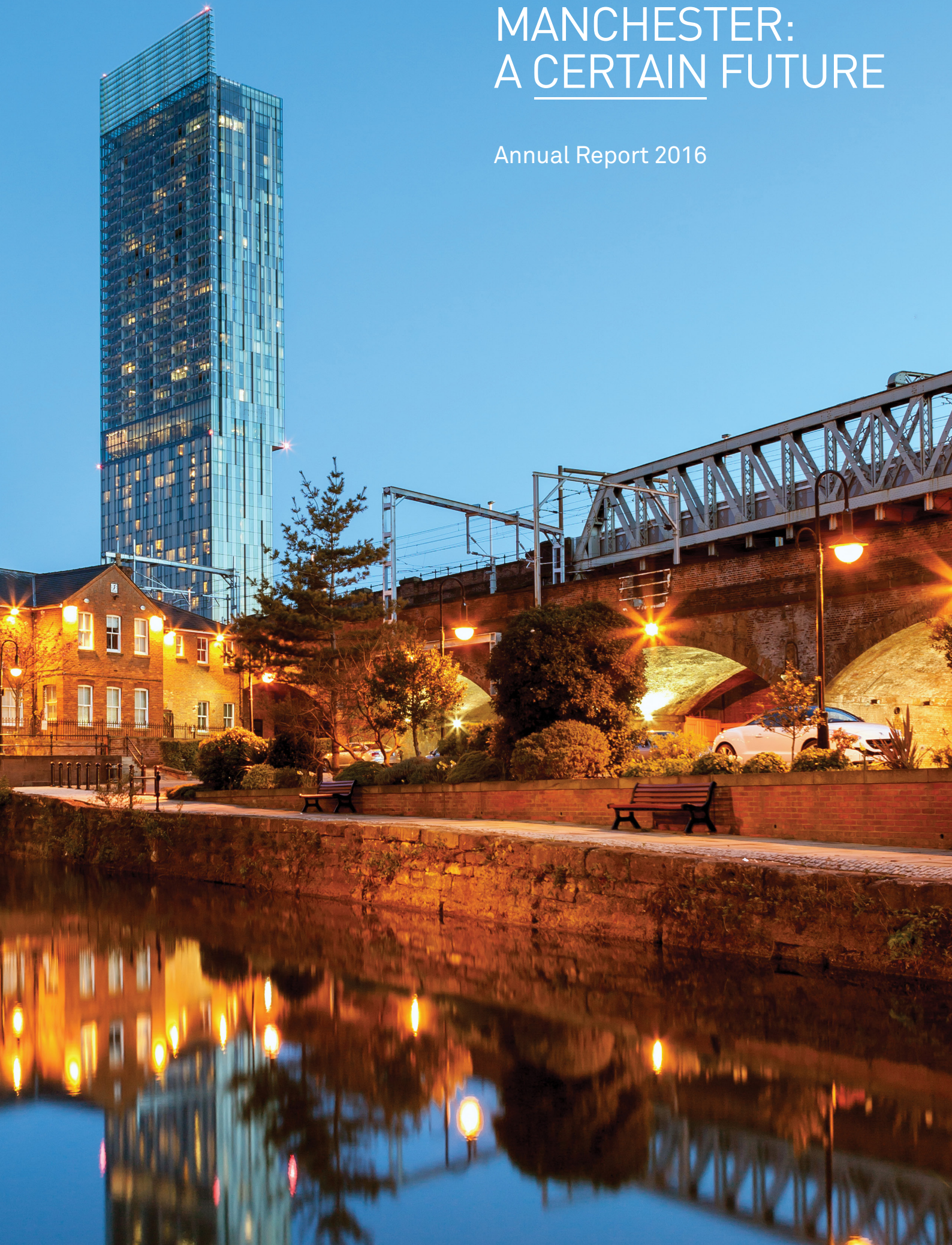


MANCHESTER: A CERTAIN FUTURE

Annual Report 2016



Key facts

In 2016 Manchester's population was

520,212



There are

19,965*

BUSINESSES
in Manchester in 2016

Manchester's energy consumption in 2013 was

8,977 GWh



Manchester covers an area of

11,564

HECTARES



There were

399,600

PEOPLE WORKING
in Manchester in 2016

On average

72%



of journeys into the city centre are by PUBLIC TRANSPORT OR BIKE IN 2016***



Manchester has

32

ELECTORAL WARDS

split into



NEIGHBOURHOODS

in the north, south and city centre

There are

176**

schools in Manchester

91%

are ECO-SCHOOLS



Manchester RECYCLED

32.8%

of its household waste in 2016

Approximately

20%



of Manchester is COVERED BY TREES

2,688

individuals are certified as CARBON LITERATE



* VAT / PAYE registered businesses.

** includes state funded primary, high, special schools, Pupil Referral Units and Academies.

*** Morning peak 74% and afternoon peak 71%.

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INTRODUCTION FROM THE CHAIR OF THE MACF STEERING GROUP

In December 2015, 195 countries came together in Paris at the 21st Conference of Parties (COP21). They reached a historic agreement to limit global temperature rise this century to less than 2 degrees Celsius, and to drive efforts even further to pursue a target of 1.5 degrees Celsius above pre-industrial levels.

This recognises that climate change is already occurring but, if we act now, we can avoid the worst impacts of a changing climate. In addition, the agreement aims to strengthen the ability to deal with the impacts of climate change.

The last assessment of the Intergovernmental Panel on Climate Change (IPCC) provided different scenarios regarding different levels of action. If there is no action and we globally continue with the same levels of CO₂ emissions we are on track for an average global temperature rise of 4°C by the end of this century.

The IPCC reports stated that owing to the carbon emissions that have been emitted so far, average global temperatures have risen by 0.85°C. Although relatively small, the effect on our planet has been huge: the Arctic ice cap has seen significant melting; some of West Antarctica's major glaciers containing tens of thousands of cubic miles of ice have started to disintegrate; sea levels have risen causing some Pacific islands to disappear; millions of acres worth of trees have died from warming-related pest infestations; and, with the droughts exasperating war in Syria, we have seen the first waves of climate refugees beginning to move in search of a better life.

COP21 has been deemed 'the rise of the cities' and, for the first time, there was support from all sectors of society; from cities, regions and nation states to civil society and businesses, who have for the first time created a window of opportunity aligning at just the right time for a successful agreement. However, the total of the commitments made in Paris, including 155 countries who submitted Intended Nationally Determined Contributions (INDCs), will not add up to what is necessary to keep us under the 2°C target set by the agreement. Achieving this level of CO₂ reduction would indicate that carbon reductions in excess of 80% by 2050 will be required.

By 2050, 70% of the world population will be urban: cities have intense problems associated with them; but those same problems make them into engines of innovation. And because we know we must change, it is exceptionally important that we focus on the commitments made by countries and cities. The cities that succeed will be those that choose low carbon, and eventually zero carbon, living. Studies have shown that people living in cities tend to be far more energy efficient; cities are more dense and they're networked.



Gavin Elliott, Chair of MACF Steering Group
Image courtesy of Andy Haslam

Following the Paris Agreement in January 2016, Manchester updated its climate change commitments, setting out in *Our Manchester*, the Manchester Strategy for 2016-25, that: *'Manchester will play its full part in limiting the impacts of climate change... and by 2025 will be on a path to being a zero carbon city by 2050.'*

At the time we were one of the first cities to make this ambitious commitment. It was made on the basis that this is what we need to do to play our part in limiting global temperature rises to between 1.5-2°C. We hope to be one of the first of many, playing a leading role in a new era of city-led action on climate change.

Alongside the publication of this year's MACF Annual Report, the Steering Group are also delighted to be launching the public consultation on the draft strategy for achieving our ambitions to become a zero carbon, climate resilient city by 2050. The draft builds on the climate change commitments in *Our Manchester*, itself built on the views of Manchester residents and businesses collected by Manchester City Council and the Manchester Leaders Forum in late 2015.

In the draft strategy we have attempted to set out a vision for a green, healthy, prosperous, liveable city, one that all current and future residents and businesses in the city will want to be part of and one which is playing its full part in limiting the impacts of climate change. I am sure there will be areas that can be improved and some issues we haven't covered as well as we need to. Fundamentally the final document will be a strategy written by the city, for the city, incorporating the views of residents and businesses from across Manchester. On that basis I very much look forward to the responses to the public consultation, to the city once again coming together to collectively define Manchester's decarbonised, climate resilient future and in inspiring each other to play our parts in making it a reality.

Gavin Elliott, Chair
Manchester: A Certain Future
Steering Group



“ Manchester will play its full part in limiting the impacts of climate change... and by 2025 will be on a path to being a zero carbon city by 2050 ”

Our Manchester, The Manchester Strategy for 2016-25.

PART 1

MACF STEERING GROUP ACTION IN 2015/16

The role of the MACF Steering Group is to oversee and champion the delivery of MACF. In the 2015 Annual Report the Steering Group set out two priorities for 2015/16: set up the MACF Community Interest Company to provide the Steering Group and the city with the additional resources needed to drive forward the delivery of MACF; and produce a SMART(er) MACF action plan for 2016-20 to set out how the MACF 2020 objectives and targets will be met.



MACF COMMUNITY INTEREST COMPANY / MANCHESTER CLIMATE CHANGE AGENCY

MANCHESTER CLIMATE CHANGE AGENCY

The MACF Community Interest Company (CIC) was established in September 2015. For the organisation's setup, members of the MACF Steering Group were invited to become founding directors of the CIC. Eight members of the Steering Group are currently in place as directors, a role which is linked but different and in addition to their roles on the Steering Group.

In January 2016 the CIC began trading as the 'Manchester Climate Change Agency' and formally registered the new name with Companies House in May 2016.

The CIC/Agency is currently in its set-up phase, for the period September 2015 to March 2017. Core funding is being provided by Manchester City Council over this time through seconded staff and financial support. Beyond this period the intention is for the CIC/Agency to become financially self-sustaining, mainly through sponsorship from partners who want to work with Agency and MACF Steering Group to help drive forward citywide action on climate change, and through additional project funding. Work is now underway to identify the Agency's first set of sponsoring partners, with BDP (www.bdp.com) and Jacobs (www.jacobs.com) the first to come on board.

Further information on the Agency and its work to date is in Part 2.



SMART(er) ACTION PLAN FOR 2016-20

In July 2015 the Steering Group's intention was to work with stakeholders to put in place the MACF action plan for 2016-20, setting out how the four MACF objectives would be achieved by 2020, with a particular focus on the 41% CO₂ reduction target. This work was to be linked to the development of the Greater Manchester Climate Change Strategy Implementation Plan 2016-20.

The context for this work has shifted significantly since then. In Autumn 2015 the Manchester Leaders Forum and Manchester City Council asked the city's residents and businesses 'what is your dream Manchester?', to help develop *Our Manchester*, the Manchester Strategy for 2016-25. The need for ongoing environmental improvement and action on climate change were strong themes in the 2,500 responses; "a green industry powerhouse"; "a carbon neutral city"; "the cleanest air"; "economically and environmentally sustainable"; "a world leader in urban sustainability and environmental regeneration" among the many views that stakeholders submitted.

This public consultation was followed soon after by the world's first international agreement on climate change in December 2015. As well as setting the target to limit to global temperature rises to between 1.5-2°C relative to pre-industrial levels, the Paris Agreement also recognised the key role that cities, businesses and civil society have to play in global

climate action. In combination with the views of the city about its future, it was clear that the time was right to bring forward a refreshed Manchester commitment on climate change.

Working through Gavin Elliot as the chair of the MACF Steering Group and as a member of the Manchester Leaders Forum, the Steering Group worked with the Forum and Manchester City Council to ensure that *Our Manchester* contained a commitment to climate change action that would be consistent with the views of the city's stakeholders and the imperative for action created by the Paris Agreement. '*Manchester will play its full part in limiting the impacts of climate change... and by 2025 will be on a path to being a zero carbon city by 2050*' is the resulting headline commitment. With a series of more detailed commitments beneath it, this overarching aim sets out the city's high-level climate trajectory for the next 30+ years.

As such we now have a significantly different context within which to develop the MACF action plan for 2016-20. Following the publication of *Our Manchester* in January 2016, the Steering Group decided to work with stakeholders to develop the city's climate change strategy for 2016-50, with a series of milestones for 2020, 2030, 2040 and 2050, and five-year implementation plans to ensure ongoing progress and the opportunity for corrective action on the journey to 2050.

This approach is consistent with the thinking in 2009 and the original MACF – *‘This plan sets headline actions for just one decade – to 2020 – but its goal is to provide a strong starting point for a much longer journey, through to 2050 and a radically changed, low carbon future where large-scale emissions of carbon dioxide (CO₂) have become a thing of the past.’* With the Paris Agreement and the new zero carbon Manchester commitment now in place, the time is no right to ensure that we have a route through to 2050.

The outcome is that the new 2016-50 strategy will replace the current MACF strategy for 2010-20, with the 2020 milestones for the new strategy taken from MACF to ensure continuity, including the 41% CO₂ reduction target. The MACF plan for 2016-20 will now become the first implementation plan for the new strategy, ensuring that the city can continue to realise the economic, social and environmental benefits that come with action on climate change.

The MACF Annual Report 2015 also set out that the 2016-20 plan would be SMART(er) than the previous plans for 2010-12 and 2013-15 i.e. it will contain actions that are Specific, Measurable, Achievable, Relevant and Time-bound. This is the approach that has been applied for the development of the draft implementation plan. It sets out the key strategic activities that need to be delivered over the next five years to directly achieve progress against the strategy’s objectives, to prepare for action that will directly achieve progress beyond 2020, and activities that will enable all individuals and organisations in the city to act on climate change.

It does not, however, attempt to capture activity at a more granular level – to define the detailed actions that residents, schools, colleges, universities and businesses will need to deliver. This detail will be set out in guidance documents, websites, engagement programmes and other initiatives designed to support, inspire and enable stakeholders to take action.

It is this combination of action that is key – the strategic activities that can only realistically be delivered by certain organisations in the city, combined with the actions of the city’s organisations and individuals, all coming together as part of the city’s collective effort to ensure that Manchester plays its full part in limiting the impacts of climate change, locally and globally. And that, whilst looking towards a long-term goal, the strategy will help to ensure that action is delivered over the short and medium term, on the city’s journey to 2050.

Alongside the publication of this Annual Report, the MACF Steering Group have published the public consultation versions of the city’s climate change strategy for 2016-50 and the implementation plan for 2016-20. The documents and further information on how to contribute to their development and delivery are available from www.manchesterclimate.com



PART 2

MANCHESTER CLIMATE CHANGE AGENCY ACTION IN 2015/16

The Agency has put in place its business plan for 2016/17 to 2019/20, setting out the key strategic activities that the organisation needs to deliver in order to drive forward the successful delivery of the city's climate change strategy. It sets out activities that are not currently being delivered by others in the city and has been designed to ensure the Agency can add value to organisations and activities already underway, not competing with or unhelpfully duplicating their work, but bringing it together and guiding it to ensure that it makes maximum contribution to the city's climate change goals. The Agency will also work with partners to add to their existing activities and help to initiate new activities and funding bids for projects that would otherwise not happen or not happen at the rate or scale needed.

The Agency's aim, as set out in the organisation's Articles of Association, is to:

'Undertake activities that support, encourage and enable individuals and organisations in Manchester and beyond to act on climate change.'

The Agency's directors believe that the best activities are those that involve the experience, skills and enthusiasm of as many different people as possible. They believe that this approach is particularly important given that there is no 'right' or 'proven' way of taking action on climate change and that creative and innovative approaches will be needed. Partnership working is therefore at the heart of the Agency's business plan.

The following pages set out the Agency's objectives, each of which should be read with the prefix 'Work with partners to...' and progress against them since September 2015.

Objective 1: Create a Strong and Unified Movement for Action on Climate Change Based on a Shared Understanding of its Importance and the Need to Act

Despite the concerted and longstanding efforts of a wide range of organisations and individuals at local, national and international levels, we are not yet seeing these efforts add up to the rate of progress that the latest science tells us is needed to meet local and national targets, or to avoid a global temperature rise of between 1.5-2°C.

Creating a strong and unified movement is therefore about ensuring that people can take the actions that are available to them, creating the right kind of conditions that will support, encourage, enable and inspire people to take action. Most importantly it is about ensuring that, across the whole city, individuals and organisations have in place both the commitment and the capacity to act on climate change, to the extent that we need in order to meet our climate change targets.

The Agency's work to create a 'movement' is made up of two areas of activity: political commitment and policy; and engaging, inspiring and enabling stakeholders to act.

Objective 1.1: Establish Strong Political Commitment and Policy to Drive and Enable Action on Climate Change

Political commitment and its translation into public policy is key to helping create the right conditions for encouraging, inspiring, enabling and at times potentially even requiring stakeholders to take action. The Agency works with Manchester City Council and partners to support the development of local policy that will help to drive and enable action on climate change.

- *Our Manchester*, Manchester Strategy 2016-25 – the Agency worked with the MACF Steering Group, Manchester Leaders Forum and Manchester City Council to help develop the responses to the *Our Manchester* public consultation into the climate change commitments in the final document. *Our Manchester* is available from www.manchester.gov.uk/mcrstrategy
- Manchester Climate Change Strategy 2016-2050 – the Agency is working with the MACF Steering Group to help develop the city's climate change strategy for 2016-50 and implementation plan for 2016-20. The public consultation versions of the documents are being published alongside the launch of this annual report in July 2016. The documents are available from www.manchesterclimate.com
- Green and Healthy Manchester – the Agency, MACF Steering Group and the Manchester Health and Wellbeing Board believe that by joining-up action on health and climate change it will be possible to deliver better progress on both issues in the city's communities, making better use of resources than if these subjects are tackled separately. In March 2016 the partners established the new Green and Healthy Manchester Partnership and Prospectus for Action. The Partnership aims to build capacity in communities to enable them to improve their health and wellbeing, skills and confidence, at the same time as taking action on climate change. The plan for 2016/17 is to develop a pilot programme of practical projects that will achieve community-based health and climate change benefits, with a view to scaling up action in future years. Further information is available at www.manchesterclimate.com

CASE STUDY GREEN AND HEALTHY MANCHESTER

The partnership includes Carbon Coop, Cooler Projects, EMERGE, Greater Manchester Community Renewables, Groundwork SSTT, Hulme Community Garden Centre (HCGC), MERCI, MEEN, City of Trees (previously Red Rose Forest) and Sow The City.

The city's community and voluntary sector (CVS) includes many organisations with a wealth of knowledge and experience of delivering on projects that have environmental benefits and often health and well-being benefits.

The Agency recognises the huge amount of work being done by these organisations and the strategic partnership was formed to showcase this essential activity across the city, in particular to health practitioners. The benefits of this work are multiple, for example a community growing project can have positive outcomes that include better mental health, improved social networks, better diets, more active lifestyles, learning new skills and as well environmental benefits.

Recent analysis of Social Return On Investment (SROI) by Hulme Community Garden Centre and Sow The City have calculated the return on investment of some projects as around 6:1.



Objective 1.2: Engage, inspire and enable stakeholders to take action

Sector-specific engagement

Ultimately, if the city's climate change commitments are going to be achieved, action needs to be taking place right across the city, by all stakeholders. To help bring about this scale of action the Agency and MACF Steering Group structure their engagement activities according to four main groups: residents and communities; businesses; schools and colleges; and universities.

- Residents and communities – developing a programme for residents and communities has been the Agency's focus to date, leading to the development of the Green and Healthy Manchester programme and partnership, as above.
- Businesses – business engagement activities to date have been focussed around identifying potential partners to work with the Agency on driving forward action on climate change, as described above. To date the city's leading environmental third sector organisations, BDP and Jacobs have committed to work with and support the Agency. Wider business support to help organisations to improve their environmental and commercial performance is available through the Greater Manchester Green Growth programme, www.green-growth.org.uk, which is promoted by the Agency.

- Schools and colleges – the Agency promotes the work of the Manchester Environmental Education Network and Manchester City Council who work together to offer advice and support for the city's schools and colleges. See www.meen.org.uk and www.manchester.gov.uk.
- Universities – Manchester Metropolitan University and the University of Manchester both have well-developed and ambitious programmes of work that contribute towards the city's climate change goals. The Agency's focus to date has been working with the universities to develop a skills and employment programme that will provide practical work experience and skills development for students and recent graduates. A report on the results of the new programme will be included as part of next year's annual report.

