in association with key partners and interested parties. Subject to agreement, it was envisaged that the report would be considered by the GMCA 27 September 2019. The Board was asked for their thoughts and comments on the overall approach.

The GMCA's Head of Environment Policy, provided the Board with a presentation, which covered:

- Priority areas in the 5 Year Environmental Plan.
- The importance of buildings in meeting our environmental ambitions.
- The scale of the challenge.
- The wider opportunity and the need to take action.
- Reducing energy demand in homes, commercial buildings and public buildings.
- Taking this forward across sectors.

The Board made a number of comments, which were noted as:

- An Officer made the following suggestions; a move to a level of consistent funding to meet aspirations; a ten year programme of building investment; more work around renewable heating sources; a review of the total cost and a shared investment model would be beneficial.

- An Officer was concerned that the following areas; types of heating; the point of action; tougher planning conditions around extensions and driving retrofit should be strengthened in the report.

- The actions for the public and private sectors were almost the same. A consistent measurement model was required.

- There was an opportunity for young people and skilled jobs. Officers asked what mechanism was in place for communication with the relevant groups. It was explained that the governance structure was linked to the GM Local Industrial Strategy and the GMCA's Director of Policy and Strategy's job was to make sure communication was happening.

- Consideration should be given to issues around Continued Professional Development (CPD) and accredited training.

- An Officer asked about procurement incentives. It was explained that the supplier offered a rate for installing but the range was vast.

- It was highlighted that the export guarantee had not been launched, so any additional incentive was a bonus. Government had confirmed its intention to end solar panel incentive payments on 31 March 2019, meaning people who had solar panels installed after this would not receive payments for generating electricity or exporting it to the grid. It was advised that work with suppliers had made the price point very attractive plus there was a renewable heat incentive. It was noted that Government work was on-going to separate groundwork and infrastructure from heat source.

- A Member suggested that the apex of a roof could be used to for battery storage.

- Officers stated that it would be ideal if estate agent staff were able to talk about energy at the point of sale, which might drive demand for more energy efficient homes.

RESOLVED/-

That the presentation be noted.

LCHB/34/19 AIR QUALITY UPDATE

The Board noted the verbal update provided by Transport for Greater Manchester's (TfGM) Head of Logistics Environment, which provided an overview of the GM Clean Air Plan – July 2019.

The Board discussed people potentially using the scheme to renew their cars and work taking place in other City Regions.

The update along with the presentations provided at the meeting would be circulated to the Board following the meeting.

RESOLVED/-

That the information be received and noted.

LCHB/35/19 GM ENVIRONMENT FUND

The Board considered a report which, outlined the progress made in establishing the Fund. It was explained that GM Leaders had agreed to the establishment of the Fund. The Environment Agency, Peel Group and United Utilities were thanked for their input and contributions. The next step would be to market test the proposal.

In response to a question, it was confirmed that the Fund would be charitable and there would be a Gift Aid option.

It was suggested that the Fund could be complex due to the funding streams and it was recommended that Officers ensure the Fund was compliant with all rules and regulations.

RESOLVED/-

1. The Board noted the progress in identifying the role and opportunities of setting up a Fund, based initially on voluntary contributions.

2. That it be noted that GMCA's in principle approval to initiate the Fund and delegate authority to the GMCA's Chief Executive, Solicitor and Treasurer, in consultation with the Portfolio Lead, to agree the form and make-up of the Fund.

3. That the Board noted that in the interim, Lancashire Wildlife Trust had been asked to hold existing donations to the Fund be noted.

LCHB/36/19 GM SPATIAL FRAMEWORK (NOW KNOWN AS GM'S PLAN FOR HOMES, JOBS AND THE ENVIRONMENT)

It was explained that the first consultation ran from 14 January to 18 March 2019 and Officers were in the process of reviewing the responses and updating the framework in light of what people had said. The GMCA would be provided with an update at the next meeting on 27 September 2019.

RESOLVED/-

That the update be received and noted.

LCHB/37/19 TREE AND WOODLAND STRATEGY

Consideration was given to the City of Tree's Technical Officer's Green Infrastructure report that provided an update on the draft GM Tree and Woodland Strategy (the Strategy), which had been developed on behalf of the GM Forests Partnership.

In light of diseases and pests, it was suggested that Officers should be planning years ahead and Districts should be planting trees 2 meters tall at a ratio 5:1. Communications work was required to help people understand and be made aware of their value. The Chair of the Natural Capital Group suggested a Net Gain Policy would resolve these types of issues.

RESOLVED/-

1. That the Board noted the progress on the Strategy, since the last meeting.

2. That the Board noted that the Strategy would be considered further by the Forest Partnership, Planning Officers and the Planning and Housing Commission.

LCHB/38/19 SMART ENERGY PLAN

The Smart Energy Plan was made available at the meeting for attendees.

LCHB/39/19 THE 5 YEAR ENVIRONMENTAL PLAN

The 5 Year Environmental Plan was made available at the meeting for attendees.

LCHB/40/19 FUNDING BIDS - LOCAL ENERGY MARKET BID

The Board considered a report that outlined the progress made in bidding for funding under the Prospering from the Energy Revolution funding call for the detailed design of a GM LEM.

The total project bid was £6-10m (50% intervention) over 24 months. If successful, the project would commence on 1 January 2020. Further detail on the proposed GM bid was provided at Annex 01 of the report.

RESOLVED/-

That the Board noted the progress report.

LCHB/41/19 DATES AND TIMES OF FUTURE MEETINGS

It was agreed that future meetings would be held on the following dates at 10.00 am at the GMCA:

- Friday 18 October 2019
- Monday 20 January 2020
- Friday 20 March 2020
- Friday 24 July 2020

GMCA GREATER MANCHESTER COMBINED AUTHORITY

GREATER MANCHESTER GREEN CITY REGION PARTNERSHIP

Date: **18th October 2019**

Subject: **PERFORMANCE UPDATE – Q2 (Jul-Sept)**

Report of: **Mark Atherton, Asst Director Environment, GMCA**

PURPOSE OF REPORT

The report provides the usual update on progress of the Low Carbon Hub for the second quarter of 2019/20.

RECOMMENDATIONS:

The Partnership is recommended to:

- Note and comment upon the progress outlined in this report and latest position set out in the dashboards attached at:
  a. Annex 01 (Environment Team Performance Overview) and
  b. Annex 02 (5 Year Environment Plan Performance).

CONTACT OFFICERS:

Contact Officer: Mark Atherton, GM Asst. Director of Environment
Mark.atherton@greatermanchester-ca.gov.uk

1.0 OVERVIEW OF PROGRESS

The update at Annexes 01 (Environment Team Performance Overview) & 02 (5 Year Environment Plan Performance) contains a summary of key achievements during the last quarter across the areas within the 5 Year Environment Plan. There are a number of key successes to be highlighted which are set out below:

Energy

- Completed scoping work for *Energy Transition Region*
- Submitted bid for Phase 2 of *Local Energy Market* proposals.
- Submit proposal for funding to for roll out of *Local Area Energy Planning* across the city-region.
- Solar Toghether GM scheme launched – over 2000 EoIs to date
- Decarbonising Trafford Park Workshop held
- 1st Energy Innovation Challenge Group Held

Buildings

- Publication of the *Low Carbon Buildings Retrofit Report* and taking forward of actions, particularly the development of proposals for a *Retrofit Challenge Group*.
- Development of zero carbon standards and pathway as part of the Greater Manchester Spatial Framework proposals.
- Succesfully bid for LGA funds to undertake housing stock condition survey

Transport

- Awarded contract for an EV Charging Infrastructure supplier.
- Continue to raise awareness on air pollution as a health issues and the action everyone can take to help tackle it.

Sustainable Consumption and Production

- Proposals for LA Plastic Pact submitted to Cexs – 5/10 signed up.
- Continue to support PlasticFreeGM
- 5 bottle refill station pilots in Bury and Stockport completed with 2 more fountains to be installed.
- Waste composition analysis completed
- Mayor has signed the Milan Urban Food Pact
- 1st SCP Challenge Group Held

Natural Environment

- Begun procurement of Investment Readiness Fund and Natural Environment Engagement Toolkit
- Soft market testing for GM Environment Fund completed
- Production of Biodiversity Net Gain guidance and a roadmap for implementation

3.0 KEY ANTICIPATED ACTION IN THE NEXT QUARTER

3.1 As a priority, the following activities will be delivered in the next Quarter:

Energy supply

- Prepare cost options for Leaders to deliver energy generation and efficiency (*Energy Innovation Company*) and carry out soft market testing.
- Consider next steps for ETR Outline Business Case
- Reviewed and potentially bid for Electrification of Heat Project funding
- Developed long list of LA energy projects based on land and property assessments
- Draft Hydrogen Strategy produced
- Commenced T&F Groups

Buildings

- Publication of the *Retrofit Report* and taking forward of actions, particularly the development of proposals for a *Retrofit Challenge Group*.
- Completed Warm Homes Fund project and established Phase 2
- Continued development of zero carbon standards and pathway as part of the Greater Manchester Spatial Framework proposals.
- Developed long list of LA buildings projects based on land and property assessments
- Commenced T&F Groups

Transport

- Award contract for an EV Charging Infrastructure supplier.
- Continue to raise awareness on air pollution as a health issues and the action everyone can take to help tackle it.

Sustainable Consumption and Production

- Develop and launch SCP/Circular Economy Plan.
- Plan Circular Economy summit with MMU
- Scenario testing on potential impacts of England's Waste Strategy
- Undertake a materials flow analysis with UoM
- Work with GM Food Group to develop a roadmap for a food strategy
- Commenced T&F Groups

Natural Environment

- Work with Coordinating Beneficiary to seek timely approval of Natural Course Phase 3 programme.
- Deliver Biodiversity Net Gain Local Authority Roadshows
- Prepare for Natural Capital Group Conference – 11th February
- Commence design of and engagement in the Investment Readiness Fund
- Support Lancashire Wildlife Trust to expand My Wild City to reach a wider audience.

Communications

- Developing a high level communications plan for GM Green City Region to support delivery of the 5 Year Plan.
- Carbon Literacy in the public sector continuing with CL Trust.

4.0 IDENTIFIED RISKS AND EMERGING ISSUES

4.1 Officers and sub-groups have identified a number of risks to existing, and particularly future, programme delivery. Mitigation of these risks, as far as possible, will be managed by the responsible Accountable Body:

Key risks:

- Failure of the 5 Year Environment Plan to achieve a step change in reducing carbon emissions. The challenge has been shown by the recent release of data for 2017, which saw a 3.7% reduction (against the need for 15% year on year reductions).
- Over the next quarter, we will be developing a dedicated communications plan for GM Green City Region to support delivery of the 5 Year Plan.
- Failure to meet ambitious recycling and waste diversion targets.
- Failure to deliver the aims of the IGNITION project. This is being managed through the governance arrangements in place for the project.
- New Risk: the need to engage with Civil Contingencies Unit on production of a resilience strategy.

Work programme issues:
In terms of the priorities set out in the 5 Year Plan, the following areas are flagged as "red" (see Annex 02 - *5 Year Environment Plan Performance*).

- The decarbonisation of GM's homes through deeper whole-house retrofit. This is being mitigated by the publication of a *Retrofit Report* to set the priorities and framework for action and, as part of that, the development of proposals for a *Retrofit Challenge Group*. GM has also joined a consortium, led by the UK Green Buildings Council and including West Yorkshire, London and the West Midlands and funded by Climate-KIC to develop proposals for city-led retrofit.
- Decarbonising freight transport. This is being mitigated by TfGM assessing and developing a roadmap to reduce freight emissions and support model shift, increased efficiency and alternative fuels for HGVs.

5.0 RECOMMENDATION

The Partnership is recommended to:

- Note and comment upon the progress outlined in this report and latest position set out in the dashboards attached at:
  a. Annex 01 (Environment Team Performance Overview) and
  b. Annex 02 (5 Year Environment Plan Performance).

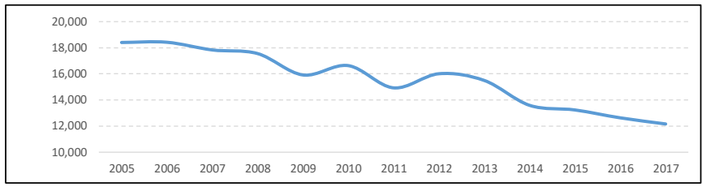
Environment Team Performance Overview

Risk	Programme Issues	Resources	Costs	Overall Delivery Confidence
Amber	Green	Amber	Green	Green

Individual Work Programme Delivery Confidence

Energy	Buildings	Sustainable, Production and Consumption	Natural Environment	Climate Change	Transport
Green	Green	Green	Green	Green	Green

GM CO2 Emissions (kt CO2)



Key Risks (Top 5)

Risk Event	Risk	Mitigation Plan	Post Risk
Failure of Environment Plan to achieve a step change in carbon emissions.	Red	Regular reporting to LC Programme Group, LC Hub Board and WLT.	Amber
Natural Course Phase 3 proposal and budget not approved by EU.	Amber	Close working with EASME and project monitor to ensure smooth transition to phase 3.	Green
Failure to meet recycling and diversion targets.	Red	New contract in place. Waste composition will assess feasibility of achieving targets. Waste and Resource strategy to be developed.	Amber
Failure to deliver the aims of the IGNITION project and attract private investment.	Red	Regular reporting to LC Programme Group, LC Hub Board and WLT.	Amber
Unable to support the delivery of an Environment Fund.	Red	Further due diligence work is being undertaken with EA/Partners on the viability of the Environment Fund.	Amber

Work Programme Issues (Top 5)

Issue	Status	Mitigating Action/s
Level and depth of retrofit required to meet our overall ambitions is highly challenging.	Red	Focus on retrofit accelerator proposals as way of overcoming these barriers in a coordinated way.
Delay in delivery of GMCA Waste and Resources Strategy.	Amber	A 5-year SCP plan to be produced by Sep-19. Waste and Resources Strategy to be developed following government consultations.
Delay to start of Natural Course Phase 3 Actions.	Amber	Work with coordinating beneficiary for timely approval of Phase 3 and begin work on actions without large budget spend.
Retrofitting of existing buses has been stalled due to contract negotiations (Clean Air Plan) and bus reform.	Amber	Continue to support operators and work through issues. Some orders have now been placed, however no retrofits have taken place.
NEW RISK: Progress on wider resilience strategy being led by CCU unknown due to issue around Rockefeller programme.	Red	Need to engage with Civil Contingencies Unit to understand key risks.

Key Achievements (June 2019 onwards)

Energy	Solar Together GM launched on 16th September for registrations with a reverse auction taking place on 23rd October. NEDO summary and technical analysis published. Sites selected for generation and storage assets for Energy Investment Prospectus with a multi District ERDF submission made and currently proceeding with full application.Big Clean Switch, has achieved 543 household switches in GM, the target for 2019 is 1000-5000. 47 SMEs supported to reduce resource consumption saving 737t CO2e/pa, the 26 grants issued leveraged £80k of private investment, with a further 21 companies supported in Low Carbon Sector.
Buildings	Retrofit report agreed by the Combined Authority in September 2019. Successful consortium bid of city regions, led by UKGBC, to develop proposals for city-led retrofit programmes (funded by Climate-KIC).Consultants engaged in developing the standard for a pathway to zero carbon new development with refined policies to be incorporated into revised GMSF.
SCP	First SCP Challenge Group held in October 2019. Priorities agreed for development of SCP 5-Year Plan. Refill bottle filling station pilot launched in Bury - 3 fountains installed, looking to progress 1 more. 2 fountains installed in Stockport. Continuing to support PlasticFreeGM campaign. Agreed in principle the findings of food strategy board report. Work is ongoing to develop future governance structure.
Natural Env.	Natural England is leading a Peat Pilot in Greater Manchester focusing on delivery of peatland targets to support the creation of the England Peat Strategy. Salford Council completed natural capital accouting for their HIF bid; now being utilised as best practice. Biodiversity Net Gain task group met in July and Sept to consider appropriate measure and baseline for future monitoring. Roadmap Phase 2 underway. GM H&P Commission briefed and presentation at POG Environment Session. Planning applications starting to feature BNG proposals. IGNITION project launched and work packages commencing. Tender brief isssued to design and implement Investment Readiness Fund. Final form and initial function of Environment Fund has now been agreed at GMCA SMT level. Tender brief issued to develop natural environment engagement resources.
Climate Change	Level 1 Strategic Flood Risk Assessment work complete and Level 2 commissioned June 2019. Testing of future growth and specific sites ongoing in Level 2 SFRA work.Task group set up to focus on Water Management and Green/Blue Infrasrtucture. Flood risk capital pipeline being managed by EA and to be delivered by 2021. Captial Schemes progressing in Bury and Rochdale
Transport	24 Bee Network schemes spread across all 10 GM districts have been granted programme entry status by the GMCA. Awareness raising on air pollution included pollution pod artwork installation at media city and various events across GM to promote electric vehicles, cargo bikes and other sustainable modes of transport.There are 3 fully electric buses operating on TfGM's free bus service in Manchester city centre. 3 GM operators successfully received a total award of £9.6m for new zero emissions buses. TfGM was awarded funds for 23 buses

Key Work Programme Milestones (July - Dec 2019)

Energy	Proposal for funding submitted to Innovate UK on 3rd August for roll out of Local Area Energy Planning across the city-region. Interviews will take place on October 17th. Final decision October 25th.	**Natural Env.**	Finalise detailed project planning and recruitment for IGNITION. Procurement of consultant support (for business case development for SUDS funding stream and wider support for developing other business models) underway.
	Continue to support MMU on development of Hydrogen Strategy.		Continue to work with Coordinating Beneficiary to seek timely approval of Natural Course Phase 3 programme
	Options appraisal for the Energy Transition Region concept has been delayed but is due to be completed end of October 19.		Continued development of GM Tree and Woodland strategy by City of Trees with launch in October 2019.
	GM Energy Company - Soft market testing completed and a tender document is now in development in conjunction with GM Investment team.		Continue to promote and embed ESS Opportunity Mapping within guidance documents including Net Gain and GI Standards.
	First meeting of the Energy Innovation Challenge Group to be held on 7th October 2019.		Work with GM Environment Fund (GMEF) steering group to find a partner organisation to establish the GMEF and run it. Expressions of interest to be sought from local organisations.
Buildings	Final retrofit report provides outline scope and purpose, a more detailed proposal to be prepared for first meeting of Buildings Challenge Group on 10th October.		Exploring demand for and opportunities to expand My Wild City to reach a wider audience.
	Mapping and visualisation via MappingGM to be completed with analysis of key headlines provided at GM and District level.	**Climate Change**	Communications Challenge Group workshop to develop GM Green City narrative and key messages. Evaluate communications planning with GMCA Central communication team. Deliver online training portal for carbon literacy.
	Complete work on Currie and Brown report to inform viability of policy for GMSF. Initial costings of policy baseline has been provided for the baseline testing.		Resilience Roadmap to be published setting out a clear approach to resilience across GM. Rockefeller programme withdrawn. Progress on strategy delayed.
SCP	Commission consultancy to look at options for GM bio-waste collections and disposal in response to Government Consultations.		Continue to test future growth and specific sites in Level 2 SFRA work as part of Strategic Flood Assessment.
	SCP challenge group held in October/priorities agreed for development of plan. Plan to be drafted and Task & Finish groups established to focus on key actions.		First challenge group meetings to be held in October 2019 as part of mission based approach.
	Convene working group to look at usage and spend data across LAs on singe-use plastics and key priorities for the development of Plastic Pact Roadmap.	**Transport**	Award contract for an EV Charging Infrastructure supplier. Tender process underway. Discussions with Districts on 24 rapid charger points approaching conclusion - awaiting update.
	Refill Pilot - Progress final installation of the last fountain in Bury and monitor pilot over next 6 months. GM Refill website to be launched.		Continue to raise awareness on air pollution as a health issues and the action everyone can take to help tackle it.

Greater Manchester Strategy (GMS)

Ref	Key Targets (2020)	Status		Commentary
5.7	Continue to reduce harmful emissions from transport sector. By 2020 GM to have reduced Co2 emissions to 11mt.	↑	Green	Further work underway to ensure GM Clear Air Plan can achieve 2020 target for performance. An informal 'clean air conversation' has taken place, and a public consultation is to be launched.
7 .1	Have co-produced a pathway for the next 5 years setting out actions to achieve an accelerated date for carbon neutrality.	↔	Green	GM now has the first city-region level science based target and pathway. Mission based approach for clean growth adopted and 5 challenge groups agreed.
7.2	Accelerated deployment of energy generation/efficiency technologies.	↔	Amber	GM has less than 50% of the UK average renewable energy installed which outlines the challenges. GM Whole System Wide Smart Energy Plan launched in conjunction with the Energy Systems Catapult.
7.3	Develop mechanisms to encourage the retrofit of public, commercial and domestic buildings.	↑	Green	On track to achieve 2020 action.
7.4	60% recycling of household waste by 2025 and 90% diversion from landfill by 2020. Establish a waste to energy (biomass)	↑	Amber	District recycling rate 48% (2018/19). Landfill diversion at 90% (2018/19). Measures underway to increase
7.5	Ensure the 2040 Transport Strategy – and wider transport investment – is fully aligned with our carbon neutral ambitions.	↔	Green	On track to achieve 2020 action.
7.6	Deliver the Urban Pioneer programme as part of Defra's 25 year Environment Plan to become an exemplar in managing the urban environment.	↔	Green	On track to achieve 2020 action.

5-Year Environment Plan

Ref	Priorities (2024)	Status		Progression towards targets
Overall	For our city region to be carbon neutral by 2038 and meet carbon budgets that comply with international commitments.	↔	Amber	GM emissions data for 2017: 12,165 kt CO2, down 469 kt (-3.7%) compared to 2016 (12,634 kt). The reduction is slightly lower than that between 2015 and 2016, when emissions were down 604 kt or -4.6% over the year.
Energy	Reduce CO2 emissions that are produced by the energy we generate to power our buildings, transport and heat - shifting to renewable sources.	↔	Green	80.7 MW of GM accredited renewable heat sources generated in July 2019, up from 80.5 MW in June 19 and 27.9 MW higher than in July 2018. 132 MW of renewable capacity generated in June 19, 5MW higher than in June 2018 and 11% progression towards target.
Buildings	Reduce CO2 emissions produced by excessive use of energy particularly in heating our homes and commercial and public buildings.	↑	Amber	86.9% of GM lodgements have an energy efficiency rating of D or above (EPC/DEC) in Q2 2019. This is a slight decrease from Q2 2018 of 0.7%.
SCP	Promote economic and resource productivity, eliminate waste and increase business opportunities through innovation.	↔	Amber	Refill pilot launched in Greater Manchester. 7% progression towards re-use target (3 per year). Recycling rate (2018/19) is 47.9% up 0.8% from 2017/18 against a target of 55% for 2024.
Natural Env.	Protect, maintain and enhance our key natural assets (air, land, water and biodiversity).	↔	Amber	In 2017/18, 37.9% of GM residents reported they had visited the natural environment at least once during the previous 7 days. This is 2.4% lower than 2016/17. Indicators to be updated.
Climate Change	Deliver robust action on climate adaption to protect vulnerable communities, our economy, key infrastructure and our natural environment.	↔	Green	Awaiting data - Indicators to be confirmed as part of the IGNITION project and Resilience Strategy.
Transport	Improve our air quality and reduce C02 emissions that are produced by the way we, and the goods we use, travel within our city region.	↔	Green	28% of all trips made by cycling/walking in 2017/18 up from 27% in 2015/16. Current ratio of journeys made by car vs sustainable modes of transport is 39/61 against a target of 50/50 for 2040. 3,697 plug-in vehicles registered at end Q2 2019, 13% increase from 2018. 3 zero emission buses in TfGM fleet to-date.

