

## Introduction

**(0.1) Please give a general description and introduction to your city including your city's reporting boundary in the table below.**

	Administrative boundary	Description of city
City boundary	Metropolitan area	Greater Manchester is in North West England, with a population of over 2.7 million is one of the UK's biggest city regions comprising Bolton, Bury, Oldham, Rochdale, Stockport, Tameside, Trafford, Wigan, Manchester and Salford. Greater Manchester - 'city of change' is today preparing itself for a markedly different tomorrow. The world's first industrial city shaped by coal and steam is now forging a sustainable future path, carbon, not oil, becoming a primary economic barometer. Cities that move swiftly to change their culture and technologies will be more competitive, less vulnerable and better prepared. City neighbourhoods harmonising with natural systems, fossil fuel-free homes and businesses creating and consuming power, a cool, green, resilient urban form - Greater Manchester's next big challenge. In less than a generation an impressive array of public and private sector endeavours has transformed and regenerated the city - its natural heritage awakening from former industrial decline. A diversified and flourishing economy in media, finance, sports, engineering and creative arts, Greater Manchester is the most vibrant and productive contributor to the UK economy outside the South East. Now we must apply our skills to lead the most important emerging market; the low carbon economy – to become a global hub for development, technology and cultural change, proficient in the design and production of a low carbon transformation. Clear vision and determined leadership are essential. Greater Manchester Combined Authority (GMCA) and our ten Councils work in partnership with the city's world-class academic, business, civic and cultural institutions, firmly resolved to pursue our low carbon future in the face of the threat of climate change, to deliver greater prosperity, resilience and an improved quality of life for all our residents and businesses. This is the future we must secure; the only future that counts.

**(0.2) If you have not previously submitted your Letter of Commitment to the Global Covenant of Mayors, either through the relevant regional covenant or through the Global Covenant secretariat, please attach the letter signed by an appropriately mandated official (e.g. Mayor, City Council) to this question.**

## City Details

**(0.3) Please provide information about your city's Mayor or equivalent legal representative authority in the table below:**

	Leader title	Leader name	Current term end month	Current term end year
Please complete	Mayor	Andy Burnham	May	2020

**(0.4) Please select the currency used for all financial information disclosed throughout your response.**

GBP Pound Sterling

**(0.5) Please provide details of your city's current population. Report the population in the year of your reported inventory, if possible.**

	Current population	Current population year	Projected population	Projected population year
Please complete	2812569	2018	3038511	2038

*figures updated using ONS mid-year population estimates, NOMIS*

**(0.6) Please provide further details about the geography of your city.**

	Land area of the city boundary as defined in question 0.1 (in square km)
Please complete	1277

*updated to 1277 KM 2 (from 1276) as it was actually 1276.8km2 and needed rounding up*

Governance

**(1.0) Does your city incorporate sustainability goals and targets (e.g. GHG reductions) into the master planning for the city?**

Yes

**(1.0a) Please detail which goals and targets are incorporated in your city's master plan and describe how these goals are addressed in the table below.**

Goal type	How are these goals/targets addressed in the city master plan?
Emissions reduction targets	Since the last CDP reporting period, GM has published the next iteration in its city region wide spatial framework. The 'GREATER MANCHESTER'S PLAN FOR HOMES, JOBS AND THE ENVIRONMENT - GREATER MANCHESTER SPATIAL FRAMEWORK REVISED DRAFT - JANUARY 2019 can be downloaded from <a href="https://www.greatermanchester-ca.gov.uk/media/1710/gm_plan_for_homes_jobs_and_the_environment_1101-web.pdf">https://www.greatermanchester-ca.gov.uk/media/1710/gm_plan_for_homes_jobs_and_the_environment_1101-web.pdf</a> and will be consulted on and adopted as the statutory spatial planning framework in 2020. Within this the plan sets out and strengthens proposals to support the Greater Manchester ambition to be a carbon neutral city-region by 2038. A key element of this is to require all new development to be net zero carbon by 2028 and to keep fossil fuels in the ground. And Reiterates that, at this time therefore Greater Manchester authorities will not support fracking. (see para 1.23 page 12). This commitment follows through into plan objective 7 which reiterates the new development net carbon/carbon neutral commitment (where spatial/land use planning has input). More generally this sits and contributes to the wider city region carbon neutral target by 2038. This is supported by a number of specific spatial planning policies throughout the document, with particular attention drawn to policy GM –S2 (page 79) which outlines more general approaches to carbon and energy and the commitment for new development to be carbon net zero from 2028.
Adaptation targets	Adaptation is referred to in the plan as climate resilience and can be seen in objective 8 (Page 40) this is also played out in specific resilience policy (but not targets – these are in 5 year environment plan) GM-S4 (page 84) with more detailed climatic resilience being addressed in specific policy (GM-S5) relating to which sets out ambition around existing and new development resilience to flood risk, for instance
Renewable energy targets	Policy GM-S2 sets renewable energy out as a method for delivery of net zero carbon in new development by 2028, but the wider GM renewables targets are associated with more than just land use planning for new development and are encapsulated within the GM 5 year environment plan – see below
Energy efficiency targets	GMSF objective 7 (Page 40) sets out ambition for improving energy efficiency more generally and policy GM-S2 sets out wider policy aspirations for retrofit but also in new development energy efficiency (in pursuit of the net zero emissions by 2028 in new development. But the plan doesn't specify specific Energy Efficiency levels at a blanket level across all development types due to technical differences in achievable standards.
Water security targets	GMSF doesn't set specific water efficiency / usage targets (for water security reasons as water scarcity, including in future climate is a lower risk issue. However, objective ensuring resilient water supply and treatment infrastructure and other water quality (ground and surface) are covered within the spatial framework in both objectives 9 (access to infrastructure to support growth – page 41) and policy GM-S5 flooding and water environment (page 87)
Waste management targets	Waste management and recycling targets are not a land use/spatial planning issue beyond ensuring adequate infrastructure for new growth. Waste management and sustainable consumption and production are addressed within wider strategy including any targets and this is found in the GM 5 year environment plan (at an overarching level, summing up ambition from local action)

**(1.1) Has the Mayor or city council committed to climate adaptation and/or mitigation across the geographical area of the city?**

Yes

**(1.1a) Please select any commitments to climate adaptation and/or mitigation your city has signed and attach evidence.**

**Name of commitment and attach document**

Individual city commitment  
5-year-plan-branded\_3 (2).pdf  
Decisions\_agreed\_\_GMCA\_29\_March\_2019.pdf

**Type of commitment**

Both

**Comments**

In March 2019 Greater Manchester Launched it's first 5 year environment plan (2019-24) that sets out in one place a set of actions and targets required within GM to take a lead and deliver the low carbon, resilient and high quality environment the city region needs to secure a sustainable future. this covers both mitigation (and reflects GM's target of achieving carbon neutrality by 2038 (12 years before the UK commitment) and a range of adaptation actions. the plan can be downloaded from [https://www.greatermanchester-ca.gov.uk/media/1986/5-year-plan-branded\\_3.pdf](https://www.greatermanchester-ca.gov.uk/media/1986/5-year-plan-branded_3.pdf) and in a range of places within this submission targets, commitments and actions have been specifically highlighted from within this ambitious document. Please note the attached Decision register for the full GM Combined Authority meeting 29th March 2019 which recorded decisions. the 5 year environment plan was taken to this meeting for formal endorsement. this was granted and the plan published with a signed forward from Andy Burnham the mayor (see p 5)

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**Name of commitment and attach document**