The Agency also works with the universities through the Corridor Partnership, to support partners in achieving their strategic objectives to 'reduce the carbon footprint of Corridor Manchester through the more sustainable management of energy and waste' and 'integrate green and smart ideas into new development and investment proposals'. See www.corridormanchester.com.

Annual engagement programme – Manchester Climate Lab 2016

The Agency has also committed to run annual programmes to help broaden the approach to engagement and help to further embed climate change as part of the city's culture. For 2016, linked to Manchester's European City of Science Programme, the Agency is working with partners to deliver 'Manchester Climate Lab'. The aim is to reach 100,000 people during the year and to test a range of engagement techniques to see which work best in Manchester.

At the centre of the programme is Climate Control, a six-month exhibition and events programme at Manchester Museum to explore the idea that we can't change the past but we can change the future, and to look at how we can each make a difference and help create

the world we want to be part of. Among the diverse range of other events in the programme is a climate-themed poetry night, a song-writing and live music event, Cycle Hack Manchester, community arts and environment-based 'Fun Palaces', a climate adaptation-focussed live action game, plus many more. See www.manchesterclimatelab.com

The programme for 2017 is being developed alongside the delivery of Climate Lab. Once developed, details will be available at www.manchesterclimate.com. Looking further ahead the Agency is working with the Manchester Youth Council Assembly, Manchester City Council and other partners on a bid for Manchester to become the European Youth Capital in 2019, with climate change and sustainability embedded as key parts of the proposed year-long programme.

Objective 2: Monitor and communicate progress

The Agency works with the MACF Steering Group to monitor progress against the delivery of MACF and to communicate progress to the city and beyond. This communication work is important in recognising the progress being made by residents and businesses and to help build momentum and inspiration for others to get involved.

The city's young people play a key part in this work, bringing their passion, enthusiasm and networks to help spread news around the city through social media, the MACF website and events. The Agency has been gratefully supported by 16 volunteers since September 2015, a number of whom were introduced by Manchester-based charity Action for Sustainable Living (AfSL). AfSL unfortunately ceased trading in early-2016. However, the Agency wishes to thank its trustees for their generous support in helping to establish the Agency's volunteering programme. The Agency also wishes to thank all of our volunteers for their invaluable hard work to date.

Key activities over the last year are:

- One 'Broadcast' event, the second MACF Annual General Meeting in July 2015, which was attended by over 200 people
- Two 'Tell Us' events, one in October 2015 for engineers and designers to share best practice on low carbon building solutions, and the July 2016 'Good Health through Green and Blue Spaces' event
- 23 MACF branded events
- 58 events promoted through MACF channels

There have been over 50 website articles published by the Agency and partners on www.manchesterclimate.com

On social media a new MACF Facebook page (www.facebook.com/manchesterclimate) has been added to the Twitter (@macf_mcr) and LinkedIn accounts.

CASE STUDY CLIMATE LAB 2016 POETRY EVENT

Facebook testimonial

"Suitably inspired, energised and a tad angry after tonight's performances – but I think that's the point"

Dr Sam Illingworth, Senior Lecturer Man Met University

Climate change could have reached the point of critical mass; that is the overriding suggestion following the Climate Poetry Lab hosted by Manchester Metropolitan University and Evidently on behalf of Manchester Climate Change Agency and funded by Eastlands Homes.

The eye-opening event at Fred's Ale House in Levenshulme featured the poetic brilliance of Dominic Berry, Joy France, and BBC Slam Champ Sophia Walker, and gave people from Manchester the opportunity to have their say on what needs to be done in order to tackle climate change, as well as the chance to hear some truly inspirational poetry.

Article by Dean Brookes, MMU.



Eastlands
Homes

Objective 3: Initiate new projects and funding bids to fill gaps in the delivery of Manchester Climate Change strategy

As well as having oversight of the good work that is already being underway the Agency also has a good view of the gaps in the delivery of the city's climate change strategy. To help fill these gaps the Agency works with partners to initiate new projects and funding bids to enable existing activities to be scaled up and new ones to begin.

Since September 2015 the Agency has helped to develop a pipeline of funding bids and new projects worth over £10 million.

Key highlights include:

- A Manchester-led bid with other European partners to use green infrastructure to adapt cities to climate change. Following success at stage 1, the stage 2 bid is in development during 2016.
- The pilot programme for the Green and Healthy Partnership is in development for delivery from 2016/17.
- £800,000 secured for Manchester universities to help to better understand the links between green infrastructure and the health and well being of the city's older population. This will also help to evaluate the impact of the Green and Healthy pilot programme.
- £100,000 project with Tyndall Manchester and Manchester Museum to find innovative ways of engaging people in climate change, as part of Climate Lab 2016.

CASE STUDY MANCHESTER CLIMATE LAB 2016 LAUNCH: OUR CITY, OUR PLANET - EMERGING LEADERS

Tuesday 1st March saw the official launch of Manchester Climate Lab 2016 in partnership with Julie's Bicycle and Contact Theatre with Our City, Our Planet – an event for emerging young leaders.

The event brought together Anna Vickerstaff from the UK Youth Climate Coalition, London's Young Poet Laureate Selina Nwulu and Amil Keating from Contact Theatre. Amil talked about his performance pieces in Ardwick, which transformed residents' memories of their estate into a promenade theatre show that included a

number of sustainable issues such as wildlife habitat loss and waste. Martin Stannage ended the event with a punchy spoken word piece that summed up many of the thoughts shared throughout the day.

The feedback collected from the workshops captured the passion, fears and beliefs of attendees; this will be included in the evaluation of Manchester Climate Lab and will help to shape Manchester Climate Change Agency's engagement strategy in the future.



www.juliesbicycle.com

www.contactmcr.com

SUMMARY

Part 1 and Part 2 are intended to provide an honest review of activities over the past year. As the Climate Change Agency was established this year we have included activities of the MACF Steering Group against their objectives from 2014, plus an overview of activity of the CIC from September 2015 when it was set up.





The Agency has now been operational for nine months and has aimed to position climate change activity as both an essential part of the city's political landscape and a key component from which to grow partnerships, alliances and start to build momentum for action amongst our communities, young people and residents who make up the city. The last year has seen the start of strategic, financial, business and academic partnerships which have strengthened projects already in existence and led to new opportunities to make the language of climate change real. There is a way to go before Manchester's infrastructure and operations are zero carbon. However, we have the aspiration, strategic direction and leadership to enable the city to start the journey in earnest.

PART 3






REVIEW OF PROGRESS AGAINST MACF IN 2015/16

This chapter provides a review of progress against the **four MACF Headline Objectives** and the **five thematic areas**. Where data is provided this gives an update of progress against the last year, and progress against the CO₂ reduction target of 41% where this is applicable.

MACF HEADLINE OBJECTIVES

- 1 41% CO₂ Reduction by 2020 
- 2 Low Carbon Culture Change 
- 3 Climate Change Adaptation 
- 4 Transition to a Low Carbon Economy 

MACF THEMATIC AREAS OF ACTION

- 1 Buildings 
- 2 Energy 
- 3 Transport 
- 4 Sustainable Consumption and Production 
- 5 Green and Blue Infrastructure 



MEETING OUR OBJECTIVES



Reduce the city's CO₂ emissions by 41% by 2020, from 2005 levels

Carbon dioxide (CO₂) is one of the main gases causing global climate change. The largest source of CO₂ is the combustion of fossil fuels in the energy sector, typically making up approximately 82% of total global emissions.

The Intergovernmental Panel on Climate Change's 5th Assessment Report (AR5) was published just before COP21 in December 2015. The report provides clear evidence that temperature rise caused by manmade CO₂ and other greenhouse gas emissions can only be kept 'well below' 2°C above pre-industrial levels if there are substantial cuts in energy use and large scale changes in our energy system.

This means that Manchester is going to have to put decarbonisation at the heart of our city's energy policy and economic activity. As individuals and organisations we are going to have to embrace lower carbon ways of living our lives and doing business: using less energy; getting the energy we need from renewable sources; reducing how often we travel long distances; and using electric vehicles for journeys we can't make by foot, bike or public transport.

Over the last 10 years we have seen CO₂ emissions in Manchester reduce. This section of the plan outlines our analysis of the city's progress against the 41% target and the carbon budget approach introduced last year.

Ali Abbas
MACF CO₂ Monitoring Group Chair

Manchester is responsible for

16% OF GREATER MANCHESTER'S CO₂ EMISSIONS AND

0.7% OF UK EMISSIONS

46% of direct emissions come from the BUSINESS (INDUSTRIAL AND COMMERCIAL SECTOR)

29% from our HOMES

25% from TRANSPORT

Our analysis of the latest Government figures indicates that Manchester's annual CO₂ emissions have fallen from 3.2 million tonnes in 2005 to an estimated 2.5 million tonnes in 2015*

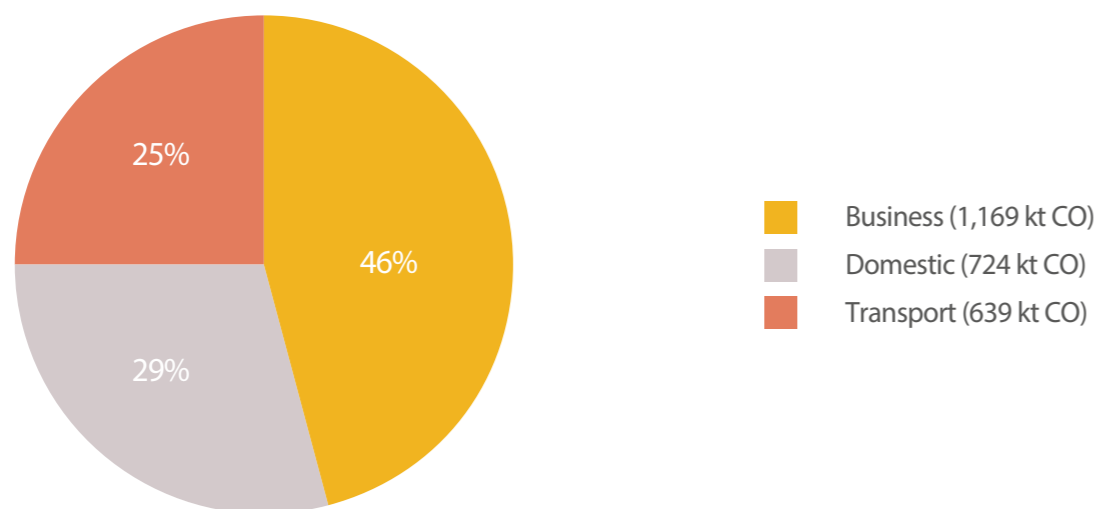
THAT'S A REDUCTION OF

22%

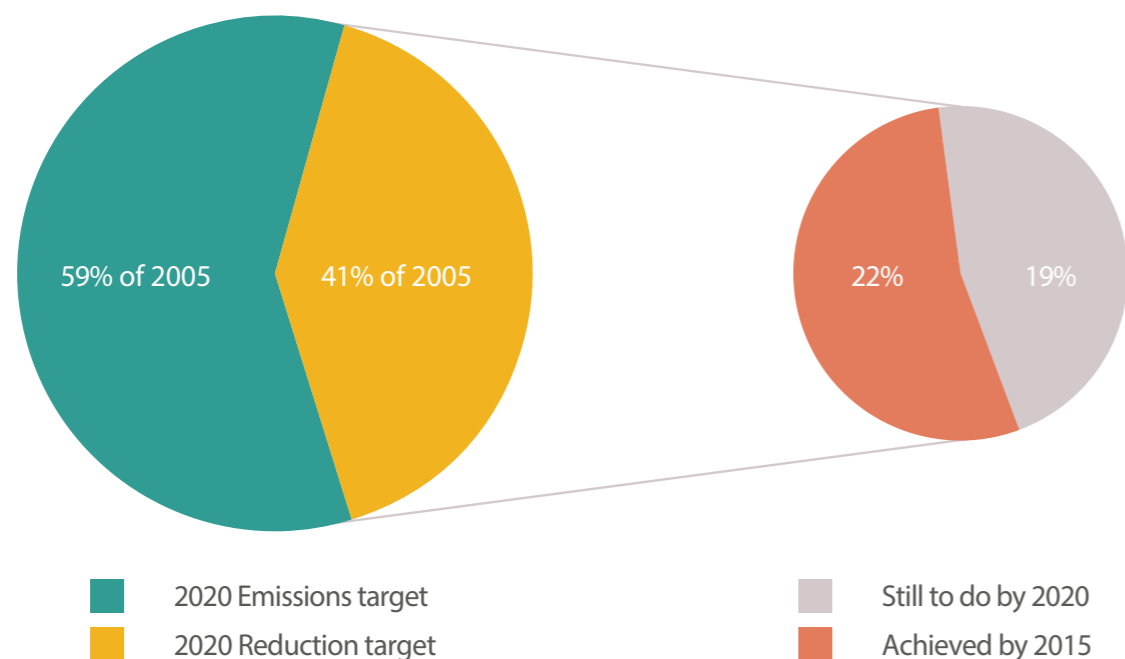
OVERALL SINCE 2005 AND AROUND 3% OVER THE PAST YEAR

*Local Authority level CO₂ data for Manchester is only currently available up until 2013; national data has been used to extrapolate Manchester's emissions for 2014 and 2015. <https://www.gov.uk/government/collections/uk-greenhouse-gas-emissions-statistics>

Manchester's direct emissions by sector in 2015 (estimated)



The scale of the challenge: the 2020 emissions target as a percentage reduction of overall emissions



The 'Pie of Pies' shows the level of CO₂ reduction still required to meet the 41% target by 2020. The smaller pie is 41% of the larger pie; we have already reduced CO₂ emissions by 22%, there is a further reduction of 19% needed over the next four years.

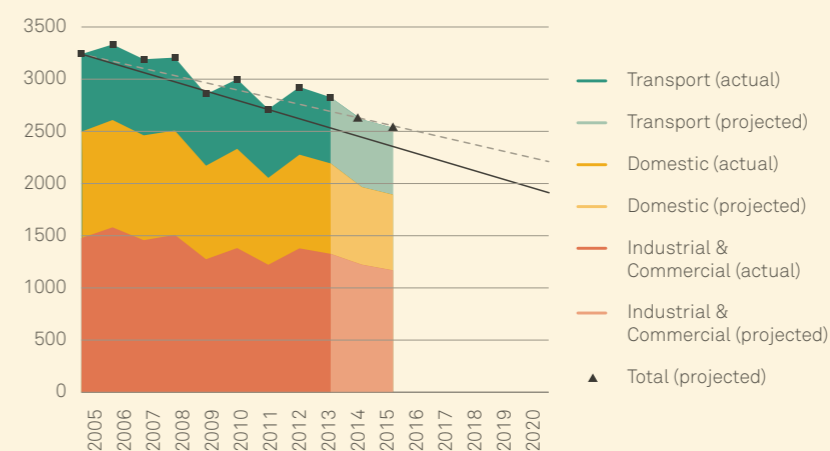
At a national level, UK CO₂ emissions are at a record low since records began in 1990. Provisional figures for 2015 estimate this to a 27% reduction from the 2005 baseline and a 4% reduction over the past year. This reduction in CO₂ emissions is mainly due to a decrease in the use of coal for electricity generation and an increase in renewable and nuclear energy generation. Further analysis of the data shows that Manchester's emissions reduction is below the UK national average due to its high consumption of energy by the industrial and commercial sector.

Indicator 1: % reduction in CO₂ from the 2005 baseline

In Manchester we are projected to achieve a 32% CO₂ reduction by 2020, assuming similar levels of energy use. The outlook has improved slightly since 2014, when we projected that a 29% reduction would be achieved, but is still a way off the 41% target.

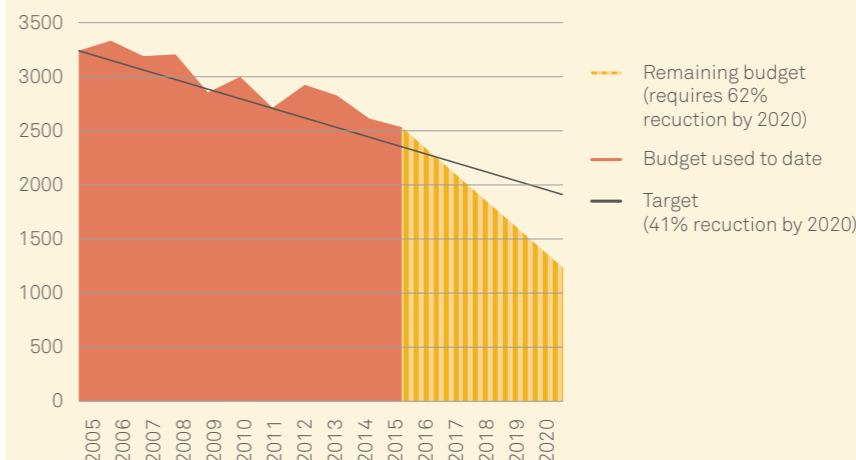
Work at a Greater Manchester level is ongoing to determine what future carbon reduction targets should be set at a regional level. In autumn 2015 GMCA carried out a public consultation on the GM Climate Change and Low Emissions Implementation Plan for 2016-20. This consultation set out a range of options which would establish the future greenhouse gas emission reduction goals and targets for Greater Manchester, upon which future strategies, policies, plans and delivery actions can be based.

In March 2016 a follow up report outlined the results of the consultation. Over 90% of consultees stated that Greater Manchester should seek to position itself as a leading global city on climate change with a longer term target towards 2050. This will be determined towards the end of 2016 and will be linked to the development of Manchester's forthcoming strategy for 2016-50.



Indicator 2: Manchester's emissions reductions and target

Analysis by the MACF CO₂ Monitoring Group of Manchester's emissions from a carbon budget perspective shows that we need to make steeper cuts from 2015 to 2020 to stay within our carbon budget. Given we have emitted more than we should between 2005 and 2014 (the area above the target line), we would now need to achieve a 62% reduction by 2020 in order to make up the difference.



OUR ANALYSIS SHOWS

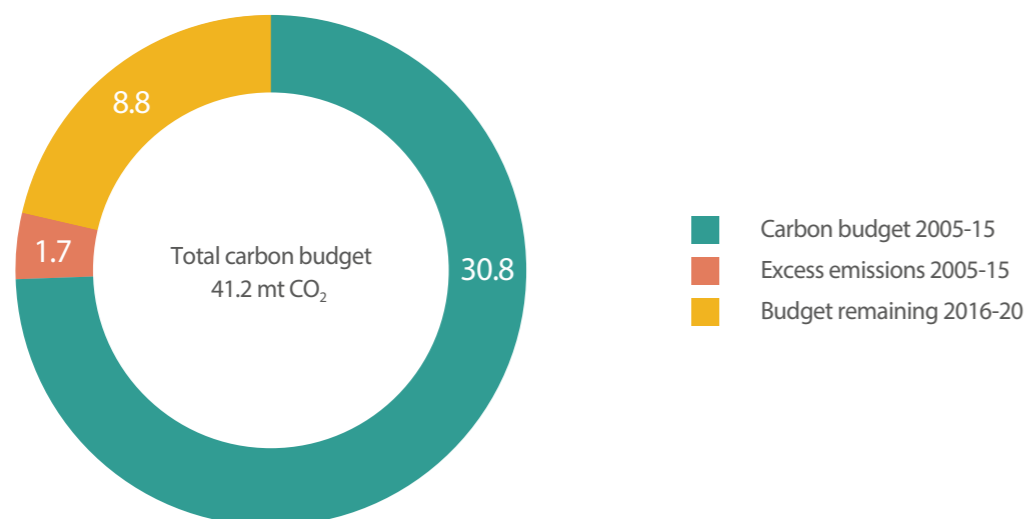
TO HIT OUR TARGETS, THE OVERALL CARBON BUDGET FOR MANCHESTER IS **41.2M TONNES OF EMISSIONS** BETWEEN 2005 AND 2020.

SINCE 2009 WE HAVE EMITTED **32.5M TONNES OF CO₂** WHICH IS **1.7M TONNES MORE** THAN WE SHOULD HAVE DONE SO FAR.