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5-Yr Environment Plan Performance

5-Year Environment Plan Priorities

Ref	Key Priorities (2024)	Status		Measure	% Towards target	Commentary
E1	Increase local renewable energy (electricity) generation, adding at least a further 45MW by 2024.	↑	Green	Additional renewable capacity (MW)	11%	Work is on-going with Electricity North West (ENWL) to assess how the future energy demand can be met from local renewable sources. Proposals are being developed for an investment vehicle to deliver renewable energy generation (GM Energy Company). GMCA and LAs have launched Solar Together GM - an collective solar PV/battery purchase
E2	Decarbonise how we heat buildings, adding at least a further 10TWh of low carbon heating by 2024.	↔	Green	Additional energy from low carbon heat sources (TWh) ONS measured in MW	80.7 MW of GM accredited renewable heat sources generated in July 2019, up from 80.5 MW in June 19.	GMCA and LAs are seeking funding to roll out Local Area Energy planning across the city region and are consulting on proposals to identify 'Heat and Energy Network Opportunity Areas'. MMU is leading on the development of a Hydrogen Strategy.
E3	Increasing the diversity and flexibility of our electricity supply, adding at least a further 45MW of diverse and flexible load by 2024.	↔	Green	Additional flexible and diverse load available (MW)	TBC	ENWL continuing to work with stakeholders and national bodies to develop the technical and regulatory framework to transition to a 'Smart Grid'.
B1	Reduce the heat demand from existing homes with retrofit measures installed on a scale of 61,000 homes per year, achieving 57% reduction in heat loss.	↔	Red	No of whole house retrofits carried out	TBC	Retrofit report agreed by the Combined Authority in September 2019. GMCA and LAs to convene partners and develop a Greater Manchester retrofit partnership/accelerator.
B2	Reduce the heat demand from existing commercial and public buildings with a 10% reduction by 2025.	↔	Amber	Increase in energy certificate ratings D or above	TBC	GMCA and LAs to standardise measures of reporting on efficiency of buildings and aim to obtain a DEC rating of D or better by 2024 for their public buildings.
B3	Reduce the heat demand in new buildings.	↔	Green	TBD	TBC	In support of this plan, GMHPs have committed to building all new homes to zero carbon in advance of 2028 target as set out in GMSF.Consultants engaged in developing the standard for a pathway to zero carbon new development with refined policies to be incorporated into revised GMSF.
SCP1	Producing goods and services more sustainably, moving to a circular economy.38% reduction in industrial emission by 2025.	↔	Green	Reduction in CO2 consumption emissions	TBC	Currently supporting RE3 UoM Project on Re-thinking Resources and Recycling and MMU Circular Economy Club. An SCP plan is in currently in development to be launched in early 2020. Refill bottle filling station pilot launched in Bury - 3 fountains installed, looking to progress 1 more. 2 fountains installed in Stockport. Continuing to support PlasticFreeGM campaign.
				Increase in Greater Manchester CA GVA (GVA (£ million)	TBC	
				No of re-usable pilots launched in Greater Manchester (3 per year)	7%	
SCP2	Becoming more responsible consumers - limiting any increase in waste to 20%.	↔	Green	Domestic waste production (kg/hh/yr)	Reported annually	GMCA has developed a Plastic Pact for the Public Sector. A roadmap to increase understanding of sustainable alternatives and reduce usage of avoidable single-use plastics is in development.
				No of streams of avoidable single-use plastic taken out of public estate - TBD	TBC	
SCP3	Managing our waste as sustainably as possible to achieve a recycling rate, 55% by 2024, and 65% by 2035.	↔	Amber	Yr on Yr increase in recycling rates (%)	87%	For 2018/19: District recycling rate 49% is 47.9%. Zero Waste Strategy will be developed in late 2020 following the outcomes of the second round of government consultations.
SCP4	Reduce unnecessary food waste.	↔	Amber	Yr on Yr reduction in residual waste (kg/hh/year)	Reported annually	Work has been undertaken to review food governance and project delivery across GM with recommendations made for inclusion in a strategy to be completed by 2020. Currently approx. over 30% of waste in domestic residual stream is food waste.
NE1	Managing our land sustainably, including planting 1m trees by 2024.	↔	Green	Amount of peatland restoration and management for carbon sequestration	TBC	City of Trees targeted to plant 3 million trees in GM over next 25 years and will continue to develop GM Tree and Woodland strategy. Target for 2019/2020 is to plant 100,000 trees. GMCA and LAs to embed natural capital approach into strategy and planning development and support peatland restoration approaches.Through Urban Pioneer we are trying to understand how this may have influence wider Government departments in their appraisal of the bid (I.e MHCLG/Homes England).
				No of trees planted	TBC	
				People living within Natural England ANGSt Standards	TBC	
NE2	Managing our water and its environment sustainably.	↔	Amber	Water bodies enhanced (per km)	TBC	Continue to work with United Utilities (UU) and Environment Agency (EA) to implement planned improvements to improve river water quality and deliver the benefits of the Water Company Investment Programme across 4 GM catchment areas.
NE3	Achieving a net gain in biodiversity for new development.	↔	Amber	TBD	TBC	GMCA and LAs to support the delivery of biodiversity net gain through the GMSF.
NE4	Increasing investment into our natural environment.	↔	Amber	Amount of non-public investment	TBC	GMCA supporting the development of a GM Environment fund and implementation of Natural Capital Investment Plan. Through the IGNITION project GMCA and LAs will establish and deliver increased investment in nature-based adaption solutions including the design of an Investment Readiness Fund.
NE5	Increasing our engagement with our natural environment.	↔	Amber	Increase in number of people engaged	Reported annually	GMCA working with a number of partners including EA, GMHSCP, Lancashire Wildlife Trust, Royal Horticultural Society and City of Trees to increase engagement and explore opportunities for a more integrated natural capital stakeholder engagement programme. In 2017/18, 37.9% of GM residents reported they had visted the Natural Environment at least once during the previous 7 days. This is 2.4% lower than 2016/17.
CC1	Embedding climate change resilience and adaptation in all policies.	↔	Green	No of policies	TBC	GMCA to develop a Resilience Strategy and roadmap in 2019 - Rockefeller programme withdrawn. Progress on strategy delayed. GMCA and LAs completed Level 1 Strategic Flood Risk Assessment and Level 2 commissioned June 2019. A policy framework will be implemented to manage the flood risk through GMSF.
CC2	Increase the resilience of and investment in our critical infrastructure.	↓	Amber	No of planning permissions granted contrary to EA advice on flood risk	TBC	Task group set up to focus on Water Management and Green/Blue Infrastructure. Flood risk capital pipeline being managed by EA and to be delivered by 2021. Capital Schemes progressing in Bury and Rochdale
				No of hh moved to lower probability flood risk	TBC	
CC3	Implement a prioritised programme of nature-based climate adaptation action.	↔	Green	Uplift in urban green infrastructure	TBC	The IGNITION project will establish a programme of innovative funding mechanisms to deliver increased investment in nature-based adaption solutions.
CC4	Improve monitoring and reporting.	↑	Amber	TBC	TBC	As part of the IGNITION project and Resilience Strategy GMCA and LAS will consider development of appropriate indicators to monitor and evaluate how prepared we are for future impacts of climate change. Whilst IGNITION will work on baseline and appropriate urban adaptation uplift targets (i.e. 10% increase in urban GI) this is in development and is only part of the indicators and involves only some of the issues/stakeholders in discussion. as a result no formal set process for developing or measuring the indicator set or timeframe exists beyond commitments to look at parts of this via relevant projects, Amber status is advised
T1	By 2040 increase the use of public transport and active travel modes to support a reduction in car use to no more than 50% of daily trips made by Greater Manchester residents with the remaining 50% made by public transport, walking and cycling.	↔	Green	Ratio of journeys made by car versus sustainable modes of transport	Current ratio (2016-18) 39/61 up 0.5% from 2015-17	Districts are working towards approval of business cases to transform cycling and walking infrastructure through the Mayor's Challenge fund for walking and cycling. £160m will be invested between 2018/19 and 2021/22 over two tranches. Ratio is 39/61% for the period 2016-18 up 0.5% from 2015-17.
				Increase in proportion of all trips made by cycling and walking (%)	28% of all trips (2017/18) up from 27% in 2015/16.	
T2	Phase out of fossil-fuelled private vehicles and replace them with zero emission (tailpipe) alternatives and implement a charging infrastructure to support expansion of 200,000 EV vehicles in our city-region by 2024.	↔	Green	No of plug-in vehicles registered licensed in GM (Source: DfT vehicle statistics)	3,697 vehicles registered at end Q2 2019.	GMCA, LA and TfGM to expand and promote city region's EV charging network with 48 new rapid charging points to be installed. No official way to track progress. Exploring potential to use ZAP MAP.
				Increase in No of rapid charge points installed (GMEV network)	TBC	
T3	Tackle the most polluting vehicles on the road.	↑	Green	TBC	TBC	TfGM secured £1.8m ULEV Taxi Fund grant award for potential delivery of 80 dual headed rapid chargers.
T4	Establish a zero emissions free bus fleet. 100% of all buses are zero emissions (tailpipe) by 2035.	↔	Green	No of new zero emissions buses entering the fleet	Currently 3 in the TfGM fleet. Awarded funds for 23 more.	TfGM successfully awarded a £3.5m ULEV Bus Fund grant from OLEV, to support electrification of 23 buses and inclusive of £1.89m for charging infrastructure to support.
				Proportion of total bus fleet that are zero emissions	TBC	
T5	Decarbonising freight transport and shifting freight to rail and water transport.	↔	Red	Delivery of freight roadmap	N/A	GMCA, LAs and TfGM to assess and develop a roadmap to reduce freight emissions and support model shift, increased efficiency and alternative fuels fro HGVs.

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GM GREEN CITY REGION PARTNERSHIP

Date: 18th October 2019

Subject: Challenge Group Progress – Low Carbon Buildings

Report of: Robin Lawler, supported by Tina Gandhi

PUPOSE OF REPORT

The purpose of this report is to outline the progress made in establishing a Low Carbon Buildings Challenge Group as agreed at the last meeting of the GM Green City Region Partnership meeting.

RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the Low Carbon Buildings Challenge Group priorities
- Discuss the issues arising from the last meeting of the Group and next steps (Section 2 & 3)
- Comment on and agree the proposed ToR for the Energy Innovation Challenge Group (Annex 01)

CONTACT OFFICERS

Sean Owen: sean.owen@greatermanchester-ca.gov.uk and
Mark Atherton: mark.atherton@greatermanchester-ca.gov.uk

1.0 BACKGROUND

The last meeting of the Low Carbon Buildings Challenge Group was held on 10th October 2019.

2.0 MAIN ISSUES ARISING FROM LAST MEETING OF THE CHALLENGE GROUP

The main issues arising from the Challenge Group were:

- Scene setting and agreeing ToR
- Defining which task and finish topics to prioritise
- The importance of robust data to inform decisions
- The role of embedded carbon in new build and retrofit

3.0 NEXT STEPS

The next steps are to:

- Set the dates for future Challenge Group meetings with the Chair for the next 12 months
- Set up task and finish groups initially focussing on the following areas:
    - Delivery and Business Models
    - Domestic Data and Indicative Targets
    - Increased Reporting - Commercial Actions
    - Skills and Supply Chain
- Prioritise individual actions within the Task and Finish Groups

4.0 PROPOSED TERMS OF REFERENCE

A proposed Terms of Reference for the Challenge Group is provided at Annex 01 for discussion and agreement.

5.0 RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the Low Carbon Buildings Challenge Group priorities
- Discuss the issues arising from the last meeting of the Group and next steps (Sections 2 & 3)
- Comment on and agree the proposed ToR for the Low Carbon Buildings Challenge Group (Annex 01)

GREATER MANCHESTER LOW CARBON BUILDINGS CHALLENGE GROUP

TERMS OF REFERENCE – OCTOBER 2019

1. INTRODUCTION

The Greater Manchester Energy Innovation Challenge Group aims to support delivery of the energy actions as set out in the GM 5 year Environment Plan. Greater Manchester aims to become a testbed for new innovative technologies, services and investment mechanisms, supporting the implementation and delivery of the GM 5 year Environment Plan and Low Carbon Buildings Report.

2. PURPOSE/PROMISE

Low Carbon Buildings Challenge Group Members will through their commitment and participation, act as conduits to their wider organisations/business units.

As a Challenge Group Member, all parties will achieve the long term vision for the environment and provide value to communities by supporting a whole system approach across a spectrum of activities. These may include but are not restricted to:

- Develop an annual business plan and seek to deliver it
- Assess barriers and opportunities and put forward measures to overcome them
- Assign individual tasks to Task and Finish Groups and monitor progress on the tasks
- Produce reports, publications and policy recommendations as required;
- Develop project and research proposals
- Raise funding, engage contractors and commission work on the ground to accelerate delivery.
- Take full account of existing work and seek to join up where possible and desirable.

Low Carbon Buildings Challenge Group Members will, through their commitment and participation, act as conduits to their wider organisations/business units.

3. LONG TERM VISION FOR THE ENVIRONMENT

We want Greater Manchester to be a clean, carbon neutral, climate resilient city-region with a thriving natural environment and circular, zero-waste economy where:

Our infrastructure will be smart and fit for the future: we will have an integrated, clean and affordable public transport system, resource efficient buildings, greater local community renewable energy, cleaner air, water and greenspace for all.

All citizens will have access to green space in every community, more trees including in urban areas, active travel networks, environmental education and healthy and locally-produced food.

Citizens and businesses will adopt sustainable living and businesses practices, focusing on local solutions to deliver a prosperous economy.

4. PRIORITES

By 2024 we aim to:

- Reduce heating demand from existing homes – making progress in scaling up to what is required (i.e. retrofit on the scale of 61,000 properties per year reducing heat loss by 57% up to 2040).
- Reduce heating demand from existing public and commercial buildings (i.e. requiring retrofit on the scale of a 30% reduction in space heating demand by 2040).
- Reduce heat demand in new buildings – note, this will be taken forward and governed separately (through the Greater Manchester Spatial Framework).

And, with the Energy Innovation Group

- Realise 45MW of additional renewable energy generation by 2024
- Realise 10.2TWh of low carbon heating by 2024
- Support (through at-building charge points) the potential for 200,000 low carbon vehicles by 2024.

5. CHALLENGES

The following are the recommendations from the Decarbonising Buildings report, developed by stakeholders across Greater Manchester and beyond and agreed by the Greater Manchester Combined Authority in September 2019.

Domestic

1. Current and future ECO funding for retrofit
2. Data and indicative targets
3. Business models and green finance
4. Delivery models
5. Skills and supply chain

Commercial

6. Reporting in new developments
7. Pathways to increased reporting and deployment

Public

8. Public reporting
9. Accelerated deployment

6. KEY PERFORMANCE INDICATORS

The following key performance indicators have been identified and will be developed further in consultation with partners:

- Number of publically funded retrofit installs
- Number of installs receiving ECO funding
- Number of new business models developed, demonstrated and deployed
- £'s of green finance deployed
- Number of participants (domestic and commercial) benefiting from new delivery models
- Average number of public buildings achieving DEC rating of D or higher

7. DELIVERY

The Low Carbon Buildings Challenge Group will define a Business Plan each year and agree this with the Chair of the Green City Region Partnership. Key actions and activities will be informed by the Greater Manchester 5 Year Environment Plan (see Appendix A): https://www.greatermanchester-ca.gov.uk/what-we-do/environment/

The Low Carbon Buildings Challenge Group will make decisions within the scope of the agreed business Plan. Decisions outside of the scope of the business plan and recommendations to the Combined Authority will be referred to the Green City Region (GCR) Partnership.

The Low Carbon Buildings Challenge Group is charged with obtaining additional resources and funds to carry out the activities identified in the Business Plan.

Priority outputs required from the GCR Partnership will be drawn from the 5 Year Environment Plan and Low Carbon Buildings report.

The Low Carbon Buildings Challenge Group does not have a legal identity, any works commissioned by member/s will be commissioned in the name of the said member/s, using their bank account/s and requiring the member/s to take on legal liability.

8. MEMBERSHIP

The Low Carbon Buildings Challenge Group will comprise a Chair and Vice Chair plus appropriate members from the public/private/voluntary sectors of GM. The number of members will be deemed as appropriate by the Chair and Vice Chair.

Group members may be asked, at the discretion of the Chair, to assume responsibility for certain portfolios or tasks covering specific aspects of the low Carbon Buildings sector, geographical locations, projects or initiatives, or oversight of Partnership resources.

The Chair will be appointed by the Chair of the GCR Partnership on behalf of the Combined Authority.

Chair: Robin Lawler, Northwards Housing,
Vice Chair: Prof Will Swan, Salford University,

Members: See Appendix B. Group membership will include representation from the Green City Region Partnership.

9. OPERATING PRINCIPLES

9.1 Governance

No business will be transacted unless four Low Carbon Buildings Challenge Group members are present. Decisions will largely be reached by consensus, by 2/3 majority vote or where appropriate under Chair's authority.

9.2 Meeting frequency

The Group will meet quarterly for 2-3 hours, with meeting dates arranged for a full financial year to align with the Green City Region Partnership meeting dates.

Where-ever practical, papers will be issued five working days before meetings, and the meeting note will be issued within two weeks of the meeting date.

At the discretion of the Group, more frequent Task and Finish meetings may be held if required.

9.3 Support arrangements

The Group will be assigned a lead officer from the Greater Manchester Environment Team to provide co-ordination and facilitation for the meetings.

9.4 Roles and responsibilities

Chair/Vice Chair

- Agree agenda and papers and Chair meetings
- Report back to the Green City Region (GCR) Board and represent the views of the Group at Green City Region Board meetings
- Ensure all participants are able to contribute equally and are respectful to each other
- Champion the role and views of the Group to external audience

Members

- Regularly attend and contribute to meetings
- Thoroughly review and inform the work of the Group
- Individually lead specific responsibilities/tasks and work programme activities and, where appropriate, identify suitable participants to support delivery of defined tasks
- Report progress against priorities they are responsible for

GM Environment Team

- Arrange secretariat support to the meetings
- Co-ordinate and facilitate the development and implementation of the work programme
- Review and contribute to proposed papers
- Provide the operational interface between the other GCR themes
- Work with the Group members to support the implementation of actions

10. COMPETITION LAW COMPLIANCE

Members will work together in a manner that is not anti-competitive and all members will not share information that could be seen to provide a competitive advantage to any party or inhibit the working of competitive markets.

11. RELATIONSHIP WITH OTHER GROUPS

The Low Carbon Buildings Challenge Group is a sub-group of the GCR Partnership. The Group will establish relationships and a working protocol with other topic groups on the following principles:

- The Chair of the Low Carbon Buildings Group is a Green City Region Board member and the Vice Chair will deputise in their absence.

- The Low Carbon Buildings Challenge Group will set out how it expects the relationship to work with each task and finish group, to be clear about how it thinks it can achieve its aims and objectives. It is expected this will evolve over time.

Appendix A: Relevant Actions from the Greater Manchester 5 Year Environment Plan

Residents
- Get the basics right – including LED lighting and draught-proofing
- Upgrade your home insulation – loft, cavity wall and draught
- Think about whole-house retrofit, particularly if carrying out renovations

Local Authorities
- Standardise measurement and reporting of the operational efficiency of their buildings.
- GMCA and LAs will aim to obtain an average DEC of rating D or better by 2024 and C or better by 2030 for their public buildings where economically viable.

Greater Manchester Health and Social Care Partnership:
- Work with partners to include sustainability indicators in their review of buildings

Businesses and other organisations
- Sign up to the Net Zero Carbon Buildings commitment
- Measure, report on and improve the operational energy efficiency of premises, coming together within sectors to do so.
- Consider greener, more energy efficient premises when current or future contracts require renewal.
- Engage with landlords/tenants landowners and tenants over key issues – e.g. data sharing, energy efficiency measures, green energy.

Other key partners
- Social Housing Providers – commitments to the efficiency of existing homes and to building new homes to net zero carbon in advance of 2028
- Voluntary, Community and Social Enterprise Organisations – continue to work with partners as we develop a GM retrofit partnership focussed on helping people and communities

Local policy
- Develop a GM retrofit partnership/ accelerator to tackle sector development/skills and access to finance/capacity
- Launch a major new drive to raise standards in the private rented sector, including the development of a GM Good Landlord standard.
- Investigate encouraging greater energy efficiency through council tax and business rates and other financial vehicles.
- Implement a business support programme for energy efficiency
- Require zero carbon development by 2028

Other key partners
- Working with us to develop new technology and financial models to make domestic and commercial retrofit at scale a possibility.
- Meeting commitments on smart meter roll-out.
- Changing the Energy Company Obligation (ECO) funding to ensure it is more effective at meeting GM's needs.

Appendix B: Current Membership List

Robin Lawler, Northwards Housing (Chair)
Will Swan, University of Salford (Deputy Chair)

Andrew Cowan, BRE
Andy Kippax, Stockport MBC
Barry Lynham, Knauf Insulation
Charlie Baker, RED
Chris Hayes, Skanska
Craig Morley, Bruntwood
David Kemp, Procure Plus
Eric Fewster, Cold Proof
John Alker, UKGBC
Jonathan Atkinson, Carbon Coop
Karolis Petruskevicius, Homely Energy
Kit Knowles, Ecoshperic
Matt Roberts, Southways Housing
Russell Smith, Parity Projects
Sarah Mcclelland, Great Places
Simon Roberts, Funded Renewables

Mark Atherton, GMCA (Environment)
Sean Owen, GMCA (Environment – Low Carbon)
Tina Gandhi, GMCA (Environment – Buildings)
Aisling McCourt, GMCA (Housing)
Murray Carr, GMCA (One Public Esate)

Substitutes
Angie Jukes, Stockport MBC
Aneaka Kelly, Carbon Coop
Marianne Heaslip, Carbon Coop

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GM GREEN CITY REGION PARTNERSHIP

Date: 18th October 2019

Subject: Challenge Group Progress – Energy Innovation

Report of: Paul Bircham, supported by Sean Owen

PUPOSE OF REPORT

The purpose of this report is to outline the progress made in establishing a Energy Innovation Challenge Group as agreed at the last meeting of the GM Green City Region Partnership meeting.

RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the Energy Innovation Challenge Group priorities
- Discuss the issues arising from the last meeting of the Group and next steps (Section 2 & 3)
- Comment on and agree the proposed ToR for the Energy Innovation Challenge Group (Annex 01)

CONTACT OFFICERS

Sean Owen: sean.owen@greatermanchester-ca.gov.uk and
Mark Atherton: mark.atherton@greatermanchester-ca.gov.uk

1.0 BACKGROUND

The last meeting of the Energy Innovation Challenge Group was held on 7th October 2019.

2.0 MAIN ISSUES ARISING FROM LAST MEETING OF THE CHALLENGE GROUP

The main issues arising from the Challenge Group were:

- First meeting of the group,
- Scene setting and agreeing task and finish topics

3.0 NEXT STEPS

The next steps are to:

- Set the dates for future Challenge Group meetings with the Chair for the next 12 months
- Set up task and finish groups initially focussing on the following areas:
    - Energy Master Planning
    - Generation and storage
    - Low Carbon Heat
    - Innovation
    - Diversity and Flexibility
- Prioritise individual actions within the Task and Finish Groups

4.0 PROPOSED TERMS OF REFERENCE

A proposed Terms of Reference for the Challenge Group is provided at Annex 01 for discussion and agreement.

5.0 RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the Energy Innovation Challenge Group priorities
- Discuss the issues arising from the last meeting of the Group and next steps (Sections 2 & 3)
- Comment on and agree the proposed ToR for the Energy Innovation Challenge Group (Annex 01)

ANNEX 01

GREATER MANCHESTER ENERGY INNOVATION GROUP

TERMS OF REFERENCE

SEPTEMBER 2019

1. INTRODUCTION

The Greater Manchester Energy Innovation Challenge Group aims to support delivery of the energy actions as set out in the GM 5 year Environment Plan. Greater Manchester aims to become a testbed for new innovative technologies, services and investment mechanisms, supporting the implementation and delivery of the GM 5 year Environment Plan.

2. PURPOSE

Our purpose is to ensure that Energy Innovation and the services it may provide are accelerated and enhanced to deliver;

1. The long term vision for the environment and;
2. Value to communities across Greater Manchester.

The Energy Innovation Challenge Group will aim to achieve the long term vision for the environment and provide value to communities by supporting a whole system approach across a spectrum of activities. These may include but are not restricted to:

- Develop an annual business plan and seek to deliver it
- Assess barriers and opportunities and put forward measures to overcome them
- Assign individual tasks to Task and Finish Groups and monitor progress on the tasks
- Produce reports, publications and policy recommendations as required;
- Develop project and research proposals
- Raise funding, engage contractors and commission work on the ground to accelerate delivery.
- Take full account of existing work and seek to join up where possible and desirable.

Energy Innovation Challenge Group Members will, through their commitment and participation, act as conduits to their wider organisations/business units.

3. LONG TERM VISION FOR THE ENVIRONMENT

We want Greater Manchester to be a clean, carbon neutral, climate resilient city-region with a thriving natural environment and circular, zero-waste economy where:

Our infrastructure will be smart and fit for the future: we will have an integrated, clean and affordable public transport system, resource efficient buildings, greater local community renewable energy, cleaner air, water and greenspace for all.

All citizens will have access to green space in every community, more trees including in urban areas, active travel networks, environmental education and healthy and locally-produced food.

Citizens and businesses will adopt sustainable living and businesses practices, focusing on local solutions to deliver a prosperous economy.

4. PRIORITIES

By 2024 we aim to:

Priority 1: Increasing local renewable energy generation, adding at least a further 45MW

Priority 2: Decarbonising how we heat our buildings, adding at least a further 10TWh of low carbon heating

Priority 3: Increasing the diversity and flexibility of our electricity supply, adding at least a further 45MW of diverse and flexible load

5. CHALLENGES

Scale of the challenge – "SCATTER GM" pathway 2040:

Priority 1

- 50% of all households have the equivalent of a 16m^2 solar photovoltaic (PV) system, with an additional 5.5km^2 on commercial rooftops or in ground-mounted installations
- 550 on-shore wind turbines delivering around 3.4TWh/year (by 2050)
- x4.5 increase in current biomass capacity delivering around 4TWh/year

Priority 2

Phasing out gas boilers so that they account for less than 35% of home heating, with 60% of all heating (domestic and commercial) supplied by low carbon heating.

Priority 3

- Our local energy system will need to adapt in order to accommodate these shifts and the increase in EVs which will mean that an increasing proportion of our energy needs will be met by electricity.
- We need to increase the use of smart technologies, services and local storage to spread the increase in peak loads these changes may bring across the day and to also accommodate anticipated increases in our population (forecast to increase by a 250,000

by 2037), number of homes (forecast to increase by 201,000 by 2037) and office, industrial and warehousing floorspace (forecast to increase by 6.7 million m^2 by 2037)[1].

6. KEY PERFORMANCE INDICATORS

The following key performance indicators have been identified and will be developed further in consultation with partners:

- Number of new renewable energy connections to the network
- Number of KWh/MWh of new renewable energy installed annually across the region
- Number of installs receiving Renewable Heat Incentive (work with low carbon buildings Group)
- KWh of heating being provided by low carbon solutions(work with low carbon buildings Group)
- Number of new energy services developed, tested and trailed
- Number of participants (domestic and commercial) receiving new energy related services
- MWh activity available for demand side response or flexibility services/signals

7. DELIVERY

The Energy Innovation Challenge Group will define a Business Plan each year and agree this with the Chair of the Green City Region Partnership. Key actions and activities will be informed by the Greater Manchester 5 Year Environment Plan (see Appendix A): https://www.greatermanchester-ca.gov.uk/what-we-do/environment/

The Energy Innovation Challenge Group will make decisions within the scope of the agreed business Plan. Decisions outside of the scope of the business plan and recommendations to the Combined Authority will be referred to the Green City Region (GCR) Partnership.

The Energy Innovation Challenge Group is charged with obtaining additional resources and funds to carry out the activities identified in the Business Plan.

Priority outputs required from the GCR Partnership will be drawn from the 5 Year Environment Plan and Energy Innovation Business Plan.

The Energy Innovation Challenge Group does not have a legal identity, any works commissioned by member/s will be commissioned in the name of the said member/s, using their bank account/s and requiring the member/s to take on legal liability.

[1] https://www.greatermanchester-ca.gov.uk/gmsf

8. MEMBERSHIP

The Energy Innovation Challenge Group will comprise a Chair and Vice Chair plus appropriate members from the public/private/voluntary sectors of GM. The number of members will be deemed as appropriate by the Chair and Vice Chair.

Group members may be asked, at the discretion of the Chair, to assume responsibility for certain portfolios or tasks covering specific aspects of the energy sector, geographical locations, projects or initiatives, or oversight of Partnership resources.

The Chair will be appointed by the Chair of the GCR Partnership on behalf of the Combined Authority.

Chair: Paul Bircham, Electricity North West Ltd, Paul.Bircham@enwl.co.uk

Vice Chair: Stuart Easterbrook, Cadent, stuart.easterbrook@cadentgas.com

Members: See Appendix B. Group membership will include representation from the Green City Region Partnership.

9. OPERATING PRINCIPLES

9.1 Governance

No business will be transacted unless four Energy Innovation Challenge Group members are present. Decisions will largely be reached by consensus, by 2/3 majority vote or where appropriate under Chair's authority.

9.2 Meeting frequency

The Group will meet quarterly for 2-3 hours, with meeting dates arranged for a full financial year to align with the Green City Region Partnership meeting dates.

Where-ever practical, papers will be issued five working days before meetings, and the meeting note will be issued within two weeks of the meeting date.

At the discretion of the Group, more frequent Task and Finish meetings may be held if required.

9.3 Support arrangements

The Group will be assigned a lead officer from the Greater Manchester Environment Team to provide co-ordination and facilitation for the meetings.