Global Covenant of Mayors for Climate & Energy

**Type of commitment**

Both

**Comments**

GM signed up to The Integrated Covenant of Mayors requires Greater Manchester in November 2015, setting targets aligned with or exceeding an 80% emissions reduction by 2050, and to achieve a 40% reduction between 2005 and 2030. The commitment also requires comprehensive action planning, monitoring and reporting using their specific methodologies, including focus on climate risk and adaptation. These are closely aligned to the Compact of Mayors requirements which Greater Manchester achieved year 1 compliance (one of only 50 cities globally) in late 2016 This has followed into the global compact of mayors for climate and energy where GM is now a compliant city <https://www.globalcovenantofmayors.org/cities/greater-manchester/>

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**Name of commitment and attach document**

100 Resilient Cities

**Type of commitment**

Adaptation

**Comments**

GM became one of the 3rd wave of RC100 cities in 2017 and is currently working (having just published its preliminary resilience assessment) on its resilience strategy. <http://www.100resilientcities.org/cities/greater-manchester/>

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**Name of commitment and attach document**

Other (Under 2 MoU)

**Type of commitment**

Mitigation

**Comments**

Signed in November 2015, GM's Under 2 MOU requires cities to commit to achieving emissions reductions of at least 80% by 2050, and/or achieving a total emissions per capita of a maximum 2 tonnes per person by 2050. (GM's 2013 performance is 5.6 tonnes per capita). There is also a focus on climate risk/adaptation. <http://under2mou.org/wp-content/uploads/2015/05/Greater-Manchester-appendix.pdf>

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**Climate Hazards & Vulnerability**

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**Risk and Vulnerability Assessment**

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**(2.0) Has a climate change risk and vulnerability assessment been undertaken for the city area?**

Yes

**(2.0a) Please select the primary process or methodology used to undertake the risk and vulnerability assessment of your city.**

	Primary methodology	Description
Risk assessment methodology	Proprietary Methodology (Proprietary Methodology )	A range of work in understanding climate risk and vulnerability has been undertaken since 2013. These have been undertaken by technical staff within the University of Manchester, however, the underlining climate projection data which was processed utilised the base and future probabilistic projection date based on the The UKCIP 2009 climate change projections of future changes may in North West England, relative to the 1961-1990 baseline period These studies have built on each other and addressed particular spatial extents or issues (critical infrastructure). taken together they represent a significant body of evidence on which a range of spatial planning policy and strategy and action planning have been directed (including the latest GM 5 year environment plan) and work on the 100 Resilient cities strategy. However, whilst these are outlined below, they need to be take together and it should be noted that a single stand alone full hazard/receptor risk and vulnerability assessment has not been carried out. indeed a building block approach and embedding the findings into particular strategy and policy has been a deliberate decision of the city region to address needs (including resource availability) this works from most recent risk assessment product first:

**(2.0b) Please attach and provide details on your climate change risk and vulnerability assessment. Please provide details on the boundary of your assessment, and where this differs from your city's boundary, please provide an explanation.**

**Publication title and attach the document**

Climate Change Risk Assessment of Greater Manchester's Critical Infrastructure  
GMCCRA\_report\_final.pdf

**Year of adoption from local government**

2018

**Web link**

[http://www.resin-cities.eu/fileadmin/user\\_upload/Resources/City\\_report\\_GM/GMCCRA\\_report\\_final.pdf](http://www.resin-cities.eu/fileadmin/user_upload/Resources/City_report_GM/GMCCRA_report_final.pdf)

**Boundary of assessment relative to city boundary (reported in 0.1)**

Same – covers entire city and nothing else

**Explanation of boundary choice where the assessment boundary differs from the city boundary**

note, this is a critical infrastructure risk assessment, with infrastructure being within GM City boundaries. it has been funded by our participation (with Uni of Manchester as our research partner) in the RESIN Horizon 2020 funded project. This has now been finalised and published in late 2018

**Areas/sectors covered by the risk and vulnerability assessment**

Energy  
Water Supply & Sanitation  
Transport  
Information & Communications Technology  
Education  
Public health  
Community & Culture  
Law & Order  
Other (Green and blue Infrastructure)

**Primary author of assessment**

Other

**Does the assessment identify vulnerable populations?**

Yes

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**Publication title and attach the document**

RESIN City Assessment Report Greater Manchester  
D4.1\_\_City\_Assessment\_Report\_Greater\_Manchester\_ICLEI\_2016-02-29.pdf  
GMCCRA\_report\_final.pdf

**Year of adoption from local government**

2016

**Web link**

[http://www.resin-cities.eu/fileadmin/user\\_upload/D4.1\\_\\_City\\_Assessment\\_Report\\_Greater\\_Manchester\\_ICLEI\\_2016-02-29.pdf](http://www.resin-cities.eu/fileadmin/user_upload/D4.1__City_Assessment_Report_Greater_Manchester_ICLEI_2016-02-29.pdf)

**Boundary of assessment relative to city boundary (reported in 0.1)**

Same – covers entire city and nothing else

**Explanation of boundary choice where the assessment boundary differs from the city boundary**

**Areas/sectors covered by the risk and vulnerability assessment**

Energy  
Water Supply & Sanitation  
Transport  
Food and agriculture  
Waste Management  
Information & Communications Technology  
Environment, Biodiversity and Forestry  
Public health  
Community & Culture  
Emergency Management  
Land use planning  
Other (green and blue infrastructure)

**Primary author of assessment**

Other (A joint Co creation between GM practitioners and University of Manchester technical staff as part of RESIN EU project)

**Does the assessment identify vulnerable populations?**

Yes

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**Publication title and attach the document**

Evidencing and Spatially Prioritising Weather and Climate Change Risks in Greater Manchester  
2-17-0078-GM-2040-Full-Strategy-Document.pdf  
FULL\_TEXT.PDF

**Year of adoption from local government**

2013

**Web link**

[https://www.research.manchester.ac.uk/portal/files/38632319/FULL\\_TEXT.PDF](https://www.research.manchester.ac.uk/portal/files/38632319/FULL_TEXT.PDF)

**Boundary of assessment relative to city boundary (reported in 0.1)**

Same – covers entire city and nothing else

**Explanation of boundary choice where the assessment boundary differs from the city boundary**

**Areas/sectors covered by the risk and vulnerability assessment**

Energy  
Water Supply & Sanitation  
Transport  
Food and agriculture  
Waste Management  
Information & Communications Technology  
Environment, Biodiversity and Forestry  
Industrial  
Commercial  
Residential  
Education  
Public health  
Community & Culture  
Land use planning

**Primary author of assessment**

Other (University of Manchester technical contract on behalf of Greater Manchester planning team)

**Does the assessment identify vulnerable populations?**

No

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**(2.1) Please list the most significant climate hazards faced by your city and indicate the probability and consequence of these hazards, as well as the expected future change in frequency and intensity. Please also select the most relevant assets or services that are affected by the climate hazard and provide a description of the impact.**

**Climate Hazards**

Extreme hot temperature > Heat wave

**Did this hazard significantly impact your city before 2019?**

No

**Current probability of hazard**

Medium Low

**Current consequence of hazard**

Medium Low

**Social impact of hazard overall**

Increased demand for public services  
Increased risk to already vulnerable populations  
Increased resource demand

**Future change in frequency**

Increasing

**Future change in intensity**

Increasing

**When do you first expect to experience those changes?**

Medium-term (2026-2050)

**Most relevant assets / services affected overall**

Residential  
Education  
Public health  
Society / community & culture  
Emergency services