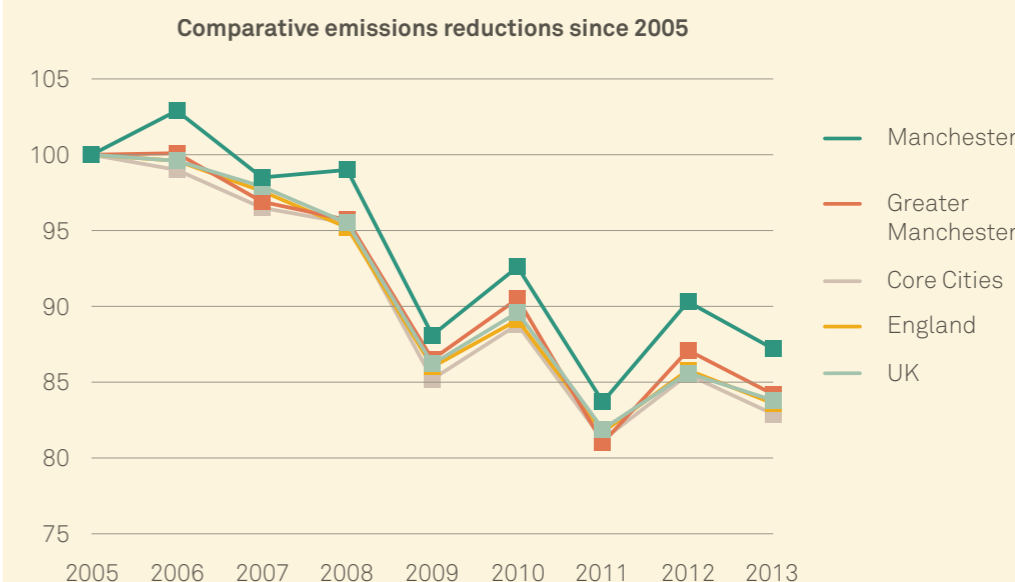
THAT MEANS WE HAVE **8.8 M TONNES LEFT** IN OUR 'BUDGET' BETWEEN NOW AND 2020.

COMPARED TO LAST YEAR WE HAVE **2M TONNES LESS IN OUR BUDGET**, SO THE RATE OF REDUCTION REQUIRED IS MUCH STEEPER.

WE NOW NEED TO REDUCE EMISSIONS BY A FURTHER **425K TONNES PER ANNUM** TO STAY ON TRACK.



Indicator 3: Comparison with others; absolute CO₂ emissions for Manchester, Greater Manchester, Core Cities and UK since 2005



Further analysis by the MACF CO₂ Monitoring Group of Manchester's CO₂ emissions against other cities and the GM region shows that between 2012 and 2013, Manchester's and Greater Manchester's emissions fell by 3.4%, compared to a Core Cities average of 3% and a UK average of just 2.1%.

Analysis of energy usage data by sector shows that the main factor was a better performance in the domestic sector, with a 3.5% reduction in Manchester compared to a 2.6% reduction in Core Cities and a 2.5% reduction nationally.

CASE STUDY MANCHESTER CULTURAL AND ARTS SECTOR HITS 7% TARGET

Manchester Arts Sustainability Team (MAST) is a cross-sector network of 24 cultural and arts organisations committed since 2011 to working together to reduce their environmental impacts. Their 2015 Annual Report produced by Julie's Bicycle shows that the sector shows that an average annual reduction of 7% was achieved across 15 MAST members reporting since 2012/13. This represents a carbon reduction of 1,264 tonnes between 2012/13 and 2014/15, and represents a cost saving of £138,955 between 2013/14 and between 2014/15.



A case study of Whitworth Art Gallery can be found on the website www.juliesbicycle.com/latest/case-studies/5611-the-whitworth-art-gallery

CASE STUDY ALBERT + SUSTAINABLE PRODUCTION TOOL

One study estimated that the combined carbon footprint of the information, communication and technology sector – of which TV and film is a part – accounts for around 2% of global emissions, the same as the aviation industry.

Albert started life as a carbon footprint calculator for TV productions, designed by the BBC in 2010 to measure the environmental impact of television production. The BBC gave Albert to BAFTA and the BAFTA Albert Consortium was formed.

This group consists of broadcasters and independent production companies (see wearealbert.org for more information).

Although Albert is a useful free tool, production teams wanted more practical advice on how to reduce their environmental impact and the BAFTA Albert Consortium developed a certification scheme in 2013 for sustainable productions called ALBERT+.

Shows or productions that gain accreditation can display the ALBERT + badge on its end credits to show audiences and the industry that they have made a real tangible effort to reduce their carbon footprint and potential negative environmental impact.



www.wearealbert.org





Low Carbon Culture Change – embedding ‘low carbon thinking’ into the lifestyles and operations of the city

The scientific evidence has now established that climate change is the direct result of human activities; primarily our use of fossil fuels. The responsibility therefore lies with us – all of us, amidst our differing cultures – to limit the effects of climate change now, both for ourselves, and for the generations that will come after us.

We face a future where limiting the Earth's temperature change to between 1.5 and 2°C will affect us all on a daily basis. However, climate change is not just about the climate – it has an impact on our economy, health, social justice, civil unrest, democracy, and equality as well as on the environment. The window for averting really dangerous climate change is now very narrow. If we want to choose our own path, not have one forced upon us, we need to take full responsibility and act now.

Human behaviour change is a complex, ill-defined and often abstract subject; is behaviour change a result of new cultural conditioning or chance? What motivates people to change? Is there a way of supporting people to change their behaviour to lower carbon, or even zero carbon behaviours? Do we even need to know the answers to all these questions to challenge and address our current high carbon, high consumption culture? The answer is probably not. However, we do need to know what effects what we are doing is having, even if we don't fully know why.

Over the last two years, as part of our citywide survey work, over one thousand Manchester residents were formally surveyed and asked questions about their knowledge and understanding of climate change. In 2014 most residents gave very positive answers reporting they felt they “understood” climate change and were “doing a lot” to address it. This was very concerning – as if they had genuinely understood the true scale of the challenge, they wouldn't have answered the survey in that way.

However, over the last 12 months, whilst a still small but increased number feel they “know a lot” about climate change, at the same time a much larger number now report they feel they “know very little”. This is probably a very positive outcome, reflecting a more accurate realisation of the scale of climate change, and a greater appreciation of the complexity and scale of action that will be required if we are to address it successfully.

In September 2015, The Tyndall Centre for Climate Research published the results of the behavioural research and public policy programme called The Behavioural Insights Team (BIT), which was set up in 2010 to design policies that help people make better decisions, and to evaluate whether those policies work. Climate change behaviour, however, continues to challenge even large research organisations.

There have been a few encouraging results from energy-related trials and interventions, but the size of the problem is much bigger than the corresponding quality and quantity of behavioural insights. More work is required to expand our understanding and to measure the parameters of success.

Globally, Manchester is the first city with an ambition to try and educate all of its citizens to be Carbon Literate. The Carbon Literacy Project is empowering pupils and students, workers and organisations, citizens and communities to change their everyday behaviours so that

Manchester's Arts and Culture sector

Cultural and arts organisations are well placed to support low carbon culture change, by helping normalise and communicate low carbon behaviours through the arts and media, and by helping people to engage with the challenge of climate change through participatory projects and events.

they have a natural ‘carbon instinct’. This was recognised in 2015 with an award at COP21. This kind of recognition is both welcome and very helpful, and globally helps put Manchester on the low carbon map. But, while as a city we are clearly making progress, the challenge remains enormous and urgent.

Dave Coleman
Manchester: A Certain Future
Change Monitoring Group, Chair

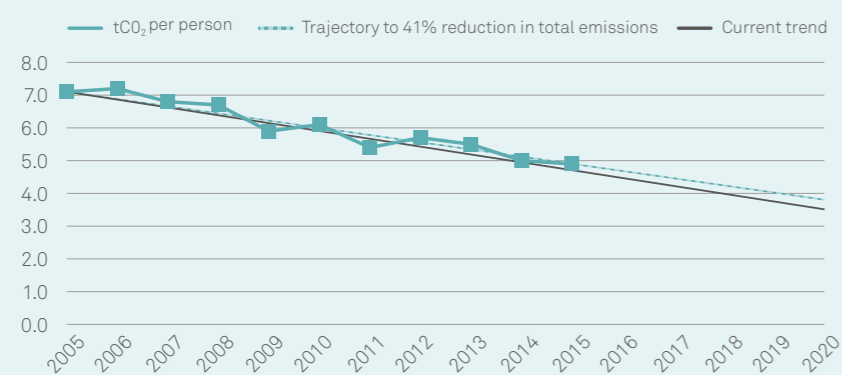
MAST (Manchester Arts & Sustainability Team) is a collection of over 20 arts and culture organisations across the city are working with consultancy Julie's Bicycle to collectively track and lower their carbon emissions and reduce resource use. MAST and MIF (Manchester International Festival) work with inspiring artists and audiences across all art forms to inspire change in the world. MIF has held climate change and low carbon culture as a theme running through the festival from its inception in 2007.

(see CO₂ section for a case study on MAST)

INDICATOR 1: CO₂ emissions per capita

Manchester's per capita emissions have continued to fall year on year, despite increases in population growth. The data shows that between 2005 and 2015 Manchester's per capita emissions reduced from 7.1 tonnes to an estimated 4.9 tonnes, down from 5.04 tonnes in 2014. This represents an estimated 4% over the past year, compared to 9% the previous year.

The city's population continues to grow steadily – by around 1% over the past year, and our domestic energy consumption has reduced overall over this period. The data indicates that we are less carbon-intensive in our daily lives. However, it is difficult to say exactly why this is; there may be other reasons apart from a desire to help tackle climate change that this reduction can be attributed to, although the downward trend is a positive one overall.



There are already **2,688** Carbon Literate citizens in Manchester.
92% of Manchester's schools are Eco Schools.

INDICATOR 2: Eco-Schools and schools activity

Eco-Schools, an international programme to provide support and information for schools to educate pupils and staff on environmental issues and improve their performance, continues to grow in membership. The number of Manchester schools registered on the programme has increased over the last year, although the number of Green Flag schools has stayed steady.

There are 176* schools in Manchester, of which 161 are Eco Schools: 41 are at Bronze level, 49 are at silver and 13 have the Green Flag award. In addition one school has the 'Energy 5 Award'. Schools are still progressing through the scheme, with new registrations,

at Bronze and Silver level. However as the pressures on the school timetable increases, schools have not been progressing to Green Flag status over the last year.

CO₂ emissions from Manchester schools has reduced over the past year with all school emissions down 5% and Academies down 11% (See Buildings Section for more details on school emissions.)

This year, MEEN (Manchester Environmental Education Network) has been focussing its efforts on The Carbon Classroom programme as part of their continuing work with The Carbon Literacy Project.

INDICATOR	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Percentage of Eco-Schools	82%	83%	85%	82%	88%	87%	92%
Number of Eco-Schools	136	137	142	137	147	153	161
Green Flag schools	5	9	14	15	15	13	13

*Statistics for reporting Eco-Schools programme in Manchester does not include private nurseries or independent schools, although does include state funded schools, pupil referral units, academies, and centres that have had support from the council previously.

INDICATOR 3: Business activity

The Greater Manchester Business Growth Hub provides tailored support and guidance to help small and medium sized businesses reduce their use of energy, materials and water, as well as helping companies in the low carbon and environmental goods and services sector to overcome barriers to growth.

A team of specialist advisors offer on-site, one-to-one guidance combined with a range of light touch online services, including a virtual Low Carbon Network for companies; a fortnightly Green Intelligence e-bulletin of environmental news and information; and the Green Growth Pledge, which helps companies to celebrate their green commitments and create an action plan to reduce their impact. A series of bespoke workshops and networking events are also held throughout the year.

In 2015/16, 137 Manchester businesses received resource efficiency support, helping to save £2.2 million and 5,835 tonnes of carbon dioxide equivalent (CO₂e) – enough to fill more than 3,200 hot air balloons.

150 companies also received low carbon sector support, helping to win £6.8 million in new sales and create 24 jobs.

“The support we're delivering to businesses is internationally recognised as best practice in its field – it's a great example of how Greater Manchester is leading the way in engaging the business community to tackle climate change while supporting local growth in the process.”

Tony Lloyd, Mayor, Greater Manchester.

INDICATOR 4: Carbon Literacy

The Carbon Literacy Project, established in 2012, defines Carbon Literacy as “an awareness of the carbon costs and impacts of everyday activities and the ability and motivation to reduce emissions, on an individual, community and organisational basis”. This unique education and engagement programme aims to help everyone – employers, workers, students and residents across the city – to develop their own understanding of climate change, what this means to them, and what they can do to take action.

In December 2015, The Carbon Literacy Project was formally recognised at COP21 as one of 100 Transformative Action Projects globally. The project's unique approach to generating knowledge, motivation, and action on climate change is a key tool in generating a low carbon culture, both here in Manchester, and far beyond.

By March 2016 there were 2,688 Carbon Literate stakeholders across the city, having completed one of the many and growing number of ways of undertaking their Carbon Literacy learning, with many more having already begun. In 2015, Councillor Jeff Smith became the first Carbon Literate Member of Parliament. There are now a range of online courses to support Carbon Literacy Training programme, and in spring 2016 the Carbon Literate Organisation accreditation scheme was launched.



CASE STUDY CARBON LITERACY: TRANSFORMATIVE ACTION PROJECT AWARD AT COP21

The Carbon Literacy Project was recognised with a global award at the 'COP21' in December 2015 for its unique approach, defining and manifesting the term Carbon Literacy through a day's training, consistent everywhere but relevant to the learner anywhere, whether at home, work or study. As more individuals and organisations become Carbon Literate this will help to deliver on our ambitions to build a low carbon economy.



www.carbonliteracy.com

CASE STUDY BBC CARBON LITERACY TRAINING

2015 saw the launch of a pioneering collaboration initiated at MediaCityUK between the BBC, ITV, Peel Media, dock10 and Creative Skillset with support from The Carbon Literacy Project.

Together the partners have created and begun roll-out of a sustainability training programme specifically aimed at people working within broadcast media. Available for all BBC staff, Carbon Literacy aims to give employees the skills and motivation they need to

thrive, professionally and personally, in the low-carbon economy.



www.bbc.co.uk/responsibility/environment

3

Adaptation – preparing for and actively adapting to a rapidly changing climate



The global climate is changing at a rapid pace. We have just experienced, by a considerable margin, the warmest May on record, marking the eighth month in a row that temperatures have been at least 1°C above the average for the period 1951-1980. For Manchester, future projections point towards rising temperatures, drier summers, wetter winters, and more extreme weather conditions such as heat waves and intense rainstorms.

It is crucial that adaptation strategies and actions are developed in response to the changing climate. If left unmanaged, climate change is likely to lead to negative consequences, disrupting or damaging the built environment, infrastructure, the natural environment, public health and the economy. Research also suggests that vulnerable sections of society are likely to be impacted the most. Conversely, a proactive response could help to make Manchester a more attractive place to live and work in a future shaped by climate change.

Over the last decade or so, Manchester has built a reputation for research on urban climate change adaptation and resilience. Much of this has focused on the city as a case study. As a result, research outputs including those developed within the EcoCities project, have been able to support the development of policies and strategies, including Manchester City Council's Core Strategy 2012-27 and the city's Green and Blue Infrastructure Strategy 2015-25.

The Climate Resilient Cities and Infrastructure (RESIN) project is the latest of these projects, and runs from May 2015 until November 2018. Involving the University of Manchester and Greater Manchester as partners, the goal is for this project to progress climate change adaptation goals in the city. In addition, Manchester has recently been selected to join the Rockefeller 100 Resilient Cities network. This high profile international initiative will add further momentum to Manchester's climate change adaptation and resilience agenda.

Although Manchester faces a challenging outlook some steps are being taken in the right direction, although it is nevertheless clear that commitment to and action on climate change adaptation will need to intensify over the coming years.

Dr Jeremy Carter
Manchester: A Certain Future
Adaptation Monitoring Group, Chair

Manchester's adaptation objectives and related indicators for measuring progress are taken from the Greater Manchester Climate Change Strategy. They provide framework to drive forward action on climate change adaptation and resilience. Examples of progress relating to MACF's two adaptation indicators are given below.

INDICATOR 1: The number and quality of resilience plans and adaptation strategies

'Manchester's Great Outdoors', is the city's Green and Blue Infrastructure Strategy for 2015-25. This strategy and its accompanying Stakeholder Implementation Plan were published in June 2015. The Strategy and Implementation Plan were jointly developed by Manchester City Council and the MACF's

Green and Blue Infrastructure group. The Strategy will help to coordinate activity as well as support future investment in the city's green spaces and waterways. The Strategy recognises the important role that green and blue infrastructure has to play in adapting the city to the changing climate.

INDICATOR 2: The extent, quality and productivity of green spaces and tree cover.

The City of Trees Programme was launched in 2015 by The Oglesby Charitable Trust and Red Rose Forest. The aim is to double the amount of tree cover in Greater Manchester and, within a generation, to plant a tree for every man, woman and child living in the city. The local community and neighbourhood will be encouraged to care of the trees. Based around Brunswick Street, the University of Manchester will be extensively landscaping a

large area to create Brunswick Park. This will become the largest green space on the campus and will encompass tree planting, wildflower planting, seating areas, pedestrian and cycle paths. This is taking place as part of the University's City of Trees commitments, and will also provide climate change adaptation benefits related to urban cooling and managing flood risk.

CASE STUDY SUDSTECH – OXFORD ROAD GATEWAY

Sudstech is an innovative 'porous' paving solution developed to improve flood resilience and urban water drainage. Made from recycled car tyres, this porous base layer can absorb in excess of 50,000 litres of water per square metre per hour, which increases urban water storage capacity and lowers water flow rates, reducing the potential of flooding.

The product was chosen as the material for the Oxford Road development in 2016. This will see over 4km of major bus priority lanes and Manchester's first ever 'Dutch-style' cycle lanes,

which segregates people on two wheels from the traffic.

With the help of the GM Business Growth Hub's Low Carbon Sector Development team, Langford Direct Ltd,

which produces Sudstech, is working to expand its workforce, promote its green credentials and establish new research and development partnerships for future innovations.



CASE STUDY CITY OF TREES

In 2015 The City of Trees initiative was launched by The Oglesby Charitable Trust and Red Rose Forest. The aim is to bring 2,000 hectares of unmanaged woodland back into a productive state and, within a generation, plant a tree for every man woman and child that lives in Greater Manchester.

Trees and urban greening play a vital role in our urban areas and help tackle climate change in a variety of ways:

- Removing CO₂ from the air: carbon can be 'sequestered' or 'absorbed' by trees and forests,

which store up to 25% of the world's carbon.

- Cooling cities: trees reduce summer temperatures in urban areas through the shade they provide and through the moisture they lose from their leaves as well as reflecting heat.

- Reducing air pollution: trees can help to reduce harmful pollutants, which are deposited into the atmosphere by our cars and vehicles.

- Reducing flood risk: trees reduce surface water runoff by absorbing rain, reducing flash flooding by around 60% compared with asphalt.

So far 39,874 trees have been planted and 2,291 people connected to nature.



Manchester
City of Trees





Economy – making a rapid transition to a low carbon economy



The 2009 Mini Stern Report for Greater Manchester highlighted a £20 billion ‘missed opportunity’ to the regional economy if we fail to act on climate change. Across Greater Manchester the Low Carbon and Environmental Goods and services (LCEGS) sector has the third highest sales in the UK, worth £5.4 billion in 2013, and is a growing part of the economy.

It is also recognised that steps taken to decarbonise local economies makes them stronger and improves global equity. However, the change to a low carbon economy requires a significant shift from fossil fuel investment to fossil fuel divestment; asking key stakeholders and institutions to move their money out of oil, coal and gas companies for environmental, moral and financial reasons. The scale of divestment required is challenging (many trillions of pounds). However, if we are to meet international agreements on climate change then fossil fuel investments will be outcompeted by clean energy investments over time, increasing risks and lowering returns to investors over time, to the point they ultimately become worthless.

Greater Manchester’s economy spends around £5 billion a year to buy fossil fuel-based energy (petrol, electricity and gas). This delivers little or no return to GM businesses, with energy expenditure going to organisations based outside of GM and the UK. By finding ways to invest our money in the generation and distribution of clean energy, will mean not only lower cost, lower carbon energy for residents and businesses, but also the generation of revenues that can be reinvested locally in further clean energy schemes.