9.4 Roles and responsibilities

Chair/Vice Chair

- Agree agenda and papers and Chair meetings
- Report back to the Green City Region (GCR) Board and represent the views of the Group at Green City Region Board meetings
- Ensure all participants are able to contribute equally and are respectful to each other
- Champion the role and views of the Group to external audience

Members

- Regularly attend and contribute to meetings
- Thoroughly review and inform the work of the Group
- Individually lead specific responsibilities/tasks and work programme activities and, where appropriate, identify suitable participants to support delivery of defined tasks
- Report progress against priorities they are responsible for

GM Environment Team

- Arrange secretariat support to the meetings
- Co-ordinate and facilitate the development and implementation of the work programme
- Review and contribute to proposed papers
- Provide the operational interface between the other GCR themes
- Work with the Group members to support the implementation of actions

10. COMPETITION LAW COMPLIANCE

Members will work together in a manner that is not anti-competitive and all members will not share information that could be seen to provide a competitive advantage to any party or inhibit the working of competitive markets.

11. RELATIONSHIP WITH OTHER GROUPS

The Energy Innovation Group is a sub-group of the GCR Partnership. The Group will establish relationships and a working protocol with other topic groups on the following principles:

- The Chair of the Energy Innovation Group is a Green City Region Board member and the Vice Chair will deputise in their absence.

- The Energy Innovation Group will set out how it expects the relationship to work with each task and finish group, to be clear about how it thinks it can achieve its aims and objectives. It is expected this will evolve over time.

Appendix A: Relevant Actions from the Greater Manchester 5 Year Environment Plan

Residents
- Install renewable energy at your home
- Switch to a renewable energy supplier
- Plan now for when you next need to replace your current heating system

Greater Manchester Health and Social Care Partnership
- Explore options to purchase green energy
- Encourage innovation and support new technologies
- Work with GM partners to assess opportunities for generating onsite renewable or ultra-low carbon energy

Local Authorities
- Will procure renewable energy tariffs (from GM sources if possible) when they are next procured
- Will complete a full assessment of the potential of our assets for renewable energy and develop these assets (where financially viable) by the end of 2021
- When replacing heating systems in buildings, will install low carbon alternatives where viable, seeking to avoid carbon intensive technologies (gas, coal, oil)

Businesses and other organisations
- Install renewable energy generation at your premises and partner with community energy groups
- Switch to a renewable energy supplier
- Access energy related business support from the Growth Company
- Plan now for when you are next due to replace your heating system

What we need from government policy
- Work with us to develop the Energy Transition Region concept to support innovation
- Accelerate and deepen grid decarbonisation
- Stable and long-term policy landscape
- Decision on long-term decarbonisation of heat

Local policy
- Establish an investment vehicle to develop assets for renewable energy and deliver renewable energy generation on estate.
- Require 20% renewable energy generation at new developments
- Examine the potential to establish a GM collective solar PV/battery purchase to drive up residential uptake
- Seek funding to roll out Local Area Energy Planning across GM to identify which heating solutions are best suited to which areas of the city-region
- Identify "Heat and Energy Network Opportunity Areas" and require an assessment of the viability of connecting new developments to a heat network within these areas
- Convene key partners (industry, academia and utility providers) with a view to them leading the development of a hydrogen strategy for Greater Manchester

Other key partners
- Electricity North West – lead the transition to a "Smart Grid" to help optimise both the generation and use of electricity and facilitate the local trading of electricity

Appendix B: Current Membership List

Paul Bircham	ENWL (Chair)
Stuart Easterbrook	Cadent (Vice Chair)
Simon Brown	Panasonic
Ian Madely	Manchester Metropolitan University
David Healy	Keele University
Tony Orton	Centrica
Steve Willock	Octagon Project
David Caine	ERM
Carly Mclachan	Tyndall Centre
Tim O'Reilly	National Grid ET
Stephen Jenkinson	Manchester Metropolitan University
Claire Igoe	Manchester Foundation Trust/GM Health and Social Care Partnership
Phil Owen	Manchester City Council
Elliot Nelson	Cadent
Ian Lloyd	Siemens
Gareth Sutcliffe	Engie
David Mackins	Energy Systems Catapult
David Kemp	Procure Plus
Rob Raine	Vital Energi
John Runniff	Vital Energi
Trevor Whittaker	Aqualorenergi
Steve Pimlott	Arup
Nigel Holden	Co-op

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GM GREEN CITY REGION PARTNERSHIP

Date: 18th October 2019

Subject: Challenge Group Progress – Natural Capital

Report of: Anne Selby Name, supported by Krista Patrick

PUPOSE OF REPORT

The purpose of this report is to outline the progress made in establishing a Natural Capital Challenge Group as agreed at the last meeting of the GM Green City Region Partnership meeting.

RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the Natural Capital Challenge Group priorities
- Discuss the issues arising from the last meeting of the Group and next steps (Section 2 & 3)
- Note that the ToR for the Natural Capital Challenge Group was agreed at the last Partnership meeting

CONTACT OFFICERS

Krista Patrick: krista.patrick@greatermanchester-ca.gov.uk and
Mark Atherton: mark.atherton@greatermanchester-ca.gov.uk

1.0 BACKGROUND

As agreed at the last Board meeting, we will use the existing Natural Capital Group as the Challenge Group in delivering the priorities for the natural environment set out in the 5 Year Environment Plan. The last meeting of the Natural Capital Challenge Group was held on 27th September 2019. Terms of Reference for the Group were agreed at the last Green City Region Partnership meeting.

2.0 MAIN ISSUES ARISING FROM LAST MEETING OF THE CHALLENGE GROUP

The main issues arising from the Challenge Group were:

- Members signed up to delivering Mission Based Approach and agreed to consider opportunities for secondments to the Combined Authority from within their own organisations.
- Natural England is leading on Defra Peat Pilot in GM focussing on delivery of peatland targets, reporting to a new task and finish group. The group will need to consider how outputs relate to GMSF and proposed housing allocations.
- Practical implementation of Biodiversity Net Gain and the need to set an appropriate target given Government's intention for a mandatory target of 10%. Task and finish group to review target options and inform development of a local authority engagement programme to inform next meeting before going onto Planning and Housing Commission.
- GI standards guidance and mapping (commitments within the GMSF) being finalised and to report back at next meeting.
- Detailed project planning and recruitment near conclusion as part of IGNITION project. Procurement of consultancy support for Natural Capital Investment Readiness Fund underway and will report to NCIP/IGNITION task.
- Procurement of consultancy support for Natural Environment Engagement Resources underway and will report to new task and finish group.
- Proposals being drawn up for Annual Conference focussing on delivery of 5 Year Environment Plan actions. Group requested need to include contribution from school children.

3.0 NEXT STEPS

The next steps are to:

- Set the dates for future Challenge Group meetings with the Chair for the next 12 months.
- Review actions from Septembers meeting and to report back on progress to next meeting of the Challenge Group
- Continue to deliver task and finish groups on:
    - 5YP Priority 1 - GM Forest Partnership – overseeing development and delivery of the GM Tree and Woodland Strategy. Ongoing partnership and looking to submit Strategy to GM Forest Partnership on 18th Oct.
    - 5YP Priority 2 - Natural Course – overseeing delivery of EU Life IP funded project. Planned end point: 2024.

    - 5YP Priority 3 - Biodiversity Net Gain – overseeing development of guidance and implementation including engagement with local authorities and wider stakeholders. Planned end point: 2021
    - 5YP Priority 4 - NCIP – IRF Steering Group – overseeing the development, by external consultants, of proposals for an Investment Readiness Fund. Planned end point: Decision by October 2020 by the GMCA on whether to proceed and establish an IRF or not.
    - 5 Year Plan Priority 4 - NCIP – IGNITION Partnership Board – overseeing the IGNITION project and the establishment of innovative funding and delivery models and a potential pipeline of projects to achieve a 10% increase in urban green infrastructure by 2038. Planned end point: Project closure in October 2021.
    - 5YP Priority 5 - Urban Pioneer – overseeing the Defra Urban Pioneer project. Planned end point: March 2020.
- Set up task and finish groups on the following areas:
    - 5YP Priority 1 - Defra Peat Pilot – overseeing delivery of Defra Peat Pilot. Planned end point: April 2020.
    - 5YP Priority 5 - Natural Environment Engagement – overseeing the development, by external consultants, of proposals for natural environment engagement tooklit. Planned end date: February 2020 to be launched at annual conference.

4.0 RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the Natural Capital Challenge Group priorities
- Discuss the issues arising from the last meeting of the Group and next steps (Sections 2 & 3)
- Note that the ToR for the Natural Capital Challenge Group was agreed at the last Green City Region Partnership meeting

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GM GREEN CITY REGION PARTNERSHIP

Date: 18th October 2019

Subject: Challenge Group Progress – Sustainable Consumption & Production

Report of: Richard Jenkins, supported by Sarah Mellor

PUPOSE OF REPORT

The purpose of this report is to outline the progress made in establishing a Sustainable Consumption and Production (SCP) Challenge Group as agreed at the last meeting of the GM Green City Region Partnership meeting.

RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the SCP Challenge Group priorities
- Discuss the issues arising from the last meeting of the Group and next steps (Section 2 & 3)
- Comment on and agree the proposed ToR for the SCP Challenge Group (Annex 01)

CONTACT OFFICERS

Sarah Mellor: sarah.mellor@greatermanchester-ca.gov.uk and
Mark Atherton: mark.atherton@greatermanchester-ca.gov.uk

1.0 BACKGROUND

The first meeting of the SCP Challenge Group was held on Wednesday 2nd October 2019.

2.0 MAIN ISSUES ARISING FROM LAST MEETING OF THE CHALLENGE GROUP

The Challenge Group covered the four key priorities;

1. Moving to a Circular City
2. Becoming Responsible Consumers
3. Managing our waste sustainably
4. Reducing Unnecessary Food Waste

The main issues arising from the Challenge Group were:

1. Moving to a Circular City

    - Need to lead by example and embed Circular Economy models within the public sector;
    - Draw together mass balance data to prioritise interventions across life cycle of materials/energy use and waste generation; and
    - Identify regulatory barriers and engage regulators early.

2. Becoming Responsible Consumers

    - Empowering the individual that small changes count;
    - Lack of drivers to move consumers (public citizens and businesses) to sustainable products/services; and
    - How can we make it easy/remove practical barriers?

3. Managing our waste sustainably

    - Need to understand true cost of waste – how can we support businesses to move to sustainable alternatives;
    - UK capacity for recycling waste, reprocessing, energy recovery – need to map out the infrastructure to identify gaps to inform those procuring materials what cannot be reprocessed locally and create resilience in the system; and
    - How can we support the industry to encourage incorporation of recovered materials?

4. Reducing Unnecessary Food Waste

    - Consumer choices versus wastefulness. How can we break the link?
    - Long supply chains and complex; how can we simplify the system? and
    - How can we use food technology better to prevent food waste.

3.0 NEXT STEPS

The next steps are to:

- Set the dates for future Challenge Group meetings with the Chair for the next 12 months
- Set up task and finish groups initially focussing on the following areas:
    - Moving to a Circular City
    - Becoming Responsible Consumers
    - Managing our waste sustainably
    - Reducing Unnecessary Food Waste

4.0 PROPOSED TERMS OF REFERENCE

A proposed Terms of Reference for the Challenge Group is provided at Annex 01 for discussion and agreement.

5.0 RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the SCP Challenge Group priorities
- Discuss the issues arising from the last meeting of the Group and next steps (Sections 2 & 3)
- Comment on and agree the proposed ToR for the SCP Challenge Group (Annex 01)

ANNEX 01

GREATER MANCHESTER

SUSTAINABLE CONSUMPTION & PRODUCTION (SCP) CHALLENGE GROUP

TERMS OF REFERENCE

SEPTEMBER 2019

1. INTRODUCTION

The Greater Manchester SCP Challenge Group aims to support the delivery of the SCP actions as set out in the GM 5yr Environment Plan. Greater Manchester aims to become a testbed for new innovative measures, services and investment mechanisms, supporting the implementation and delivery of the GM 5yr Environment Plan.

2. PURPOSE/PROMISE

Our purpose is to ensure that SCP, measures and the services they may provide are accelerated and enhanced to deliver value to communities across Greater Manchester. SCP Challenge Group Members will through their commitment and participation, act as conduits to their wider organisations/business units.

As an SCP Challenge Group Member, all parties will achieve the long-term vision for the environment and provide value to communities by supporting a whole system approach across a spectrum of activities. These may include but are not restricted to;

- Identifying strategies, plans, barriers and opportunities,
- Produce reports, publications, policy recommendations;
- Raise funding, engage contractors and commission work on the ground to accelerate delivery.

Members will work together in a manner that is not anti-competitive and all members will not share information that could be seen to provide a competitive advantage to any party or inhibit the working of competitive markets.

3. VISION

We need to significantly reduce CO2 emissions that are created by the production and consumption of resources. Achieving this will require a change to the way we produce goods and services, moving towards more circular, sustainable and resource efficient business models. At the same time, we need to ensure that we are managing our waste as sustainably as possible and make a change to the way that we, as consumers, treat end-of-

life products. This needs to go well beyond the current delivery of SCP concepts/models taking place across our city region.

4. Goals

By 2024 we aim to:

- Reduce industrial emissions – requiring a 50-77% reduction in industrial emissions by 2040 (38% by 2025)
- Reduce the amount of waste produced
- Achieve a recycling rate of 55% (65% by 2035)

How and the challenges

Residents

1. Minimise waste produced
2. Move to reusable and sustainable products
3. Recycle as much as you can
4. Reduce the amount of food wasted
5. Support local growing and redistribution initiatives

Commercial

6. Review internal processes to make efficiencies in design and production
7. Make sure sustainability and recycled components are part of procurement policy
8. Take action to reduce all waste, including food, within your organisation
9. Support local food growing and redistribution initiatives and organisations

Public

10. Embed environmental sustainability criteria in public procurement
11. Provide carbon literacy for all staff involved in procuring activities
12. Aim to eradicate avoidable single use plastics on public estates
13. Explore ways to support innovation that will help GM transition to a circular economy
14. Develop an approach to move GM to a Zero Waste City Region

5. KEY PERFORMANCE INDICATORS

The following key performance indicators have been identified which will be developed further in consultation with partners:

- Accelerate the delivery of SCP concepts/models to achieve the goals as set out above.
- Further KPIs to be agreed with the challenge group members

6. DELIVERY

The SCP Challenge Group will define a Business Plan each year and agree this with the Chair of the Green City Region (GCR) Board. Key actions and activities will be informed by the Greater Manchester 5 Year Environment Plan (see Appendix A): https://www.greatermanchester-ca.gov.uk/what-we-do/environment/

The SCP Challenge Group will make decisions within the scope of the agreed business Plan. Decisions outside of the scope of the business Plan and recommendations to the Combined Authority will be referred to the GCR board.

The SCP Challenge Group is charged with obtaining additional resources and funds to carry out the activities identified in the Business Plan.

Priority outputs required from the GCR Board will be provided by the SCP Challenge Group and drawn from the 5yr Environment Plan and SCP Challenge Business Plan.

7. MEMBERSHIP

The SCP Challenge Group will comprise a Chair and Vice Chair plus appropriate members from the public/private/voluntary sectors of GM. The number of members will be deemed as appropriate by the Chair and Vice Chair. Group members may be asked, at the discretion of the Chair, to assume responsibility for certain portfolios covering specific aspects of the natural environment, geographical locations, projects or initiatives, or oversight of Partnership resources.

The Chair will be appointed by the Chair of the Green City Region on behalf of the Combined Authority.

Chair: Richard Jenkins, Suez

Vice Chair: Amanda Reid, Manchester Metropolitan University

Members: See Appendix B. Group membership will include representation from the Green City Region.

8. OPERATING PRINCIPLES

8.1 Governance

No business will be transacted unless four SCP Challenge Group members are present. Decisions will largely be reached by consensus, by 2/3 majority vote or where appropriate under Chair's authority.

8.2 Meeting frequency

The Group will meet quarterly for 2-3 hours, with meeting dates arranged for a full financial year to align with the GCR Board meeting dates.

Where-ever practical, papers will be issued five working days before meetings, and the meeting note will be issued within two weeks of the meeting date.

At the discretion of the Group, more frequent Task and Finish meetings may be held if required.

8.3 Support arrangements

The Group will be assigned a lead officer from the Greater Manchester Environment Team to provide co-ordination and facilitation for the meetings.

8.4 Roles and responsibilities

Chair

- Agree agenda and papers and Chair meetings
- Report back to the GCR Board and represent the views of the Group at GCR Board meetings
- Champion the role and views of the Group to external audience

Members

- Regularly attend and contribute to meetings
- Thoroughly review and inform the work of the Group
- Individually lead specific responsibilities and work programme activities
- Report progress against priorities they are responsible for

GM Environment Team

- Arrange secretariat support to the meetings

- Co-ordinate and facilitate the development and implementation of the work programme
- Review and contribute to proposed papers
- Provide the operational interface between the other GCR themes
- Work with the Group members to support the implementation of actions

GM Governance Team

- Provide equipment, materials, rooms and a secretariat service to the Board

9. RELATIONSHIP WITH OTHER GROUPS

The SCP Challenge Group is a task-group of the GCR Board. The Group will establish relationships and a working protocol with other topic groups on the following principles:

- The Chair of the SCP Challenge Group is a GCR Board member

- The SCP Challenge Group will set out how it expects the relationship to work with each group to be clear about how it thinks it can achieved its aims and objectives. It is expected this will evolve over time.

Appendix A: Relevant Actions from the Greater Manchester 5 Year Environment Plan

Residents
- Reduce the amount of waste you produce and use reusable products
- Cut down the amount of plastics you use.
- Buy sustainable products
- Look at alternatives to purchasing large items such as lease agreements or take-back schemes.
- Recycle as much as you can
- Reduce the amount of food you waste
- Support local food growing and redistribution initiatives and organisations

Local Authorities
- Voluntary, Community and Social Enterprise Organisations – continue to work with partners across these areas, particularly on the development of our food strategy.

Businesses and other organisations
- Review your processes to look where you can make efficiencies in design and production.
- Make sure sustainability is part of your procurement policy
- Take action to reduce the amount of food your organisation wastes
- Support local food growing and redistribution initiatives and organisations

Local Authorities
- Embed environmental sustainability criteria in social value procurement mechanisms
- Provide Carbon Literacy for all staff involved in procuring activities
- Aim to eradicate avoidable single use plastic on the public estate.

Lead policy
- Collaborate with the GM Sustainable Business Partnership, including a focus on resource efficiency
- Explore ways to support innovation that will help us transition to a circular economy.
- Continue to develop the Plastic Free GM campaign, including launching a roadmap and Plastic Pact for the public sector
- Develop and consult on a Zero Waste Strategy to set out our approach to becoming a zero waste city region.
- Produce a roadmap and future food strategy, which will set out a pathway and priorities for our food system.

What we need from government policy
- Further powers and incentives in increase reuse and recycling for both residents and businesses.

Greater Manchester Health and Social Care Partnership
- Work with partner organisations to support the development of waste management action plans across Trusts
- Take an approach towards a continual reduction in levels of waste, relative to the size of the organisation
- Have a system/process in place that identifies suitable opportunities to convert "waste" into a resource for community groups or charities
- Support staff on how to reduce food wastage to reduce the environmental impact

Appendix B: Membership

1	David Taylor	GMCA Executive Director - Waste and Resources
2	Michelle Whitfield	GMCA Head of Communications – Waste and Resources
3	Todd Holden	Director, Low Carbon, Growth Company
4	Darryl Quantx	NHS
5	Jemma Hynes	Food Sync
6	Garry Parker	Head of Operations and Neighbourhoods – Waste Management, Tameside Council
7	David Seager	Assistant Director, Waste Management, Salford Council
8	Amanda Reid	Programme Lead,Waste to Resource Innovation Network, MMU
9	Iain Ferguson	Environment Manager – Food, Co-op
10	Nicola Martin	Sustainable Business Services Manager, Groundwork
11	Carolyn Fitzgerald	Corporate Affairs/Communications Manager, Suez
12	Adam Read	Operations/Strategy, Suez
13	Adrian Morley	GM Food Board/MMU
14	Cat Drew	Chief Design Officer, Design Council
15	James Evans	Sustainability Lead, UoM
16	Frank Boons	Director of SCI at UoM

17	Alex Forrest	Senior Consultant, Eunomia
18	Lynsey Clarke	Jacobs
19	Gavin Ellis	Director, Hubbub
20	Lorraine Cox	Director, STAR Procurement
21	Mark Lancelott	PA Consulting
22	Richard Jenkins - Chair	Suez
23	Joanne Holden	Peel

GM GREEN CITY REGION PARTNERSHIP

Date: 18th October 2019

Subject: Challenge Group Progress – Communications and Behaviour Change

Report of: Louise Blythe, supported by Tina Bugliosi

PUPOSE OF REPORT

The purpose of this report is to outline the progress made in establishing a Communications and Behaviour Change Challenge Group as agreed at the last meeting of the GM Green City Region Partnership meeting.

RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the Communications and Behaviour Change Challenge Group priorities
- Discuss the issues arising from the last meeting of the Group and next steps (Section 2 & 3)
- Comment on and agree the proposed ToR for the Communications and Behaviour Change Challenge Group (Annex 01)

CONTACT OFFICERS

Tina Bugliosi: tina.bugliosi@greatermanchester-ca.gov.uk and
Mark Atherton: mark.atherton@greatermanchester-ca.gov.uk

1.0 BACKGROUND

The first meeting of the Communications and Behaviour Change Challenge Group was held on Friday 11th October 2019.

2.0 MAIN ISSUES ARISING FROM LAST MEETING OF THE CHALLENGE GROUP

The Challenge Group covered the three key priorities:

- Priority 1: Establishing a framework for communication, branding, marketing: Greater Manchester to loudly champion the long term vision for the environment and ambitious targets for the city region, regularly promoting the many steps orgnanisations and individuals can take and the big impact collective action can make.

- Priority 2: Working urgently and collaboratively with businesses and communities towards a ambitious environment transition through incentives, Mayoral 'calls to action', campaigns and through greater transparency of data.

- Priority 3: Provide support to the Five Year Environment Plan Challenge Groups to effectively communicate their priorities to the city region.

The main issues arising from the Challenge Group were:

- Need to put sustainability at the heart of the agenda
- Need to understand what we need to do (inter-generational)
- How to engage the concerned but inactive
- Understand the variety of responsibility (sense of control)
- How to encourage participation and action
- Positive range of triggers

3.0 NEXT STEPS

The next steps are to:

- Set the dates for future Challenge Group meetings with the Chair for the next 12 months – next meeting 17th Dec pm
- Organise Carbon Literacy training for the Comms Group
- Rebrand GM Low Carbon Hub as Green City Region Partnership on digital media
- Provide feedback to `In the Boardroom' by 1st November and confirm the high level key messages with Mayor & 10 LA Leaders

4.0 PROPOSED TERMS OF REFERENCE

A proposed Terms of Reference for the Challenge Group is provided at Annex 01 for discussion and agreement.

5.0 RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the Communications and Behaviour Change Challenge Group priorities
- Discuss the issues arising from the last meeting of the Group and next steps (Sections 2 & 3)
- Comment on and agree the proposed ToR for the Communications and Behaviour Change Challenge Group (Annex 01)

GREATER MANCHESTER COMMUNICATIONS AND BEHAVIOUR CHANGE CHALLENGE GROUP

TERMS OF REFERENCE

SEPTEMBER 2019

1. INTRODUCTION

The Greater Manchester Communications & Behaviour Change Challenge Group aims to support delivery of communication and behaviour change actions as set out in the GM 5 year Environment Plan. Greater Manchester aims to become an exemplar for communications and adoption of positive behaviour change, to support the implementation and delivery of the GM 5 year Environment Plan.

2. PURPOSE

Our purpose is to ensure that communications and behaviour changes are adopted to accelerate and enhance the delivery of:

1. The long term vision for the environment and;
2. Value to communities across Greater Manchester.

The Communications & Behaviour Change Challenge Group will aim to achieve the long-term vision for the environment and provide value to communities by supporting a whole system approach across a spectrum of activities. These may include but are not restricted to:

- Develop an annual Communications/business plan and seek to deliver it
- Assess barriers and opportunities and put forward measures to overcome them
- Assign individual tasks to Task and Finish Groups and monitor progress on the tasks
- Produce reports, publications and policy recommendations as required;
- Develop project and research proposals
- Raise funding, engage contractors and commission work on the ground to accelerate delivery.
- Take full account of existing work and seek to join up where possible and desirable.

Communications and Behaviour Change Challenge Group Members will, through their commitment and participation, act as conduits to their wider organisations/business units.

3. LONG TERM VISION FOR THE ENVIRONMENT

We want Greater Manchester to be a clean, carbon neutral, climate resilient city-region with a thriving natural environment and circular, zero-waste economy where:

Our infrastructure will be smart and fit for the future: we will have an integrated, clean and affordable public transport system, resource efficient buildings, greater local community renewable energy, cleaner air, water and greenspace for all.

All citizens will have access to green space in every community, more trees including in urban areas, active travel networks, environmental education and healthy and locally-produced food.

Citizens and businesses will adopt sustainable living and businesses practices, focusing on local solutions to deliver a prosperous economy.

4. PRIORITIES

By 2024 we aim to:

Priority 1: Establishing a framework for communication, branding, marketing: Greater Manchester to loudly champion the long term vision for the environment and ambitious targets for the city region, regularly promoting the many steps orgnanisations and individuals can take and the big impact collective action can make.

Priority 2: Working urgently and collaboratively with businesses and communities towards a ambitious environment transition through incentives, Mayoral 'calls to action', campaigns and through greater transparency of data.

Priority 3: Provide support to the Five Year Environment Plan Challenge Groups to effectively communicate their priorities to the city region.

5. DELIVERY

The Communications and Behaviour Change Challenge Group will define a Business/Communications Plan each year and agree this with the Chair of the Green City Region Partnership. Key actions and activities will be informed by the Greater Manchester 5 Year Environment Plan https://www.greatermanchester-ca.gov.uk/what-we-do/environment/

The Communications and Behaviour Change Challenge Group will make decisions within the scope of the agreed Business/Communications Plan. Decisions outside of the scope of the business plan and recommendations to the Combined Authority will be referred to the Green City Region (GCR) Partnership.

The Communications and Behaviour Change Challenge Group is charged with obtaining additional resources and funds to carry out the activities identified in the Business Plan.

The Group will create space for multiple voices to be heard and will utilise robust evidence and facts to transparently communicate issues and progress.

The Communications and Behaviour Change Challenge Group does not have a legal identity, any works commissioned by member/s will be commissioned in the name of the said member/s, using their bank account/s and requiring the member/s to take on legal liability.

6. MEMBERSHIP

The Communications and Behaviour Change Challenge Group will comprise a Chair and Vice Chair plus appropriate members from the public/private/voluntary sectors of GM. The number of members will be deemed as appropriate by the Chair and Vice Chair.