**Please identify which vulnerable populations are affected**

Children & youth  
Elderly  
Persons with chronic diseases

**Magnitude of expected future impact**

Medium

**Please describe the impacts experienced so far, and how you expect the hazard to impact in the future**

Although heat waves and extreme hot days are extremely rare in GM in the present day, climate change projections indicate that they will become more common in the future. indeed, in the period 1945-1969 there were 2 heat stress incidents in GM. this rose to 10 in the period 1994-2017. as part of the GM Critical infrastructure risk assessment, using projected climate change (developed under the EcoCities project) for a 2050's high GHG emissions scenario, projections suggest: -summer mean daily maximum temperature: + 5.6°C - Warmest day in summer: + 6°C - Warmest night in summer: + 4.4°C It is important to note that there is a geographic element to this hazard. under the Ecocities project (Cavan 2010) 3 climate zones were defined for GM. The increases of heat stress (and max temp) is most prevalent for for GM's Mersey Basin zone. This increases the risk of negative impacts linked to high temperatures, such as negative health effects and reductions in the productivity of employees. this is particularly important due to economic activity concentrated in the city region core (and the Mersey basin zone) and the prevalence of vulnerable groups (deprived, health impacted, young and elderly) in the spatial locations projected to suffer the worse increases as well as urban heat island effect as a forcing factor on top. Therefore, the spatial pattern of GM's urban heat island demonstrates that certain areas, generally those where development density is at its highest, are more likely to suffer from negative impacts as a result. There is also an equality dimension to heat stress. For example, looking at GM's housing development types, there is greater potential exposure to heat stress in more deprived areas. In effect, groups that are vulnerable to heat stress, due to factors including poverty and poor health, show the highest potential exposure to this climate change impact.

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**Climate Hazards**

Extreme hot temperature > Extreme hot days

**Did this hazard significantly impact your city before 2019?**

Yes

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**Current probability of hazard**

Medium Low

**Current consequence of hazard**

Medium Low

**Social impact of hazard overall**

Increased demand for public services  
Increased demand for healthcare services  
Increased risk to already vulnerable populations

**Future change in frequency**

Increasing

**Future change in intensity**

Increasing

**When do you first expect to experience those changes?**

Medium-term (2026-2050)

**Most relevant assets / services affected overall**

Residential  
Education  
Public health  
Society / community & culture  
Emergency services

**Please identify which vulnerable populations are affected**

Children & youth  
Elderly  
Persons with chronic diseases

**Magnitude of expected future impact**

Do not know

**Please describe the impacts experienced so far, and how you expect the hazard to impact in the future**

Although heat waves and extreme hot days are extremely rare in GM in the present day, climate change projections indicate that they will become more common in the future. indeed, in the period 1945-1969 there were 2 heat stress incidents in GM. this rose to 10 in the period 1994-2017. as part of the GM Critical infrastructure risk assessment, using projected climate change (developed under the EcoCities project) for a 2050's high GHG emissions scenario, projections suggest: -summer mean daily maximum temperature: + 5.6°C - Warmest day in summer: + 6°C - Warmest night in summer: + 4.4°C It is important to note that there is a geographic element to this hazard. under the Ecocities project (Cavan 2010) 3 climate zones were defined for GM. The increases of heat stress (and max temp) is most prevalent for GM's Mersey Basin zone. This increases the risk of negative impacts linked to high temperatures, such as negative health effects and reductions in the productivity of employees. this is particularly important due to economic activity concentrated in the city region core (and the Mersey basin zone) and the prevalence of vulnerable groups (deprived, health impacted, young and elderly) in the spatial locations projected to suffer the worse increases as well as urban heat island effect as a forcing factor on top. Therefore, the spatial pattern of GM's urban heat island demonstrates that certain areas, generally those where development density is at its highest, are more likely to suffer from negative impacts as a result. There is also an equality dimension to heat stress. For example, looking at GM's housing development types, there is greater potential exposure to heat stress in more deprived areas. In effect, groups that are vulnerable to heat stress, due to factors including poverty and poor health, show the highest potential exposure to this climate change impact.

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**Climate Hazards**

Flood and sea level rise > Flash / surface flood

**Did this hazard significantly impact your city before 2019?**

Yes

**Current probability of hazard**

Medium High

**Current consequence of hazard**

Medium

**Social impact of hazard overall**

Fluctuating socio-economic conditions  
Increased demand for public services  
Increased demand for healthcare services

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Increased risk to already vulnerable populations

#### **Future change in frequency**

Increasing

#### **Future change in intensity**

Increasing

#### **When do you first expect to experience those changes?**

Medium-term (2026-2050)

#### **Most relevant assets / services affected overall**

Energy

Water supply & sanitation

Transport

Food & agriculture

Waste management

Information & communications technology

Environment, biodiversity, forestry

Industrial

Commercial

Residential

Education

Tourism

Public health

Society / community & culture

Emergency services

Land use planning

#### **Please identify which vulnerable populations are affected**

Children & youth

Elderly

Marginalized groups

Persons with disabilities

Persons with chronic diseases

Low-income households

Unemployed persons

Persons living in sub-standard housing

#### **Magnitude of expected future impact**

High

#### **Please describe the impacts experienced so far, and how you expect the hazard to impact in the future**

Flooding stand out as one of the key weather and climate threats to the conurbation, not just in the future but also in the present day. Indeed, evidence from the EcoCities project suggests that flooding has been the most prominent hazard facing GM over recent decades, and that surface water flooding is superseding fluvial flooding (from main rivers) as the most common type of event (Carter and Lawson 2011). Indeed, pluvial flooding now dominates, accounting for 50% of all floods since 1994. Within the GM Critical infrastructure risk assessment, which looked at 2050's high GHG emissions scenario for GM's Mersey Basin zone. Change is from 1961-1990 at 90th percentile) for this GM climate Zones (defined under the Ecocities project, Cavan 2010), under this emissions scenario, we expect the following hazard increases which will intensify the pluvial / flash flood risk by: Precipitation on wettest day in winter: + 31% - Precipitation on wettest day in summer: + 19% - Winter mean precipitation: +28% - Annual mean precipitation: +9% In addition to the damage flooding causes to buildings and infrastructure, flooding also brings knock-on secondary impacts which must be recognised. One example is the effect of flood damage to people's homes, and the subsequent psychological stress that this can cause flood victims.

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#### **Climate Hazards**

Storm and wind > Severe wind

#### **Did this hazard significantly impact your city before 2019?**

Yes

#### **Current probability of hazard**

Medium

#### **Current consequence of hazard**

Medium



### **Social impact of hazard overall**

Increased demand for public services  
Increased demand for healthcare services  
Increased risk to already vulnerable populations

### **Future change in frequency**

Increasing

### **Future change in intensity**

Increasing

### **When do you first expect to experience those changes?**

Medium-term (2026-2050)

### **Most relevant assets / services affected overall**

Energy  
Water supply & sanitation  
Transport  
Food & agriculture  
Waste management  
Information & communications technology  
Environment, biodiversity, forestry  
Emergency services

### **Please identify which vulnerable populations are affected**

Children & youth  
Elderly  
Marginalized groups  
Persons with disabilities  
Low-income households  
Persons living in sub-standard housing

### **Magnitude of expected future impact**

Do not know

### **Please describe the impacts experienced so far, and how you expect the hazard to impact in the future**

Disruption and short term problems associated with damage to infrastructure or problems with movement (including mobilisation of emergency response). There could be risk to health due to dangers of high winds. This could be compounded by disruption to the wider energy and ICT networks. This, alongside combinations of high wind events with higher rainfall could see this hazard impact combine with more frequent and higher risk fluvial and pluvial flood risks identified above.