We have continued to measure the value and impact of Manchester’s Low Carbon Economy over the past two years using carbon intensity of GCV, the value of the LCEGS sector and resource efficiency savings through the Green Growth Hub. A much broader set of indicators is emerging as the fossil fuel divestment campaign continues and investment in the ‘carbon bubble’ begins to burst.

Helen Seagrave
Manchester: A Certain Future
Low Carbon Economy Monitoring Group, Chair

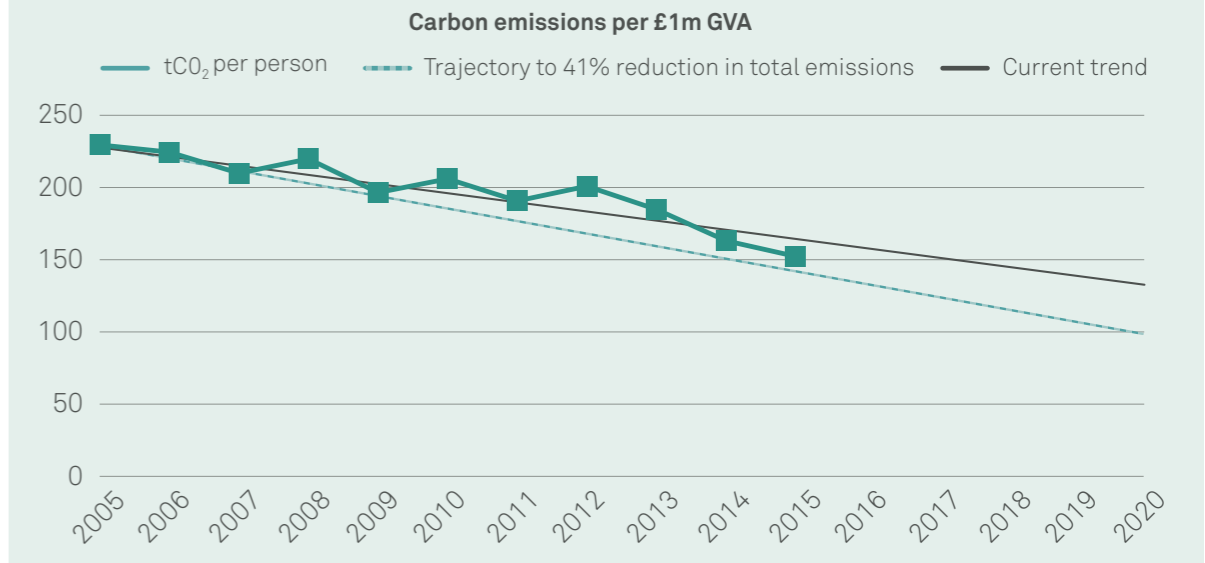
INDICATOR 1: Carbon intensity – the amount of carbon that is emitted per unit of economic activity.

Manchester’s is one of the fastest growing economies in the region and second after London. Research from MIDAS shows that Manchester City Region is particularly strong in financial and professional services; food and drink; manufacturing; aviation; Higher Education; logistics; textiles; creative industries; IT; and digital. The concentrations of employment in financial and professional services show this to be a significant area, with Biotechnology and energy also important sectors. All these industries have different carbon impacts. The carbon intensity of service led industries such as financial and professional services

may be lower than that of manufacturing, which uses large amounts of energy and water.

Latest estimates show that Manchester’s economy is growing at around 2.5% a year. This equates to the economy producing 152 tonnes of CO₂ per £1 million GVA (Gross Value Added) in 2015, a reduction of 34% on 2005 levels.

The projected growth in the size of Manchester’s economy to 2020 means its carbon intensity will need to fall to around 98 tonnes of CO₂ per £1 million GVA, a 57% reduction on 2005 levels, if we are to meet our 41% carbon reduction target.



INDICATOR 2: Low Carbon Environmental Goods & Services sector (LCEGS) and Low Carbon & Renewable Energy Economy (LCRE)

In July 2013, the Department for Business Innovation and Skills (BIS) stated that UK Low Carbon and Environmental Goods and Services (LCEGS) sector employed more than one million people and was worth £122 billion that year, which was around 8% of GDP, and was growing at 7% a year. The definition and methodology for evaluating what types of organisations and activities constitute 'Low Carbon' was re-analysed for the period 2010 to 2013 and was published in March 2015. Nationally from 2010-2013 the low carbon sector grew by 12% in terms of employment, 24.7% for turnover, and 28.4% GVA.

These figures have not been updated. However, in May 2016 the Office for National Statistics (ONS) issued its first update under the first UK Low Carbon and Renewable Energy Economy Survey (UK LCRE) for the reporting year 2014. The survey provides details of the low carbon and renewable energy economy in the UK. This shows that there are around 96,500 low carbon and

renewable energy businesses in the UK. Renewable energy and lowcarbon industries are worth billions for the UK economy and lowcarbon industries generated more than £46 billion in turnover for the economy in 2014.

Nearly half of this 47.3% (£21.9 billion) was generated in the 'energy efficient products' group; many businesses in this group focus on installing and manufacturing products. This was followed by the 'low carbon electricity' group which generated 26.9% (£12.4 billion) of turnover but employed only 17% (40,500) of LCRE FTE employees. This reflects that many businesses operating in this group were generating electricity, which requires fewer employees than activities in some of the other groups, such as installation.

While the change in standard makes providing year-on-year comparisons difficult, the ONS claim the new LCRE system will "provide greater detail".

INDICATOR 3: Business activity

See the Low Carbon Culture section on pg 33 for actions by businesses in Manchester.

CASE STUDY BUSINESS GROWTH HUB

The Business Growth Hub provides specialist environmental support to help SMEs in Greater Manchester reduce their environmental impact and take advantage of opportunities in the low carbon economy. To date the support has helped 13,000 organisations across the north west to reduce costs by £290 million and save over one million tonnes of CO₂e – more than the total annual emissions from every home in Manchester combined. It has also helped to grow Greater Manchester's low carbon sector, increasing sales by £7.6 million since 2013.



ACTIONS BY THEME

Review of progress against the actions in MACF 2013-15

Since the publication of the original MACF strategy in 2009, two action plans for 2010-12 and 2013-15 have been developed to set out how the strategy will be delivered. This section sets out progress against the actions in the 2013-15 plan.

From next year the city will have a new climate change strategy, covering the period 2016-50. This will build on and replace the current MACF strategy for 2010-20. There will also be an implementation plan for 2016-20, the first of a new series of five-year implementation plans that will be developed to ensure that the city stays on course for its 2050 zero carbon destination.

This will therefore be the last year that progress will be reported against the below actions. This report has been used to help inform the draft strategy for 2016-50 and draft implementation plan for 2016-20, to ensure that we build on successful initiatives, as well as finding new ways to overcome barriers we have experienced since 2010.

1

Buildings

Energy used in our city's homes, public buildings, hospitals, universities, offices and industrial units are responsible for the majority of Manchester's energy use; through heating and cooling, and power use in the lifetime of the building.

With 75% of our city's energy being used in this sector we need the building sector to be among our priorities for reducing carbon emissions and meeting Manchester, UK, EU and international carbon reduction targets. It is estimated that energy savings of up to 30% are possible in many buildings through retrofitting proven technologies. The construction, renovation, and maintenance of buildings contribute to around 40% of countries' Gross Domestic Product (GDP). Investing in reducing emissions from buildings will bring multiple benefits to both the economy and to society, boosting local employment, jobs and health and wellbeing of residents on low incomes.

Manchester, as part of Greater Manchester Combined Authorities (GMCA) has the advantage of the Devolution programme, meaning that Manchester will have new powers for a number of improved outcomes including new planning powers to encourage regeneration and development, and across the region a new £300 million fund for housing: enough for an extra 15,000 new homes over ten years, plus incentives to skills-providers to develop more work-related training. All of which is good news for the city economically and socially, and which also provides the opportunity to also embed objectives for carbon reduction and climate resilience as part of local development projects.

However, 2015 saw the abolition of the Zero Carbon Homes 2016 Standard that was due to come into force in 2016 and which would have required new housing developments to generate as much clean energy – through renewable sources like solar panels or ground heat pumps – as they use in hot water, heating, lighting and ventilation. The standard would have helped ensure the homes of the future are energy efficient, warm and require minimal heating. We have the technology and building techniques to construct homes that generate their own power and require little heating, and it is to the building sector that we must look for climate ready homes fit to house our residents now and in generations to come.

There is the risk that the Zero Carbon Standard for Non Domestic Buildings 2019 may be similarly scrapped and the display energy certificate (DEC) scheme for public sector buildings watered down. It is up to our city's business, schools, construction companies, architects, public sector organisations and planners to lead the city in delivering its zero carbon commitments, designing out carbon when we have the chance and ensuring that we construct the buildings that we want our future generations to live, work and learn in.

Through Devolution we have a unique opportunity in Manchester to start to address the planning and building requirements of a zero carbon city. And it is with enthusiasm about this opportunity that I look forward for the coming year.

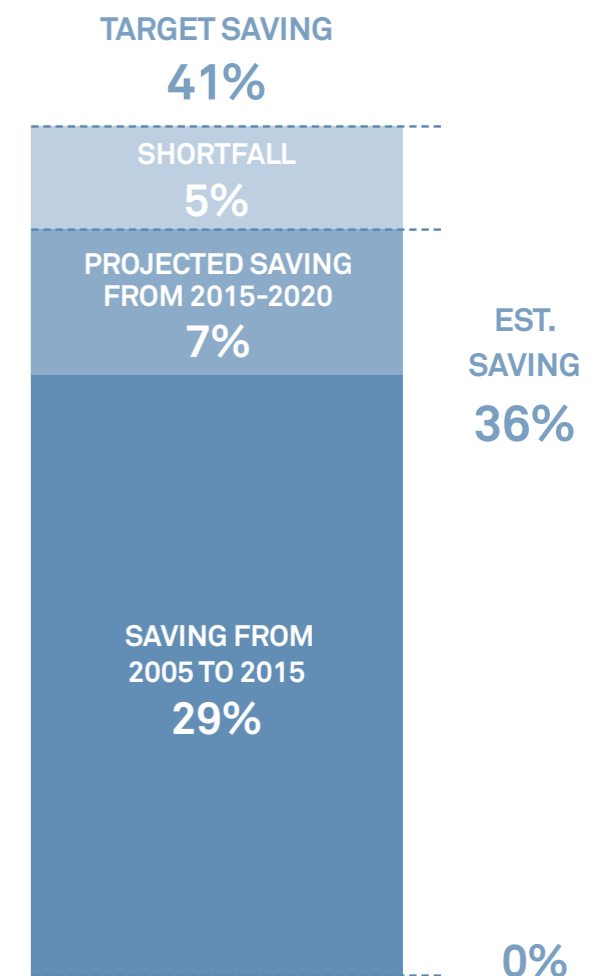
Prof. Will Swan
Manchester: A Certain Future
Buildings Group, Chair

DOMESTIC BUILDINGS

Headline aim: Through physical and cultural measures, to save more than 30,000 tonnes of CO₂ emissions from domestic properties by 2015, creating the capacity to double that target for the period 2016 to 2017.

DOMESTIC EMISSIONS

- In 2015, domestic buildings were responsible for an estimated 724,000 tonnes CO₂, which is 29% of Manchester's carbon emissions. This is a 3% reduction on the 2014 figure, which is similar to the UK average for CO₂ reduction from the domestic sector.
- Since 2005 carbon emissions from domestic buildings have reduced by an estimated 295,000 tonnes CO₂, which equates to a 29% reduction. To reach the 2020 target, emissions need to reduce by 123,000 tonnes (a further 47,000 tonnes of reduction above our current trajectory). This equates to a reduction of 30,000 tonnes a year.
- If we continue along our current trajectory, we will reduce emissions by a further 76,000 tonnes, equating to a reduction of 36% below 2005 levels.



INDICATOR	2009	2010	2011	2012	2013	2014	2015
Manchester CO ₂ emissions from domestic buildings	896kt	951kt	833kt	898kt	867kt	743kt est*	724kt est*
Number of Green Deal Assessments to date (cumulative)	n/a	n/a	n/a	n/a	1,458	3,949	4,527
Number of ECO measures installed to date (cumulative)	n/a	n/a	n/a	n/a	7,252	10,145	10,380

* Data estimates based on a year-on-year correlation reduction.

HOUSEHOLD ENERGY EFFICIENCY SCHEMES

Nationally the number of efficiency measures installed through government-backed schemes has fallen by 80% since 2012, according to research by the Association for the Conservation of Energy. There was a sharp fall in 2013-14, as previous schemes were replaced by Green Deal and the Energy Companies Obligation (ECO) schemes.

The Greater Manchester Green Deal ECO framework, which was launched in 2014 with planned delivery to 31st March 2017 (with an option to extend to 2019), has to date assisted over 6,750 fuel poor households in Greater Manchester with a total of 7,414 energy efficiency measures installed, and fuel poor residents in Manchester have access to free boilers and insulation.

The Greater Manchester Green Deal Communities (GDC) Project, funded through £6.1M DECC funding, successfully completed in March 2016, during a challenging change to national policy. Through the scheme over 1,240 households received energy efficiency measures, of which 900 households in Greater Manchester received external wall insulation.

Manchester accounts for 119 of the total households who have received energy efficiency works through the Greater Manchester Green Deal Communities Programme. This figure can be broken into 88 households receiving external wall insulation (10 of these households that received these works were also part of the BBC DIY SOS Help the Heroes Programme), 31 households received measures such as boiler replacement, and loft/cavity wall insulation.

CASE STUDY ERNELEY CLOSE RETROFIT

One Manchester commissioned R-GEN to reinvent two dilapidated concrete frame maisonette blocks in Longsight into low energy modern accommodation for older people, which would also be a catalyst for wider social and physical regeneration in East Manchester.

The refurbishment used 'EnerPHit Certification Criteria', which is a residential refurbishment criteria used for Passivhaus renovations and means the requirement for space heating and cooling is dramatically reduced.

The first three months of heating bills show an average reduction of 90%, which given that the majority of residents are elderly and therefore tend to be at home more, is excellent.

The University of Manchester has recently completed a study on the development and produced an informative guide titled *Maximising the Benefits of PassivHaus: A guide to supporting older occupants*. The scheme was a finalist in the UK PassivHaus Awards 2015.



MACF 2013-15 ACTION PLAN:

DOMESTIC BUILDINGS	PROGRESS IN 2015/16
5,000 homes (1,350 under the GM Delivery Partnership) will have been retrofitted through the Green Deal and ECO by 2015, and plans for retrofitting further homes by 2020 will be in place, embedded with our plans for neighbourhood regeneration.	<p>Manchester received £3.65 million from DECC for Green Deal Go Early scheme. Between March 2011 and December 2014 Manchester's ECO programme delivered 252 energy efficiency measures in homes.</p> <p>In 2014 this was replaced by a Greater Manchester ECO and Green Deal Framework, which aimed to support energy efficiency measures to approximately 10,000 households in the city across all tenures (privately owned, private and social rented sectors) over three years.</p> <p>The DECC-funded Green Deal Communities scheme, called 'Little Bill' in Manchester, began in March 2014 with an enhanced financial 'offer' cross four chosen areas of the city: Levenshulme, Northenden, Whalley Range, Higher Blackley and later extended to Old Moat and Chorlton and supported 119 households until the scheme ended in December 2015.</p>
All new build housing developments will be guided by energy policies in the Manchester Core Strategy, ensuring that developers are on-track to build zero-carbon housing from 2016.	<p>Manchester's Core Strategy sets out the planning policies for the city, which includes policies to enable lower carbon domestic new developments.</p> <p>The Manchester Strategy 2016-2025, published in March 2016, includes a 'liveable and low carbon' strand promising good quality housing in clean, safe, attractive and cohesive neighbourhoods.</p> <p>Although the Zero Carbon Homes 2016 standard has been withdrawn, there are many examples of new homes being built in Manchester to low carbon standards such as the Urban Splash new prefabricated homes scheme in New Islington 'hoUSE', which are built from sustainable timber construction and assembled on site, reducing build time and ensuring energy efficient construction.</p>
All households will have received energy efficiency advice, with targeted programmes aimed at alleviating fuel poverty in the poorest neighbourhoods.	<p>The GMEA service closed on 31st March 2015, although the GM Green Deal Communities Programme continues to support residents with energy efficiency measures. Assistance for residents, especially those in fuel poverty, is available from Manchester Citizens Advice Bureau, with energy efficiency advice, switching tariffs and assisting with trust fund applications to help reduce fuel bills.</p> <p>Manchester Care and Repair Service offers HELP (Home Energy loan Plans) to homeowners in Manchester pay for central heating; external/internal and eco-friendly insulation; renewable energy (solar PV, electricity or heat recovery systems); or replacement windows and doors (double glazing).</p> <p>Manchester Welfare Provision Services administered the Fuel Poverty Crisis Fund to Manchester residents in short-term crisis along with the Warm Home Discount Scheme, Winter Fuel Payment and Cold Weather Payment. National schemes such as Home Heat Helpline can assist vulnerable and low income households in urgent need.</p>
Aligned with Carbon Literacy, 500 local people will have been trained in order to contribute to and benefit from a growing retrofit industry in the city. Carbon Literacy will also be delivered to residents through our various retrofitting schemes.	<p>The Carbon Literacy for Registered Providers of Social Housing (CL4RP) programme continues working with 20 of the largest Housing Associations across Greater Manchester to roll out Carbon Literacy to over 60 Registered Providers staff, and community trainers, who are now currently implementing the learning in each of their own organisations. Additionally, over 1,500 CL4RPs staff members have completed their Carbon Literacy learning including Northwards Housing, Great Places Housing Group and Southway Housing, and are now looking to deliver carbon literacy to tenants and residents, following completion of Carbon Literacy delivery to their entire workforce, in all sectors.</p>

DOMESTIC BUILDINGS

PROGRESS IN 2015/16

While our social housing providers continue to provide leadership on greening our housing stock, an increasing number of owner-occupiers and private landlords will be taking steps to reduce energy consumption and climate proof their homes.

Carbon Coop, a mutual organisation made up of individual householders, is working on a number of projects including Community Green Deal; a low carbon retrofit programme, where work is paid for through a zero interest loan to householders. Work is monitored both by the Carbon Co-op and the University of Salford to see how the houses perform in reality: eight homes have been retrofitted so far. This work will also help to inform the development of a 'Retrofit Pattern Book' for Greater Manchester, identifying and documenting common details across the housing stock that can then be re-used, helping to speed up and reduce the costs of retrofit works in the future.

Green shift – Nobel Grid Project: a three and a half year, EU-funded project to test out the use of new smart meters in a co-operative. Up to 200 householders in Greater Manchester will participate with the project involving other energy co-operatives across the EU.

My Home Energy Planner enables householders to baseline their current energy performance and acts as a decision making tool, modelling the impact and price of different retrofit improvements for the home. The assessment tool is mainly for use by trained assessors, but we feel more technically minded members will also be able to use it. (See case study)

We will have a system for measuring and recording the energy performance of all housing in the city, ensuring that we can prioritise investment to areas in greatest need, particularly for those living in fuel poverty.

Energy Performance Certificates (EPCs) are provided with every home that's put up for sale, every new home that's built, and every home that's rented out to a new tenant. The EPC allows prospective buyers and tenants to see information about the energy efficiency of their building so that they can consider fuel costs before they buy or rent.

The GM Retrofit Strategy sets a long term target for 90% of housing stock in Greater Manchester, to be at Energy Performance Certificate(EPC) rating B, and 17 kg/CO₂ per m² by 2035. The remaining 10% of homes will need to achieve a minimum of EPC C by 2035.

We will have a growing network of low carbon show homes, demonstrating to residents and landlords the practical steps they can take to improve their own properties.

Carbon Co-op's Green Deal Communities Project includes a network of super energy-efficient 'Showhomes' being retrofitted through the scheme. They are open to the public on selected days to provide real life examples of the financial and carbon-saving benefits of retrofitted homes.