Group members may be asked, at the discretion of the Chair, to assume responsibility for certain portfolios or tasks covering specific aspects of the energy sector, geographical locations, projects or initiatives, or oversight of Partnership resources.

The Chair will be appointed by the Chair of the GCR Partnership on behalf of the Combined Authority.

Chair: Louise Blythe, Executive Producer, BBC Academy louise.blythe@bbc.co.uk

Vice Chair: Phil Korbel, Director, The Carbon Literacy Project
phil.korbel@coolerprojects.com

Members: See Appendix A. Group membership will include representation from the Green City Region Partnership.

7. OPERATING PRINCIPLES

7.1 Governance

No business will be transacted unless four Communications and Behaviour Change Challenge Group members are present. Decisions will largely be reached by consensus, by 2/3 majority vote or where appropriate under Chair's authority.

7.2 Meeting frequency

The Group will meet quarterly for 2-3 hours, with meeting dates arranged for a full financial year to align with the Green City Region Partnership meeting dates.

Wherever practical, papers will be issued five working days before meetings, and the meeting note will be issued within two weeks of the meeting date.

At the discretion of the Group, more frequent Task and Finish meetings may be held if required.

7.3 Support arrangements

The Group will be assigned a lead officer from the Greater Manchester Environment Team to provide co-ordination and facilitation for the meetings.

7.4 Roles and responsibilities

Chair/Vice Chair

- Agree agenda and papers and Chair meetings
- Report back to the Green City Region (GCR) Board and represent the views of the Group at Green City Region Board meetings
- Ensure all participants are able to contribute equally and are respectful to each other
- Champion the role and views of the Group to external audience

Members

- Regularly attend and contribute to meetings
- Thoroughly review and inform the work of the Group
- Individually lead specific responsibilities/tasks and work programme activities and, where appropriate, identify suitable participants to support delivery of defined tasks
- Report progress against priorities they are responsible for

GM Environment Team

- Arrange secretariat support to the meetings
- Co-ordinate and facilitate the development and implementation of the work programme
- Review and contribute to proposed papers
- Provide the operational interface between the other GCR themes
- Work with the Group members to support the implementation of actions

8. COMPETITION LAW COMPLIANCE

Members will work together in a manner that is not anti-competitive and all members will not share information that could be seen to provide a competitive advantage to any party or inhibit the working of competitive markets.

9. RELATIONSHIP WITH OTHER GROUPS

The Energy Innovation Group is a sub-group of the GCR Partnership. The Group will establish relationships and a working protocol with other topic groups on the following principles:

- The Chair of the Energy Innovation Group is a Green City Region Board member and the Vice Chair will deputise in their absence.

- The Energy Innovation Group will set out how it expects the relationship to work with each task and finish group, to be clear about how it thinks it can achieve its aims and objectives. It is expected this will evolve over time.

Appendix A: Communications and Behaviour Change Challenge Group Membership (Initial)

Louise Blythe (BBC Academy)
Phil Korbel (Cooler Projects)
Shelley Tattersall/Angela Rogers (Environment-agency)
Ollie Wilson (bigcleanswitch)
Stephanie.Wyatt (Groundwork)
Ben Cawley/Becky Marr (Tfgm)
Sarah Nurton (City of trees)
Chris Matthews (UU plc)
Darryl Quantz/Louise Hayes (HSCP)
Nick Brooks-Sykes/Louise Latham (Marketing Manchester)

Officers
James, Hayley <Hayley.James@greatermanchester-ca.gov.uk>;
Whitfield, Michelle <Michelle.Whitfield@greatermanchester-ca.gov.uk>;
Bugliosi, Tina <Tina.Bugliosi@greatermanchester-ca.gov.uk>;

GM GREEN CITY REGION PARTNERSHIP

Date: 18th October 2019

Subject: 5 Year Environment Plan Forum

Report of: Carly McLachlan, supported by Mark Atherton

PUPOSE OF REPORT

The purpose of this report is to outline the progress made in establishing a 5 Year Environment Plan Forum as agreed at the last meeting of the GM Green City Region Partnership meeting.

RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the 5 YEP Forum priorities
- Discuss the issues arising from the last meeting of the Group and next steps (Section 2 & 3)
- Comment on and agree the proposed ToR for the Forum (Annex 01)

CONTACT OFFICERS

Mark Atherton: mark.atherton@greatermanchester-ca.gov.uk

1.0 BACKGROUND

The last meeting of the 5 YEP Forum was held on 23rd September 2019.

2.0 MAIN ISSUES ARISING FROM LAST MEETING OF THE FORUM

The main issues arising from the Forum were:

- General Agreement that the Forum would be a valuable vehicle
- Question over how progress on the 5 YEP would be quantitatively monitored?
- Need to continue pushing residents for uptake of Big Clean Switch
- Noted that:
    - GMCA Update given – LEM, Retrofit Report, PlasticFreeGM, Peat Pilot
    - BEIS funded Carbon Literacy Project in public sector commenced
    - SCATTER pathways would go live in 4 weeks time
    - Tyndall target setting tool being adapted for other LAs
    - TfGM – Bee network, clean air plan, clean bus tech plan
    - GMCVO working on Low Carbon Accelerator
    - Carbon Coop running a BEIS funded local retrofit market project
    - City of Trees Tree and woodland strategy nearing finalisation
    - NHS looking at replacing inhalers for carbon free alternative
    - MCCA – Zero carbon cities, grow green project Gorton Demonstrator,
    - Oldham Council – Redwolf project, new solar farm proposal
    - GM Chamber – business impact of clean air deal
- Agree to help support the GM Solar Together promotion
- Discussion over impact of XR Deansgate closure
- Asked whether a Challenge Group on Transport would be established?
- Need time in Challenge Groups for bottom up thinking

3.0 NEXT STEPS

The next steps are to:

- Set the dates for future Challenge Group meetings with the Chair for the next 12 months
- Appoint a Vice Chair
- Consideration of whether some Forum members should join the Challenge Groups

4.0 PROPOSED TERMS OF REFERENCE

A proposed Terms of Reference for the Challenge Group is provided at Annex 01 for discussion and agreement.

5.0 RECOMMENDATIONS

The Partnership is asked to:

- Note the progress in developing the 5 YEP Forum priorities

- Discuss the issues arising from the last meeting of the Group and next steps (Section 2 & 3)
- Comment on and agree the proposed ToR for the Forum (Annex 01)

ANNEX 01

GREATER MANCHESTER 5 YEAR ENVIRONOMENT PLAN FORUM

TERMS OF REFERENCE

SEPTEMBER 2019

1. INTRODUCTION

The Greater Manchester 5 YEP Forum aims to support delivery of the GM 5 year Environment Plan by supporting wider engagement with activities and projects developed through the Challenge Groups to increase the uptake of services/offers and to review progress and activities across the Challenge Groups to encourage a whole system approach. The 5 YEP Forum is more about the `how' we deliver the Plan than `What' we will deliver.

2. PURPOSE

Our purpose is to ensure that 5 YER Environment Plan and the services it may provide are accelerated and enhanced to deliver;

1. The long term vision for the environment and;
2. Value to communities across Greater Manchester.

by supporting a whole system approach across a spectrum of activities. These may include but are not restricted to:

- Develop a work programme for the year
- Review reports from Challenge Groups, identify ways to support and scale interventions/project etc and work with Challenge Groups to deliver these.
- Assess barriers and opportunities and put forward measures to overcome them and communicating these to Challenge Groups/Green City Region Partnership as appropriate.
- Is required, assign individual tasks to Task and Finish Groups and monitor progress on the tasks
- Produce reports, publications and policy recommendations as required;
- Develop project and research proposals
- Raise funding, engage contractors and commission work on the ground to accelerate delivery.
- Take full account of existing work and seek to join up where possible and desirable.

5 YEP Forum Members will, through their commitment and participation, act as conduits to their wider organisations/business units.

3. LONG TERM VISION FOR THE ENVIRONMENT

We want Greater Manchester to be a clean, carbon neutral, climate resilient city-region with a thriving natural environment and circular, zero-waste economy where:

Our infrastructure will be smart and fit for the future: we will have an integrated, clean and affordable public transport system, resource efficient buildings, greater local community renewable energy, cleaner air, water and green space for all.

All citizens will have access to green space in every community, more trees including in urban areas, active travel networks, environmental education and healthy and locally-produced food.

Citizens and businesses will adopt sustainable living and businesses practices, focusing on local solutions to deliver a prosperous economy.

4. DELIVERY

The 5 YEP Forum will define a work programme each year and agree this with the Chair of the Green City Region Partnership. Key actions and activities will be informed by the Greater Manchester 5 Year Environment Plan (see Appendix A): https://www.greatermanchester-ca.gov.uk/what-we-do/environment/ and the business plans of the Challenge Groups.

The 5 YEP Forum will make decisions within the scope of the agreed work programme. Decisions outside of the scope of the work programme and recommendations to the Combined Authority will be referred to the Green City Region (GCR) Partnership.

The 5 YEP Forum is charged with obtaining additional resources and funds to carry out the activities identified in the work programme (and aligning with existing resources and capacity where possible).

Priority outputs required from the GCR Partnership will be drawn from the 5 Year Environment Plan and 5 YEP Forum work programme.

The 5 YEP Forum does not have a legal identity, any works commissioned by member/s will be commissioned in the name of the said member/s, using their bank account/s and requiring the member/s to take on legal liability.

5. MEMBERSHIP

The 5 YEP Forum will comprise a Chair and Vice Chair plus appropriate members from the public/private/voluntary sectors of GM. The number of members will be deemed as appropriate by the Chair and Vice Chair.

Group members may be asked, at the discretion of the Chair, to assume responsibility for certain portfolios or tasks covering specific aspects of the work programme, geographical locations, projects or initiatives, or oversight of Partnership resources.

The Chair will be appointed by the Chair of the GCR Partnership on behalf of the Combined Authority.

Chair: Carly McLachlan, Tyndall Centre for Climate Change Research, University of Manchester
Vice Chair: TBC

Members: See Appendix B. Group membership will include representation from the Green City Region Partnership.

6. OPERATING PRINCIPLES

6.1 Governance

No business will be transacted unless four 5 YEP Forum members are present. Decisions will largely be reached by consensus, by 2/3 majority vote or where appropriate under Chair's authority.

6.2 Meeting frequency

The Group will meet every 6-8 weeks for 2-3 hours, with meeting dates arranged for a full financial year to align with the Green City Region Partnership meeting dates.

Where-ever practical, papers will be issued five working days before meetings, and the meeting note will be issued within two weeks of the meeting date.

At the discretion of the Group, more frequent Task and Finish meetings may be held if required.

6.3 Support arrangements

The Group will be assigned a lead officer from the Greater Manchester Environment Team to provide co-ordination and facilitation for the meetings.

6.4 Roles and responsibilities

Chair/Vice Chair

- Agree agenda and papers and Chair meetings
- Report back to the Green City Region (GCR) Board and represent the views of the Group at Green City Region Partnership meetings
- Ensure all participants are able to contribute equally and are respectful to each other
- Champion the role and views of the Group to external audience

Members

- Regularly attend and contribute to meetings
- Thoroughly review and inform the work of the Group
- Individually lead specific responsibilities/tasks and work programme activities and, where appropriate, identify suitable participants to support delivery of defined tasks

- Report progress against priorities they are responsible for

GM Environment Team

- Arrange secretariat support to the meetings
- Co-ordinate and facilitate the development and implementation of the work programme
- Review and contribute to proposed papers
- Provide the operational interface between the other GCR themes
- Work with the Group members to support the implementation of actions

7. COMPETITION LAW COMPLIANCE

Members will work together in a manner that is not anti-competitive and all members will not share information that could be seen to provide a competitive advantage to any party or inhibit the working of competitive markets.

8. RELATIONSHIP WITH OTHER GROUPS

The 5 YEP Forum is a sub-group of the GCR Partnership. The Group will establish relationships and a working protocol with other topic groups on the following principles:

- The Chair of the 5 YEP Forum is a Green City Region Board member and the Vice Chair will deputise in their absence.

- The 5 YEP Forum will set out how it expects the relationship to work with each task and finish group, to be clear about how it thinks it can achieve its aims and objectives. It is expected that this will evolve over time.

Appendix A: Extract from 5 YEP – Doing Things Differently

Doing things differently

In order to deliver our environmental vision and aims this plan sets out and to close the gap between what is needed and where we are now, we need to take different approaches to the following:

- Supporting innovation in technology
- Taking new approaches to finance and funding
- Building on existing partnerships between the public, private and voluntary, community and social enterprise organisations
- Showing leadership
- Engaging and educating residents, communities and businesses
- Upskilling our workforce

SUPPORTING INNOVATION IN TECHNOLOGY	TAKING NEW APPROACHES TO FUNDING AND FINANCING	BUILDING ON EXISTING PARTNERSHIPS
Innovation ecosystem to support all firms to be innovative, supporting the creation of new products and services (e.g. Energy Transition Region proposals)	Long-term sustainable funding models for infrastructure. Developing business models in unproven areas (whole house retrofit; natural environment)	Continuing the engagement from 2018 Green Summit, with GMCA convening stakeholders around key challenges and through a mission-oriented approach
SHOWING LEADERSHIP	**ENGAGING & EDUCATING RESIDENTS, COMMUNITIES AND BUSINESSES**	**UPSKILLING OUR WORKFORCE**
A set of commitments from GMCA/LAs, plus health and social housing providers, showing they are leading by example.	Make a programme of carbon literacy available to young people through the GM Career Portal, in addition to our own commitments on carbon literacy for staff in procurement in GMCA and LAs	Engage the sector in BridgeGM, to better link business leaders into schools and colleges.

Appendix B: Current Membership List

Carly Mclachlan (Chair),

Clive Memmot (GM Chamber),

Daryl Quantz (Public Health),

Gudrun Stummer (SERA + Ex Reb),

Brad Blundell (Anthesis),

Jonny Sadler (Mcr Climate Change Agency),

Pete Able (Mcr Friends of Earth),

Ian Taylor (GMCVO),

Ryan Bellinson/Beth Perry (Sheffield Uni),

Phil Korbel (Carbon Literacy Project),

Cllr Abdul Jabbar (Oldham Council),

Aneaka Kellay (Carbon Coop),

Jess Thompson (City of Trees),

Lydia Meryl (SERA),

Todd Holden (Growth Company);

Chris Matthews (UU);

Steve Connor (Creative Concern)

Mark Easedale (Environment Agency)

Mike Ormerod (Groundwork)

Louise Marix Evans (Quantum)

Jonathan Atkinson (Carbon Coop)

James Evans (Manchester Uni)

Officers

Mark Atherton (GMCA),
Tina Bugliosi (GMCA), Sean Owen (GMCA),
Megan Black/Matt Roberts (TfGM)

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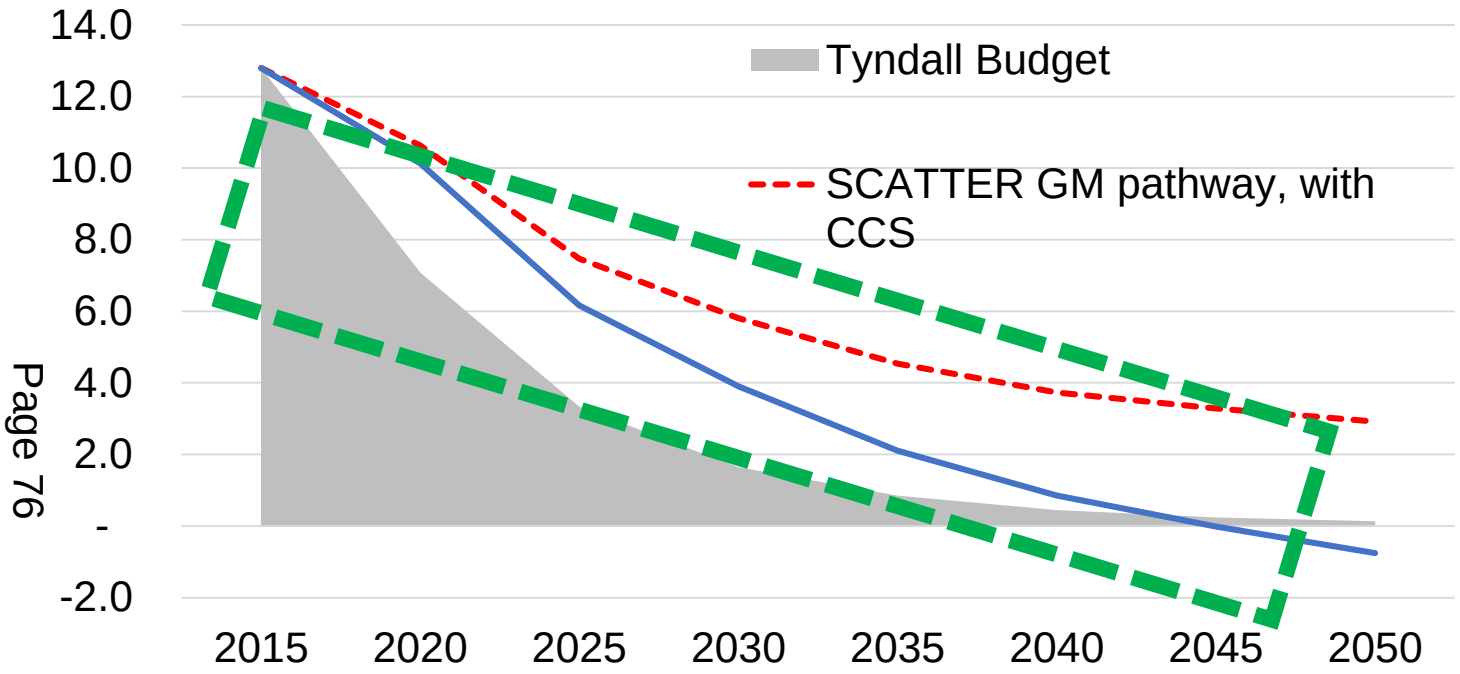
GREATER MANCHESTER
DOING THINGS DIFFERENTLY


PFER:
Local Energy Market Proposal


The Local Place Based GM Challenge



Outstanding Questions

a) How quickly will technology evolve e.g. battery storage and hydrogen to grid?
b) How do we fund building retrofit for energy efficiency/fuel poverty?
c) What is the role of nuclear (SMR) and biomass?
d) What opportunities for negative emission and disruptive technology?
e) Do we have sufficient skilled workers for the task?

Highest Impact Local Actions

- Renewables (Solar PV/Thermal, Heat networks, Heat Pumps)
- Energy efficiency of domestic properties
- Improved efficiency of commercial heating and cooling
- Biomass power generation
- Shift from fossil fuels to battery or fuel cells for transport
- Shifting domestic transport behaviour
- Waste reduction, reuse and recycling

…the scale of the GM challenge…

GREATER MANCHESTER
DOING THINGS DIFFERENTLY

Some examples of the assumptions about now to 2040 in the SCATTER GM model

Half of our homes have solar PV plus a further 5.5km^2 commercial/ground-mounted

Gas accounts for less than 35% of heating supply

All cars on our roads are zero emissions (tailpipe) by 2035

61,000 homes a year are retrofitted

Commercial heating demand drops by over 20%

Industrial emissions reduce by 50-75%

Informed, validated and Optimised

The GM Local Energy Market (LEM) project aims to reduce and ultimately remove the known challenges through,

1. **Informed:** Local Area Energy (Master) Planning
    1. Urban
    2. Semi Urban
    3. Rural
    4. Across 10 districts and aggregated to a regional level
2. **Validated:** investment ready business model
    1. Operational testing (inc controlled energy assets)
    2. Deployment of new assets alongside the leveraging of £10M existing energy related legacy projects
3. **Optimised**: Digital Energy Platform Design
    1. Supporting the control of 7-10MW of energy asset
    2. Responding to `place based' constraints market needs
    3. At a regional, district, and or micro grid level

Informed

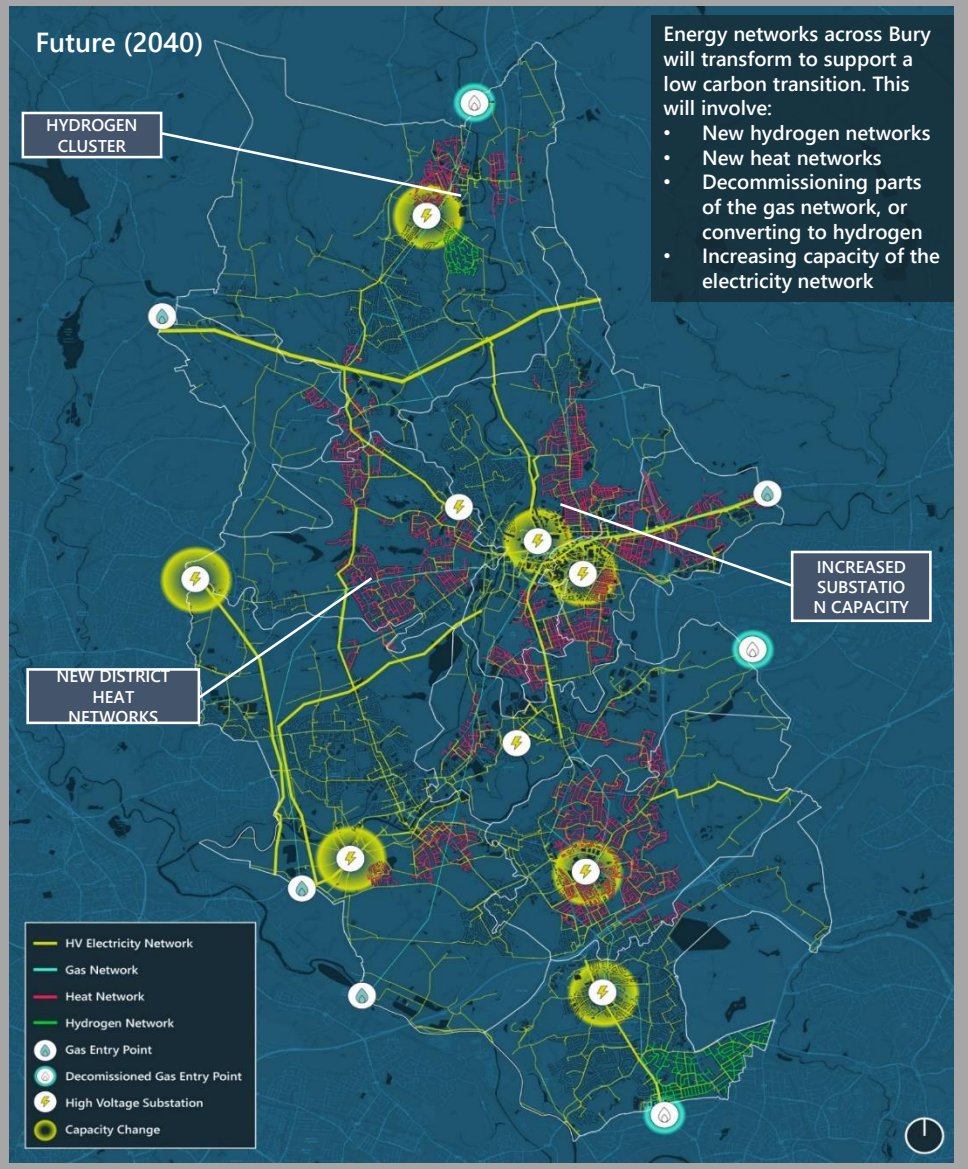
Network and local area understanding

Comprehensive Local Area Energy Planning (LAEP), capable of providing, district and aggregated region scale understanding across;

1. Generation and storage
2. Decarbonised heating (Inc. Hydrogen ingress)
3. Low carbon transport (Inc. Hydrogen ingress)
4. Diversity flexibility (current and future possible network constraints)

Supporting the optimisation of the current energy system as we transition to the future.