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### **Climate Hazards**

Flood and sea level rise > River flood

### **Did this hazard significantly impact your city before 2019?**

Yes

### **Current probability of hazard**

Medium High

### **Current consequence of hazard**

Medium High

### **Social impact of hazard overall**

Fluctuating socio-economic conditions  
Increased demand for public services  
Increased demand for healthcare services  
Increased risk to already vulnerable populations  
Loss of traditional jobs

### **Future change in frequency**

Increasing

### **Future change in intensity**

Increasing

### **When do you first expect to experience those changes?**

Short-term (by 2025)

### Most relevant assets / services affected overall

Energy  
Water supply & sanitation  
Transport  
Food & agriculture  
Waste management  
Information & communications technology  
Environment, biodiversity, forestry  
Industrial  
Commercial  
Residential  
Education  
Public health  
Society / community & culture  
Emergency services

### Please identify which vulnerable populations are affected

Children & youth  
Elderly  
Marginalized groups  
Persons with disabilities  
Persons with chronic diseases  
Low-income households  
Persons living in sub-standard housing

### Magnitude of expected future impact

High

### Please describe the impacts experienced so far, and how you expect the hazard to impact in the future

Flooding stand out as one of the key weather and climate threats to the conurbation, not just in the future but also in the present day. Indeed, evidence from the EcoCities project suggests that flooding has been the most prominent hazard facing GM over recent decades, and that surface water flooding is superseding fluvial flooding (from main rivers) as the most common type of event (Carter and Lawson 2011). Although fluvial flooding is relatively uncommon in GM, given the location of key assets and infrastructures within Flood Zones and the high consequences of related impacts should they occur, the associated risks remain high. Indeed GM is already seeing an intensification in its fluvial flood hazard. With 17 river flood events in the 1945-1969 period rising to 27 in the 1994-2017 period. Again this is a hazard GM projects to increase in intensity and risk. Within the GM Critical infrastructure risk assessment, which looked at 2050's high GHG emissions scenario for GM's Mersey Basin zone. Change is from 1961-1990 at 90th percentile) for this GM climate Zones (defined under the Ecocities project, Cavan 2010), under this emissions scenario, we expect the following hazard increases which will intensify the pluvial / flash flood risk by: Precipitation on wettest day in winter: + 31% - Precipitation on wettest day in summer: + 19% - Winter mean precipitation: +28% - Annual mean precipitation: +9% In addition to the damage flooding causes to buildings and infrastructure, flooding also brings knock-on secondary impacts which must be recognised. One example is the effect of flood damage to people's homes, and the subsequent psychological stress that this can cause flood victims.

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### Climate Hazards

Wild fire > Land fire

### Did this hazard significantly impact your city before 2019?

Yes

### Current probability of hazard

Medium

### Current consequence of hazard

Medium

### Social impact of hazard overall

Increased demand for public services

### Future change in frequency

Increasing

### Future change in intensity

Increasing

### When do you first expect to experience those changes?

Medium-term (2026-2050)

**Most relevant assets / services affected overall**

Environment, biodiversity, forestry

Tourism

**Please identify which vulnerable populations are affected**

Please select

**Magnitude of expected future impact**

Do not know

**Please describe the impacts experienced so far, and how you expect the hazard to impact in the future**

Significant peatland wildfires have been occurring in the upland areas around GM, with 2018 an extreme year. exacerbated by land management practices, earlier drying of peatland and accidental/deliberate setting of fires, the impact of this hazard is expected to increase affecting land access, local health (air quality) and potentially risk to property (low)

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**Climate Hazards**

Extreme Precipitation > Rain storm

**Did this hazard significantly impact your city before 2019?**

Yes

**Current probability of hazard**

Medium High

**Current consequence of hazard**

Medium

**Social impact of hazard overall**

Increased demand for public services

Increased risk to already vulnerable populations

Increased resource demand

**Future change in frequency**

Increasing

**Future change in intensity**

Increasing

**When do you first expect to experience those changes?**

Short-term (by 2025)

**Most relevant assets / services affected overall**

Energy

Water supply & sanitation

Transport

Food & agriculture

Information & communications technology

Residential

Public health

Society / community & culture

Emergency services

Land use planning

**Please identify which vulnerable populations are affected**

Children & youth

Elderly

Marginalized groups

Persons with disabilities

Persons with chronic diseases

Low-income households

Persons living in sub-standard housing

**Magnitude of expected future impact**

High

**Please describe the impacts experienced so far, and how you expect the hazard to impact in the future**

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With surface water flooding events increasing in frequency in GM, and climate change projections threatening a rise in intense downpours, attention needs to be paid to protecting people, buildings and infrastructure from the associated consequences

**(2.2) Please identify and describe the factors that most greatly affect your city’s ability to adapt to climate change and indicate how those factors either support or challenge this ability.**

Factors that affect ability to adapt	Support / Challenge	Please describe the factor and the degree to which it supports or challenges the adaptive capacity of your city
Political engagement / transparency	Support	There are established and active connections between GM planners and decision makers in the public sector and universities, research consultancies and community groups working on issues linked to climate change adaptation and resilience. This provides a platform for knowledge exchange and collaborative working. This platform has already delivered positive outcomes including research outputs influencing climate-related strategies and policies. Over recent years, GM has secured greater political commitment for the adaptation and resilience through initiatives including the Global Covenant of Mayors for Climate and Energy and the 100 Resilient Cities programme. This provides a crucial building block for action on this agenda.
Political stability	Support	GM has a history of collaborative working across the ten districts that make up the conurbation, which can provide a platform to support engagement of other partner organisations involved in adaptation and critical infrastructure activities. This can encourage a more joined up approach to adaptation that crosses sectors, stakeholder groups and spatial scales.
Access to basic services	Support	particularly in relation to disaster risk response which is mandated under legislation (civil contingencies act 2004) means that public sector is well placed to respond to hazard events
Poverty	Challenge	inequality, including income inequality and poverty negatively affects citizens adaptive capacity.
Resource availability	Challenge	Funding available to local authorities and other public sector agencies working in this field has to compete with a range of other statutory priorities. This is occurring against a challenging background of wider public sector funding pressures, which is having an impact on capacity of key organisations to develop and deliver adaptation and resilience responses
Access to quality / relevant data	Challenge	1. The extent and nature of climate related risk is not yet fully understood due to the complexity of interconnections between the changing climate, land use and natural processes. 2. Records have not been systematically kept of the incidence and consequences of extreme weather events impacting on critical infrastructure (and other locations and assets) located within and serving GM. This makes it difficult to generate a strategic picture of priority sectors, locations and hazard events that are of greatest relevance to the conurbation. The passing of the Flood and Waters Management Act (in 2010) has started to address this issue in the context of flooding. 3. There are issues and uncertainties concerning the accuracy of data and prediction tools, particularly regarding future flooding projections data, which is generally recognised as GM's RESIN City Assessment Report   Greater Manchester 29 key hazard. This makes is challenging to develop adaptation and resilience responses, particularly regarding hard infrastructure investments that operate over long time horizons.