CASE STUDY CARBON CO-OP & URBED: MY HOME ENERGY PLANNER

Carbon Co-op and URBED received support from InnovateUK to develop an online, whole house retrofit assessment and decision-making tool. My Home Energy Planner was developed in 2015 to develop the open source tool and involved contributions from organisations including Centre for Alternative Technology, National Energy Foundation and Centre for Sustainable Energy.

With 80 assessments delivered to date, My Home Energy Planner will enable more people in Manchester

to purchase an assessment taking the first step in planning their energy efficiency works.



CASE STUDY BBC DIY SOS THE BIG BUILD

In September 2015 the BBC's DIY SOS 'The Big Build' worked with an army of volunteers including hundreds of tradesmen and local business to transform Canada Street and New Street in Newton Heath into a community for veteran Army heroes.

Gorton Horticultural Society also helped to create new gardens and set up street planters as part of the street facelift.

Manchester City Council has been shortlisted for the UK Housing Awards 2016.

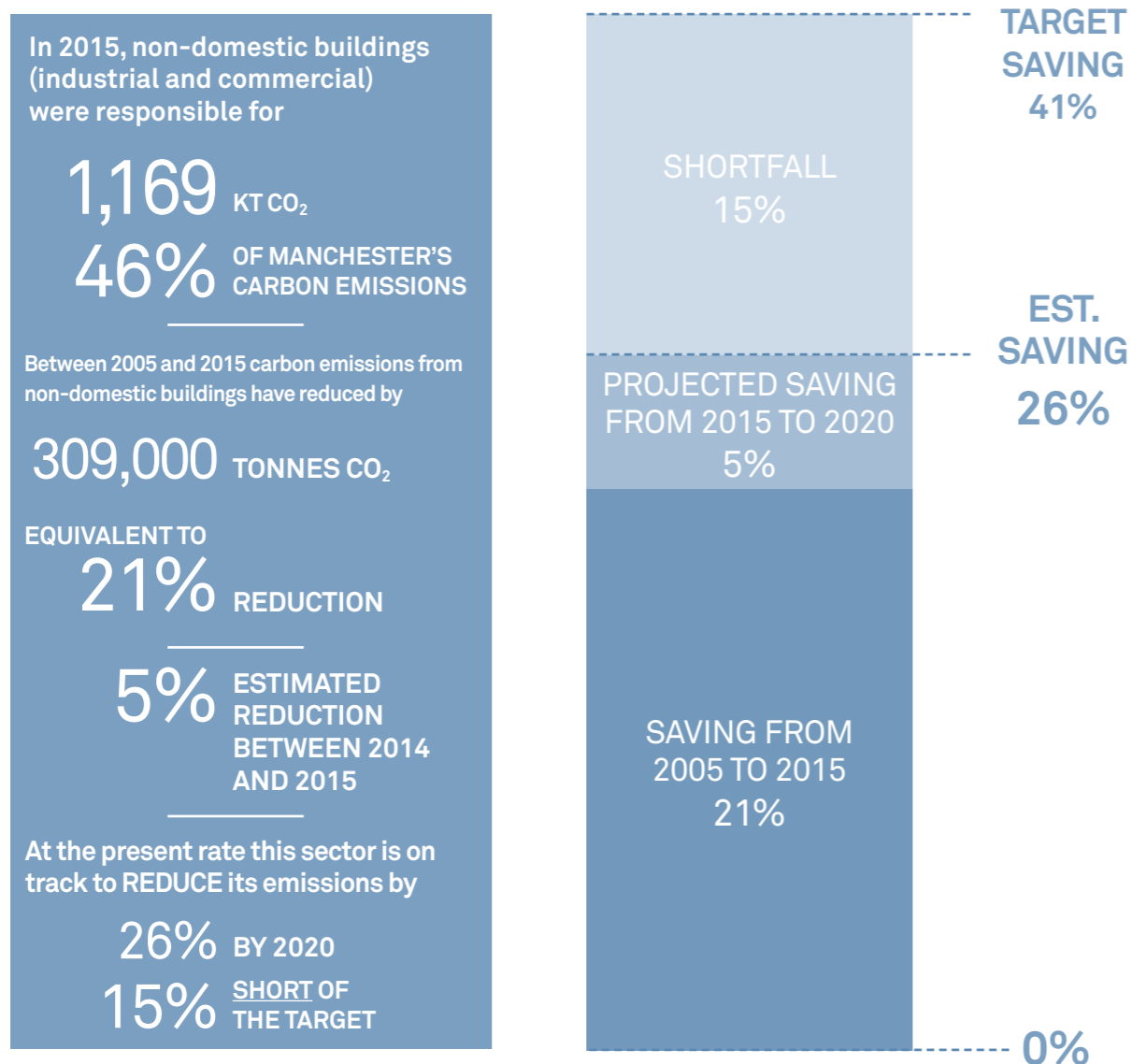
Ten of the 62 homes benefitted from external wall insulation as part of the GM Green Deal Communities Scheme, and the entire street also benefitted from disabled access, new doors and windows, and rendering to the front of the properties.



NON-DOMESTIC BUILDINGS

Headline aim: Through physical and cultural measures, and collaboration between building owners, occupants and energy services companies, to reduce emissions from commercial, public and community buildings by 5% per year, from 2012 levels.

NON-DOMESTIC (BUSINESS) EMISSIONS



ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE (DECS)

The current Display Energy Certificate regime for public sector buildings is being consulted on by the Government to look at “improving the Display Energy Certificates regime for public buildings”. If this proposal becomes law the Government will drop DECs for 54,000 public buildings in England and Wales – most of these will be schools and town halls. This will be done by taking a far narrower view of buildings ‘frequently visited by the public’ that require DECs so that buildings such as town halls, swimming pools and schools could all become exempt.

Energy costs only account for up to 3% of a company’s outgoings, so retrofitting buildings to be energy efficient isn’t always a priority for businesses, especially where the building is leased. However, as 46 % of Manchester’s carbon emissions come from non-domestic buildings, developers, commercial landlords tenants all have a key role to play in addressing this portion of the city’s carbon footprint. As of April 2018, all rented properties will require a Minimum Energy Performance Standard (MEPs), which will be based on the existing EPC rating system, and landlords won’t be able to let out buildings that don’t get a high enough rating. It is expected that this minimum standard will be equivalent to an EPC rating of E.

Both the University of Manchester and Manchester Metropolitan University have set challenging carbon reduction targets of 40% reduction, and have an approach to construction activities that is designed to embed carbon reduction objectives in building design and construction.

Hospitals consume large amounts of energy, with a continuous need for heating and air-conditioning to keep patients comfortable; good lighting for staff to work in; significant amounts of electronic medical equipment; and lots of laundry to be done. Rising energy prices mean that high energy use results in high bills, so reducing energy use and using renewable sources of energy can free up money to be spent on front-line patient services.

INDICATOR	2009	2010	2011	2012	2013	2014	2015
Manchester CO ₂ emissions from industry and commercial buildings (kilotonnes)	1274kt	1381kt	1221kt	1378kt	1326kt	1223kt	1169kt

CASE STUDY MANCHESTER AIRPORT'S INTELLIGENT BUILDING CONTROL (IBC)

Manchester Airport is a 24-hour, highly regulated environment with 300 companies operating on site, 19,000 staff and 23 million passengers. Reducing carbon emissions, whilst at the same time providing a welcoming and efficient customer experience, can be challenging, particularly in a building with such a dynamic use as an airport terminal.

The control of the LED lighting and air handling units within Terminal 2 have been synergised with the airport's operational database (flight management system). Real time flight information is fed through to control units allowing lighting and ventilation to be adjusted automatically using the Intelligent Building Control (IBC). So far the system has delivered CO₂ savings of

1,808 tonnes. When completed and fully rolled out to Terminals 1 and 3 annual CO₂ savings of 4,699 tonnes and equates to total savings of 200GWh, almost equivalent to two years' site consumption.



Low energy lighting, controlled by IBCs in Terminal 2 arrivals.

www.manchesterairport.co.uk/community/environment

CASE STUDY MANCHESTER CATHEDRAL

Built in 1215, Manchester Cathedral dates from medieval times. Its last major refurbishment was in the 1950-60s, following bomb damage in the Second World War.

The Cathedral has now made a commitment to become the UK's 'Greenest' cathedral, and has undertaken number of measures to ensure this commitment is met. In 2013 the Cathedral replaced the underfloor heating with ground source heat pumps that use natural energy stored in the earth to heat and cool the Cathedral. The building now gets 70-75% of its heating from

32 geo-thermal wells. In March 2015 over 4,151 bulbs (100-150 watt) were replaced with low energy 14 watt LED bulbs.



www.manchestercathedral.org



HOME
Image courtesy of Paul Karalius

MACF 2013-15 ACTION PLAN:

NON-DOMESTIC BUILDINGS

PROGRESS IN 2015/16

We will have a full understanding of the total carbon emissions from commercial, public and community buildings in the city and plans in place for stronger partnerships to secure investment, share and publicise data and good practice so that aggregate emissions can be reduced by 41% by 2020.

DECC provides an overall figure for the energy and direct carbon emissions from the city's buildings. Although there is a two year time lag the MACF CO₂ Monitoring Group provides analysis and estimated figures for the gap in the time period to enable annual reporting, based upon DECC data trends and has been accurate thus far.

Display Energy Certificates (DECs) and Energy Performance Certificates (EPCs) provide building energy performance data for public buildings and homes.

The CRC Energy Efficiency Scheme is a mandatory carbon emissions reporting scheme that cover all organisations in the UK using more than 6,000MWh per year of electricity.

Development of GM's Green Deal will have stimulated access to a range of financial mechanisms to fund low carbon building retrofit for commercial property owners, and initiated training programmes for professionals involved in the retrofitting of buildings.

The Business Growth Hub has been able to set up the Green Growth Service, which has delivered key objectives including the development of the GM's Green Growth Business Pledge.

13,000 Manchester businesses have benefitted from the service since 2002 which includes energy efficiency advice, and a networking scheme for the growing market for low carbon and environmental goods and services, which is helping to stimulate the market.

New buildings will comply with the energy policies in the city's Core Strategy, ensuring that developers are on track for new commercial, public and community developments to be zero-carbon from 2019.

Manchester Core Strategy 2012-2027 is the key long term strategic policy for Manchester development forms the framework that planning applications will be assessed against. There are two supplementary planning documents including 'Guidance to Development in Manchester' and 'Providing for Housing Choice' against which developments in the city are assessed against and include a number of carbon reduction policies.

Although the Zero Carbon Homes 2016 standard has been withdrawn for domestic properties, the Standard is due to start for Non Domestic buildings in 2019.

The Universities, NHS Hospitals and the Council all have plans to reduce emissions from their estates – mostly in line with the MACF objective – by 2020. All will be making significant progress against these targets by 2015.

Manchester City Council's Climate Change Action Plan 2015-18 sets out how it aims to achieve the 41% reduction by 2020. The latest Council report states that it has reduced carbon emission by 13% in total from 2009/10 to 2014/15.

The University of Manchester has a total of 245 buildings with a Campus Masterplan of new build and refurbishments that must also help to meet the university's challenging 40% carbon reduction target. All new build and refurbishment projects must meet specific targets to ensure environmental sustainability is considered from the outset through to post completion. Alongside this, all projects in the Campus Masterplan have been assigned challenging carbon targets in order to contribute to reductions outlined in the Carbon Management Plan. We have also appointed a framework of Environmental Sustainability Advisors who manage and monitor these targets throughout all major projects.

Manchester Metropolitan University has developed a dynamic approach to managing its activities and estate. All our new building and construction work reaches the standards set by BREEAM Education excellence, and have switched a 100% Green Energy supplier for non-residential estate. In addition The Birley site is committed to being zero-rated in waste, water and heating and integrates environmental sustainability into every aspect of its design, making it one of the UK's greenest campuses. The Robert Angus Smith Energy Centre uses combined Heat and Power (CHP), water storage and boiler systems to provide heating and hot water to campus.

Central Manchester University Hospitals (CMUH), which includes seven hospital sites, has a Sustainable Development and Management Plan for 2014-2020 outlines how the Trust is investing substantial resources into carbon saving initiatives and has a minimum of 2% reduction per annum in its direct carbon footprint. The Hospital Trust won several awards in the NHS Sustainability Awards 2015 in the categories of Behaviour Change, Waste and Human Resources.

University Hospital of South Manchester NHS Trust (UHSM) is a major acute teaching hospital trust providing services for adults and children at Wythenshawe Hospital and Withington Community Hospital, as well as community services. The Hospital has reduced its energy consumption by 26% in fewer than five years and is striving to cut another fifth before 2018.

Despite reduced levels of capital investment in schools in the period to 2015, continuing increase in IT activity and rising primary school numbers, the emissions from schools will be 10% lower than in 2012.

Manchester state schools have reduced their energy use by 5% in 2015, and Manchester Academies have reduced their emissions by 11% in the same year. 97% of schools are Eco Schools. Some schools have worked with Cooler to design the Low Carbon classroom element of the Carbon Literacy project.

We will use iconic public and commercial retrofit and new build projects in the city centre as a centre of excellence for low carbon, climate-adapted buildings to inspire and inform projects across Manchester and make preparations to secure hosting a Low Carbon Buildings World Exhibition in 2017.

The University Hospital of South Manchester NHS Trust (UHSM) site in Wythenshawe was the first NHS hospital to install biomass boilers with a capacity to reduce carbon emissions by 3,400 tonnes each year is one of the reasons why UHSM has staked a claim to the title 'Britain's Greenest Hospital'.

NOMA is a 20-acre regeneration of Manchester urban land owned by The Co-operative Group and Hermes Real Estate, which is creating a mixed-use location in the centre of the city with real community at its heart.

One Angel Square at NOMA is one of the city's most sustainable large buildings and is built to a BREEAM Outstanding rating. It is powered by a biodiesel cogeneration plant using rapeseed oil to provide electricity and heat. The structure makes use of natural resources, maximising passive solar gain for heat and using natural ventilation through its double-skin facade, adiabatic cooling, rainwater harvesting, greywater recycling and waste heat recycling and proves that Grade A, environmentally friendly and sustainable office space can be delivered to the market and be commercially viable.

Birley Fields site achieved BREEAM Excellent with the buildings designed to extensively retrofit photovoltaic arrays. In addition there is ground source local cooling and heating provided by borehole water abstraction. An independent District Heating Scheme, through combined heat and power will supply the campus, meaning that heating systems are more energy efficient. Maximum use of natural daylight and extensive use of LED lighting will reduce electricity consumption.

First Street Complex contains BREEAM Excellent office space as well as HOME, a new purpose-built centre opened in 2015 for international contemporary art, theatre, film and books. The sites sustainability credentials include 35 thermal boreholes which were housed in the new Southern Square, and boost the building's energy efficiency by as much as a further 10%.

We will have developed a range of innovative applications using digital technologies to enable buildings to be better managed and more energy efficient.

The €4.5 million 'Triangulum: Three Points of Light' is a five-year project funded by the European Commission's Horizon 2020 programme to develop low-carbon smart districts in Manchester, Eindhoven, and Stavanger. The programme began in February 2015 and includes developing an integrated suite of energy, transport, and ICT solutions that will be monitored in the long term as a 'SMART' package.

CASE STUDY PARRS WOOD SCHOOL SOLAR PV

Parrs Wood High School in Didsbury hosts one of the country's largest on-roof solar PV arrays on a school. The 250KW single installation array is mounted across the school's main roof with the system totalling of 961 solar panels (260W panels) combined with four high efficiency inverters. It is expected that the solar installation will significantly reduce the school's annual electricity consumption, as well as slashing its carbon consumption by 119 tonnes per year.

across the sixth form students. The system was funded through Manchester City Council, and installed by the procured partner, Forrest Energy.

Pupils at Parrs Wood High School have played an active role in cutting the school's carbon emissions, and are now learning about the role renewables can play in reducing carbon pollution, using it as a key teaching aid within science, and even developing business skills



2

Energy

To become a zero carbon city supplied by 100% clean energy by 2050 will require us to transform the way that energy is generated, distributed and finally used by the city's residents and business.

A shift to low and eventually zero carbon energy and transportation systems will mean investing heavily in both energy efficiency and renewable energy generation, supported and enabled by the Devolution of powers and funding from government. The establishment of decentralised energy generation and commercial and domestic retail company within the cityregion's economy is vital. The creation of a local GM Energy Company, planned for 2017, would be able to deliver carbon reduction and a host of other economic, social and environmental benefits through decentralised and decarbonised infrastructure.

This would mean that there will need to be a significant scaling up of renewable energy generation such as large scale PV, community renewables, on-shore wind and others. A clear advantage of decentralising energy generation is that it affords the city increased levels of control over supply and demand, and infrastructure can be designed and built around emerging and disruptive technologies, as well as the expanding smart city agenda. The city has many organisations working on these types of energy innovations, from large universities, through to SMEs and small scale community and social enterprises.

Manchester has continued to take a long term view of its energy generation and usage and the innovation and investment expertise of the city's universities and businesses will be key in beginning to translate this into the delivery of low carbon energy projects on the ground, on route to 100% of the city's energy being from clean sources by 2050.

Headline aim: To increase knowledge, research and delivery of renewable energy technologies; understanding and planning of the city's energy needs and opportunities; and application of digital technologies for energy management.

A zero carbon and clean energy network must include renewable energy generation from renewable technologies alongside a reduction in our energy use.

DISTRICT HEART NETWORKS

Across Greater Manchester a number of local authorities have undertaken feasibility studies that show the long term financial as well as carbon savings of district heat networks. There are currently four new and one improved existing heat network proposals, of which the Manchester Civic Quarter District Heating Network (CQHN) has progressed to procurement stage. Once operational the system will provide low carbon heating and electricity to Manchester Town Hall, Manchester Art Gallery, Central Library and other buildings in the area. The project will also help to improve air quality and reduce the amount of public money the City Council spends on energy in these buildings. Other linked buildings, including Manchester Central and Bridgewater Hall will receive electricity as well as heat, while other privately owned buildings based nearby can also choose to benefit from the project.

The scheme will comprise of a highly efficient, low emission Combined Heat and Power (CHP) unit set up at Manchester Central. It is estimated that the plant will reduce the City Council's carbon emissions by at least 3,500 tonnes by year. In addition to the CQHN, five more District Energy projects around the city centre are being developed utilising funding secured from the government:

- Within the Corridor Manchester area a Feasibility Study is in progress that will complete later in 2016. There is the potential for the Corridor Network to be integrated with the CQHN.
- In the NOMA area of the city a parallel Feasibility Study is also in progress that will also complete later in 2016.
- In the medium term, proposals for a Heat Network are being explored with Network Rail and other partners for Piccadilly Station and the surrounding area.

RENEWABLE ENERGY GENERATION

Greater Manchester Community Renewables Limited (GMCR), established by volunteers in 2015, is a community benefit society. It is planning to install solar panels on three schools and a community building in 2016/17, funded through a community share issue that was launched in 2016. The sites will benefit from lower electricity bills and a lower carbon footprint as a result of the clean electricity being generated from their rooftops, and surpluses will go into a Community Fund to support eco-friendly projects in the local area. There has been a steady increase in the number of renewable installations installed in Manchester over the last five years. However, this may now start to level off due to government changes in the Feed-in Tariff in January 2016, which make the scheme less attractive by increasing the payback time for PV projects.

SMART ENERGY MANAGEMENT

Smart City technology can not only help to address economic and infrastructure issues, but also has the potential to mitigate the impact of cities on the environment. The UK Green Building Council found that while cities occupy just 3% of the earth's land surface, they consume 75% of the planet's natural resources, account for 80% of global greenhouse gas emissions, and 50% of global waste production.

Smart technology is being used to help address this issue. 2015/16 has seen significant progress in the Smart City agenda; the €24m Euros EU funded Triangulum Project formally began over the last 12 months, marking the start of work to make Manchester a 'lighthouse' Smart City for others to learn from. In December 2015 Manchester's 'CityVerve' Consortium was chosen as the Government's £10 million flagship Smart City IoT (Internet of Things) demonstrator, which will use digital technologies and data to deliver environmental, social and economic improvements in the Corridor.

At the community level Carbon Co-op based in South Manchester has launched 'My Home Energy Planner', an online tool to enable householders to understand current energy usage and decide which energy efficiency improvements might best suit their home.