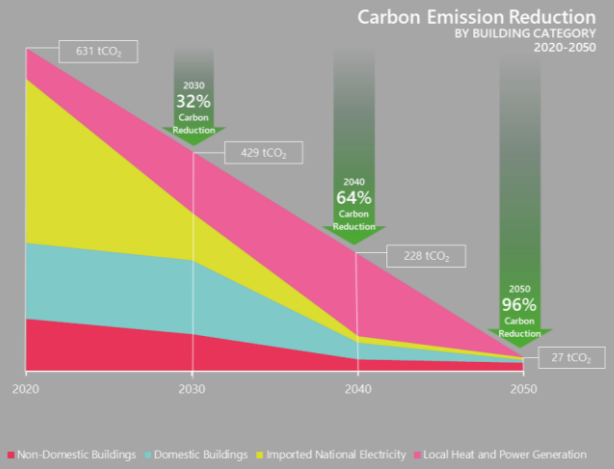
Exploring a range of possible energy system options



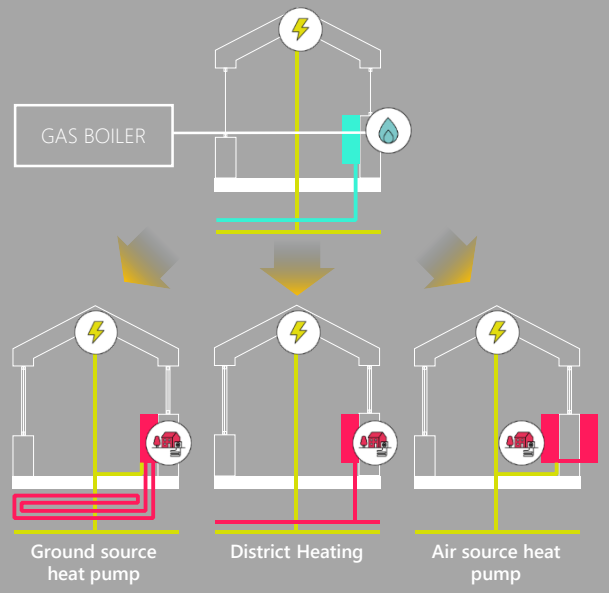
To develop a Local Area Energy Plan for each borough

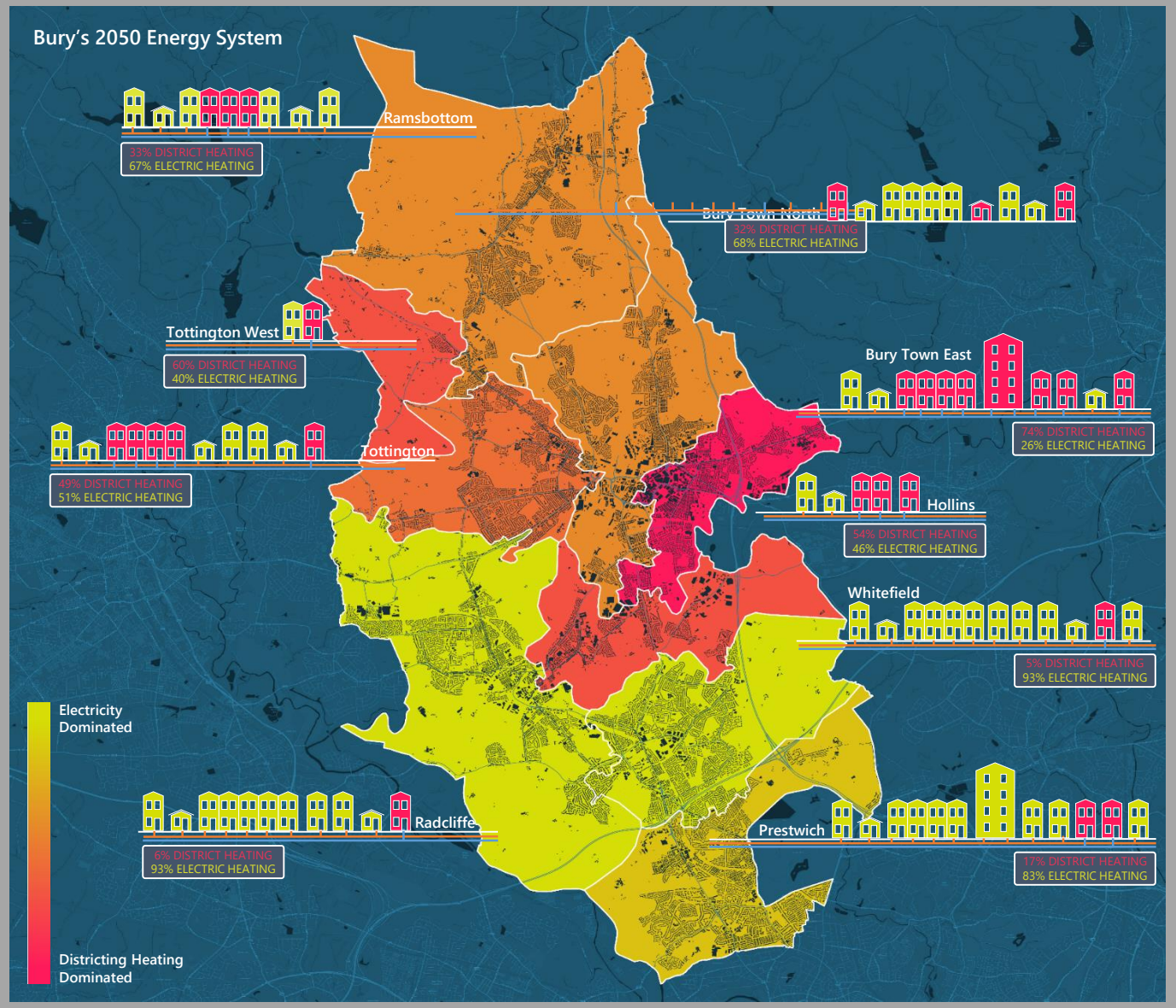
GREATER MANCHESTER
DOING THINGS DIFFERENTLY

Your local energy system is changing to meet our commitment to reducing carbon emissions. This means installing new low carbon technologies and phasing out the use of gas boilers.



Homes with gas boilers may transition to different heating systems, such as those illustrated below.





Validated

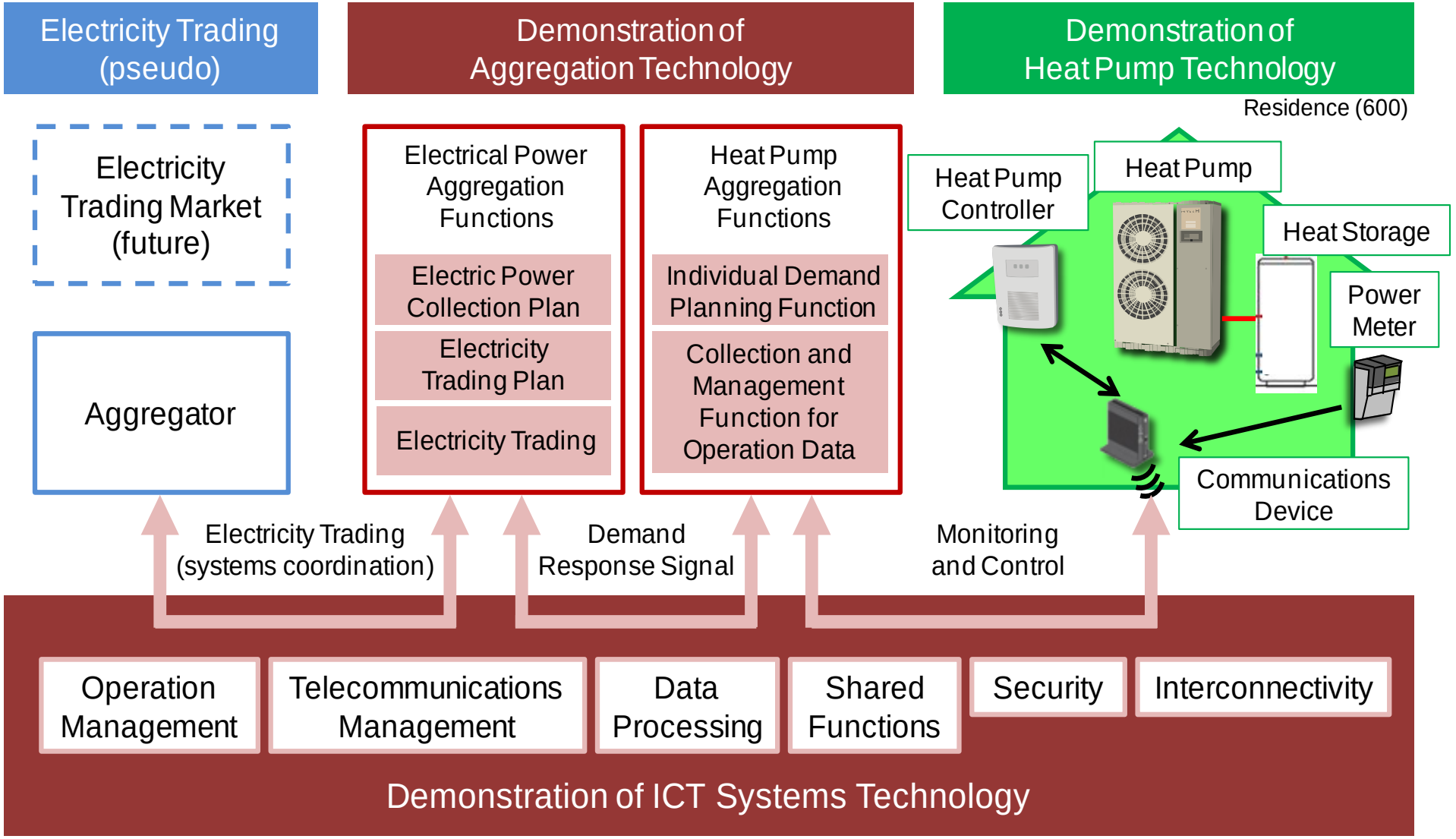
GM LEM platform pilot: Demonstration of the required capabilities to support current and near term services, with the ability to offer longer term DSR ambition(s)

Refinement: Continual refinements to the platform design to demonstrate the value that a LEM local can bring to regional stakeholders, including,

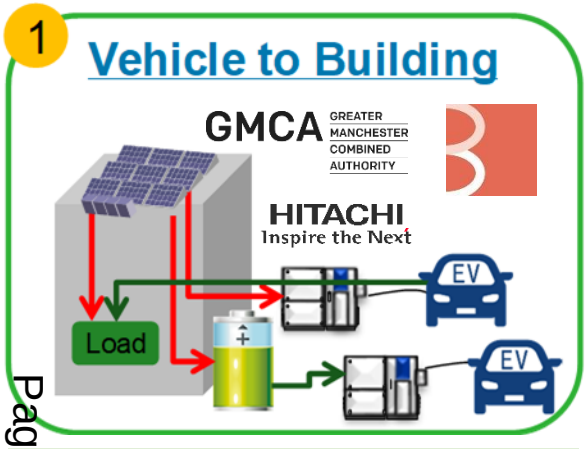
1. Domestic and commercial consumers
2. Generation projects
3. Vehicle to grid projects

Value sharing proposition: validation through the Installation and trial of controllable assets

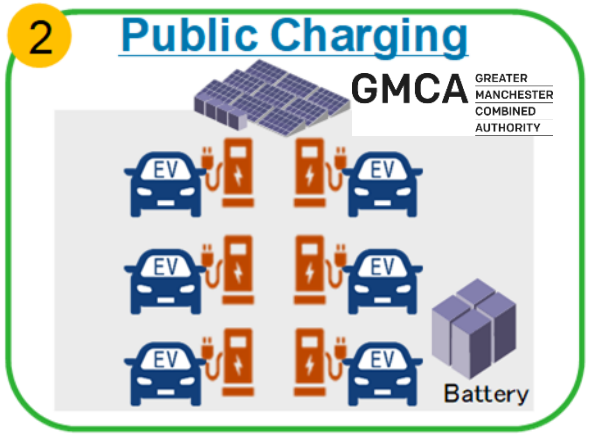
Heating and Storage validation



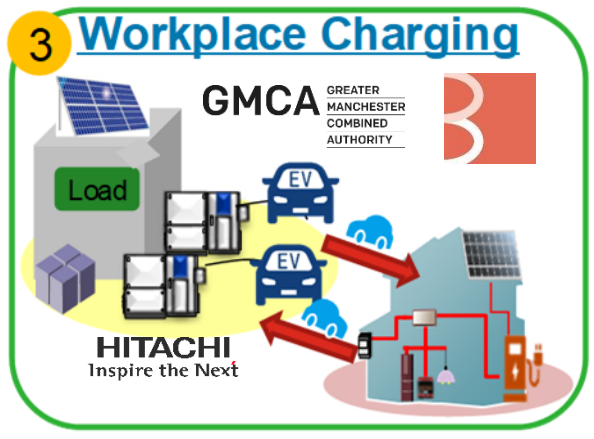
V2G Validation



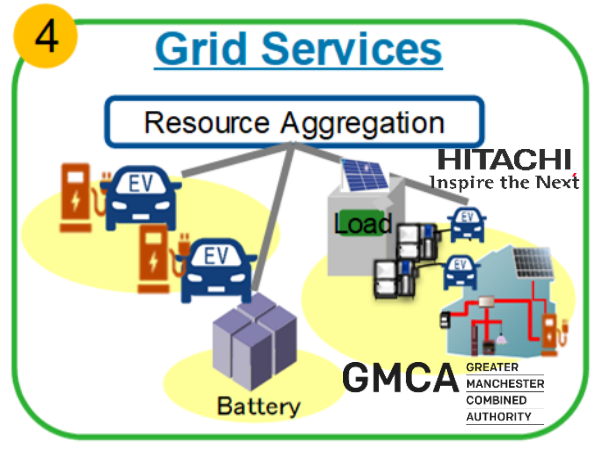
Behind the meter optimisation
Buildings as enhanced DER assets



- Ability to turn parked cars into energy resources for GM LEM



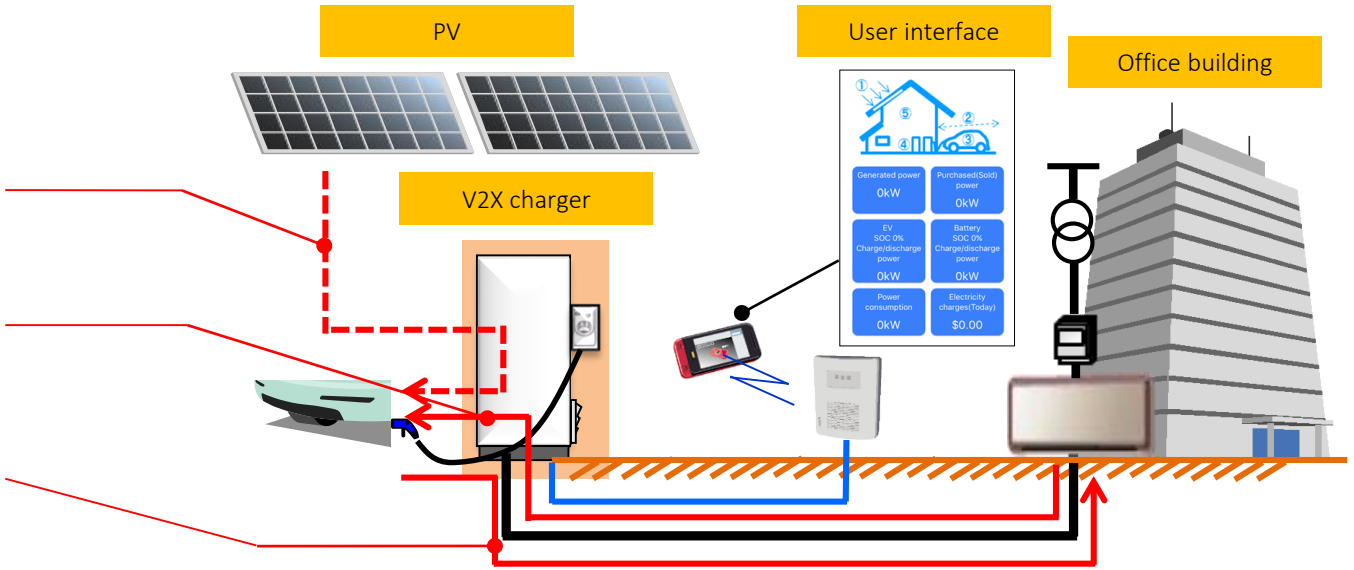
- GM LEM can provide benefits to both employers and employees



- Aggregated resources can provide flexibility services through GM LEM

Vehicle to Building Example:

- PV connection. Maximise utilisation of renewables via V2X charger control
- Charge EV with electricity from the grid leveraging offers through the GM LEM
- Discharge from EV to building via V2X charger to optimise energy consumption



Value Sharing Proposition 1 - EV Fleet Operators - Need a base & have predictable usage

Operator Benefits - £8,000 grant available/vehicle
Enhanced capital allowance

Sharing Value

- Fleet Operators – Taxi, Private Hire, Logistics Fleets
- Charging on private landlord location
- Rapid Charging >50kW
- Vehicle to Grid
- Variable pricing

- Research to match proposition with operator needs e.g. locations, other services (toilets, café, security)

Value Sharing Proposition 2 – Community Energy across Domestic and Non Domestic settings (Peer to Peer)

- Manchester schools
- LEM connected CE Scheme
- Off-taker profiles
- Handling Spill from off-takers
- FLEX Market access

Assets

PV and Battery

New Vehicle charging

Other generation classes

Value Sharing Proposition 3 – Campus Micro grid

- Inter campus LEM trading
- Off-take from LEM trading
- Trade Spill on LEM
- Flex load case
- Heat Pumps(S)
- Rapids + V2G
- FLEX Market access

Assets

Manchester Science Park

Central charging facility with V2G

Optimised Market

Platform Design

1. Design the requirements for a regional LEM platform, i.e. control, optimisation, dispatch and trade

2. Design the required integration with other local control platforms, particularly those operated by the DNO, who provide constraint management locally and will interface with the national transmission system.

Platform fundamentals

Upside's Virtual Energy Store will aim to demonstrate how the GM LEM will work in practice. Ensuring that geographical network constraints are managed, local generation and supply is maximised and provision of ancillary network services are offered.

1. National Grid/DSO provides local constraint issues.

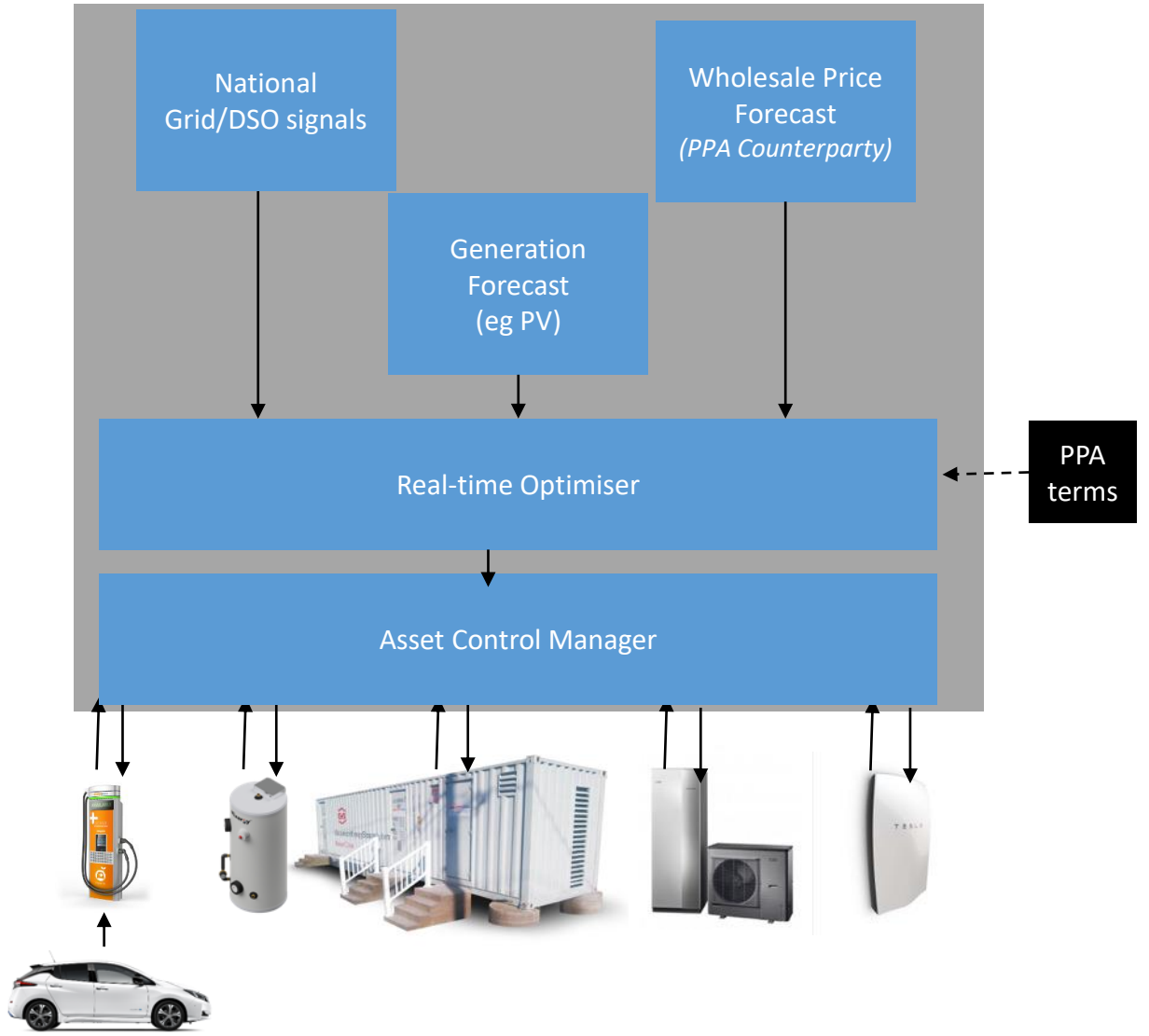
2. Rolling 24 hour renewable generation forecast (eg PV) for a sleeved PPA to share between GM authorities.

3. Half-hourly updates of wholesale market price forecasts, from the GM LEM PPA counterparty

4. Given forecasts for local constraints, renewable generation, wholesale price and the PPA terms, create an optimal dispatch plan for the selected authority/site.

5. Given the optimized dispatch plan, turn site storage up or down to maximise income for the authority, whilst minimizing imports when generation import is not available

6. Monitor real-time asset behaviour in-order to update forward optimization plan



Investment Ready Validated Business Model

Communication and engagement

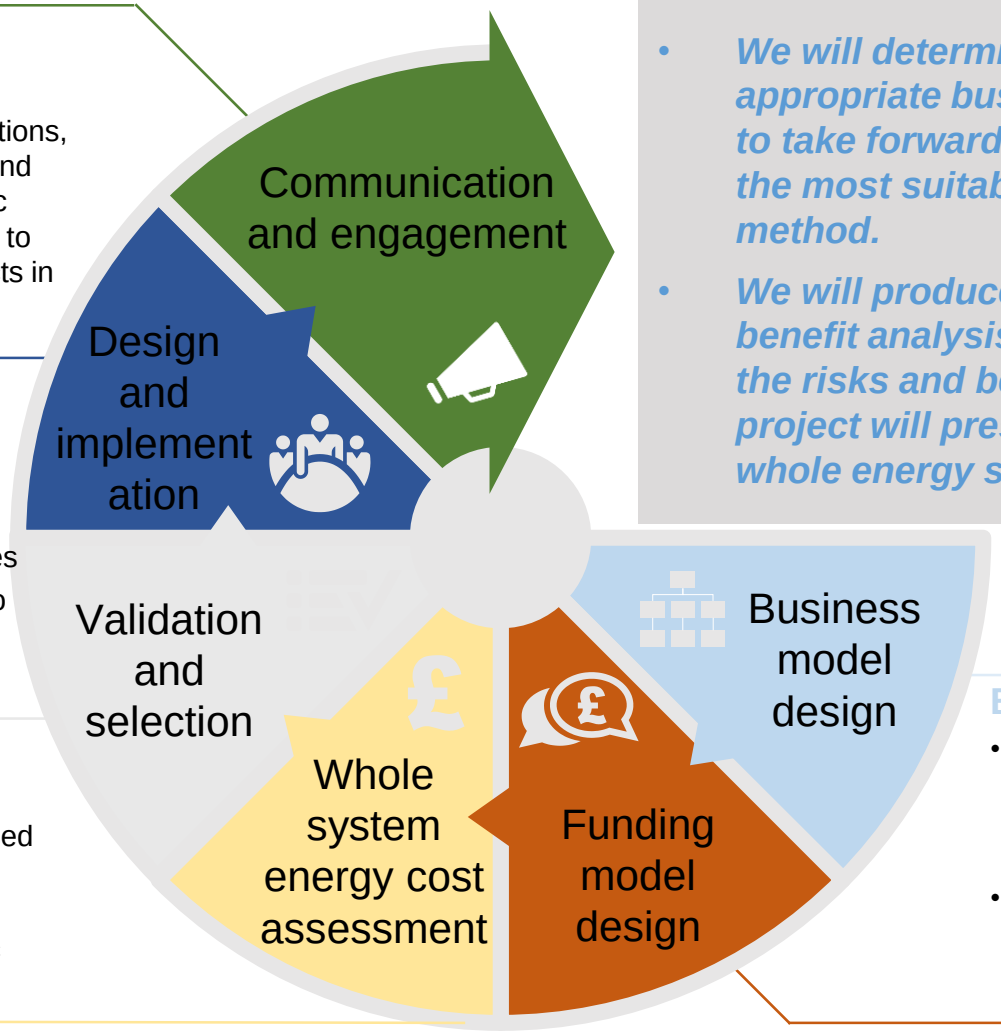
- Deliver a strong communications, engagement plan, recommend activities to achieve strategic objectives of the project and to share operations with projects in other localities

Design and implementation

- Develop detailed design for chosen business model and determine expected outcomes
- Implement business model to build financial structure of project

Validation and selection

- Validate revenue streams and value proposition of the proposed business models
- Recommend most appropriate model that aligns with strategic objectives



- ***We will determine the most appropriate business model to take forward, including the most suitable funding method.***
- ***We will produce a cost benefit analysis to evaluate the risks and benefits the project will present to the whole energy system.***

Business model options

- Propose revolutionary market and business model options for the provision of smart energy systems
- Develop selection criteria to assess suitability of models

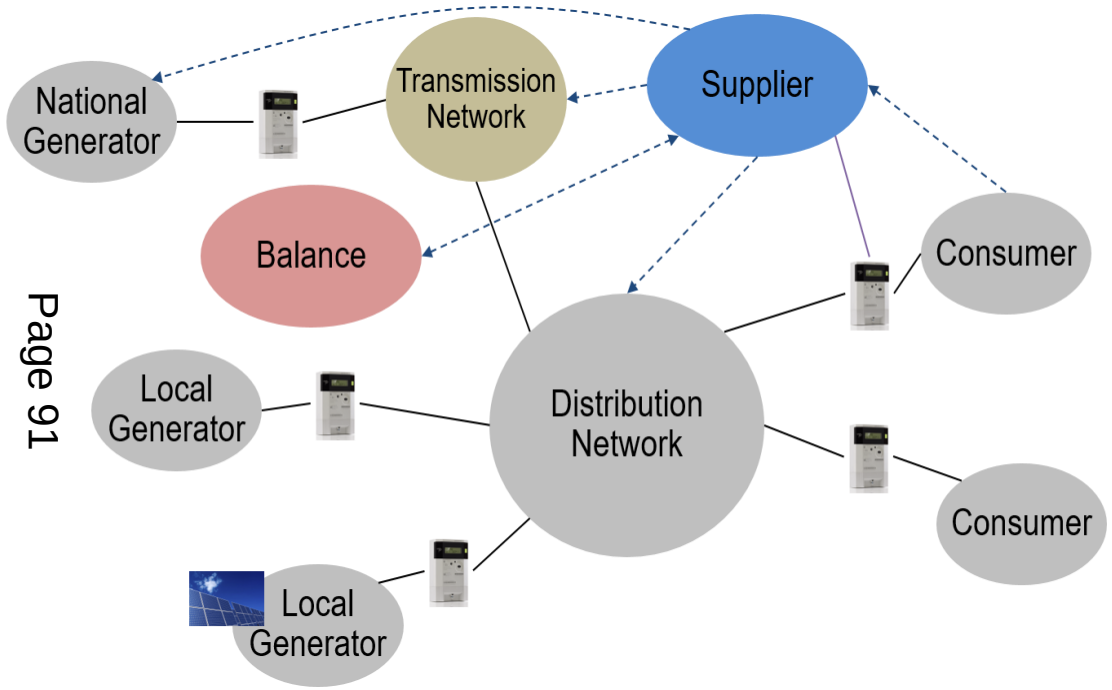
Whole system energy cost assessment

- Perform impact assessments to compare affects of business models on value chain for whole energy system
- Develop financing proposals that share benefits and risks fairly between investors, consumers, utilities and authorities

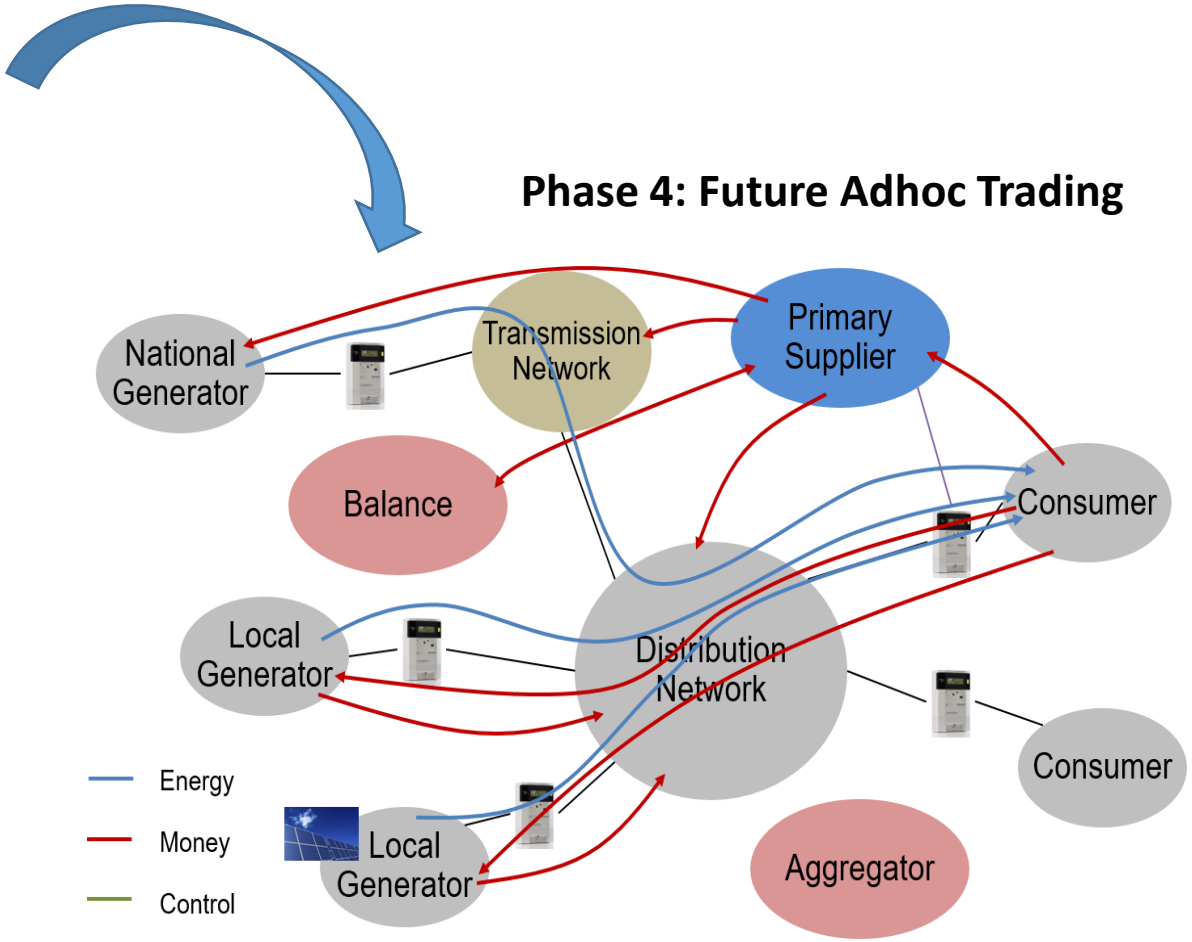
Funding model options

- Investigate possible funding models and structures to finance the project
- Ensure business model will attract finance and investment

Future……



Phase 1: Current Commercial Structure



Proposed Consortia

GMCA GREATER MANCHESTER COMBINED AUTHORITY

upside

HITACHI Inspire the Next

CORNWALL INSIGHT CREATING CLARITY

DAIKIN

regen transforming energy

BRISTOL energy

Northwards Housing North Manchester's Council Homes

Carbon Co-op

TBC

Advisors

electricity north west

Cadent Your Gas Network

GrahamOakes Community & Municipal Energy

Pioneer City

BRISTOL CITY COUNCIL

International followers

eko KUMPPANIT

GREATER MANCHESTER
DOING THINGS DIFFERENTLY

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GM GREEN CITY REGION PARTNERSHIP

Date: 18th October 2019

Subject: Energy Transition Region Update

Report of: Sean Owen, Energy Lead GMCA

PUPOSE OF REPORT

The purpose of this report is to outline the progress made in developing a high level business case for a GM Wide Energy Transition Region.