Adaptation

Adaptation Actions

**(3.0) Please describe the main actions you are taking to reduce the risk to, and vulnerability of, your city’s infrastructure, services, citizens, and businesses from climate change as identified in the Climate Hazards section.**

**Climate hazards**

Extreme hot temperature > Heat wave

**Action**

Public preparedness (including practice exercises/drills)

**Action title**

NHS heatwave plan

**Status of action**

Implementation

**Co-benefit area**

Disaster Risk Reduction

Enhanced resilience

Disaster preparedness

Improved public health

**Action description and implementation progress**

Implement UK national Heat wave plan as appropriate. A set out emergency procedure with various triggers, actions and

responsibilities across a range of emergency and other responders – the process is understood, and implemented (and tested/trained) as needed. this manifests in the civil contingencies preparedness planning within the GM community Risk register and a range of work with partners via the Local Resilience Forum.

**Finance status**

Finance secured

**Total cost of the project**

**Total cost provided by the local government**

**Primary fund source**

(Sub)national

**Web link**

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/801539/Heatwave\\_plan\\_for\\_Engl\\_and\\_2019.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/801539/Heatwave_plan_for_Engl_and_2019.pdf)

[http://www.gmemergencyplanning.org.uk/gmprepared/download/downloads/id/4/greater\\_manchester\\_risk\\_register\\_2015.pdf](http://www.gmemergencyplanning.org.uk/gmprepared/download/downloads/id/4/greater_manchester_risk_register_2015.pdf)

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**Climate hazards**

Flood and sea level rise > Flash / surface flood

**Action**

Storm water capture systems

**Action title**

Lead Local Flood Authority action

**Status of action**

Implementation

**Co-benefit area**

Disaster Risk Reduction

Enhanced resilience

Enhanced climate change adaptation

**Action description and implementation progress**

Capital flood risk schemes and wider work to increase property and community level resilience. A range of capital schemes are funded and progressed. Smaller more local pluvial and fluvial schemes are programmed and wider efforts on engagement and increasing community flood resilience are undertaken currently

**Finance status**

Feasibility finalized, and finance partially secured

**Total cost of the project**

**Total cost provided by the local government**

**Primary fund source**

Other (a mix of national Grant in aid, local levy and partnership contributions (i.e. from Developers))

**Web link**

---

**Climate hazards**

Flood and sea level rise > River flood

**Action**

Flood defences – development and operation & storage

**Action title**

Environment Agency medium term plan

**Status of action**

Implementation

**Co-benefit area**

Disaster Risk Reduction

Enhanced resilience

Disaster preparedness

Enhanced climate change adaptation

---

Economic growth

**Action description and implementation progress**

Capital flood risk schemes and wider work to increase property and community level resilience. A range of capital schemes are funded and progressed. A second flood storage basin in Salford is now complete, deculverting and associated FR reduction works in Rochdale. Smaller more local pluvial and fluvial schemes are programmed and wider efforts on engagement and increasing community flood resilience are undertaken currently For GM, currently the 6 year capital investment plan (15-2021) aims to reduce risk to 1300 house holds and a projected program size of £46m

**Finance status**

Feasibility finalized, and finance partially secured

**Total cost of the project**

46000000

**Total cost provided by the local government**

**Primary fund source**

Other (this is a blend of national Grant in Aid funding, local level and local contributions (i.e. from developers) which is brought together on a scheme by scheme basis to deliver the wider headline 6 year investment strategy targets via capital schemes. )

**Web link**

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## Adaptation Planning

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**(3.1) Does your city council have a published plan that addresses climate change adaptation?**

Yes

**(3.1a) Please provide more information on your plan that addresses climate change adaptation and attach the document. Please provide details on the boundary of your plan, and where this differs from your city's boundary, please provide an explanation.**

**Publication title and attach the document**

the 5 year environment plan for greater manchester  
5-year-plan-branded\_3 (1).pdf

**Areas covered by adaptation plan**

Energy  
Transport (Mobility)  
Building and Infrastructure  
ICT (Information and Communication Technology)  
Spatial Planning  
Waste  
Public Health and Safety

**Year of adoption from local government**

2019

**Boundary of plan relative to city boundary (reported in 0.1)**

Same - covers entire city and nothing else

**If the city boundary is different from the plan boundary, please explain why and any areas/other cities excluded or included**

**Stage of implementation**

Plan in implementation

**Type of plan**

Integrated mitigation / adaptation

**Has your local government assessed the synergies, trade-offs, and co-benefits, if any, of the main mitigation and adaptation actions you identified?**

Yes

**Comment or describe the synergies, trade-offs, and co-benefits of this interaction**

the 5 year plan and its development has considered how the themes connect. particular links within the chapters (synergies) between actions to address air quality, health and transport/mitigation exist. Similarly the ability of measures to reduce general stress on populations (i.e. financial pressures, health uplift via natural environment) are co-beneficial both for resilience of populace and also delivering of wider carbon reductions (active travel) or sequestration)

**Primary author of plan**

Relevant city department

**Description of the stakeholder engagement processes**

the plan was developed with extensive engagement. a key organisation steering group, thematic workshops in late 2017-18, an initial public 'GM Green Summit' in March 2018 which resulted in a 12 month program of engagement and action to develop (and publically launch) the 5 year plan in March 2019 at the 2nd GM Green Summit

**Web link**

[https://www.greatermanchester-ca.gov.uk/media/1986/5-year-plan-branded\\_3.pdf](https://www.greatermanchester-ca.gov.uk/media/1986/5-year-plan-branded_3.pdf)

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## Adaptation Goals

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**(3.2) Please describe the main goals of your city's adaptation efforts and the metrics / KPIs for each goal.**

*note - GM has high level objectives for adapting to a rapidly changing climate and a number of linked current and future climate risk and resilience actions, but it does not, in the same way as for carbon reduction, have adaptation goals/targets/kpi's*

**Adaptation goal**

manage our land sustainably including planting 1m trees by 2024

**Target year**

2024

**Metrics / indicators**

numbers trees planted

**Percentage of target achieved so far**

0

**Does this target align with a requirement from a higher level of government?**

Yes, but it exceeds its scale or requirements

---

**Adaptation goal**

Develop a GM Resilience Strategy Roadmap

**Target year**

2019

**Metrics / indicators**

roadmap produced

**Percentage of target achieved so far**

50

**Does this target align with a requirement from a higher level of government?**

Do not know

---

**Adaptation goal**

implement a prioritised program of nature based adaptation action - Note there is no equivalent national target for this measure in the NAP. however, it is a priority in both the Defra 25 year plan and the GM work for this action is referenced in HM Govt Green finance strategy

**Target year**

2022

**Metrics / indicators**

NBS adaptation action pipeline identified first project package selected financing/contracting/delivery vehicle set up

**Percentage of target achieved so far**

10

**Does this target align with a requirement from a higher level of government?**

Yes, but it exceeds its scale or requirements

---

**Adaptation goal**

protect an additional 1300 domestic properties from fluvial flooding by 2021

**Target year**

2021

**Metrics / indicators**

Capital expenditure programme (£46m) delivered Numbers new properties protected

**Percentage of target achieved so far**

50

**Does this target align with a requirement from a higher level of government?**

Yes

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## City Wide Emissions

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### City-wide GHG Emissions Data

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**(4.0) Does your city have a city-wide emissions inventory to report?**

Yes

**(4.1) Please state the dates of the accounting year or 12-month period for which you are reporting your latest city-wide GHG emissions inventory.**

	From	To
Accounting year dates	January 1 2017	December 31 2017

**(4.2) Please indicate the category that best describes the boundary of your city-wide GHG emissions inventory.**

	Boundary of inventory relative to city boundary (reported in 0.1)	Excluded sources / areas	Explanation of boundary choice where the inventory boundary differs from the city boundary (include inventory boundary, GDP and population)
Please explain	Same – covers entire city and nothing else		