INDICATOR	2009	2010	2011	2012	2013	2014	2015
Energy consumption (Gwh)	9654	9517	9097	9152	8977	Available autumn 2016	Available autumn 2017
Amount of generation capacity registered for the Feed-in Tariff (MW) (annual)	n/a	0.153	0.615	5.61	1.019	1.36	8.7
Cumulative no. of renewable installations registered for the Feed-in Tariff	n/a	29	234	2,258	2,635	2,962	6,066
Cumulative generation capacity registered for the Feed-in Tariff (MW)	n/a	0.15	0.77	6.38	7.40	8.76	18.32

CASE STUDY CITYVERVE: INTERNET OF THINGS

Manchester's £10 million CityVerve consortium is the UK Government's flagship Internet of Things (IoT) demonstrator. The project aims to test and improve services for its residents to demonstrate immediate energy and cost savings through demonstrating SMART systems at scale. The CityVerve project will demonstrate applications of IoT technologies and services in four key areas: healthcare; transport; energy and environment; and culture and community. It will also show benefits in the management of chronic respiratory

conditions, community wellness, talking bus stops, smart lighting and bike sharing. Smart air-quality monitoring information will be passed to those with health conditions and made generally available to support walking options and routes.



@cityverve



MACF 2013-15 ACTION PLAN:

ENERGY	PROGRESS IN 2015/16
Integrating policies from the Core Strategy with the framework of the GM Energy Plan, we will have developed a city-wide energy plan that sets out the major opportunities for renewable energy generation, embedded within the city's plans for neighbourhood regeneration.	<p>The GM Climate Change Strategy and Implementation plan consultation draft was launched at the end of 2015 and includes 72MW of renewable energy installed across GM and £110 million of new energy research.</p> <p>Manchester's Core Strategy provides the structure for low carbon and renewable generation to be implemented through the planning system.</p> <p>A number of other Heat Network proposals have been funded through DECC's Heat Network Delivery Unit (HNDU) including NOMA, Oxford Road Corridor and Piccadilly.</p>
Awareness and understanding of the sources of energy will be increased for organisations and residents and programmes such as GM's Energy Switching scheme will have increased local demand for energy from renewable sources.	<p>The third GM Energy Auction energy switching campaign held in 2014 resulted in 10,000 GM households registered and 15% of those switched suppliers as a result. Each household saved on average £250.</p> <p>In 2013 there were two similar auctions – 40,960 Greater Manchester residents signed up, saving 4,577 households a total of £570,943.</p>
We will have progressed understanding and practice of smart energy management in the city through programmes including ENW's Capacity to Customers and CLASS projects, and outputs from Manchester Energy.	<p>Electricity North West continues to deliver energy management programmes including Capacity to Customers and CLASS.</p> <p>Manchester's Carbon Co-op has secured EU funding for a new smart meter technology project where householders profile their daily energy use and use new apps and devices to help make best use of energy when it's being produced from clean, renewable sources.</p>
Large-scale energy generation and distribution systems will have begun to serve a small number of key areas of the city, establishing the basis for developing citywide heat networks in the future.	<p>The Civic Quarter Heat Network has now progressed to procurement stage, offering low carbon energy generation across the city centre.</p> <p>A number of feasibility schemes have secured funding from DECC's Heat Network Delivery Unit in 2015 including Oxford Road Corridor detailed feasibility, NOMA detailed feasibility, Piccadilly master planning, and a wider strategic study considering connection options for heat network proposals within the 'Regional Centre' across Manchester, Salford and Trafford.</p> <p>In addition in 2015 a number of DECC funded Outreach Workshops have been delivered in Manchester including CHP and Heat Pumps.</p>
We will have increased the installation of building-scale renewable and low carbon heat and power technologies including solar PV, geothermal, solar thermal, hydropower and heat pumps.	The number of renewable energy installations (mainly solar PV) that have registered for the Feed-in Tariff in Manchester is 6,066, offering 18.32 MW of generation capacity.
Partnerships including our universities and Manchester Science Park will have developed Manchester-dedicated research and demonstrator programmes that develop digital energy data, closed-loop fuel recycling, new applications such as hydrogen technology, and an understanding of the potential for locally produced biofuels.	<p>The Greater Manchester Hydrogen Partnership (GMHP) was set up in 2012 to develop a network of hydrogen fuel cell stakeholders to bring together knowledge and skills to improve Greater Manchester's capacity to address the challenges of grid demand, energy security and ability to create a lower carbon economy. In 2013 the partnership, led by MMU and Greater Manchester Combined Authorities, teamed up with Viridor Laing Greater Manchester Ltd to investigate the potential to create green energy by producing hydrogen gas from Manchester's waste sites.</p> <p>The technology has recently seen advances for fuel cells in the automotive industry with new factory run by Honda and General Motors could open by 2025.</p>
We will have developed innovative demonstrators using open data and sensor networks to monitor energy use and help stimulate cultural change.	The use of SMART systems, where sensors are integrated with real-time monitoring systems for energy data collected from residents, business and their appliances and or devices, allow energy usage to be processed and analysed. The information and knowledge gathered are keys to tackling inefficiency; in Manchester energy monitors, including open source data continue to be developed by Carbon Co-op.

CASE STUDY GMCR COMMUNITY SHARES DEAL

Currently, Greater Manchester Community Renewables, which was founded in 2015, is planning on installing solar panels at schools across Greater Manchester and has launched a community share offer to raise £186,000 by 30th June 2016.

support to help local residents of all ages learn about energy and climate change. Not only this, a proportion of the surpluses (estimated to reach over £60,000), will be available to be used for community projects relating to climate change and environmental education.

It is estimated that this project will save 50 tonnes of CO₂ in the first year alone, by generating over 100,000 kWh of renewable electricity. This is estimated to result in the combined energy savings of up to £50,000 over the life of the project, as the sites will receive electricity from the panels at a 25% discount compared to their existing supplier. As well as all that, each site will also receive educational



www.gmcr.org.uk/invest

3



Transport

The latest analyses of Manchester's CO₂ emissions shows that transport makes up just over a quarter of the city's direct carbon footprint at 25%. This is primarily from the burning of petroleum, diesel and other fossil fuels.

As well as the climate change impact of this, the city's air quality is also a key challenge causing significant harm to the health of our residents and the environment, with knock on effects on the city's economy. There are long and short term impacts resulting from breathing air pollutants that can affect our health. Nitrogen oxides (NOx), specifically nitrogen dioxide (NO₂) and particulates (PM), are air pollutants that contribute to respiratory illness, cardiovascular disease and some cancers. Currently Greater Manchester will not meet EU legal limits for airborne NO₂ levels until 2020 under current air quality plans unless the city takes further action to reduce emissions.

Transport for Greater Manchester (TfGM) is the first UK transport authority to commit to becoming a zero carbon authority by 2033, building on the success of already reducing its carbon emissions by 19% in the last three years. Fundamental to this is the delivery of the Draft Greater Manchester Low-Emission Strategy (LES) and Air Quality Action Plan (AQAP), which Greater Manchester Combined Authority (GMCA) Transport for Greater Manchester (TfGM) recently consulted on.

Delivery of the LES and AQAP will focus on programmes and activity to reduce emissions from freight and goods vehicles and reduce energy in order to improve air quality and to contribute to a reduction in CO₂ emissions. There are new guidelines for residential developments, actions for buses, actions for cycling, actions for travel choice, actions for cars and improved information and resources.

TfGM will be at the centre of the Low Emission Strategy and Implementation Plan working with the City Council and Greater Manchester district councils, residents, business and other stakeholders to develop the plan and take ownership for driving and coordinating its the delivery, development and reporting of progress.

A more accessible and efficient transport system requires major changes in transport infrastructure, vehicle technologies and behaviours, which will take time to deliver and will have a significant impact on travel demand and infrastructure requirements. That's why we will be consulting on a new, long-term Greater Manchester Transport Strategy for 2040 this summer. This has sustainability and integration at its heart and will set out bold ambitions for delivering a radically improved transport system over the coming years, taking advantage of the opportunities that increased devolution of powers and funding will offer Greater Manchester.

Sitting alongside our Low-Emission Strategy and Air Quality Action Plan, our 2040 Strategy and first five-year Delivery Plan, and as we now move into the development of the Implementation Plan, I am confident that provide us with the right structures and strategies to enable (Greater) Manchester to deliver a long-term integrated approach to reducing carbon emissions and improving air quality in the future and to focus investment to greatest effect with benefits for everyone.

Simon Warburton
Manchester: A Certain Future
MACF Transport Group, Chair

Headline aim: To deliver modal shift (getting people out of cars and taking public transport, walking or cycling) to sustainable transport; continue the improvement of sustainable public transport services within and to and from the city; and create a platform for substantial increases in journeys on foot, by bike and by electric vehicle in the period 2016 to 2020.

FUTURE TRANSPORT EMISSIONS

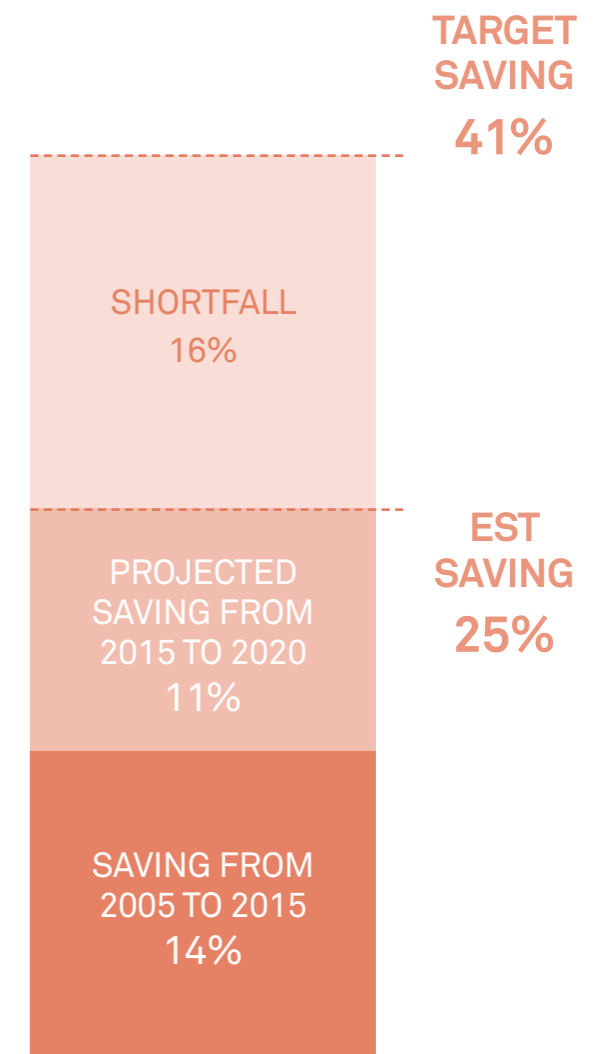
The Low-Emission Strategy (LES) and Air Quality Action Plan (AQAP) will need to identify measures that will have the maximum impact on both carbon levels and air quality.

There are different interventions and actions that have an impact on both carbon emissions and air quality:

- Changing travel behaviour
- Managing emissions
- Greening vehicle fleets
- Awareness-raising.

While a shift to sustainable modes of transport will help, they will not reduce emissions on the scale required to meet the targets. The huge amount of vehicles on the road, car traffic and freight means that emissions must be tackled over the long-term. However, the greatest short-term impacts will be through focusing on HGVs and on buses on key routes into the city centre.

Radical action is now required to clean up vehicle engines; the Euro IV and V engines have not delivered as big a reduction in emissions 'on the road' as predicted. In addition new cars have not been performing as advertised. Overall less progress on tackling carbon and air pollution has been made than expected, primarily because impact is not focused on specific problem locations.



In 2015, transport was responsible for 25% of Manchester's emissions – 639,000 tonnes CO₂.

Since 2005 carbon emissions from transport have reduced by 14%.

Over the past year there has been an estimated reduction of 1%.

On the current CO₂ trajectory it is estimated that transport will achieve a 25% reduction by 2020, from 2005 levels.

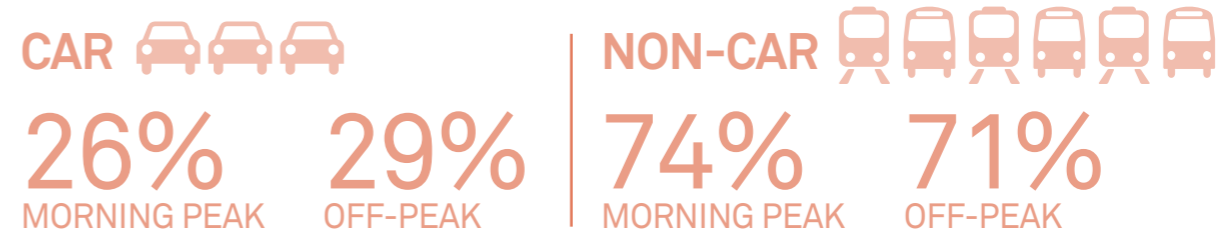
TfGM green facts

- **Metrolink runs on biomass:** Over 26 million passenger journeys are made on Metrolink – every year. Metrolink was the first light rail network in the UK to be powered by green energy – (hydroelectricity generated by water), and now runs on 100% renewable energy generated by biomass.
- **Greater Manchester is a green bus giant:** Greater Manchester will soon have 280 ‘green’ hybrid-electric buses – that’s more low carbon buses than anywhere in the UK outside London. There will also be three fully electric buses, thought to be the first of their kind in Greater Manchester.
- **Walking and cycling:** TfGM has secured £32.5 million from the Local Sustainable Transport Fund to deliver a total investment of £52 million to increase cycling and walking and deliver smart ticketing. Cycling has increased by 17% in Greater Manchester since 2005.
- **Traffic lights:** TfGM is replacing all 2,200 traffic signal heads in Greater Manchester with LEDs, making energy savings of around 42% by 2015. LED signals have already reduced traffic signal energy use by 27% in

two years.

- **Electric vehicles:** Manchester has electric vehicle charging point network and pay as you go programme. Charge points are being installed at key locations across all ten districts in a scheme operated by Charge Your Car (CYC) a leader in EV charging networks.
- **The Yellow school buses are green:** 39 of a fleet of 81 Yellow School Buses are hybrid-electric vehicles, which can make a 30% reduction in greenhouse gas emissions compared to a similar-sized standard diesel Euro 3 vehicle. TfGM is also investing £680,000 to upgrade some of our older diesel buses with air pollution control equipment.
- **TfGM is energy efficient:** All our bus stations and offices are supplied by energy generated by fuel efficient ‘Combined Heat and Power’. TfGM’s energy use in buildings and bus shelters has reduced by over 10% in the past three years, through delivering energy saving schemes such as LED lighting and voltage optimisation.

IN 2015 INBOUND CITY TRANSPORT WAS



FROM 2005 TO 2015 PEDESTRIANS COMING INTO THE CITY CENTRE HAS INCREASED BY



FROM 2005 TO 2015 CYCLISTS COMING INTO THE CITY CENTRE HAS INCREASED BY



TRANSPORT INDICATORS

INDICATOR	2009	2010	2011	2012	2013	2014	2015
Transport CO ₂ emissions kilotonnes	681	664	656	646	631	646 (estimate)	639 (estimate)
Cycling levels (cycled millions)*	13.4km	15.6km	16.9km	16.3km	22km	19.2 km	Available July 2016
Modal share of non-car trips into the key centre (Manchester)**	69.7%	69.4%	70.2%	71.7%	72.7%	73.2%	74%

* Refers to kilometres cycled on A and B roads in Manchester
**Morning peak figures (07:30am – 09:30am) figures for Manchester regional centre.

MACF 2013-15 ACTION PLAN:

TRANSPORT	PROGRESS IN 2015/16
<p>More of us will have access to greener public transport – Metrolink lines to Didsbury, Droylsden, Wythenshawe and Rochdale will be operational and Quality Bus Partnerships will be further developed: SMART ticketing for the whole network will be in the process of being introduced.</p>	<p>In 2008 Transport for Greater Manchester (TfGM) embarked on a £1.5 billion expansion and enhancement programme which has seen the Metrolink network almost triple in size and now extends to Oldham and Rochdale, Ashton-under-Lyne, East Didsbury and Manchester Airport.</p> <p>Work to deliver a second Metrolink line through the heart of Manchester city centre is currently underway and TfGM is now proposing a Metrolink extension through Trafford Park.</p> <p>TfGM has launched two new get me there offers: an m-ticket app for Metrolink and a suite of multi-operator products for bus passengers utilising smart cards.</p> <p>So far around 10,000 passengers have downloaded the free app, with around 60% of them using it regularly. Created with supplier Corethree the app includes ApplePay, a first for the UK transport sector.</p>
<p>An improving framework for increasing commuter cycling will be in place – cycle centres, training programmes, employer user groups, new cycle lanes and signage, improved integration with Metrolink – and plans for expansion will be in development as part of a new Greater Manchester cycle strategy.</p>	<p>Cycling levels have continued to rise across Manchester and TfGM is aiming to make cycling an everyday and aspirational form of transport for everyone, with an aim to increase the proportion of trips made by bicycle from approximately 2% to 10% by 2025.</p> <p>TfGM is currently delivering a £20 million programme of investment as part of the Cycle City Ambition Grant package, which includes new cycleways, development of Cycle & Ride stations, a Cycle Schools and Colleges programme and cycling training and promotion.</p> <p>A second application for £22 million was successful in 2015 and further work will build on the success of the first phase of the Cycle City programme.</p>
<p>Through an increase in active travel programmes and Manchester Carbon Literacy schemes, more residents and pupils will be more aware of the health and climate change impacts of their transport choices.</p>	<p>The Local Sustainable Transport Fund (LSTF) invested £59.8 million (£37.4 million LSTF grant and £22.4 million of local contributions) programme completed in 2015. The programme linked communities with employment opportunities and encourage sustainable commuting and business travel under five key themes:</p> <ol style="list-style-type: none"> 1. Sustainable Access is a comprehensive network of cycle and walking route improvements being delivered across the 10 districts of Greater Manchester, with more than 60km of new routes and over 30 junction improvements being delivered by March 2015. 2. Travel Choices Programme helped commuters, businesses and jobseekers to get the most out of Greater Manchester’s changing transport network by removing barriers. 3. Smarter Technology: funding was used to introduce intermodal, real-time travel information, available by web or mobile. 4. Enabling Community Transport: For harder to reach areas, Local Link demand responsive transport services play a critical role in connecting people with employment opportunities. 5. Commuter Cycle project: To support commuter cycling a toolkit of complementary measures will be developed, including cycle training, information and improvements to routes. Significant improvements are also being made to the quality and availability of secure cycle parking including the Cycle Hub programme which looks to provide secure facilities at key locations across Greater Manchester.
<p>Many large and medium-sized employers, including the Universities, the NHS Hospitals, the Co-op and the Council, will be delivering green travel plans, and inspiring others to follow.</p>	<p>Advisors from TfGM’s Travel Choices team have worked closely with 478 businesses, of which 275 produced Sustainable Travel Action Plans.</p>

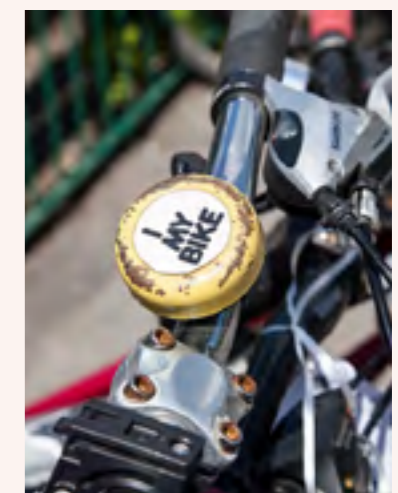
<p>We will see more widespread 20mph zones in residential areas, helping to make walking and cycling a safer and more attractive option, and improving the wellbeing in our neighbourhoods.</p>	<p>Following a pilot scheme in 2014, in 2015 £500,000 of funding was approved by TfGM and a public consultation was launched over introducing the limit in central, east and south Manchester, which could lead to around 46% of the city’s total area being covered by the limits.</p>
<p>An initial network of electric vehicle charging points will be operational across GM, including in Manchester and use of the city car club will have increased by 50% with more cars available.</p>	<p>Greater Manchester has 324 public charging sockets available, with 1,164 members registered with GMEV.</p> <p>Working with stakeholders to develop the ‘Plugged in Places’ scheme bid has resulted in £3.6 million investment in park and plug areas for electric vehicles across Greater Manchester, to be match funded by various private sector partners.</p> <p>Manchester’s Enterprise Car Club, formerly City Car Club, of has over 35 vehicles in 24 locations.</p>
<p>The development of Quality Bus Partnerships and cycling promotion in the south of the city centre will have begun to transform the Oxford Road corridor into a centre of excellence for sustainable transport.</p>	<p>Since 2000, more than £88 million has been spent on improving bus corridors across Greater Manchester, while operators have also modernised their bus fleets operations on these routes, including the introduction of low-emission vehicles.</p> <p>Large-scale projects such as the Leigh Guided Busway have further improved bus connections and encouraged modal shift by providing new park and ride sites as well as walking and cycle paths.</p>
<p>We will have begun to research and develop new ways of moving freight around in the city, exploring partnerships that include retailers, electric vehicles and new businesses.</p>	<p>TfGM currently operates an Urban Traffic Management system that controls signals, regulates traffic flows at key junctions and monitors and optimises journey times. It also operates a system of Variable Messaging Signs (VMS) on key routes to warn drivers of congestion.</p> <p>Under the AQAP, travel choice messages will be included on VMS systems as well as pollution events and health advice to help people consider alternative travel options or avoid routes detrimental to health.</p>

CASE STUDY LIFEON2WHEELS CHALLENGE

The LifeOn2Wheels challenge is part of the Cycle City programme, funded by the Department for Transport, which will see around £45 million being invested in a wide range of initiatives and projects to increase cycling in Greater Manchester. There are lots of incentives to encourage and support cyclists both new and old including running free adult cycle training, building new cycle hubs, offering secure bike parking spaces, and developing a major

network of cycle ways to make travelling around the region by bike easier, safer and more convenient.