RECOMMENDATIONS

The Green City Region Partnership is asked to:

- Note the progress in developing the Energy Transition Region proposal
- Comment on Energy Transition Region draft Strategic Outline case provided by Atkins (Annex 01)

CONTACT OFFICERS

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Mark Atherton: mark.atherton@greatermanchester-ca.gov.uk

1.0 BACKGROUND

The Greater Manchester 5 Year Environment Plan, under Energy supply, outlines 3 priority `asks' of central government. The first is: " to work with us to establish an Energy transition Region (Innovation Zone) in Greater Manchester to test innovative approaches, policy and finance mechanisms, to accelerate local renewable energy generation, storage and efficiency at scale."

BEIS provided funding to enable Greater Manchester to complete an Outline Strategic Case for the Energy Transition Region (ETR) concept in April 2019 and Atkins Consultants were appointed in June 2019 to undertake this work.

2.0 OUTLINE STRATEGIC CASE CONTENT

Following 2 workshops and multiple 1-1 interviews, Atkins have provided a draft Outline Strategic Case for review (Annex 01).

The main aspects of the draft Outline Strategic Case includes:

1. Introduction: Overview of the energy sector in Greater Manchester, and the national and local policy context
2. Strategic Case: Strategic context, rationale and objectives for Greater Manchester
3. Economic Case: Identification and appraisal of options for the proposed ETR
4. Commercial Case: Discussion of potential commercial arrangements upon which the ETR could be established
5. Financial Case: Discussion of potential means of funding for the establishment and ongoing delivery of the ETR
6. Management Case: Outline of the arrangements to be put in place to deliver, monitor and evaluate the implementation of the ETR

3.0 NEXT STEPS

The next steps are to:

- Comment on the Draft Outline Strategic Case
- Review and agree next steps via the Green City Region Partnership `Energy Innovation' Challenge Group

4.0 RECOMMENDATIONS

The Green City Region Partnership is asked to:

- Note the progress in developing the Energy Transition Region proposal
- Comment on Energy Transition Region draft Strategic Outline case provided by Atkins (Annex 01)

Energy Transition Region

ETR Strategic Outline Case

Greater Manchester Combined Authority

4 October 2019

Contains *sensitive* information

Notice

This document and its contents have been prepared and are intended solely for Greater Manchester Combined Authority's information and use in relation to the Energy Transition Region.

Atkins assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 47 pages including the cover.

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Client signoff

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Introduction

Introduction text

Executive summary

This Document

This document provides the Strategic Outline Case (SOC) for the establishment of an Energy Transition Region (ETR) for Greater Manchester. In line with Treasury Green Book Guidance the SOC is intended to make the case for change and explore the preferred way forward. The planning phase and any subsequent procurement should be recorded in an Outline Business Case (OBC) and Full Business Case (FBC) respectively; both of which follow the SOC.

The SOC is structured as follows:

1. Introduction: Overview of the energy sector in Greater Manchester, and the national and local policy context

2. Strategic Case: Strategic context, rationale and objectives for Greater Manchester

3. Economic Case: Identification and appraisal of options for the proposed ETR

4. Commercial Case: Discussion of potential commercial arrangements upon which the ETR could be established

5. Financial Case: Discussion of potential means of funding for the establishment and ongoing delivery of the ETR

6. Management Case: Outline of the arrangements to be put in place to deliver, monitor and evaluate the implementation of the ETR

1. Introduction

This section provides an overview of the energy sector in Greater Manchester and the national and local policy context. It sets out the broader ambitions before considering, in the Strategic Case that follows, the more specific strategic objectives for Greater Manchester and the challenges faced in achieving its goals.

1.1. Overview of energy in the Great Manchester Area

Greater Manchester Combined Authority (GMCA) has the target of being carbon neutral by 2038. The Greater Manchester (GM) region is at the forefront of tackling the challenge of climate change through the reduction of carbon emissions. The carbon neutral target will be supported through the transition to a smarter and cleaner energy system. Greater Manchester aims to become a “carbon neutral city region”, with a transformed energy system which is based on being fit for the future, low carbon, smart and sustainable, both economically and environmentally.

1.2. Local policy Overview

1.2.1. Greater Manchester

5-Year Environment Plan – Greater Manchester has the vision to become a clean, carbon-neutral, climate resilient region, with the mitigation of climate change the most significant environmental challenge. There is an urgent need to reduce emissions produced by energy through shifting away from fossil fuels towards renewable energy sources. Three key priorities for the energy sector include:

1. Increasing local renewable electricity generation;
2. Decarbonising the heating of buildings; and
3. Increasing the diversity and flexibility of energy supply.

Greater Manchester Strategy – Our People, Our Place – The energy sector is a key component of one of the 10 priorities for GM. Priority 7, “a green city for all”, will be realised through the generation of local low carbon energy to tackle climate change. In order for the region to reduce carbon emissions, the methods for supplying, managing and consuming energy need to be transformed, including the development of new, renewable energy sources and improvement of the whole energy system.

Greater Manchester Spatial Strategy – This strategy highlights the importance of improving energy efficiency, including low carbon generation and storage of energy for decarbonising the Greater Manchester economy. The GMCA is committed to being carbon neutral by 2038. This goal will be supported by numerous measures:

- Promotion of low carbon energy schemes and networks;
- Introduction of a balanced and smart electricity grid;
- Minimisation of energy demand;
- Maximisation of energy efficiency; and
- Utilisation of low carbon, renewable energy sources.

Climate Change and Low Emissions Implementation Plan – This plan sets out the strategic actions Greater Manchester intends to deliver from 2016 to 2020 in order to fulfil its Climate Change Strategy (2012) and Low Emissions Strategy (2015). The plan aims to deliver the following five outcomes:

1. Make a rapid transition to a sustainable low carbon economy;
2. Reduce collective carbon emissions by 48%;
3. Be prepared for and actively adapt to a rapidly changing climate;
4. Embed low emission behaviours into the culture of our organisations and lifestyles; and
5. Meet all the EU thresholds for key air pollutants at the earliest date.

1.2.2. Wider Policy

Northern Energy Strategy – The strategy aims to transform the north into a leading low carbon energy region by 2050. The region hopes to create an energy economy worth £15bn per annum, providing 100,000 green jobs for the region and supplying clean, affordable energy to customers. The strategy aims to achieve this by building on existing strengths in renewable energy, including hydrogen, tidal and marine energy and new forms of energy storage, along with energy innovation.

Science and Innovation Audit (Greater Manchester and Cheshire East) – The SIA recognises energy as an area with fast-growth potential, with a wide range of key assets across the sector that need to be fully utilised. The region has leading positions in nuclear research, low carbon generation, transmission and storage, these areas must be capitalised on to maximise the benefits to Greater Manchester and Cheshire East.

Realising the Opportunities of Decarbonisation in the North of England – There are big opportunities for the north of England to be the centre point for low-carbon energy economies, with the possibility of creating 46,000 jobs by 2030 in the power sector. This report emphasises the importance of effective management during the transition to a low carbon industry. This will ensure the region capitalises on local strengths and delivers a “high-skill, high-wage, low-carbon economy of the future”. The three main challenges identified are:

1. Lack of policy certainty and ambitions;
2. Failure to put a just transition at the heart of decarbonation policy; and
3. An ill-equipped skills system.

The report made several recommendations with regards to the long-term certainty and devolved powers, a Just Transition Commission and Just Transition Funds for the North and skills standards and funding.

There are major national, regional and local challenges, and Greater Manchester is particularly ambitious in its carbon neutral objectives. The policies that have been established within Greater Manchester and the wider region to tackle the energy challenges show a clear commitment to supporting and promoting the carbon neutral aspiration.

The Strategic Case in the section that follows sets out the specific opportunities, challenges and barriers to the innovation required in the energy sector to meet the goals of Greater Manchester.

2. Strategic Case

The Strategic Case sets out in the specific challenges that Greater Manchester faces in achieving its 2038 carbon neutral target. The barriers and opportunities to closing the 'innovation gap' are described and how the concept of an Energy Transition Region for Greater Manchester can help to overcome this gap.

2.1. The Strategic Challenges

Emissions Reduction:
In 2015/16 the Greater Manchester region emitted 12.5 $MtCO_2$, through 51.6 TWh of energy usage.[1] In order to be compliant with the 2015 United Nations Climate Change Conference Paris agreement, emissions will need to be reduced by 15% per annum over the next 5 years. The vision of GMCA to be carbon neutral by 2038 has further increased the requirement to reduce emissions relating to energy generation and usage.

Population Growth:
The region is expected to experience strong population growth through to 2035, which is estimated to lead to a 3% increase each year in energy demand, this will correspond to an additional 2,400 GWh of additional energy usage per year.

Energy Generation and Supply:
- Currently only 2.5% of electricity used in Greater Manchester is generated using renewable energy sources within the region.[2] This is almost half the national average by household. Uptake rates are poor, and it is estimated that only a quarter of the renewable energy potential of the city region is utilised.
- Gas is the main source of heating across the region with 95% of homes connected to the gas grid. There are a small number of microscale heat networks, along with an estimated 1,000 electric heat pumps functioning across the region. There are opportunities to introduce hydrogen into the gas grid to reduce carbon, however due to technical and cost implications, this is currently not viable.
- In terms of diversity and flexibility of energy supply, at present the major energy infrastructure in the Greater Manchester region is configured to supply homes and other buildings with electricity from power stations. Currently the region has 750kW of storage, including 500kW used for research purposes.[3]

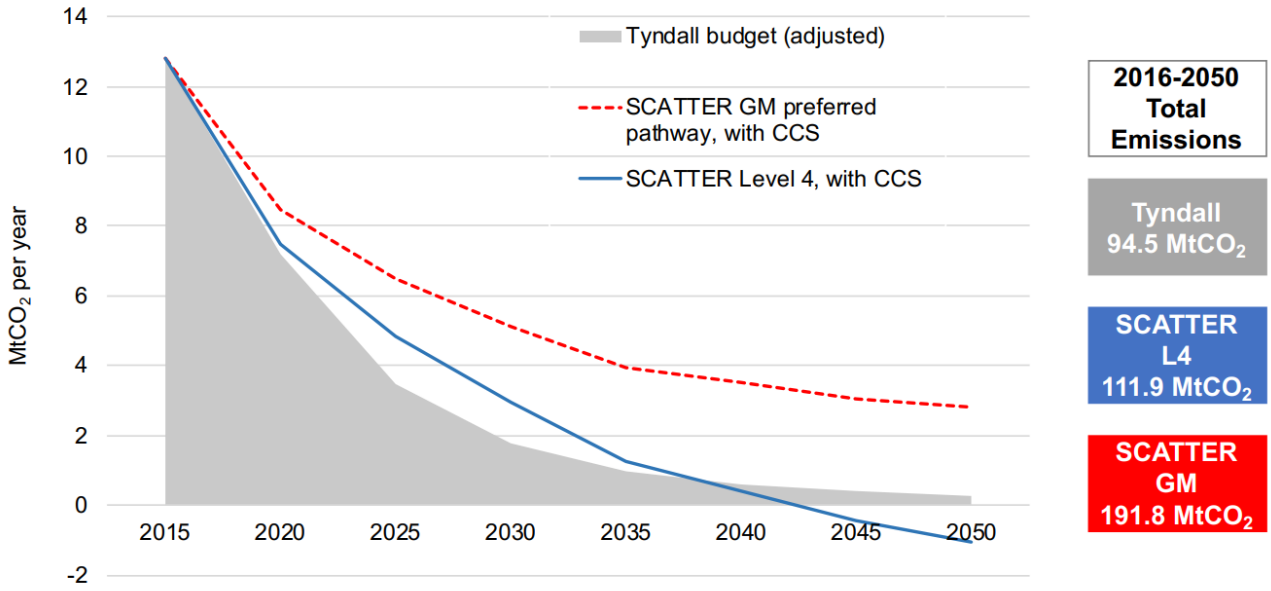
CO_2 emissions have however declined significantly over the last three decades; 39% from 1990 to 2015, predominantly due to changes in energy production at a national level, through a shift from coal to gas and offshore wind.

The Innovation Gap:
The graph below shows the challenge that GMCA will face reducing emissions to become carbon neutral by 2038. The Tyndall budget is the recommended pathway for cuts in emissions for Greater Manchester from the Tyndall Centre for Climate Research. The other pathways use the SCATTER model, which is based on implementing over 40 different interventions to different extents. The SCATTER Level 4 line shows the reduction in carbon emissions pathway when all interventions are pulled through to the maximum extent, while the SCATTER GM line is based on a pathway of what is currently planned in GM and what might be achievable in the future.

[1] GM Smart Energy Plan
[2] 5-year Environment Plan for Greater Manchester 2019-2024
[3] 5-year Environment Plan for Greater Manchester 2019-2024

The pathways predict a substantial gap between expectations and the current trajectory, and even when the SCATTER Level 4 pathway implemented, total emissions produced from 2016-2050 are almost 20% higher than what should be produced in the Tyndall Centre's recommended pathway. Innovation in the energy sector is crucial to closing this gap and shifting Greater Manchester onto a pathway which reflects the Tyndall Centre's recommendation for carbon emissions.

Figure 1 - Potential Carbon Reduction Pathways for GM



Source: 5-Year Environment Plan for Greater Manchester

With both emissions needing to be reduced and energy usage expected to increase, it is clear that if Greater Manchester continues on its current path, it will not meet its aspiration of being carbon neutral by 2038. There therefore needs to be a transformative shift in the energy sector to enable innovation in new low carbon technology.

2.2. Barriers to Innovation in Greater Manchester

There are three key barriers which we have identified using information from GMCA, workshops and interviews with key contacts in the energy sector in Greater Manchester and our extensive industry knowledge:

1. **Engagement and collaboration between key stakeholders**: There are excellent examples of collaboration across Greater Manchester's energy sector with a number of networks already established (examples); however, the scope of these are limited with no formal overall focal point and joined up approach to innovation and the carbon neutral agenda.

2. **Difficulty securing funding/finance:** Sources of funding are available to support innovation in energy; however, innovators are often not clear on what funding they may be eligible for or how to secure it and in many cases, don't have the resources or necessary skills to successfully apply.

3. **Regulatory and policy:** Regulation and policy is seen as a potential barrier to innovation and this can in different cases be a real or perceived barrier. Regulation and policies need to be forward looking and future-proof, allowing individuals and organisations flexibility and opportunities to innovate. The energy sector needs to promote innovation by creating policies which improves the risk vs. reward trade-off related to innovation within the energy sector, allowing innovators to make returns on successful new products. Closing the innovation gap will require effective engagement with the regulator and policy makers.

Numerous other issues have been identified and discussed in stakeholder workshops and interviews. Many of these relate to the difficulties in the overall 'process of innovation'; stimulating sufficient ideas that address the right problems and opportunities in Greater Manchester, prioritising the innovations that will deliver the greatest benefit to achieving the net zero carbon target, and ultimately commercialising them to achieve the best outcomes. Inherent to this is a real or perceived gap in procurement routes available to support innovation and concerns around a growing skills gap.

2.3. Strengths and Opportunities in Greater Manchester

In contrast to the barriers to innovation in the energy sector, there are also a number of strengths and opportunities to build on in overcoming these barriers and closing the innovation gap. These include:

1. **Ambition:**
   The strategies and plans described in the Introduction (section 1) clearly show the level of aspiration for Greater Manchester. The carbon neutral 2038 target is an ambitious statement of intent.

2. **Stakeholder Commitment:**
   The engagement with stakeholders in developing the Strategic Outline Case demonstrated a very strong agreement with the need to explore different approaches to achieving the energy goals for Greater Manchester. This included local government, academia, utility companies and private sector stakeholders.

3. **Current Innovation Landscape:**
   Greater Manchester has an established track record of innovation in energy and is playing a leading role in the development of, for example, hydrogen fuel and graphene applications.

2.4. Energy Transition Region

The concept of an Energy Transition Region (ETR) is proposed as a means of overcoming the barriers and leveraging the strengths and opportunities to close the innovation gap in Greater Manchester.

The ETR will promote energy innovation in Greater Manchester by bringing together key stakeholders in the industry; including universities, SMEs, large commercial businesses, utilities and public organisations. This connects important local energy assets, ensuring they are fully utilised and work together to create low carbon energy solutions. It aims to create a future proof energy system, which is underpinned by innovative technology and smart networks.

Along with accelerating innovation, the ETR will focus on upscaling deployment through smart technology and services, integration and optimisation. It will bring together the whole range of regional and national stakeholders to share knowledge, agree priorities, develop processes, services and technologies and deploy innovations onto the grid.

It is envisioned that the ETR will speed up the pace of delivery of innovative, carbon-neutral ideas and products within the energy sector. This will be crucial for GM, as urgent action is needed if the carbon-neutral target is to be reached by 2038. If Greater Manchester continues down its current path for the foreseeable future, then the target will become unachievable.

The proposed ETR intends to provide energy security to households, communities and businesses, as well as optimising economic opportunities and minimising costs to taxpayers. These changes will be brought about as the region becomes a leader in smart energy innovation and delivering a decarbonised energy system. Innovative business models, governance and funding solutions will be key enablers to realising this vision and it is crucial that the ETR focuses on a fully integrated, whole system approach.

The aim of the ETR would be to accelerate creation, deployment and uptake of new innovative carbon neutral products and systems for the energy sector. The purpose of the proposed ETR will be to:

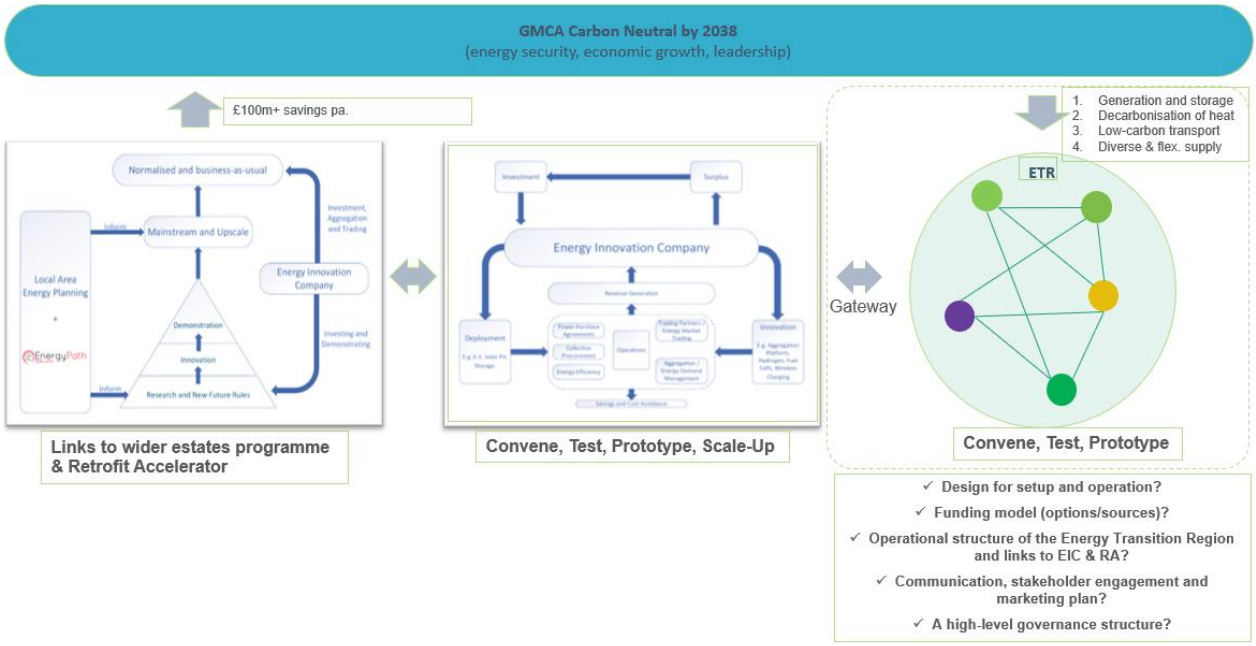
1. Facilitate the provision of innovative and digitally enabled smart energy systems and energy services;
2. Monitor the 'innovation gap', identifying specific opportunities for innovation and proactively encouraging the sector to develop solutions;

3. Facilitate and support access to sources of funding for energy innovations in Greater Manchester;
4. Optimise local assets to open ancillary markets;
5. Improve the connection between local generation and smart networks and consumers in Greater Manchester;
6. Facilitate derogation on a case-by-case basis through accelerated, agreed processes and procedures with Ofgem; and
7. Support and integrate the longer-term proposals for a Greater Manchester Energy Innovation Company and Retrofit Accelerator.

Ultimately it is envisaged that an Energy Innovation Company (EIC) will be established through evolution of the ETR and will seek to accelerate delivery, upscale and mainstream innovations from the ETR using public sector assets. The EIC will promote innovative financing and delivery mechanisms, bringing together public, commercial, industry and citizens.

The Retrofit Accelerator will act as an intermediary between current operators in the retrofit market in the construction sector and potential customers.

Figure 2 - How the ETR will support the Carbon Neutral Target



The appropriate governance and processes will need to be in place to enable an innovation-accelerating atmosphere, while ensuring the grid is secure and consumers are protected.

The ETR will promote the development of projects from any point on the Technology Readiness Levels, testing these projects in real world environments, including consumer homes or businesses, with appropriate consumer protection. GMCA has a number of existing demonstrators which will inform the ETR and shape processes going forward.

The ETR will take a systemic approach to transforming the system to achieve its zero carbon ambitions, with multiple complementary, innovative projects being carried out in parallel.

The ETR will enable exploration of multi-vector solutions and their interaction with the whole energy system. In order to create an innovative environment, various local stakeholders will be required to collaborate, including utilising living demonstrators, simulators and test lab capabilities. This will provide end-to-end integration opportunities of how technologies can connect to the energy system, with feedback from customers on how service models are received.

It will be important to ensure that the ETR does not operate in isolation, but works with and utilises other key organisation within the energy space in GM. This will enable the ETR to maximise the beneficial impact it has

on support GM's goal of being carbon-neutral by 2038. Two key organisations within the GM region which are currently promoting low carbon energy are:

1. Greater Manchester Low Carbon Hub – The GM Low Carbon Hub is responsible for developing and carrying out the delivery of the Greater Manchester Climate Change Strategy and other key environmental plans and priorities. The hub promotes environmental sustainability across the region, with a diverse group of members, including key individuals and organisations in GM.
2. GM Green Switch – This is a partnership between Big Clean Switch and GMCA, which is trying to promote households and businesses to switch to a low carbon energy supply. The partnership provides a service which eases the switch to a green energy supplier through providing information on different options and the cost of each option, along with enabling the switching process by contacting your existing and future energy supplier.

The experience and knowledge acquired by the ETR will help inform and shape the future of energy regulation and local and national policy. Through the ETR, the GMCA aspires to become a leader in the UK energy market, transforming the Greater Manchester into a greener, more climate resilient region.