**(4.3) Please give the name of the primary protocol, standard, or methodology you have used to calculate your city's city-wide GHG emissions.**

	Primary protocol	Comment
Emissions methodology	Global Protocol for Community Greenhouse Gas Emissions Inventories (GPC)	

**(4.3a) The Global Covenant of Mayors requires committed cities to report their inventories in the format of the new Common Reporting Framework, to encourage standard reporting of emissions data. If your city is reporting an updated inventory, we encourage reporting this in the CRF format, for which guidance can be found in the link below. Would you like to report your inventory in the CRF format or continue to report in the GPC format? Please ensure you respond to this question in order for the correct emissions breakdown questions to be displayed.**

Yes – use the CRF format

**(4.4) Which gases are included in your city-wide emissions inventory? Select all that apply.**

CO2  
CH4  
N2O

**(4.5) Please attach your city-wide inventory in Excel or other spreadsheet format and provide additional details on the inventory calculation methods in the table below.**

**Emissions inventory format**

SCATTER

**Document title and attachment**

Anthesis 2017 SCATTER Baseline Emissions Inventory for CDP Report CRF inventory \_GMCA  
Anthesis 2017 Baseline Emissions Inventory for CDP Report CRF inventory \_GMCA.xlsx

**Emissions factors used**

IPCC

**Global Warming Potential (select relevant IPCC Assessment Report)**

IPCC 4th AR (2007)

**Please select which additional sectors are included in the inventory**

Agriculture, forestry or other land use sectors

**Population in inventory year**

2798800

**Overall Level of confidence**

High

**Comment on level of confidence**

completed by a trusted partner with accreditation to GHG protocol using UK govt data sets on emissions

**(4.6a) The Global Covenant of Mayors requires committed cities to report their inventories in the format of the new Common Reporting Framework, to encourage standard reporting of emissions data. Please provide a breakdown of your city-wide emissions by sector and sub-sector in the table below. Where emissions data is not available, please use the relevant notation keys to explain the reason why.**

	Direct emissions / Scope 1 (metric tonnes CO2e)	If you have no direct emissions to report, please select a notation key to explain why	Indirect emissions from the use of grid-supplied electricity, heat, steam and/or cooling / Scope 2 (metric tonnes CO2e)	If you have no indirect emissions to report, please select a notation key to explain why	Emissions occurring outside the city boundary as a result of in-city activities / Scope 3 (metric tonnes CO2e)	If you have no emissions occurring outside the city boundary to report as a result of in-city activities, please select a notation key to explain why	Please explain any excluded sources, identify any emissions covered under an ETS and provide any other comments
Stationary energy > Residential buildings	2666217.51	Please select	1505538.61	Please select	680065.54	Please select	
Stationary energy > Commercial buildings & facilities	465380.92	Please select	260043.93	Please select	122024.21	Please select	
Stationary energy > Institutional buildings & facilities	780683.12	Please select	1314056.4	Please select	334712.38	Please select	
Stationary energy > Industrial buildings & facilities	574817.81	Please select	761734.26	Please select	225601.51	Please select	
Stationary energy > Agriculture	9537.24	Please select	2.9	Please select	2276.69	Please select	
Stationary energy > Fugitive emissions		Please select		N/A		N/A	
Total Stationary Energy	4496636.59	Please select	3841376.1	Please select	1364680.33	Please select	

	Direct emissions / Scope 1 (metric tonnes CO2e)	If you have no direct emissions to report, please select a notation key to explain why	Indirect emissions from the use of grid-supplied electricity, heat, steam and/or cooling / Scope 2 (metric tonnes CO2e)	If you have no indirect emissions to report, please select a notation key to explain why	Emissions occurring outside the city boundary as a result of in-city activities / Scope 3 (metric tonnes CO2e)	If you have no emissions occurring outside the city boundary to report as a result of in-city activities, please select a notation key to explain why	Please explain any excluded sources, identify any emissions covered under an ETS and provide any other comments
Transportation > On-road	3642856.12	Please select		Integrated Elsewhere	0	Please select	
Transportation > Rail	47565.08	Please select		Integrated Elsewhere	11320.12	Please select	
Transportation > Waterborne navigation	97.29	Please select		Not Occurring	23.2	Please select	
Transportation > Aviation	276719.26	Please select		Integrated Elsewhere	1478660.19	Please select	
Transportation > Off-road	0	Please select		Integrated Elsewhere	0	Please select	
Total Transport	3967237.75	Please select	0	Please select	1490003.51	Please select	
Waste > Solid waste disposal	269812.56	Please select	0	Please select	0	Please select	
Waste > Biological treatment	0	Please select	0	N/A	0	Please select	
Waste > Incineration and open burning	0	Please select	0	N/A	0	Please select	
Waste > Wastewater	174443.87	Please select	0	N/A	0	Please select	
Total Waste	444256.44	Please select	0	N/A	0	Please select	
IPPU > Industrial process	0	Please select	0	N/A	0	Please select	
IPPU > Product use	0	Please select	0	N/A	0	Not Estimated	
Total IPPU	0	Please select	0	N/A	0	Not Estimated	
AFOLU > Livestock	12831.14	Please select	0	N/A	0	Not Estimated	
AFOLU > Land use	0	Please select	0	N/A	0	Not Estimated	
AFOLU > Other AFOLU	0	Not Estimated	0	N/A	0	Not Estimated	
Total AFOLU	12831.14	Please select	0	N/A	0	Not Estimated	
Generation of grid-supplied energy > Electricity-only generation	0.07	Please select	0	N/A	0.01	Please select	
Generation of grid-supplied energy > CHP generation	4013.62	Please select	0	N/A	741.3	Please select	
Generation of grid-supplied energy > Heat/cold generation	0	Please select	0	N/A	0	Please select	
Generation of grid-supplied energy > Local renewable generation	0	Please select	0	Integrated Elsewhere	0	Please select	

	Direct emissions / Scope 1 (metric tonnes CO2e)	If you have no direct emissions to report, please select a notation key to explain why	Indirect emissions from the use of grid-supplied electricity, heat, steam and/or cooling / Scope 2 (metric tonnes CO2e)	If you have no indirect emissions to report, please select a notation key to explain why	Emissions occurring outside the city boundary as a result of in-city activities / Scope 3 (metric tonnes CO2e)	If you have no emissions occurring outside the city boundary to report as a result of in-city activities, please select a notation key to explain why	Please explain any excluded sources, identify any emissions covered under an ETS and provide any other comments
Total Generation of grid-supplied energy	4013.68	Please select	0	N/A	741.31	Please select	
Total Emissions (excluding generation of grid-supplied energy)	8920961.92	Please select	3841376.1	Please select	2854683.84	Please select	

**(4.8) Please indicate if your city-wide emissions have increased, decreased, or stayed the same since your last emissions inventory, and describe why.**

	Change in emissions	Primary reason for change	Please explain and quantify changes in emissions
Please explain	Decreased	Technological change	the last submitted Global GHG protocol compliant inventory submitted by GM was for 2014 and saw a combined scope 1 and 2 emissions inventory of 17325654 tonnes. this years Anthesis compiled Scatter BEI sees the same emissions for scope 1 and 2 at 12,766,352 Tonnes. This reduction has been in part driven by decarbonising of the national grid, an increase in energy efficiency within the the city region (particularly domestic properties) and a greater local low / zero carbon energy generation.