The LifeOn2Wheels Challenge runs during September where cyclists can earn ‘BikeMiles’, which can be exchanged for discounted offers and vouchers. Workplaces will be able to compete for prizes including a folding bike, taster sessions at the National Cycle Centre and bike maintenance equipment.



lifeon2wheels.tfgm.com



Sustainable Consumption and Production

One of the biggest challenges faced by our modern day consumption of goods and services is how to make the best use of the planet's limited resources with the least environmental and social impact. The consequences of climate change and the growing demand for energy and resources are challenging economies today to integrate environmental sustainability with economic growth and welfare by decoupling environmental degradation from economic growth.

Sustainable Consumption and Production aims to set out an approach that can maximise business' potential to transform environmental challenges into economic opportunities and provide a better deal for consumers. The challenge is to improve the overall environmental performance of products throughout their life-cycle, to boost the demand for better products and production technologies, and to help consumers in making informed choices.

The manufacturing process for goods, their consumption and end of life disposal currently works to a 'linear' model of make, use and dispose. In recent years Manchester has seen

a plateau in its domestic recycling rates coupled with an increase in the volume of waste to landfill, meaning higher costs for waste management. The shift to a 'circular economy' will see us transform resource use into an ongoing cycle where we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.

As the chair of the SCP Group and chair of the Manchester Food Board, I have dual role in ensuring that the city's food actions align with the aims of MACF, especially around sustainable food procurement and reducing food waste. It is the Food Board's aim for Manchester to gain Sustainable Food City status in the coming year, which will require the combined efforts of a sustainable approach to the production and consumption of food across the city.

Councillor Kate Chappell
Manchester: A Certain Future
SCP Group, Chair
Manchester Food Board, Chair

THE MACF PLAN FOR 2013-15 SETS OUT THREE SEPARATE BUT LINKED AREAS OF ACTIVITY FOR SUSTAINABLE CONSUMPTION AND PRODUCTION (SCP): WASTE, FOOD, AND BUSINESS PROCUREMENT.

CASE STUDY MANCHESTER CYCLEHACK 2015

As part of the not-for-profit global movement The University of Manchester volunteered to host Manchester's first ever CycleHack event in the summer of 2015. Over one weekend, the event brings people together to make and test their ideas that reduce people's barriers to cycling. The CycleHacks created in Manchester are then added to an open source catalogue hosted by the global movement where others can compare, learn and develop

the ideas further with the aim to make their cities more sustainable and cycle-friendly much sooner.

In collaboration with local organisations, CycleHack also

hosts regular socials to share knowledge and help grow the community. By the time of publication the city will have run its second event, being held in June 2016.



<http://cyclehackmcr.co.uk/mcr-2016>

SUSTAINABLE CONSUMPTION AND PRODUCTION: RESOURCES (PREVIOUSLY 'WASTE')

Headline aim: To develop a sustainable approach to waste management, ensure maximum use of waste as a resource, and move from waste management to resource recovery.

The MACF Waste Group recognised that the rebranding from 'waste' to 'resources' requires the strengthening of support, partnership working and innovation. The Group changed its name to the MACF Resources Group in 2015, and worked upon a number of project led initiatives to build early momentum in its new role. The End of Term Halls Recycling Scheme across both universities was delivered in partnership with The British Heart Foundation. Sustainable and locally sourced food items were introduced to University of Manchester's halls of residence catering, extending the already successful partnership with Manchester Veg People to procure locally sourced organic fruit and vegetables across the university campus.

The MACF Resources Group is now working with academics to explore the circular economy, working in partnership with business, public sector, third sector and waste disposal companies to share innovation in the re-use sector and re-imagine our waste into a viable economic resource.

Delivering the city's waste and recycling target

Waste management and recycling have improved over the life of MACF to date. In 2009/10 the city's recycling rate was 19%, in 2015/16 the rate was 32.8%. This improvement in Manchester's recycling rates mirrors the national trend with the amount of household waste that was recycled rising rapidly between 2000 and 2010. This accelerated increase occurred while local authorities were introducing and expanding their recycling collection schemes. City-wide recycling rates have begun to plateau as 'easier wins' have now been secured and, if this trend continues over forthcoming years, we are not on target to meet the 50% recycling rate EU target by 2020.

Analysis of the figures show recycling is increasing by an average of 2.5%. However, waste is increasing at a greater rate by approximately 3%. If this is not managed there will be an adverse impact on the amount of money Manchester City Council spends on waste disposal costs. The Council has plans to reduce the amount of waste per household in order to control waste disposal costs – however, the level of challenge cannot be underestimated. Evidence shows that, in Manchester, there is considerable opportunity to recycle more through kerbside collection with accompanying resident engagement, especially in high rise properties and areas that are already well performing. Throughout 2015 a multi-agency and targeted series of communications, campaigns and activities were delivered, including door to door canvassing, incentive schemes, enforcement and engagement with residents and key partners such as registered housing providers.

KPI	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Amount of household residual waste per household Kilograms per household per year (kg/hh/yr)	701	631	518	481	485	506	503
% of household waste recycled or composted	18.8	25.8	34.0	36.8	34.9	32.4	32.8
Food wastage (tonnes) from New Smithfield Market diverted back to food chain	N/A	N/A	N/A	23	75	135	>2400

MACF 2013-15 ACTION PLAN:

SCP: WASTE RESOURCES	PROGRESS IN 2015/16
At least ten large organisations will be committed to sending zero waste to landfill by 2020.	There are a number of organisations across Manchester working towards zero waste to landfill including, some of whom have been supported through The Green Growth service at Business Growth Hub – such as Thos. Storey Supplies. Greater Manchester Waste Disposal Authority (GMWDA) has an aspiration to be zero waste to landfill, with 43 facilities now in place to delivering zero waste for residents through reuse, recycling, and recovery of energy from waste technologies. Manchester Metropolitan University is working towards zero waste to landfill by 2021 through the delivery of a new waste contract. Manchester Airport has a target for zero waste to landfill by 2020.
The city will have a growing number of businesses repairing and reusing goods, which would otherwise become waste.	Manchester has seen an increase in the trend for 'second hand shopping' and re-use of household items such as clothes, baby items, furniture and white goods through a number of sites such as Preloved, Gumtree, neighbourhood 'Sale or Swap' Facebook groups and large-scale table top sales events. Where demand is considerable social enterprises and business are now looking to the re-use market – such as Renewal NW who help long term unemployed and create work experience opportunities by refurbishing/ selling second hand furniture, household appliances and items as well as computers and laptops. The reimagining of old pieces of furniture has led to new business models. NISP (National Industrial Symbiosis Programme) offers a free service matching business with a resource to community groups, recyclers and other business that can use that waste.
We will have a full understanding of the city's commercial and industrial waste and be exploring options for increasing recycling and reducing the amount to landfill.	Manchester Metropolitan University is currently exploring research opportunities across the circular economy with a newly formed Waste Resources Innovation Network.
All new developments will be designed to facilitate best practice waste management and maximise the amount of material sent for recycling.	New Waste Storage and Collection Guidance for New Development (supplementary planning guidance GD 04) was published by the City Council in September 2014. This provides minimum standards for planners, architects, developers and property managers to assist in planning and designing systems for the storage and collection of refuse, and for recycling facilities in domestic and commercial properties.

CASE STUDY GIVE IT DON'T BIN IT

In 2015 an amazing 169 tonnes of items were donated to the British Heart Foundation, which raised around £322,000 from the combined efforts of Manchester Metropolitan University and the University of Manchester's students leaving their accommodation.

'Give it, don't bin it' is a city-wide campaign, jointly run by Manchester City Council, Manchester Metropolitan University and the University of Manchester to collect and recycle a wide variety of products, using these to support local foodbanks and the British Heart Foundation.



www.sociology.mmu.ac.uk/university-of-manchester

CASE STUDY RECYCLING FOR A BETTER GREATER MANCHESTER

The two-year European funded LIFE+ Up & Forward Project was delivered by Greater Manchester Waste Disposal Authority (GMWDA) to improve recycling rates and re-use to over 64,000 households in 'hard to reach' communities across Greater Manchester.

through its Recycle for Greater Manchester brand.

Through community engagement the project has achieved some fantastic results in areas that are historically poor-performing. The Golden Bin (#Rubbish Selfie) campaign promoted recycling to students living in private rental accommodation in Manchester. Results showed that 37% of the students targeted are now recycling more.



GMWDA is continuing to deliver community engagement campaigns to improve recycling

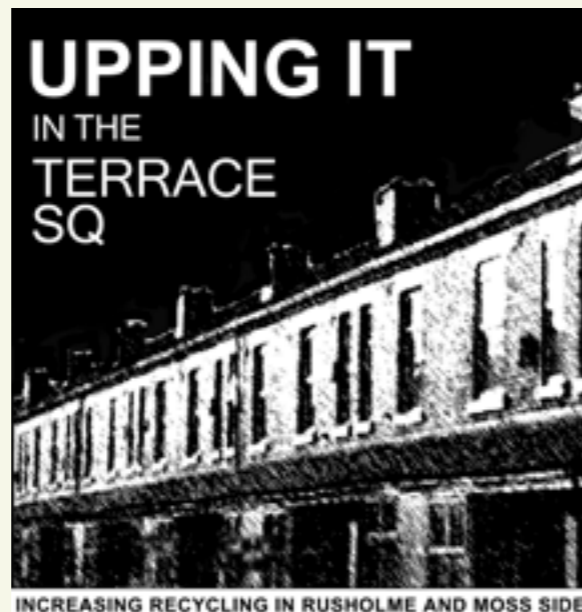
www.facebook.com/upforward

CASE STUDY 'UPPING IT!' MOSS SIDE AND RUSHOLME

This resident-led project evolved from an idea by the local community to approach the City Council asking for improved recycling services and in return the community would commit to reaching 50% recycling in their area.

built. Impressed by such dedication the City Council has provided a grant from Clean City Funds to fund greening alleyways and training sessions for street representatives.

The scheme has been a great success. The area is considerably improved as a local community group and residents have cleaned and greened over 20 alleyways. This transformation has been sustained over a period of time, with a reduction of fly tipping and excess waste. Although recycling performance has stayed nearly static it is clear that residents are taking responsibility for their streets, which is providing the basis on which further activity to increase recycling can be



<https://twitter.com/uppingit>

CASE STUDY WARP-IT AT CENTRAL MANCHESTER FOUNDATION TRUST HOSPITAL (CMFT)

CMFT is a large, Acute NHS Trust employing over 13,000 staff and treating over one million patients every year. Its Sustainable Development Management Plan, launched in early 2014, is part of a set of challenging objectives to reduce the carbon footprint of its buildings, energy use, waste production, travel, procurement and other activities. 'Warp-it' was introduced in February 2016.

Warp-it is an online platform that allows staff to upload serviceable, unwanted items fit for reuse such as uniform, medical equipment and office furniture that would have otherwise been disposed. It now has over 450 members, equating to over 4% of the total staff population. In the first four months over 200 transactions have taken place saving over £21,000, equivalent to one newly qualified nurse.

Over 2,342kg of waste has been avoided, comparable to 5,204 household's annual waste disposal.

Staff uniform has been the biggest success, with over 100 unworn uniforms being reused, saving approximately £12,000.



[@cmftgreen](https://twitter.com/cmftgreen) www.warp-it.org

SUSTAINABLE CONSUMPTION AND PRODUCTION: FOOD

Headline aim: To build a better understanding of the food systems that support Manchester, create strong links between healthy diets and sustainability, and to develop opportunities to build local supply chains that support local businesses and reduce risks to future food security.

Analysis of the greenhouse gas footprint (GHG) of an average Mancunian diet is estimated at around 3.1 tonnes CO₂e per annum, which is slightly below the national average. Of this just less than half (46%) is from eating meat, and meat products. Food waste also contributes highly to our food GHG footprint, with the average household in the UK wasting £470 a year in unused food and drink, rising to £700 for a family with children, the equivalent of around £60 a month.

Manchester also has less than 1/30th of the UK's land per person available for food growing – this means that the city has limited amount of land capable for commercial agriculture. However, there is scope for more local food sourcing from the city's hinterland, North West and other parts of the UK. For our city there are two main parts to the sustainable food agenda:

- The ability for people to eat affordable, healthy diets; and
- Promoting environmentally and socially responsible and sustainable food supply chains.

There are, of course, other positive benefits, such as improved mental health, community cohesion, health and wellbeing, improved diet, reduction in disease, education and skills, environmental, wildlife and climate change benefits that come with a sustainable diet and local food system. With these co-benefits in mind a new Green & Healthy Manchester Partnership has been formed in 2016 make Manchester a healthy, happy, green city for

everyone who lives, visits and works here. Between the partners they have many years of experience working with Manchester's communities to deliver inspiring, life-changing award-winning projects. The Green & Healthy Prospectus for Action sets out the partnership's public commitment to continue with this work, with a particular focus on contributing towards the delivery of Manchester's Health and Wellbeing Strategy and MACF.

The Manchester Food Board

The Manchester Food Board, initially established in 2014, is a cross-sector partnership of public, private and third sector organisations in Manchester who come together to harness the collective energy of the food sector in the city. The board is working towards making a difference on eight agreed commitments, which include key priorities such as reducing food waste across the city, working to alleviate food poverty and malnutrition in a health and social care setting. The Manchester Food Board is working towards gaining 'Sustainable Food Cities' Bronze Award status for Manchester and initiated a Supplementary Planning Document (SPD) for hot food takeaways in the city.

A variety of schemes have been supported across our communities for residents to access affordable and healthy food, including FareShare FoodCloud, The Anson Community Shop, Wythenshawe Unit-e and Southway Housing Quid's-In scheme.

KPI	2010	2011	2012	2012/13	2013/14	2014/15	2015/16
Number of organisations supported through the Growing Manchester programme	N/A	N/A	N/A	12	34	65	65

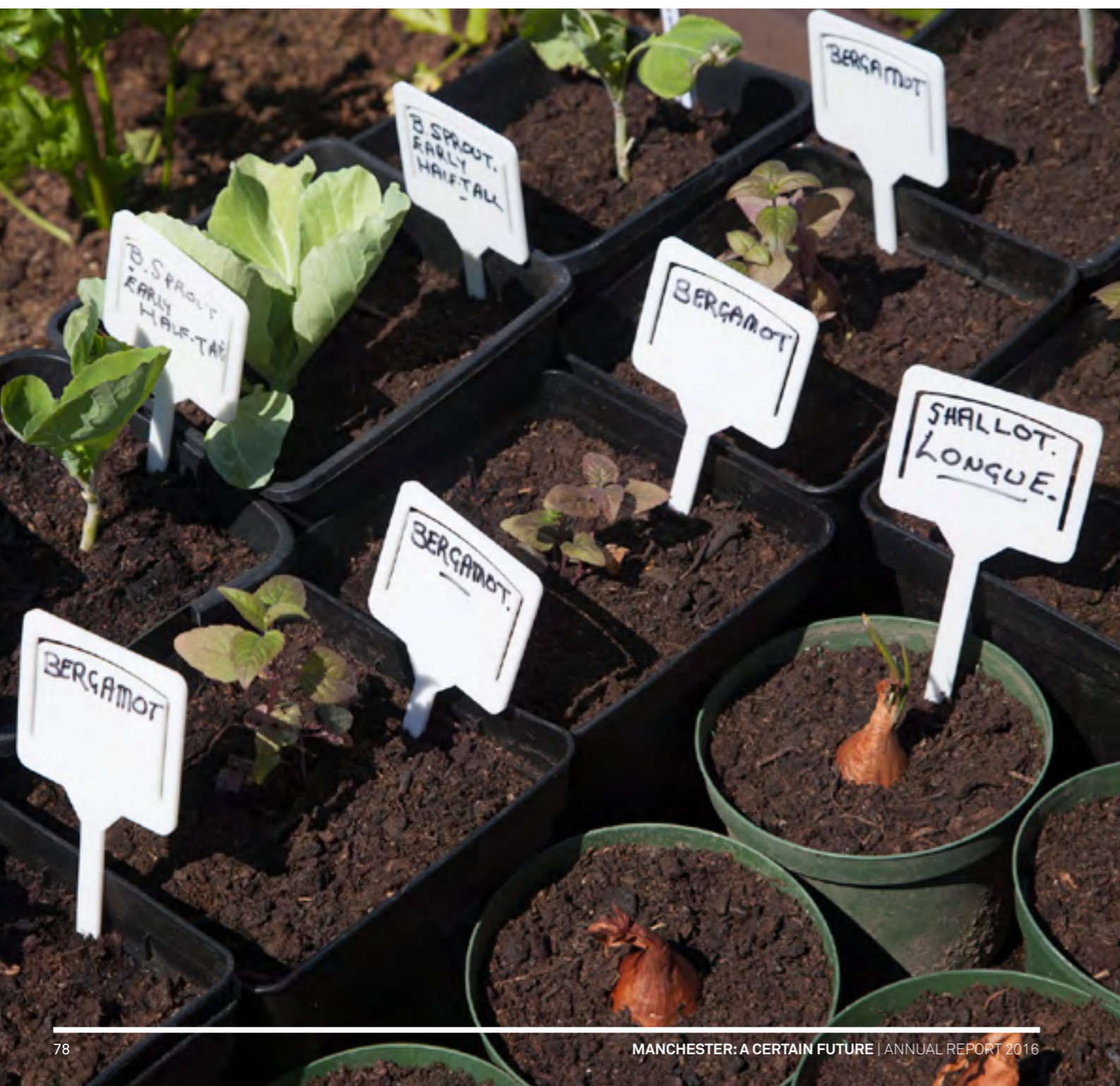
MACF 2013-15 ACTION PLAN:

SCP: FOOD	PROGRESS 2015/16
By making land available and providing support, community food growing projects will have sprung up all over the city, including schemes delivered as part of neighbourhood regeneration schemes and new developments.	Now in its fifth year the Food Futures 'Growing Manchester' programme supports over 65 community food growing projects across the city to grow and live sustainably. The Real Food Wythenshawe project continues with its established growing projects; April 2015 saw the launch of the award winning GEODOME at Manchester College, enabling pioneering research on sustainable food systems as a 'living lab' for both students and residents. Sow The City has developed a number of community food growing projects, including HOME (Helping Old Moat Eat) and Growing Communities projects with Southway Housing supporting 2,000 tenants to learn how to grow fruit and vegetables. STC are encouraging Manchester growers to track their produce through a national online tool 'Harvest-ometer'.
Community growing, local food production and consumption, and reducing food waste will have a higher public profile through exemplar projects like Wythenshawe Real Food and FareShare.	FareShare Greater Manchester's 'Too Good to Waste' initiative captures at least 200 tonnes of surplus fruit and vegetables every month that would have been sent for composting or animal feed from New Smithfield Market in East Manchester. At least 10% of this food is fit for human consumption. At the same time, thousands of Manchester residents on low incomes struggle to access fresh food. Volunteers quality control it and then redistribute it to charities, schools and food banks tackling poverty in Greater Manchester.
There will be an increase in Manchester-based businesses growing and processing food commercially, for sale within the city.	Independent cooperative, The Manchester Veg People, has doubled turnover in over the last year with eight farmers supplying over 40 businesses. There are a number of locally sourced Veg Box scheme for residents available across the city including Manchester Veg People and Herbie in East Manchester.
Further progress will have been made in reducing and recycling domestic food waste and initiatives that reduce and recycle commercial food waste will be increasing in scope and scale.	Real Junk Food Manchester and CIC launched a series of pop-up events whilst waiting for new premises using food that would otherwise go to waste from supermarkets, restaurants and a number of other sources, and turning it into healthy, nutritious meals for anyone and everyone on a pay-as-you-feel donation basis. At Wythenshawe Real Food there is a new project aimed at redistributing retailers' unwanted food. Unit-e, a food storage warehouse based in Wythenshawe, has distributed over 7,000kg of food and distributes to seven food banks across the entire Wythenshawe area.
Manchester will have begun to build a reputation as a destination for sustainable food through large events and festivals as well as neighbourhood food markets and projects.	The annual Manchester Food and Drink Festival, now in its 19th year, encourages sustainable food through working with local suppliers. The prestigious Award Scheme includes 'Best Vegetarian Offer'. Manchester Sustainable Fish City is a growing campaign to encourage the procurement of fish from sustainable sources. Manchester has a number of food markets selling local produce: two new markets, GRUB and Castlefield Market in Ancoats, have joined regular Piccadilly Food Market in selling locally produced food and drink. Levenshulme Market, which sells local food, is a social enterprise set up to support the local economy and community.