3. Economic Case

The Economic Case identifies a number of options that Greater Manchester could pursue in establishing the concept of an Energy Transition Region to address the innovation gap as described in the Strategic Case. The options have been developed with the support of discussions with key stakeholders in one-to-one meetings and workshops. Each option is appraised in terms of their estimated costs and the expected advantages and disadvantages of each approach.

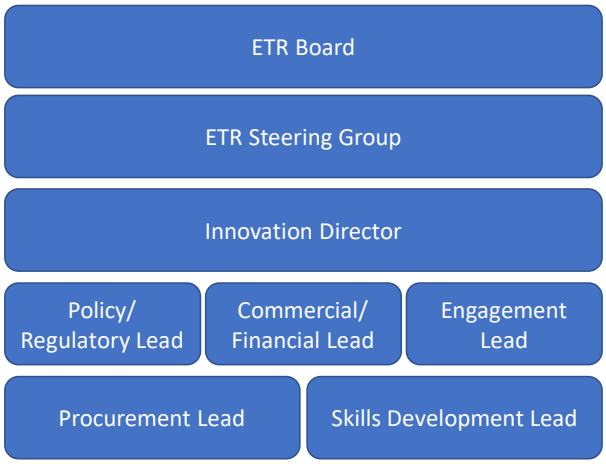
The scope of this business case is to establish the model by which an ETR could accelerate innovation in Greater Manchester. Its purpose is not to assess current and likely future innovations, specific gaps or solutions to addressing the carbon neutral challenges. The options proposed are to provide the vehicle which will be responsible.

Options are not mutually exclusive and the ETR is expected to evolve over time. The purpose of this appraisal has been to identify a preferred option for the initial launch of the ETR in Greater Manchester:

1. The **Do-Nothing** option maintains the status quo with Greater Manchester continuing on its current trajectory with respect to reducing emissions.
2. The **ETR Support** option brings key stakeholders together to set and steer the strategy and direction for Greater Manchester and provides minimal support to the GM energy sector via a 'light touch' innovation hub on a case-by-case basis.
3. The **ETR Lead** option provides an established ETR Board and Steering Group with an innovation hub co-ordinating support and administration for innovation in the GM energy sector. Specific subject matter experts within the ETR will proactively enable innovators to overcome barriers to innovation.
4. The **ETR Drive** option builds on the ETR Lead option to directly provide a wider range of subject matter expertise and support to innovation in the energy sector.

The diagram below shows the key elements of the proposed ETR; highlighting which elements are included in each option.

Figure 3 – Key elements in each ETR Option



	Do Nothing	ETR Support	ETR Lead	ETR Drive
ETR Board	No	Yes	Yes	Yes
ETR Steering Group	No	Yes	Yes	Yes
Innovation Director	No	Part-Time	Full-Time	Full-Time
Policy/ Regulatory Lead; Commercial/ Financial Lead; Engagement Lead	No	No	Part-Time	Full-Time
Procurement Lead; Skills Development Lead	No	No	No	Full-Time

The roles and responsibilities of the ETR functions are described in Appendix A.

The table below provides an initial appraisal of the four options; considering an estimation of costs to implement and deliver the ETR and the key advantages and disadvantages of each approach.

The costs are at this stage approximate estimations of implementation (including outline/full business case development where relevant) and ongoing annual costs of running the ETR. All costings should be revisited in more detail during the subsequent planning (Outline Business Case) stage.

3.1. Options Appraisal

Table 1 - Options Appraisal

Option		Description	Key Advantages	Key Disadvantages	Indicative Costs
1	Do Nothing	Maintain the status quo and GM continues on current trajectory	• Incurs no additional cost or effort	• Very high risk of GM meeting its carbon neutral 2038 target • Risks to stakeholder commitment and joined up approach to carbon neutral agenda	Implementation costs: £0 Ongoing costs: £0 per annum **Total costs (Years 1 – 5): £0**
2	ETR Support	Provide minimal structure, direction and support to the GM energy sector on a case-by-case basis.	• Provides the means for stakeholders to agree strategy and direction for the carbon neutral agenda • Establishes a 'front door' for support to energy innovation • Low level of complexity for implementation and management • Achievable relatively quickly within existing stakeholder organisations	• ETR likely to act passively due to resource constraints and therefore fail to make the necessary impact to close the innovation gap • Risk of losing stakeholder commitment if benefits of ETR are not easily recognised • Does not provide targeted support to overcoming barriers to innovation	Implementation costs: £100k Ongoing costs: £175k per annum **Total costs (Years 1 – 5): £917k** Based on 4-month implementation period
3	ETR Lead	Provides structure, direction and support to the GM energy sector plus subject matter expertise to support overcoming priority barriers to innovation.	• Provides a firm focus on a joined-up strategic approach to the carbon neutral agenda • Provides the resources for a more proactive approach to accelerating innovation • Offers subject matter expertise to help overcome the most significant barriers to innovation	• No provision for subject matter expertise to help overcome the • Likely to require some organisational changes to be most effective	Implementation costs: £200k Ongoing costs: £360k per annum **Total costs (Years 1 – 5): £1.73m** Based on 9-month implementation period
4	ETR Drive	Provides structure, direction and support to the GM energy sector plus subject matter expertise to support overcoming a wide range of barriers to innovation.	• Provides the advantages of the ETR lead option plus a wider range of subject matter expertise to overcome barriers to innovation.	• Will require organisational changes and potentially the need to establish a special purpose vehicle • Implementation timescales and effort required likely to be significant	Implementation costs: £750k Ongoing costs: £680k per annum **Total costs (Years 1 – 5): £3.47m** Based on 12-month implementation period

3.1.1. Cost Assumptions

Implementation costs for each option include development of the Outline and Full Business Case plus the project management and specialist input (legal, HR, procurement, etc.). They are approximate estimates based on similar instances where third-parties have been commissioned.

The implementation costs are expected to be reduced if delivered in-house by GMCA and/or other stakeholders. No market testing or implementation planning/resourcing has been conducted at this stage. This should be carried out in the subsequent Outline Business Case stage.

Ongoing costs of operating the ETR are based on employee costs only as per the table below.

Table 2 - Summary of Costs

	ETR Board	ETR Steering group	Innovation Director	Innovation Hub	Enabler Leads	Total Cost (per annum)
Assumed average employee cost	£100k	£80k	£60k	£40k	£50k	
Do nothing (FTE)	0	0	0	0	0	**£0**
ETR Support (FTE)	0.25	1	0.5	1	0	**£175k**
ETR Lead (FTE)	0.25	1.5	1	2	1.5	**£360k**
ETR Drive (FTE)	0.5	2	1	4	5	**£680k**

3.1.2. Benefits of an Energy Transition Region

The proposed Energy Transition Region for Greater Manchester intends to provide focus, strategic direction and to accelerate innovation to achieve the carbon neutral ambition by 2038.

The costs and benefits of innovation proposals will be assessed, selected and supported through their lifecycle by the ETR once it is established.

The negative effects of climate change caused by carbon emissions are many, ranging from extreme weather events such as flooding, heatwaves and storms, to increased spread of disease and reduced security for water and food supplies. These effects can cause severe financial impacts to businesses and families through rising healthcare costs, increased food prices and destruction of property. The intensity and frequency of climate related weather events are only likely to increase. To cover some recent relevant examples, the estimated cost of the 2016 Manchester Boxing Day floods was £6.5m. Manchester and Stockport also experienced a flood event in August this year.

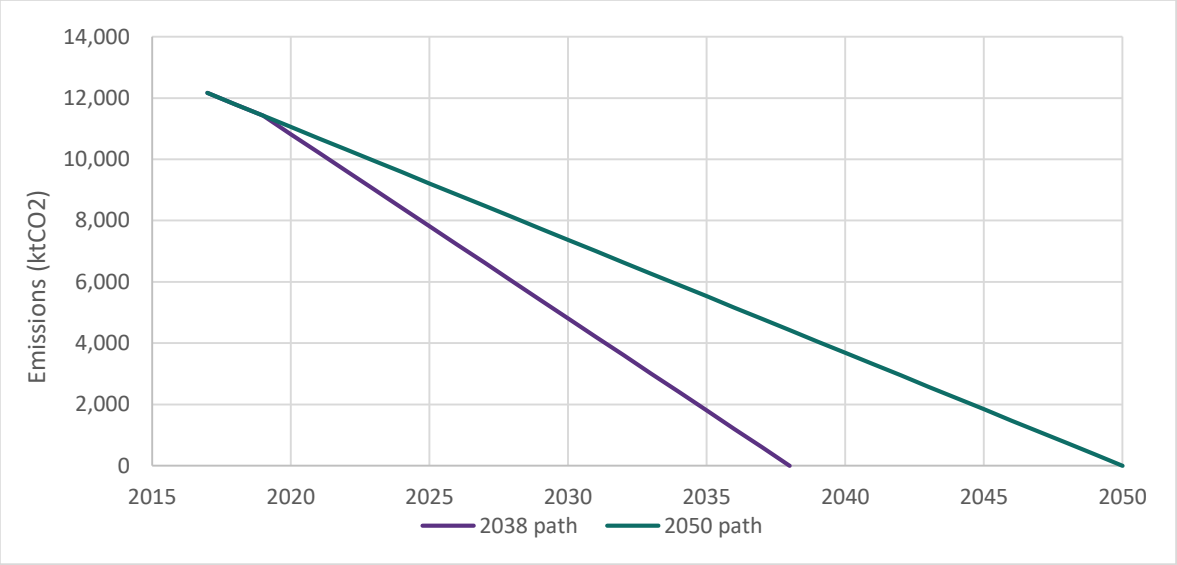
The social cost of carbon is a measure of the economic harm of those impacts, expressed as the sterling value of the total damages of emitting one tonne of CO_2 into the atmosphere. Consensus estimates for the social cost of carbon ranges between £30 and £41 per tonne of CO_2.

By choosing to become net zero carbon by 2038 instead of the government target of 2050, GMCA will avoid significant expenditure on climate related impacts. Official UK government statistics show that carbon emissions for the 10 GMCA regions in 2017 was 12,164ktCO_2. These figures cover industrial, commercial, residential and transport sectors.

To determine the avoided emissions the earlier decarbonisation path would deliver, and hence the avoided costs, emissions under each path need to be calculated. Three assumptions have been made. The first is that the national decarbonisation trajectory follows a straight path from the 2017 baseline year to 2050. The second is that the GMCA region aligns with the national decarbonisation trajectory until 2020, after which GMCA region emissions decline faster to meet their 2038 target, and the third is that from 2020 the GMCA

region decarbonisation path follows a straight line path to zero emissions. The outcome of this calculation is indicated in the figure below.

Figure 4 – Decarbonisation paths for 2038 and 2050



The cumulative emissions under the 2050 scenario is approximately 206,800ktCO$_2$. whereas if the ETR is successful in accelerating innovation and achieving zero net carbon for Greater Manchester by 2038 the cumulative emissions will be approximately 138,250ktCO$_2$, a reduction of 68,550ktCO$_2$. Using the low and high social cost figures, potential savings between now and 2050 would be between £2.093bn and £2.828bn.

Each ETR option in the appraisal is expected to progressively increase the likelihood of achieving this target in the ascending order 'Do Nothing', 'ETR Support', 'ETR Lead' and 'ETR Drive'.

3.2. Preferred Option

The 'ETR Lead' option is recommended as the preferred option. This recommendation is made on the rationale that:

- The 'do nothing' option is discounted as the pathways analysis shows that the current trajectory will not achieve the net zero carbon ambition for Greater Manchester
- The 'ETR Support' option does not provide sufficient support to overcoming the barriers to innovation is therefore also unlikely to achieve the net zero carbon ambition for Greater Manchester
- The 'ETR Drive' option whilst vastly increasing the likelihood of success, will require significant investment, effort and timescale to implement and likely require establishing a special purpose vehicle to be effective. This option may be considered as a longer-term development of an Energy Innovation Company; a natural evolution of the ETR.

In the preferred option the ETR will act as a lead for the energy sector in Greater Manchester, bringing businesses, public organisations, universities and SMEs together, promoting collaboration and engagement and providing a channel for the whole sector to communicate regulators and policy makers with one salient voice. The ETR will also provide support for innovators, through identification and facilitation of engagement with the people and organisations who can provide opportunities to get innovative products to market, through finance or provision of resources and workshop space. The group will also be able to advise on regulation and commercial matters, along with support on preventing key blockers from affecting new, innovation solutions' ability to get access to market.

4. Commercial Case

The Commercial Case discusses the potential commercial arrangements that may be required to deliver the preferred option for an Energy Transition Region in Greater Manchester. The planning and implementation of the ETR model is considered first, followed by the ongoing operation of the ETR and potential future evolution.

4.1. Planning and Implementation of ETR

Establishing and delivering the ETR will incorporate, planning and development of the Outline Business Case (OBC), resourcing the implementation project team (which may require support from third-parties), and designing, implementing and handing-over the solution.

The implementation project team may be resourced entirely with GMCA and/or key stakeholder resources if the capacity and capability is available; however, with third-party support required to develop the Strategic Outline Case it should be expected that this is likely to be required.

No market testing has been conducted at this stage; however, there are existing Government Frameworks (such as Crown Commercial Services Management Consultancy Framework Two) that are accessible to GMCA, and provide the right capabilities, value for money and terms and conditions for this requirement.

4.2. Ongoing Operation of ETR

The ETR, once implemented will require resources for its ongoing delivery. The preferred option aims to strike a good balance between providing sufficient focus and support to accelerate innovation in the Greater Manchester energy sector whilst keeping the organisation and resources required simple enough to facilitate a relatively rapid implementation.

There are several options for establishing the ETR.

- Resources provided by an existing entity in Greater Manchester (GMCA, for example): This creates a clear lead and focus but places the administrative and financial burden on a single stakeholder. Governance (Board and Steering Group) would still require input from other stakeholders to be effective and financial contributions from other stakeholders may be sought. Additional recruitment or secondments may be required to fill any capacity/capability gaps.
- Sharing of resource contributions between key stakeholders: Agreement on contributions from stakeholders via a memorandum of understanding without the need for
- Creating a special purpose vehicle for ETR: The simple nature of the preferred option and the limited financial risk it holds means the benefits of an SPV are unlikely to warrant this model in the early phases of operation. However, as the ETR evolves it may move towards the creation of an Energy Innovation Company, at which point an SPV may be more appropriate.
- Outsourcing to a third-party: Transferring the ETR to a third-party creates the risk of diluting the control and influence of key stakeholders on the strategic direction for Greater Manchester. At the very least the Board and Steering Group should have local stakeholder leadership and influence.

A model in which resource contributions are shared between stakeholders provides a starting point in which the ETR can be established relatively quickly and evolve over time.

As with planning and implementation, potential capacity and capability constraints may require third-party support. The planning and Outline Business Case stage should explore this further; firstly, assessing capacity and capabilities in stakeholder organisations and planning to address any gaps with recruitment, secondments and/or third-party contract(s). A delivery partner model may be an appropriate through planning, implementation and ongoing operation of the ETR.

5. Financial Case

The Financial Case considers the affordability and potential sources of funding for the implementation and ongoing operation of the Energy Transition Region for Greater Manchester. These will need to be explored further in the planning and Outline Business Case phase.

5.1. Current Funding Opportunities

UK Research and Innovation Strength in Places Fund

The Strength in Places Fund (SIPF) was established by UK Research and Innovation and supports significant local economic growth. The SIPF is a competitive funding scheme for research and innovation through a place-based approach. The objectives of the fund are to support innovation-led regional growth by identifying and supporting areas of R&D strength, and enhance local collaboration between universities, research institutes, other R&D facilities and businesses at the forefront of innovation. The deadline for initial expression of interest (EOI) for the first stage of the fund is the 9th of October, which will provide funding to develop a full proposal.

BEIS Clean Growth Fund

This fund was set up by the UK government as a new clean technology early stage investment fund. The Clean Growth Fund has £20 million available, with aims to speed up the deployment of innovative clean technology. Investments will be made in organisations which support the commercialisation of technologies that reduce emissions from greenhouse gases. The application closing date is the 15th October 2019.

Innovate UK Smart Grants

Innovate UK are investing up to £25 million in the commercialisation of innovative or disruptive ideas. Proposals for funding must demonstrate a strong business plan which addresses market needs, a clear evidence-based plan to deliver significant economic impact and good value for money. Innovate UK welcome projects which promote the grand challenges, one of which is clean growth, which would be promoted through innovate, carbon-neutral products and technology. The application for grants closes on 16th October.

5.2. Other Future Funding Opportunities

Industrial Strategy Challenge Fund

The Industrial Strategy Challenge Fund is part of the Government's Industrial Strategy, with the aim to increase funding in research and development to strengthen UK science and business. The fund will invest in world-leading research base and highly-innovative companies in order to tackle the biggest challenges in society and industry, with industrial decarbonisation a shortlisted challenge area for future support. EOIs for wave 3 of funding is closed, with a 4th wave not currently established.

BEIS Energy Innovation Programme

The Government has increased investment in low carbon innovation between 2015-2021. The Energy Investment Programme is run by the UK's Department for Business, Energy & Industrial Strategy, with funding of up to £505 million to accelerate the commercialisation of innovative clean energy technologies and processes.

Low Carbon Networks Fund

The Low Carbon Networks (LCN) Fund has up to £500 million to support new technology, operating and commercial arrangement. The fund will be available to projects sponsored by the Distribution Network Operators (DNOs) and will aim to help DNOs provide security of supply at value for money for low carbon initiatives.

Shared Prosperity Fund
The Shared Prosperity Fund is expected to replace the EU structural funding, which comprises of the European Regional Development Fund, the European Agricultural Fund for Rural Development and the European Social Fund. Around 20% (£364M) of the investments for the European Regional Development Fund went towards supporting the shift to low carbon economies. The Shared Prosperity Fund will be aiming to reduce inequalities between communities across the UK.

European Regional Development Fund
The European Regional Development Fund (ERDF) is allocated by the European Union, with £60 million of funding made available for the Greater Manchester region. The fund focuses on 4 key areas: innovation and research; the digital agenda; support for SMEs; and the low-carbon economy. In more developed regions, such as Greater Manchester, at least 20% of resources must be channelled specifically towards low-carbon economies. This funding will not be available post-Brexit.

Horizon 2020
Horizon 2020 is the EU's funding programme for research and development, with over €80 billion available from 2014-2020. Funding for the energy industry must support the EU's commitment to reduce greenhouse gas emission by 20% by 2020 and a further reduction of up to 80-95% by 2050. Funding for non-nuclear research between 2014-2020 has a budget of almost €6 billion.

Greater Manchester Low Carbon Fund – The fund has been set up by the GMCA and aims to promote the generation and distribution of energy from renewable, low carbon sources. £15million has been made available to fund projects that require a flexible approach to finance due to the implementation of new technology or projects the would benefit from the fund's expertise.

5.3. Funding for ETR Projects

A key role of the ETR will be to facilitate access to funding for innovation in the Greater Manchester energy sector. The initial expectation of the ETR will be that it will support innovators by signposting them to available sources of funding and helping them to secure what they need.

As the ETR evolves and potentially transitions into an Energy Innovation Company, it may change its focus to secure funding on behalf of Greater Manchester and allocate it to priority innovation projects.

6. Management Case

The management case outlines the arrangements to be put in place to deliver, monitor and evaluate the implementation of the ETR.

6.1. Implementation Project Management Arrangements

The preferred option has been selected to balance achieving a sufficient impact on energy innovation in Greater Manchester with simplicity and ease of implementation. The project management arrangements required to implement the ETR are accordingly intended to be simple in nature, whilst also providing appropriate governance and control of delivery.

The key features of the project management approach are as follows:

- **Sponsorship**: A project sponsor should be appointed to own the delivery of the ETR. This may be but is not necessarily the same as the sponsor for the ETR into ongoing operation. The sponsor should have a strong vested interest in the successful delivery of the ETR and
- **Project Board**: Involvement of key stakeholders in decision-making will be critical to successful delivery and operation. A Project Board should be established for the implementation period, supporting the sponsor in scrutinising and approving key project deliverables.
- **Project Management**: A Project Manager will be responsible for planning and delivering the implementation of ETR, any third-party procurement activity, risk, issues and benefits management. A Project Support Officer may be required to support the project manager with administrative tasks.
- **Delivery Resource**: A small team should be established that will be responsible for developing the Outline Business Case (and Full Business Case if required), key processes, terms of reference, and roles and responsibilities for approval by the Project Board.
- **Business Change**: Careful attention to the people aspects of change is critical to the successful delivery of ETR. This could be the responsibility of the project manager, delivery team or require an additional resource to support the implementation. In any case the lead for Business Change will be responsible for readiness assessments, stakeholder engagement and communications and any training required.
- **Subject Matter Expertise**: The implementation project team will need to draw on specialist capabilities to support delivery of the ETR

6.2. Project Plan

The implementation project plan, to include timescales and key milestones, should be evolved in the planning and Outline Business Case phase. At this stage the key activities are considered to be:

1. Project Initiation and Planning: To establish the detailed scope and plans for the implementation of the ETR.
2. Outline Business Case development: To progress the Strategic Outline Case and reflect the outcomes of the initiation and planning activities.
3. Third-party Procurement: If required, a procurement exercise will need to be undertaken to address any capability or capacity gaps in stakeholder organisations.
4. Full Business Case development: The Outline Business Case should be revisited to reflect any procurement outcomes.
5. Detailed Design: Develop the key processes, terms of reference, and roles and responsibilities for approval by the Project Board.
6. Implementation: Delivery of the ETR and transition to ongoing operation.

Appendix A. ETR Roles & Responsibilities

A brief description of each role is outlined below:

ETR Board:

- Defines objectives of the ETR and secures top level commitment from key stakeholders;
- Decides upon strategic direction and corporate governance;
- Chaired by sponsor.

Steering group:

- Appointed by ETR board;
- Implement strategic direction, including filtering projects;
- Identify gaps in sector and focus innovation;
- Members proactively engaging with sector.

Innovation Director

- Lead and organise of steering group;
- Manages the overall ETR programme of innovation and the process;
- Develops and updates milestone plan;
- Budgetary responsibility;
- Manages interdependencies within the ETR;
- Ensures benefit realisation;
- Provides stakeholder management.

Innovation Hub

- Responsible for the day-to-day management and administration of the processes, controls and methodologies that underpin project and programme delivery for the ETR; including reporting, governance, assurance, change control, planning, risks and issues management, resource management, benefits management and financial management.

Enabler leads

- Provides specialist support to accelerate and enable progress and overcome barriers to innovation;
- Make recommendation to steering group and board;
- Enabler leads will specialise in policy/regulation, commercial/finance and engagement in the preferred option (skills and procurement leads can be introduced in the future).

The overall structure of the ETR can be seen below.

- The **ETR Board** will be made up of key stakeholders in the region and will be required to manage the overall direction of the ETR, with the sponsor being the chairperson of this group. The board is expected to meet up a couple of times a month to review the ETR and discuss any changes or improvements that should be implemented in the future. The board will also be responsible for lobbying with regulators and policy makers. If any discussions or challenges within the rest of the organisation aren't able to be resolved within that arm of the organisation, it will be the board's responsibility to resolve the matter with a satisfactory solution.
- The **ETR Steering Group** will communicate and meet with businesses, SMEs and innovators to identify which projects require and will benefit from support from the ETR. It is probable that the ETR will be unable to support all projects presented to them, therefore it is the steering group's role to select to support the projects which will have a highest chance of successful deployment and will bring the greatest benefit to the energy sector in the Greater Manchester region. It is important that the steering group is made up of key stakeholders, who are experts in the energy market, with in depth knowledge of the industry and the ability to recognise viable projects.
- The **ETR Innovation Director** will be responsible for delivering the ETR programme and ensuring that all the different parts of the organisation are working together effectively and collaboratively. The programme manager will provide project milestone plans and oversee the overall programme, guaranteeing project benefits are realised. The programme manager will organise support from enabler leads, based on discussions with the steering group. It will be important for the programme manager to be well-embedded in the local region and to have the public's best interest at the forefront of decision making, therefore we recommend GMCA appoint an internal candidate for this role.
- The **Innovation Hub** will run the day to day management and administrative responsibilities of the programme, working closely with the programme manager to ensure the smooth running of the ETR. The PMO will maintain high standards for the processes in the ETR and will carry out the reporting, governance, documentation and assurance responsibilities.
- The **Enabler Leads** will work closely with business, SMEs and innovators on a project-by-project basis, providing high-quality, expert support to help push innovative products onto the market and promote deployment across the network. These leads will be experts in their individual areas of specialism and will be able to identify keys actions to boost the success rate of innovative projects.

Appendix B. 1-2-1 Interview Notes

Name: Simon Brooke

Company: ENWL

Time/date: 9:30 8/8/19

Introduction: Capacity Strategy Manager for ENWL, involved in forecasting, reinforcement and role as a market facilitator. ENWL has a good relationship with LEPs, including understanding their visions. Houses need to be un-looped to enable low carbon technology. The business tries to make it easier for customers to switch to low carbon.

Notes:

- The ENWL are governed by statues and licenses.
- Regulation needs to change ahead of the curve
- The ENWL wants to invest ahead of the curve, however it is hard to predict the future
- Forecasting helps to predict which investment will be required
- There is the need to implement now for delivery in the future
- The company needs to react to change, regulations/policy change is more in advance, customer behaviour change is more reactive
- There is a clustering of low carbon tech in local areas
- There is uncertainty with regards to where the future will be, depends on the uptake of tech
- Invest needs to be done to ensure the grid is ready for the uptake of low carbon tech to ensure stability in supply
- Uncertain where certain infrastructure or low carbon tech will need to be located (home or public spaces)
- Learning about government plans and regulation changes in advance, gives the grid/network time to prepare
- The move to decarbonisation will cause people to be more flexible in terms of source of energy and less dependent on energy from the grid
- If the infrastructure of the future can be planned and built today, then this will minimise long run costs

Name: Jane Lindsay-Green & Yujia Du

Company: Shell

Time/date: 10:30 8/8/19

Introduction: Works in renewable sustainable energy and the energy transition programme, taking products to create an integrated solution for clients. Shell have a good relationship with GM, with a long history of establishment on the GM region and want to support GM using their expertise to decarbonise public services. Areas shell would be interested in exploring with GM include: district heating network, transport and mobility and energy efficiency. Could set up something similar to a Clean Air Zone to reduce carbon from transport. Ventures part of business invests in innovations, including equity stakes. How does the ETR fit in with GMs mission-based approach?