**(4.9) Does your city have a consumption-based inventory to measure emissions from consumption of goods and services by your residents?**

	Response	Provide an overview and attach your consumption-based inventory if relevant
Please complete	Intending to undertake in the next 2 years	

## City-wide external verification

**(4.11) Has the city-wide GHG emissions data you are currently reporting been externally verified or audited in part or in whole?**

Yes

**(4.11a) Please provide the following information about the city-wide emissions verification.**

	Name of verifier and attach verification certificate	Year of verification	Please explain which parts of your inventory are verified
Verification details	Anthesis	2017	we chose anthesis because they were a recognised Global GHG protocol expert service provider this is a CDP compliant Scatter process

## Historical emissions inventories

**(4.12) Please provide details on any historical and base year city-wide emissions inventories your city has, in order to allow assessment of targets in the table below.**

**Inventory date from**

January 1 2014

**Inventory date to**

November 3 2014

**Scopes / boundary covered**

Scope 1 (direct)

Scope 2 (indirect)

**Previous emissions (metric tonnes CO2e)**

17325654

**Is this inventory used as the base year inventory?**

No

**Methodology**

Global Protocol for Community Greenhouse Gas Emissions Inventories (GPC)

**File name and attach your inventory**

GM2014\_GPC Reporting Tool\_V1.9\_ENG

GM2014\_GPC Reporting Tool\_V1.9\_ENG.xls

**Comments**

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Re-stating previous emissions inventories

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**(4.13) Since your last submission, have you needed to recalculate any past city-wide GHG emission inventories previously reported to CDP?**

No

Emissions Reduction

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Mitigation Target setting

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**(5.0) Do you have a GHG emissions reduction target in place at the city-wide level? Select all that apply.**

Base year emissions (absolute) target

**(5.0a) Please provide details of your total city-wide base year emissions reduction (absolute) target. In addition, you may add rows to provide details of your sector-specific targets, by providing the base year emissions specific to that target.**

**Sector**

All emissions sources included in city inventory

**Where sources differ from the inventory, identify and explain these additions / exclusions**

**Boundary of target relative to city boundary (reported in 0.1)**

Same – covers entire city and nothing else

**Base year**

1990

**Year of target implementation**

**Base year emissions (metric tonnes CO2e)**

21200000

**Percentage reduction target**

97.3

**Target year**

2038

**Target year absolute emissions (metric tonnes CO2e)**

0.57

**Percentage of target achieved so far**

**Does this target align with the global 1.5 - 2 °C pathway set out in the Paris Agreement?**

Yes - 2 °C

**Please indicate to which sector(s) the target applies**

- Energy industry
- Heating and cooling supply
- Commercial buildings
- Residential buildings
- Public facility
- Industrial facilities
- Transport
- Water

**Does this target align to a requirement from a higher level of sub-national government**

Yes, but it exceeds its scale or requirement

**Please describe your target. If your country has an NDC and your city's target is less ambitious than the NDC, please explain why.**

---

**(5.1) Please describe how the target(s) reported above align with the global 1.5 - 2 °C pathway set out in the Paris agreement.**

GMCA via a commission to Anthesis and Tyndall Centre has set pathways approaches which mean the selected emissions reduction pathway equates to keeping it to well within Paris and 2 degrees and ensuring GM's emissions reduction is a fair share.

**(5.2) Is your city-wide emissions reduction target(s) conditional on the success of an externality or component of policy outside of your control?**

Yes

**(5.2a) Please identify and describe the conditional components of your city-wide emissions reduction target(s).**

decarbonising of national grid

**(5.3) Does your city-wide emissions reduction target(s) account for the use of transferable emissions units?**

No

---

## Mitigation Actions

**(5.4) Describe the anticipated outcomes of the most impactful mitigation actions your city is currently undertaking; the total cost of the action and how much is being funded by the local government.**

**Mitigation action**

Buildings > Energy efficiency/ retrofit measures

**Action title**

reduce heat demand from existing homes with retrofit measures installed at 50000 homes/annum - to 2040

**Means of implementation**

Capacity building and training activities  
Stakeholder engagement  
Infrastructure development  
Development and implementation of action plan  
Financial mechanism  
Sustainable public procurement

**Implementation status**

Implementation

**Estimated emissions reduction (metric tonnes CO2e)**

1.23

**Energy savings (MWh)**

**Renewable energy production (MWh)**

**Timescale of reduction / savings / energy production**

Per year

**Co-benefit area**

Reduced GHG emissions  
Poverty reduction / eradication  
Social inclusion, social justice  
Greening the economy  
Economic growth  
Job creation

**Action description**

GMCA and LAs to convene partners and develop a Greater Manchester retrofit partnership/accelerator to deliver the 50k/annum heat reduction retrofits

**Finance status**

Feasibility finalized, and finance partially secured

**Total cost of the project**

**Total cost provided by the local government**

**Primary fund source**

Please select

**Web link to action website**

**Name of the stakeholder group**

<Not Applicable>

**Role in the GCC program**

<Not Applicable>

**Name of the engagement activities**

<Not Applicable>

**Aim of the engagement activities**

<Not Applicable>

**Attach reference document**

<Not Applicable>

---

**Mitigation action**

Buildings > Energy efficiency/ retrofit measures

**Action title**

10% reduction in commercial and public building heat demand by 2025

**Means of implementation**

Capacity building and training activities  
Stakeholder engagement  
Infrastructure development  
Policy and regulation  
Financial mechanism

**Implementation status**

Pre-implementation

**Estimated emissions reduction (metric tonnes CO2e)**

**Energy savings (MWh)**

8.4

**Renewable energy production (MWh)**

**Timescale of reduction / savings / energy production**

Projected lifetime

**Co-benefit area**

Reduced GHG emissions  
Improved resource efficiency (e.g. food, water, energy)  
Social inclusion, social justice  
Social community and labour improvements  
Job creation  
Improved resource security (e.g. food, water, energy)

**Action description**

GMCA and LAs to standardise measures of reporting on efficiency of buildings and aim to obtain a DEC rating of D or better by 2024 for their public buildings. work with commercial building sector to apply to private stock

**Finance status**

Feasibility finalized, and finance partially secured

**Total cost of the project**

**Total cost provided by the local government**

**Primary fund source**

Please select

**Web link to action website**

**Name of the stakeholder group**

<Not Applicable>

**Role in the GCC program**

<Not Applicable>

**Name of the engagement activities**

<Not Applicable>

**Aim of the engagement activities**

<Not Applicable>

**Attach reference document**

<Not Applicable>

---

**Mitigation action**

Energy Supply > Low or zero carbon energy supply generation

**Action title**

increase local renewable (electricity) generation, adding at least an extra 45MW by 2024



**Means of implementation**

Policy and regulation  
Financial mechanism  
Sustainable public procurement

**Implementation status**

Pre-implementation

**Estimated emissions reduction (metric tonnes CO2e)****Energy savings (MWh)****Renewable energy production (MWh)**

6.69

**Timescale of reduction / savings / energy production**

Projected lifetime

**Co-benefit area**

Reduced GHG emissions  
Improved resource efficiency (e.g. food, water, energy)  
Greening the economy  
Economic growth  
Job creation

**Action description**

Work is on-going with Electricity North West (ENWL) to assess how the future energy demand can be met from local renewable sources. Proposals are being developed for an investment vehicle to deliver renewable energy generation (GM Energy Company). GMCA and LAs are examining the potential to establish collective solar PV/battery purchase - ICHOOSR.