Health and warm homes: Green Doctors scheme

There is a clear link between food and fuel poverty and synergy between reducing the carbon footprint of our residents and the health agenda. As the current Government-funded GM domestic energy efficiency scheme – Green Deal Communities – finished in March 2015, there is a strong case for partnership working across the energy and health sectors to fill the otherwise impending gap in activity. The Groundwork-led Green Doctors scheme, delivered across 300 homes

in Manchester in 2015/16, has worked with Housing Associations, resident and community groups, health charities and GP surgeries to provide energy efficiency advice to residents who may be in danger of being in food and fuel poverty. The scheme provided each householder with tailored advice session at home, and provided basic efficiency measures up to £50 per household.



CASE STUDY HOME: HELPING OLD MOAT EAT

The Helping Old Moat Eat (HOME) was a fun and educational project to address food poverty through a range of community engagement and learning activities, focussed on how food growing can help reduce food poverty.

more active member of my community. I did head massage at an event and dance sessions. I felt confident as I knew the people from engaging with them on their doorsteps.
Local resident.

Around 500 local people were engaged with; either on their doorsteps or at training sessions and community events. Four local residents were trained as Food Champions and helped to train 27 people on how to grow food and provided the materials for them to apply this knowledge at home.



"It helped me to start growing for myself, by giving me seeds and told me what to do with them. HOME has encouraged me to become a

www.sowthecity.org



CASE STUDY REAL FOOD WYTHENSHAWE

Wythenshawe was built in 1926 as a garden city. However, over the years the estate suffered decline and this coupled with poor health and worklessness presented significant challenges to overcome.

the future of food

Real Food Wythenshawe is now in its fourth year, a unique project to encourage people to think and learn about how sustainable food production and consumption threads through seven flagship programmes including:

- Converting local green space into productive growing sites
- Sharing and mapping abundance
- Developing the community growing at Wythenshawe Park and farm
- A programme of education to develop food and cooking skills
- Tackling local food poverty
- A large scale programme of research and evaluation

The programme is supporting over 60 community growing venues, with 3,458 people involved in cooking and growing activities and a community farm shop opened.

- The Geodome – food production through closed loop aquaponics, a great tool for learning about



www.realfoodwythenshawe.com

Real Food. Wythenshawe.

5

SUSTAINABLE CONSUMPTION AND PRODUCTION: PROCUREMENT

In November 2014, GMCA approved the development of a bespoke Social Value Policy and Framework for use across the Greater Manchester authorities. The policy creates a consistent approach to considering social value by identifying a shared set of social value objectives, which reflect the Greater Manchester Strategy 2013-20 'Stronger Together'.

Eighteen months since the policy and framework were adopted we are starting to see this translate into action by many of the city's major public and private organisations. Aligned with their wider corporate objectives, embedding sustainability into the procurement activities of these organisation – valued at many billions of pounds annually – is starting to deliver significant carbon reduction benefits, as well as financial savings and support for local businesses.

MACF 2013-15 ACTION PLAN:

SCP: PROCUREMENT	PROGRESS IN 2015/16
Sustainable procurement will be improving the environmental performance of our organisations, and creating demand for suppliers to provide to provide low carbon goods and services.	Manchester City Council has had a sustainable Procurement Policy since 2009. It now works alongside the GM Social Value Procurement Evaluation Framework to deliver economic, social and environmental and benefits for its residents and service users. Other large organisations across Manchester with sustainable procurement and or ethical procurement policies include Manchester Metropolitan University, the University of Manchester, which is recognised for its Excellence in Procurement, GM Fire and Rescue, Manchester Airport Group, Central Manchester University Hospitals, MCFE, Manchester College and Central Manchester Convention Centre.
There will be more businesses in the city providing low carbon goods and services.	The Green Growth programme has supported 13,000 business to grow and reduce their carbon emissions over time. In an increasingly competitive business environment the purchaser, procurer and commissioner of products and services have a unique opportunity to be leaders in reducing carbon emissions. This is especially the case in the Low Carbon Goods and Services Sector where the use of disruption technology and innovation and is at the forefront of advances in this sector.
Research from the Sustainable Consumption Institute and others will help identify further opportunities for low carbon activity from 2016.	The Sustainable Consumption Institute continues to develop novel approaches to the global issue of explosive consumption rates and finite resources; either consuming less, or consuming differently. The SCI's mission is to bring insight and clarity to a key part of the sustainability challenge: the role of consumption with particular emphasis on retail and food.



Green and Blue Infrastructure

Green and Blue Infrastructure – the green and blue spaces that exist within and between our city's urban areas – is an essential part of creating a successful, liveable and healthy city.

Manchester's green and blue spaces cover more than half of the city. In fact, 58% of the city is classified as green and blue incorporating five river valleys, three canals, over 160 parks, street trees, woodland, private gardens and other areas that intertwine with the built environment.

'Manchester's Great Outdoors; the Green and Blue Infrastructure Strategy for 2015-25' was published in June 2015. It sets out the critical role that the city's green spaces and waterways have to play in supporting the successful growth and development of the city, in improving residents' health, and reducing flood risk, while at the same time as delivering some of the more well-understood benefits such as biodiversity and improving the visual appearance of the city.

The Strategy and accompanying Stakeholder Implementation Plan are already yielding results. It is building upon progress from the previous decade, providing a framework for scaling up existing activities and driving new investment. As we move into a new phase of development for the city, I am pleased to see that high quality green and blue infrastructure is already beginning to be included as part of this work. A key challenge for us over the coming years is to scale up this approach and ensure that it becomes embedded as part of all city development, alongside investment in our many existing green and blue spaces.

Steve Merridew
Manchester: A Certain Future
Green and Blue Infrastructure Group, Chair

Headline aim: To ensure the city's green and blue infrastructure is providing the optimal benefits to the city in terms of quality of life, climate change adaptation, and wider social, economic and environmental benefits.

The Green and Blue Infrastructure Strategy and accompanying Stakeholder Implementation Plan was published in June 2015, and has been developed jointly by the Council and the Manchester: A Certain Future Green and Blue Infrastructure Group. With a three-year pipeline of projects set out in the Stakeholder Implementation Plan the outlook suggests that good progress will continue to be made in this area of MACF.

Highlights for 2015 include:

- The delivery of over £1million City Council Clean City-funded environmental improvements, including park access and infrastructure improvements, 2.1 million bulbs planted, innovative floating ecosystems installed at Bridgewater Basin, and the beginning of exciting new investment into Moston Brook and Brookdale Park in Newton Heath.
- The City of Trees initiative was launched. The Oglesby Charitable Trust are leading a new movement, to double the tree cover in Greater Manchester and, within a generation, plant a tree for every man woman and child that lives in Greater Manchester, and to improve access to existing woodland and ensure they are well managed and, where possible, local communities can have an active role in caring for them.
- Three Natural Environment Research Council (NERC) projects on Green Infrastructure have recently been approved for funding, worth approximately £1.1 million.

INDICATOR	2009	2010	2011	2012	2013	2014	2015
Monitor and maintain the % of sites of biological importance in positive management*	43%	46%	48%	50%	51%	55%	58%
Number of Local Nature Reserves (LNR) and size in hectares.	-	7 (307ha)	8 (392ha)	8 (392ha)	8 (392ha)	8 (392ha)	8 (392ha)
Number of trees planted per annum. **	-	8,120	10,515	9,400	10,106	12,967	4,767

* Target is a minimum 1% annual increase of SBIs in active conservation management.
** A combination of trees, hedge plants, and fruit trees planted as part of known schemes.



MACF 2013-15 ACTION PLAN:

GREEN AND BLUE INFRASTRUCTURE	PROGRESS IN 2015/16
A Green and Blue Infrastructure Strategy will be published and in use in all parts of the city, providing a framework for ensuring that natural environment benefits become and remain embedded in our plans for neighbourhoods and the city centre.	'Manchester's Great Outdoors' a Green and Blue Infrastructure Strategy for Manchester and accompanying Stakeholder Implementation Plan were published in June 2015.
A programme of tree planting will have continued in the city, with an increase in street trees, green roofs and green walls delivered or in plan in the city centre.	4,767 trees were planted across the city in 2015/16 on known projects, including approximately 450 metres of hedgerow and an amazing 35 new community orchard/fruit tree planting projects. A Green Wall has been installed as part of TfGM's Second City crossing project, along with green tramways.
Investment in the quality and use of the city's waterways will be better aligned with other priorities so that flood risks management, improved water quality, property values, recreational and urban cooling benefits are linked with urban development and refurbishment.	A €12 million project bid to the EU was successful. Manchester's Great Outdoors was used as a backdrop to the successful bid, which has a long term aim to improve water quality across the region. On a local level, the £150,000 Manchester City Council 'Clean Streams' project will look to improve the aspect of 7.5km ordinary watercourses working with land owners, managers and community groups.
Community and friends groups, businesses and schools will be more actively involved in the city's green and blue spaces, and learning about the many benefits they can provide, including health, recreation, climate change adaptation and mitigation.	The Tale of Two Cities Project to create wildflower landscapes in Manchester and Liverpool came to life in Manchester during 2015, with arts and cultural activity supporting the fantastic show of flowers in and around Hulme and Moss Side. A Forest Schools project in Moston saw over 600 children from local primary schools connect with nature in Moston Fairways Nature Reserve. Friends of the Earth hosted a 'Bee Summit' at Manchester Museum, to highlight the importance and plight of pollinators in cities.
Data held on all the city's green and blue infrastructure will have been improved and updated and made publicly available, growing a shared understanding of its value for climate change adaptation, biodiversity, health and wellbeing, education and recreation.	The 'Platform' web portal was used as a positive vehicle to promote GI activity in the city with many related articles submitted.

CASE STUDY NATURAL COURSE – OUR WATER, OUR FUTURE

The European Commission's LIFE Integrated Projects programme (LIFE IP) is a new funding stream designed to deliver challenging objectives over large geographical areas on the subjects of water, waste, climate action, air quality and nature.

The European Water Framework Directive (WFD) recognises that water is one of the most critical environmental, social and economic issues for the future of the European Union. It therefore sets out a framework for protecting and improving our water environment to ensure all water bodies reach 'good status' by the end of 2027.

A bid to the LIFE IP programme called Natural Course – our Water, our Future, aimed at

helping achieve WFD targets across the North West, was submitted by the Environment Agency in 2015. Manchester's Great Outdoors: a Green and Blue Infrastructure Strategy for Manchester, was used as a backdrop to the successful bid.

This is a 10-year project which will run in 2.5-year phases. Natural Course been awarded €12 million as a contribution towards a total project cost of €20 million, although spend has been front loaded to kick start and stimulate the necessary action and innovation. This makes Natural Course the largest Integrated Project funded by the LIFE programme, and therefore the most important water-focussed initiative in the European Union.

CASE STUDY TALE OF TWO CITIES

Tale of Two Cities began in 2014 when a public vote saw Manchester and Liverpool win the Royal Botanical Gardens Kew prestigious Grow Wild! England Flagship competition to showcase £120,000 worth of wildflower seeds. In Manchester, there are now wildflowers blooming along Princess Parkway, Hulme and Cambridge Street Junction subways, Chester Road roundabout, Hulme and Alexandra Parks and Southways Homes near Princess Road.

"It can feel a bit drab round here, a bit rundown, so to come across something like this is really life-affirming."
Roger, Hulme, July 2015.

"I am a wild flower!" Lemn Sissay, Poet, Vice Chancellor of the University of Manchester, Tale of Two Cities, Everton Park, July 2015.



Community engagement and inspiration lie at the heart of this project. In 2015 the project came to life in a big way with over 3,000 people being involved. Uniting the cities over the beauty of wildflowers shows the power that nature has over people. With sowing events, music gigs, interactive art and school trips, this project really is bringing these two amazing cities together.

CASE STUDY NATURAL ENVIRONMENT RESEARCH COUNCIL (NERC) PROJECTS

The need to develop a strong evidence base and greater understanding is at the heart of the city's Green Infrastructure Strategy. Objective Four of the Strategy the sets out clear commitments to develop academic alliances with a strong network of GI related partners and projects. The MACF Green and Blue infrastructure Group has worked collaboratively to develop a number of focussed student projects, placements and bids and helped shape academic focus in line with GI strategy priorities.

Through the network of the MACF GI Group, three major bids to The Natural Environment Research Council (NERC) were successful. These inter-disciplinary projects, worth over

£1.1 million over three years, will increase our understanding of GI, providing detailed study, evidence and tools to help inform decision making in Manchester.

- Topics for research the research include:
- Green Infrastructure and the Health and Wellbeing Influences on an Ageing Population (GHIA);
 - Domestic Gardens and their value in terms of Ecosystem Services; and
 - Green Growth: Increasing Resilience in Cities through Green Infrastructure Based Solutions.

PART 4

PRIORITY ACTIONS FOR 2016/17

MACF STEERING GROUP PRIORITIES

The establishment of the Climate Change Agency was borne out of the MACF Steering Group's need to increase its capacity to deliver its core role of overseeing and championing climate change action in the city. With the Agency now in place, a key priority for the Steering Group is to work with the Agency staff and directors to help cement the Agency's position in the city as a key driver for action, at the centre of a dynamic network of city-wide activities. By linking the Agency to existing structures, networks and partnerships, the Steering Group can help to ensure the successful completion of the Agency's setup phase and put in on a firm footing to deliver its business plan from April 2017 onwards.

This work will also need to address other issues that have developed over the last twelve months including: the governance required to drive and enable the successful delivery of the forthcoming climate change strategy for 2016-50; the role of the MACF Steering Group and Manchester Climate Change Agency within this structure; how best to engage the city's businesses in the delivery of the 2050 strategy; the need to incorporate the strategic partnership between the MACF Steering Group and the Manchester Health and Wellbeing Board, which was agreed in March 2016; and finally, considering how the development of any new governance relates to the Manchester Leaders Forum and the structures that are being established to oversee the delivery of *Our Manchester*.

This governance work will be critical in providing the right platform for the successful delivery of the forthcoming 2050 strategy.

MACF STEERING GROUP PRIORITIES FOR 2016/17:

- 1) Work with the Climate Change Agency to complete the development of the 2016-50 Strategy and Implementation Plan 2016-20.
- 2) Work with partners to establish the required governance for the successful delivery of the 2016-50 strategy and implementation plan 2016-20.

Further information on the MACF Steering Group, including minutes of meetings is available from www.manchesterclimate.com

MANCHESTER CLIMATE CHANGE AGENCY PRIORITIES

In headline terms the priority for the Agency will be to deliver its business plan for 2016/17 to 2019/20, ensuring that climate action becomes an embedded part of the city's culture, economy and society and that it works with partners to help put the city on the right trajectory for the successful delivery of the 2050 strategy.

To do this, the Agency will need to work in partnerships across all sectors, have a voice that speaks to all age groups, ensure there is a robust evidence base to secure funding, and tell a good and compelling story to ensure that the city is willing and able to start its journey to becoming a zero carbon city within the next generation.

MCCA PRIORITIES FOR 2016/17:

- 1) Work with the MACF Steering Group to complete the development of the 2016-50 Strategy and Implementation Plan 2016-20.
- 2) Establish targeted programmes for engagement of each of the city's stakeholder groups.
- 3) Work with partners to develop and deliver the 2017 engagement programme, building on the outcomes of Climate Lab 2016.
- 4) Secure funding to enable the organisation to become financially self-sustaining from April 2017 onwards.

Further information on the Manchester Climate Change Agency, including minutes of director meetings is available from www.manchesterclimate.com

CITYWIDE PRIORITIES – 2016 CALL TO ACTION

This is where our organisations, business, our residents, students and visitors need to take action directly to build on the good work outlined in this annual report, scale it up, and fill the gaps that still exist. This is where the Agency comes into play, acting as the catalyst to achieve sustainable carbon reductions and behaviour change through collaboration, advocacy, and support and communicating success. The MACF Steering Group will play a supporting role but the actions themselves need to come from you – the city's committed residents and businesses!

10 things we should all do now:

1. Become a Carbon Literate person or organisation
www.carbonliteracy.com
2. Switch to a greener tariff or invest in renewable energy
www.carboncoop.com and www.gmcr.co.uk
3. Get a smart meter and use it
www.smartenergygb.org
4. Use less energy
www.energysavingtrust.org
5. Sign your business up to the Green Growth support programme
www.green-growth.org.uk
6. Use public transport, cycle or walk
www.tfg.com/travelchoices
7. Follow the waste hierarchy of prevention, minimisation, reuse, recycle, recovery, disposal
www.wrap.org.uk
8. Choose local, sustainable and seasonal food – eat less meat and waste less
www.lovefoodhatewaste.com
9. Plant a tree
www.cityoftrees.org.uk
10. Sign your school up and work through the Eco Schools Bronze, Silver and Green Flag levels
www.eco-schools.org.uk

FEEDBACK ON THIS REPORT

We welcome your feedback. If you have any comments or thoughts on this report, please email MCCA manchesterac@gmail.com

SUMMARY

The last twelve months have been pivotal for climate change. For the first time we now have a global agreement to help drive action around the world and a refreshed commitment in Manchester setting out our planned contribution towards the new Paris Agreement: the commitment to become 'zero carbon by 2050'.

These commitments are important. They provide the platform and precursor for action at the rate and scale we need. 2015/16 has seen us deliver yet more action in the city, with many more examples and areas of progress than we reported in 2015. However, as with previous years, and despite much good work, the city is still not on track for its 2020 targets.

As we now look to become zero carbon, 2020 is important in its own right but becomes even more so as a milestone and platform for action on the way to 2050.

To become zero carbon by 2050 will require us to make fundamental changes to the city's built fabric (our buildings, energy system, transport system), our natural environment, and the way that we use them all. The level of change is nothing short of transformational and will make sure that Manchester can become a city known for its green and healthy lifestyles, prosperity, and for playing its part in the global effort to tackle climate change.

Getting there won't be easy – our work to date shows that. However, with more and more partners and stakeholders getting involved every year we have a good starting point for this next leg of the journey. The Steering Group and Climate Change Agency look forward to working with you all, and to making sure that the city does indeed have a certain future.



Details of all of MACF's activities will be published on the MACF website:

manchesterclimate.com

Email MACF:

manchesteracf@gmail.com

Get the latest news to your inbox:

manchesterclimate.com/user/register

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MANCHESTER: A CERTAIN FUTURE

Annual Report 2016