Notes:

- The involvement of OFGEM is key, more regulatory framework support and engagement is needed, especially in the district heating network industry
- In terms of transport, customers' needs are and will continue to change, rapid charge points and use of hydrogen are key for the future
- There is a need for more generation of renewable energy at a local scale, including speeding up the ability of new innovations to compete in the industry
- New technology needs an integrated and commercial approach
- The timescale to get regulatory changes in currently too long leading to new projects being financially not viable
- Getting regulatory bodies engaged early in projects increases success rates, shows the key stakeholders are on board, encourages private investment
- There is a need for an aligned industry position to lobby for regulatory change
- It's not necessarily all about Central government leading the sector forward, local authorities need to play a key role in developing their own space and shaping the industry.
- Local authorities need to be the driving force is shaping the future of the sector, leading engagement with Ofgem
- In order to be successful, innovations need to be commercial opportunities

Name: Jonathan Collins

Company: Cadent Gas

Time/date: 11:30 8/8/19

Introduction: Cadent Gas is aiming to redesign network delivery to a more regional process. Cadent are working with the electricity network to deliver a decarbonisation plan. Hydrogen should be introduced into the network, especially for transportation. N8 partnership between universities for collaboration in innovation.

Notes:

- The energy network is a strategic national asset, which should be utilised better and future-proofed to promote low carbon tech
- Electronification will not be able supply all the energy needs of the local area, gas still plays an important role
- The use of hydrogen will be key for the future of the gas network
- A change in the mindset of key stakeholders is needed
- Regulators are not promoting innovation and decarbonisation, framework needs to change

- Change needs to be driven from top down and bottom up
- The benefits of greater collaboration need to be demonstrated to regulators, a collective approach increases the change of regulatory change
- The future of the energy sector could use existing assets/network, using more efficient and low carbon practices and increasing reliability
- Government/regulators need to move quickly to promote innovation and industry change, otherwise the UK will lose out to other European countries, just following their lead. GM is well placed to be a leader
- The energy sector drives the future economy. The is a need to develop skills in future energy technology and services, collaborate with universities to promote training
- It is important engagement with regulators is made through a sectoral group rather than in isolation
- The ETR will provide collective insight into industry problems and promote a collective case for change

Name: Ivan Hewlett, Ian Lloyd & Robin Phillips

Company: Siemens

Time/date: 13:00 8/8/19

Introduction: Robin: Siemens Consulting, site development manager for Manchester office; Ivan: Innovative energy management; Ian: head of strategic growth in innovation. Interviewees very well contacted, on board of the growth hub, vice president of the chamber of commerce, on board of UoM. Triangulum-Oxford road project: increasing energy efficiency through smart innovations in centralised control, grid independency, energy storage and optimisation. Siemens have good experience, contacts and arrangements with key stakeholders and operate in multiple areas. The company also have a venture capital arm and are keen to finance innovative projects.

Notes:

- The energy grid is not ready for complete independence
- Issues over how to scale up innovative tech
- Need to optimise and maximise network and create system resilience
- Smart technologies should be used to help GM reach its vision
- The ETR should collate experience and collaborative in terms of contracts and arrangements
- Regulation varies across projects causing delays, constraints and barriers
- Derogation will enable projects
- Getting regulators onboard as key stakeholders of a project will benefit several elements of a project
- Local authorities have poor regulatory frameworks to test tech or new systems
- The boundaries of digitalisation need to be pushed and data from tech should be utilised

- People are protectionist with data, which causes a barrier. GM would benefit pooling all data and working out how best to achieve their vision – data might need to be cleaned
- There are not enough commercially viable projects to invest in
- With Brexit some funding branches might become unavailable, need for other sources of funding
- The sector is constantly evolving and shifting

Name: Kevin Toye

Company: TFGM

Time/date: 14:00 8/8/19

Introduction: Works in the innovation team for TfGM, helping to secure funding for projects. Helping to deliver the strategy for electricity vehicle charging innovation. GM has been shortlisted as a Future Mobility Zone. Creation of a future mobility zone marketplace for innovator to get funding and set up of an intelligent mobility accelerator.

Notes:

- Future proof the industry by utilising the latest technology and smart infrastructure
- There is a need to control and balance electricity (solar and wind are not always readily available, more energy needed in winter)
- Standardisation is needed across the industry to make innovative products more attractive to customers
- Smart energy management using real-time data will help balance surges
- The network needs to be developed to ensure capacity
- Questions over who should pay for and bear the risk of innovation
- TfGM do not have dedicated capital or consistent revenue for individuals with innovative ideas, they do provide advice and letters of support
- Legislation should be made for new innovation, there is a need to move fast
- A process should be introduced to set rules of enforcement – innovation permit?
- All data collected should be shared in one central source
- Smart infrastructure – connecting all energy usage into an integrated payment system
- Often innovative SMEs are prevented from big contracted programmes due to stringent procurement rules – support should be made available to submit more polished bids

Name: Arjun Sikand

Company: HIM

Time/date: 9:30 9/8/19

Introduction: Partner of Health Innovation Manchester (HIM). Similar concept to ETR, solving barriers to health sector and bringing together all stakeholders in the sector in GM. Created as a virtual organisation with no resources, however joined up with an academic research centre. Initially funded by NHS England, however various other organisations now contribute. Now the organisation is based in the City Lab.

Notes:

- Difficulty working together with clinical and academic sides, lots of bureaucracy
- Academics are encouraged to get involved as it provides an opportunity to prove the real impact of their work
- A big culture change is needed to improve the uptake of new technology
- HIM acts as a bridge to maximise the impact of the innovation of SMEs, through their understanding of barriers and processes
- People who spend the money don't always feel the benefits – solution: pool funding
- Simple solutions can have big impacts, if barriers are removed
- A key factor is a common resource team and the availability of academic resources
- There needs to be plans and data for each phase in the process, including which policy changes are needed
- Once a project has been selected it is essential to set milestones for quality checks and evaluation

Name: David Hilton

Company: MIDAS

Time/date: 10:30 9/8/19

Introduction: MIDAS is a Greater Manchester inward investment agency, promoting GM as a business location. Aim to help start-ups by linking them with key stakeholders and aligning the businesses with the vision of the local region. Potential for investment with Japan Bank of International Corporation, however they want a packaged-up pipeline of opportunities. MIDAS could provide the ETR with opportunities to attract overseas investors. Strength In Places fund could provide funding for a proper business proposal for the ETR.

Notes:

- There is genuine inward investment potential in GM
- Reasons to set up businesses in GM include that there are many other companies and supply chain linkages

- A key barrier is the availability of funding, especially for SMEs
- There is a need to ensure projects benefit GM once investors/funding stops sponsoring the project
- ETR should aim to replicate the consolidation hub, a place for new businesses
- Provide incentives for each project stage, including for consumers
- There is currently much uncertainty
- Investment is promoted through commercial viability, good access to skills, connectivity, tax incentives, business enabling environment, financial incentives
- Changing customer spending habits is difficult
- Innovative projects often have a large upfront capital cost and do not make good returns in the short run
- Office/lab space can be hard to find, especially for larger projects

Name: William Swan

Company: Salford University

Time/date: 10:30 9/8/19

Notes:

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Name: Karolis Petruskevicius

Company: Homely Energy

Time/date: 11:30 9/8/19

Introduction: Synthesis of data relating to efficient use of energy mapping at home. Octopus energy, through Homely energy shows the price/cost of heating a home for 24 hours, allows each home to effectively become an energy trader. Customers buy energy at the start of the day, with the possibility to sell any unused energy at the end of the day. An app has been created to help monitor heat pumps at home and have introduced technology to monitor heating needs of houses.

Notes:

- In the future there will be a greater need for heat pumps. With the gas ban there will be a greater need for non-gas heating by 2025
- An increase in the take up of renewable energy will reduce stress on the grid

- Difficult to obtain funding with lack of project management skills cited
- Innovative ideas need sufficient access to test beds to provide evidence to investors of the future potential and viability
- If innovators are not protected, larger companies can easily replicate ideas, which prevents investment and discourages innovation

Name: Amer Gaffar & John Willis

Company: Manchester Metropolitan University

Time/date: 13:00 9/8/19

Introduction: Amer Gaffar: Works on innovative research and projects on hydrogen fuel cells at Manchester Met. Plans to establish an energy centre in the Jon Dolton Centre. Hydrogen fuel cell train from Germany will be tested on one of the lines in GM.

John Willis: SME programme manager at Manchester Met. The Centre for Aviation, Transport and Environment and the Fuel Cell Centre help researcher with equipment and winning funding. There is a good amount of academics who put time aside for business engagement.

Notes:

- There is not currently an established supply chain in GM for hydrogen fuel cell
- Questions over whether there are skills available in GM for growing the hydrogen fuel cell sector
- Manchester met provide access to centre for SMEs to get into the market
- Property owners do not prioritise innovation-based projects
- Businesses will only use innovative products if it will make them money or it is low risk
- It is key to look at the real impact of innovative products on the GM economy, and its potential to survive past the incentives phase
- Whole life costing is an important consideration
- Public perception needs changing, marketing could be a potential solution
- There are various test bed centres and a good supply of knowledge and experience from university academics
- Innovative projects need to be centred around a core funding scheme, programmes have to fit around available funding options
- There a lack of collaboration between innovative SMEs and the public sector
- GMCA in a leadership role will help bring the private sector on board, including multinationals
- Creative and flexible funding avenues are available

Name: Graham Oakes

Company: G Oakes Cons

Time/date: 14:00 9/8/19

Introduction: Technical background, now involved in software engineering. GM has a project to set up a public-private SPV to redesign the local energy system. TELCO have done similar programmes to ETR but not in energy.

Notes:

- Regulation is a big barrier for innovation, it restricts flexibility within the energy sector
- Skills development and procurement need more support
- Tech is available but needs to be refined
- Getting real data will drive idea generation
- Customers are confident and reliant on old technology, they don't have the confidence and trust on new innovations
- Questions over how the market will adopt new tech
- Uncertainty over the path to scale up investment and giving investors the confidence to scale up investment
- Data driven governance gives people agility
- Ensuring data is available and managed to provide clarity on business risks
- It is difficult for innovation to come through public sector channels
- At a local level the sector is more agile

Name: Nic Gowland

Company: Graphene Inst

Time/date: 15:00 9/8/19

Introduction: Workers for Graphene Institution (GI), including the graphene innovation centre. Advises and helps select/direct projects with potential. GI aims to enhance existing projects and bring new products to market. The graphene centre has one of the best energy labs in the UK, funded EU and a private Abu Dhabi company. The company receives royalties on IP, which is how it makes money.

Notes:

- A strategic agreement across universities would benefit the sector
- The ETR should test new ideas and products in housing and building
- There are a number of ideas, but not the resources/bodies to get the ideas to market
- The is a need for test beds in GM to allow opportunities to prove products are applicable to the real world, maybe in a university campus
- Funding is needed for test areas

- Individual research projects are funded by a number of organisations, including EPSRC, the European commission and the royal society

Company: The Growth Company GC Angels

Time/Date: 15:00 23/8/19

Introduction: From the finance arm of the Growth Company, focusing on green energy and smart power. Aiming to reduce reliance on non-renewable materials and has a multi-sector relationship with GMCA.

Notes:

- There are some great innovative projects being realised in the energy sector
- Funding remains a significant barrier for innovators
- Many innovators are not commercially minded and would massively benefit for commercial support
- There is lots of technical expertise within Greater Manchester across different organisations
- Collaboration will benefit the region by allowing individual experts to team up to provide solutions and innovations
- Many innovative projects established by universities are not commercially minded, and do not have any commercial support

Name: Richard Halsey & Lisa Evans

Company: Energy Systems Catapult

Time/Date: 27/8/19 15:00

Introduction: Energy Systems Catapult is aiming to decarbonise the domestic energy market through a smart system and heating programme, with a focus on a whole system view. The company is mainly funded by the public sector, however has some private funding too.

Notes:

- The main people facing barrier is a lack of consumer appeal for innovation
- Policy and regulation need to drive whole system change through incentives, rather than just incentivising certain technology
- Regulation is often very complex and scares of potential innovators
- The risk-reward for innovation in the energy sector prevents innovation as companies are penalised for making large returns. Businesses should be financially rewarded for innovation

- An environment needs to be created within the energy sector, where innovation encourages suppliers and excites consumers
- Sometimes it is the combination of innovations that might provide market solutions
- Before money is spent creating, testing and deploying new tech, the market should be tested to uncover what consumers want and help shape the product
- The main funding gap for innovation is not the piloting stage but the scaling up due to time and money costs. A solution to this could be the creation of a living lab.
- A whole view approach should be encouraged. Often innovation will have trade-off, benefitting one part of the system but negatively impacting another part
- The energy industry is not seen as a valve generating industry, more of a necessary evil. Customers are only concerned with cost and reliability
- There is a strong appetite, but it is constrained by barriers
- Innovation would be encouraged through easing the access to data
- Different LEPs have different approaches to strategic plans, forecasting demand, procurement and implementation, creating a standardised approach across GM will encourage innovators
- Creating innovation momentum will promote more innovation
- Barriers should be addressed at the early stages of innovation
- Innovative products/projects need to be commercial with a solid rationale

Appendix C. Case Studies

C.1. Copenhagen

Copenhagen is aiming to become to the first zero net carbon capital by 2025, including having a 100% renewable energy target by 2025. The city has already reduced carbon emission by 42%. The city's Climate Plan is based on 4 key pillars: energy consumption, energy production, mobility and city administration initiatives, with energy production accounting for 80% of the needed carbon reduction.

EnergyLab Nordhavn is a smart energy programme which is aiming to integrate all available energy sources in Copenhagen. The programme is concentrated in the Nordhavn neighbourhood, with the district's heating and smart-grid creating a fully integrated, intelligent, optimised energy system. The city's traditional heating infrastructure is the biggest contributor to reducing carbon, with the potential to remove 80,000 tons on CO2 from the atmosphere. The programme is promoting a transition to cost-effective future smart energy system, with integration across electricity, thermal and transportation energy infrastructure.

http://www.energylabnordhavn.com/about.html

https://europeansting.com/2019/05/22/this-is-how-copenhagen-plans-to-go-carbon-neutral-by-2025/

https://carbonneutralcities.org/cities/copenhagen/

C.2. Norwegian Energy Solutions

Norwegian Energy Solutions is an energy cluster made up of companies, operators, suppliers, start-ups, investors, academia and authorities. The company aims to lead the transition to low emission energy solutions by promoting the development of renewable and sustainable energy solutions and improving existing solutions. The organisation focuses on generating zero-emission value chains, promoting local innovation, reducing emissions from hydrocarbon production, developing new value chains, connecting with other clusters working on renewables, exporting innovative technologies and services and putting Norway on the map for development of renewable energy.

C.3. Melbourne

The City of Melbourne is aiming to reduce emissions by 4.5% per year in order to contribute to the 2015 Paris Climate Change Agreement's target to limit global temperature growth to 1.5oC above pre-industrial levels. The City government's operations were certified as carbon neutral in 2012. Melbourne has met its target set in 2010-11, reducing emissions by 10% by 2018 and has also reducing greenhouse gas emissions by 31% since 2013-14, despite strong population growth. Melbourne has a renewable energy target of 25% by 2018. The priority area to assist the plan to reduce emissions include: developing a low carbon culture, zero carbon for buildings, carbon neutral goods and services and reduce emissions from waste. The City are working closely with the regional, national and local governments, the public, and businesses to achieve this target. Melbourne government has introduced several programmes including the innovative 1200 Buildings, Smart Blocks, City Switch and Solar programmes, which promote innovative solutions.

https://carbonneutralcities.org/cities/melbourne/

https://www.melbourne.vic.gov.au/about-council/vision-goals/eco-city/Pages/carbon-neutral-operations.aspx

https://www.melbourne.vic.gov.au/sitecollectiondocuments/climate-change-adaptation-strategy-refresh-2017.pdf

C.4. Health Innovation Manchester

Health Innovation Manchester (HIM) was formed in 2017 to address the problems in the healthcare across the region. The poor health of the population in Greater Manchester (GM) was impairing productivity and economy growth and there was an unacceptable level of variation in health across GM. HIM was set up to support the creation and adoption of innovation, bringing together the existing assets of the Manchester Academic Health Science Network and Centre, with academic and commercial assets in the region. The board of the organisation is made up of leaders from health and social care, academia, research and industry. HIM is currently delivering over 50 projects in the GM region, along with making significant steps to create key infrastructure, governance and decision mechanisms.

Appendix D. Technical Note Example Accelerators

1.0 Overview and Purpose

The Energy Transition Region (ETR) will be an innovation zone across Greater Manchester. The zone will bring together: GM assets and its public estate; with academia and its research facilities; other expert in devolved energy systems; and partners willing to invest in those innovations. The innovation zone will convene, test, prototype and scale-up those innovations to a point where they can be deployed safely on the networks. It will bring together this whole range of regional and national stakeholders to share knowledge, agree priorities, develop processes, services and technologies and deploy these innovations to the grid.

Atkins commission will assess the governance and structures required to enable partnerships that will facilitate multiple individual projects within the ETR being conducted at any one time, to cohesively tackle different energy system challenges.

This Technical Note (TN) has been produced to provide an overview of research to assess existing accelerator/ innovation initiative models that are analogous to the proposed ETR concept. This includes the energy sector specifically, but also wider sectors where parallels can be drawn. The list is not intended to be exhaustive, but rather to provide a flavour of similar models to help provide inspiration/ learning for developing the ETR concept.

2.0 Review

Table 1 below summarises projects and initiatives, and where appropriate their relevance to ETR.

We note that GMCA are not attempting to recreate initiatives such as the Cornwall Energy scheme, however these examples have been included below, as there will be elements of learning from such models.

Table 1 - Project Examples

Project	Sector	Partners	Project Description	Relevance to ETR	Notes
Brooklyn Microgrid	Energy	LO3 Energy	Started in 2016, this project has enabled local peer-to-peer (P2P) energy trading between consumers. It utilises blockchain and other controls to enable the P2P element and also microgrid/'smart grid' control. The platform also enables the distribution system operator to negotiate with the microgrid to acquire load balancing and demand response.	P2P and grid energy trading, balancing and flexibility platform. The project was initiated by consumers and operated with LO3 Energy, utilising their 'Exergy' platform. Network operator able to interact with available resources through platform.	Potential accelerator in terms of software platform. Greater interaction with DSO, and also P2P trading. One of the more valuable project lessons will be the experience of utilising blockchain technology for energy transactions.
Cornwall Local Energy Market Trial	Energy	LO3 Energy; Centrica	Centrica and LO3 Energy have partnered to trial a local energy market in Cornwall. The trial will utilise the Exergy platform by LO3 Energy, which is also used in the Brooklyn Microgrid project	This project will explore how blockchain technology can unlock potential savings for 200 homes and businesses.	Similar to the Brooklyn microgrid project, the key accelerators will be the use of software and automation, in the context of local energy markets.
ReFLEX Orkney	Energy	Herriot-Watt University; European Marine Energy Centre; Solo Energy; Aquatera; Community Energy Scotland; Orkney Islands	This project aims to create a Virtual Energy System (VES) by digitally linking distributed resources to flexible demand and storage. The project takes a whole-system approach (i.e. electricity, transport, and heat networks), to create "one	Innovative technology applications, aiming to provide cheaper energy with reduced CO2 emissions. Flexible 'virtual' energy system to enable flexibility.	

Project	Sector	Partners	Project Description	Relevance to ETR	Notes
		Council; Doosan Babcock;	controllable, overarching system…which will reduce and eventually eliminate the need for fossil fuels"	Project scale. Potential insight into large scale roll out of innovative technology and how stakeholders are considered during the project.	
Project LEO (Local Energy Oxfordshire)	Energy	EDF Energy R&D; SSE; Oxfordshire County and Oxford City Council's; Piclo; Origami; Nuvve; Oxford Brookes University; University of Oxford;	This local energy project will utilise experience from previous Low Carbon Hub projects. The various partners will all contribute to achieving ambitious local low carbon energy targets, by utilising local energy markets, renewable energy, flexibility, and demand optimisation.	Local energy markets, for heat, transport, and electricity systems. Applied research and innovation-based activities (e.g. demand optimisation). Low carbon emission objectives. Scale of project (270,000 homes, 35,000 businesses, and 5 science parks).	
Oxford Energy Superhub	Energy	Pivot Power; Oxford City Council; Habitat Energy; Kensa Contracting; RedT Energy Storage; University of Oxford.	The energy superhub in Oxford will apply renewable energy sources, smart grid technology, flow battery storage,	Innovation to achieve low carbon targets. Scale of project (300 homes "expected to half carbon footprint"). Councils working with innovative energy companies, research institutes, and local communities.	

Project	Sector	Partners	Project Description	Relevance to ETR	Notes
Eden Campus Energy Centre (University of St. Andrews)	Energy	St. Andrews	This project aims to implement the Guardbridge Guarantee[1] and make St. Andrews the first energy carbon neutral university in the UK, through leveraging local renewable energy, and energy efficiency measures.	Local energy measures through engagement, provision of business and job opportunities. University engagement with local community. Low carbon targets.	
The Burntisland Community Energy Masterplan	Energy	Local Energy Scotland; Fife Council	The masterplan pilot project mapped out options for a whole energy system for the community in Fife and how to achieve a 80% carbon footprint reduction, through e.g.energy efficiency, and renewable energy.	Local community whole system energy masterplan. Carbon reduction targets. Applicable knowledge/lessons on how councils and communities can work together to deliver local energy systems.	
FlexLondon	Energy	London Council; UKPN; The Carbon Trust; Open Energi; Various businesses within London; Islington and Merton councils; South Western Railway; Premier Inn; Liberty	This project aims to unlock flexibility within London's power networks. The project is aiming to help local businesses to fully utilise flexibility opportunities by removing barriers and complexity in current arrangements.	Body that sits between end users and UKPN/London Councils. End user engagement. Removal of barriers to enable full utilisation of energy flexibility opportunities. New business models.	Use of air quality data from across London

Project	Sector	Partners	Project Description	Relevance to ETR	Notes
		Global; Go Ahead London; Centrica.		Energy-as-a-service.	
Simris Microgrid[2]	Energy	E.On	This project is building a business model for microgrids based on 100% renewables, and aims to provide flexibility to the grid via demand response from customers.	Community engagement "To help determine the right mix of industrial and domestic participation from a technical and commercial perspective."	
InterFlex	Energy	H2020	This EU research project is investigating local energy optimisation within various countries in the EU.	Results being published this year will share lessons learnt from various projects across Europe.	
ChArGED Project	Energy	EU H2020 European Dynamics Belgium	This project addresses the energy consumption in public buildings by use of a framework/app-based gamification, with the aim to reduce energy wastage. Social interaction and competition aim to achieve long term savings and energy efficiency targets.	Engagement approach for participants involved in ETR.	
Centre of Nuclear Excellence (CoNE)	Nuclear	- Britain's Energy Coast (BEC) - The nuclear organisations, BAE,	CoNE is a partnership of the nuclear sector and communities in Cumbria working together as a sector	Local initiative bringing together public and private sector.	

Project	Sector	Partners	Project Description	Relevance to ETR	Notes
		LLWR, NDA, NNL, Nugen, Sellafield Ltd - The regional supply chain through BECBC and the chamber of commerce - Local councils and the Cumbria LEP - The regional education and training sector	cluster focussed on growth of the Cumbrian and UK sector	Research based activities. Innovative model.	
Data Science Accelerator	Data Science	UK Govt.	"The Data Science Accelerator is a capability-building programme which gives analysts from across the public sector the opportunity to develop their data science skills." Analysts and aspiring data scientists work on a self-proposed project over three months. This accelerator aims to boost data science skills within the UK, by providing a mentor and equipment.	Example of accelerator programme for individuals, potential for ETR in development of individuals in Manchester who could be involved in the ETR (local engagement, ambassador, energy managers, etc)	
MedTech Super Connector (MTSC) Accelerator	Medical	Imperial College London Research England Connecting Capability Fund	This body aims to enable research to become new diagnostic tools, medical devices, and digital healthcare solutions. This	Example of accelerator programme for individuals, potential for ETR in development of individuals in	Modelled on MIT's Venture Mentoring Service)

Project	Sector	Partners	Project Description	Relevance to ETR	Notes
			aims to position the UK as a leader in 'MedTech' development and create a standard for the acceleration of medical technologies to market. The MTSC provides participants with funding, training, mentorship and access to industry partners and patients etc to enable fast delivery of new medical technologies.	Manchester who could be involved in the ETR (local engagement, ambassador, energy managers, etc)	
Airbus[3] Bizlab	Aerospace	Airbus	This is a global aerospace accelerator but is not limited to the aerospace domain[4]. This "…offers early-stage projects wide-ranging support in the form of a 6-month acceleration programme. Startups have access to a large number of Airbus coaches, experts in various domains, and support staff, free hosting, and a Demo Day with Airbus decision makers, venture capitalists, Airbus customers and partners."	Potential knowledge exchange. Accelerator programme framework (multiple start-ups that use various technologies).	

Project	Sector	Partners	Project Description	Relevance to ETR	Notes
Astropreneurs Accelerator	Aerospace	EU H2020 Various	"Astropreneurs Accelerator is a three-month acceleration program that includes business and technical mentorship, support to fund your business idea and access to our "SPACE Economy "Astropreneurs" network". Through Astropreneurs Accelerator, you can use this mentorship and the "space economy network" of investors, industry and supporting agencies to scale your business and better capitalize target markets and global opportunities. Start-ups will also have access to Astropreneurs workshops and initiatives aimed at a wider audience."	Potential knowledge exchange. Accelerator/mentorship programme framework.	
ABB Industrial AI Accelerator[5]	Artificial Intelligence	ABB Various	"The ABB Industrial AI Accelerator supports startups working on deploying novel technologies around Artificial Intelligence (AI) to address most relevant challenges in industrial environments"	Potential knowledge exchange. Accelerator programme framework. Energy system optimisation/automation through AI techniques.	

Project	Sector	Partners	Project Description	Relevance to ETR	Notes
Greenlytics[6]	Data Analytics / Energy	KTH Various	This Swedish start up is listed as a team under the ABB Industrial AI Accelerator, which "provides AI-based energy forecasting for wind, solar, and consumption as well as decision support tools for power trading and asset optimisation."	Relevant industry experience to ETR, and lessons learnt from start up via the ABB accelerator.	
Bellrock Technology[7]	Data Analytics / Energy		Data analytics start-up which provides predictive analytics.	Sits between the plant owner/source of data, provides analytics, and a toolbox of apps for the client. Experience of company start up in energy sector.	
Y Combinator Accelerator	Tech/IT[8]		Y Combinator is the start-up accelerator space that has been involved with Airbnb, Dropbox, Stripe, Reddit, Twitch, Coinbase, and Weekly.	Accelerator that has helped various successful companies to market.	
MassChallenge	Start Up Biotech Fintech		Accelerator programme which focuses on biotech and fintech in the UK, Israel, Mexico, and Switzerland.	Potential for experience in other sectors.	

Project	Sector	Partners	Project Description	Relevance to ETR	Notes
MIT Enterprise Forum[9]	Various	MIT	This hub helps inform, connect, and coach technology entrepreneurs via a global network.	Various chapters globally[10] provide support to technology-related entrepreneurs. Potential valuable experience in training individuals and examples of stakeholder engagement (events, knowledge exchange, etc.).	

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