**Finance status**

Feasibility finalized, and finance partially secured

**Total cost of the project****Total cost provided by the local government****Primary fund source**

Please select

**Web link to action website****Name of the stakeholder group**

<Not Applicable>

**Role in the GCC program**

<Not Applicable>

**Name of the engagement activities**

<Not Applicable>

**Aim of the engagement activities**

<Not Applicable>

**Attach reference document**

<Not Applicable>

---

**Mitigation action**

Energy Supply > Low or zero carbon energy supply generation

**Action title**

add at least an extra 10TWh of low carbon heating by 2024

**Means of implementation**

Development and implementation of action plan

**Implementation status**

Pre-feasibility study

**Estimated emissions reduction (metric tonnes CO2e)**

0.71

---

### Energy savings (MWh)

### Renewable energy production (MWh)

### Timescale of reduction / savings / energy production

Projected lifetime

### Co-benefit area

Reduced GHG emissions

Improved resource efficiency (e.g. food, water, energy)

Greening the economy

Economic growth

Promote circular economy

Job creation

### Action description

GMCA and LAs are seeking funding to roll out Local Area Energy planning across the city region and are consulting on proposals to identify 'Heat and Energy Network Opportunity Areas'. MMU is leading on the development of a Hydrogen Strategy. Note - see page 18 of GM 5 year plan tech annex - this reduction figure is included within improved insulation assumptions.

### Finance status

Feasibility finalized, and finance partially secured

### Total cost of the project

### Total cost provided by the local government

### Primary fund source

Please select

### Web link to action website

### Name of the stakeholder group

<Not Applicable>

### Role in the GCC program

<Not Applicable>

### Name of the engagement activities

<Not Applicable>

### Aim of the engagement activities

<Not Applicable>

### Attach reference document

<Not Applicable>

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### Mitigation action

Private Transport > Improve fuel economy and reduce CO2 from motorized vehicles

### Action title

support delivery of 200000 EV in City region by 2024

### Means of implementation

Infrastructure development

### Implementation status

Pre-feasibility study

### Estimated emissions reduction (metric tonnes CO2e)

1.61

### Energy savings (MWh)

### Renewable energy production (MWh)

### Timescale of reduction / savings / energy production

Projected lifetime

### Co-benefit area

Reduced GHG emissions

**Action description**

GMCA, LA and TfGM to expand and promote city region's EV charging network with 48 new rapid charging points to be installed.

**Finance status**

Feasibility finalized, and finance partially secured

**Total cost of the project**

**Total cost provided by the local government**

**Primary fund source**

Please select

**Web link to action website**

**Name of the stakeholder group**

<Not Applicable>

**Role in the GCC program**

<Not Applicable>

**Name of the engagement activities**

<Not Applicable>

**Aim of the engagement activities**

<Not Applicable>

**Attach reference document**

<Not Applicable>

**Mitigation action**

Mass Transit > Improve fuel economy and reduce CO2 from bus and/or light rail

**Action title**

100% zero emissions (tailpipe) bus fleet by 2035

**Means of implementation**

Policy and regulation

Financial mechanism

Sustainable public procurement

**Implementation status**

Pre-feasibility study

**Estimated emissions reduction (metric tonnes CO2e)**

**Energy savings (MWh)**

**Renewable energy production (MWh)**

**Timescale of reduction / savings / energy production**

Please select

**Co-benefit area**

Reduced GHG emissions

Greening the economy

Improved resource quality (e.g. air, water)

Improved public health

**Action description**

TfGM successfully awarded a £3.5m ULEV Bus Fund grant from OLEV, to support electrification of 23 buses and inclusive of £1.89m for charging infrastructure to support. Note carbon saving of zero carbon tailpipe buss fleet are included in the carbon savings for 200k EV vehicle target for GM by 2024. see 5 year plan tec annex page 20

**Finance status**

Feasibility finalized, and finance partially secured

**Total cost of the project**

**Total cost provided by the local government****Primary fund source**

Please select

**Web link to action website****Name of the stakeholder group**

<Not Applicable>

**Role in the GCC program**

<Not Applicable>

**Name of the engagement activities**

<Not Applicable>

**Aim of the engagement activities**

<Not Applicable>

**Attach reference document**

<Not Applicable>

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## Mitigation Planning

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**(5.5) Does your city have a climate change mitigation or energy access plan for reducing city-wide GHG emissions?**

Yes

**(5.5a) Please attach your city's climate change mitigation plan below. If your city has both action and energy access plans, please make sure to attach all relevant documents below.****Publication title and attach document**

5 year environment plan for Greater Manchester

**Year of adoption from local government**

2019

**Web link**

[https://www.greatermanchester-ca.gov.uk/media/1986/5-year-plan-branded\\_3.pdf](https://www.greatermanchester-ca.gov.uk/media/1986/5-year-plan-branded_3.pdf)

**Areas covered by action plan**

Energy

Transport (Mobility)

Building and Infrastructure

Industry

ICT (Information and Communication Technology)

Waste

**Boundary of plan relative to city boundary (reported in 0.1)**

Same – covers entire city and nothing else

**If the city boundary is different from the plan boundary, please explain why and any areas/other cities excluded or included****Stage of implementation**

Plan in implementation

**Has your local government assessed the synergies, trade-offs, and co-benefits, if any, of the main mitigation and adaptation actions you identified?**

Yes

**Comment or describe the synergies, trade-offs, and co-benefits of this interaction**

actions and plan looks at related issues such as health, transport improvements decarbonisation, etc etc

**Has there been a stakeholder engagement plan to develop the plan?**

the plan was developed with extensive engagement. a key organisation steering group, thematic workshops in late 2017-18, an initial public 'GM Green Summit' in March 2018 which resulted in a 12 month program of engagement and action to develop (and publically launch) the 5 year plan in March 2019 at the 2nd GM Green Summit

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**Primary author of plan**

Relevant city department

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**Publication title and attach document**

GMCA 5 year plan Technical Annex

GMCA 5 Year Env Plan Technical Annex - FINAL June 2019.pdf

**Year of adoption from local government**

2019

**Web link**

Note - this document needs to be read with the 5 year plan - it includes the actions which make up the reductions needed to achieve the chosen emissions reduction trajectory set out in our 2038 carbon neutrality statement (and set out above from our 1990 baseline)

**Areas covered by action plan**

Energy

Transport (Mobility)

Building and Infrastructure

Industry

ICT (Information and Communication Technology)

**Boundary of plan relative to city boundary (reported in 0.1)**

Same – covers entire city and nothing else

**If the city boundary is different from the plan boundary, please explain why and any areas/other cities excluded or included****Stage of implementation**

Plan in implementation

**Has your local government assessed the synergies, trade-offs, and co-benefits, if any, of the main mitigation and adaptation actions you identified?**

Yes

**Comment or describe the synergies, trade-offs, and co-benefits of this interaction**

health, Air quality, transport, poverty all interlink in actions (i.e. fuel poverty measures, clean bus fleet etc

**Has there been a stakeholder engagement plan to develop the plan?**

Yes, this was part of the wider engagement to develop the 5 year plan (over circa 2 years) which has been referred to in other places in this submission.

**Primary author of plan**

Relevant city department

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Opportunities

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Opportunities

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**(6.0) Please indicate the opportunities your city has identified as a result of addressing climate change and describe how the city is positioning itself to take advantage of these opportunities.**

Opportunity	Describe how the city is maximizing this opportunity
Increase in clean technology businesses	Sector development business support programme to increase growth in environmental tech companies. The Low Carbon Environmental Good and Services sector in GM is the 3rd largest in the UK. It employs 37,000 people within GM and has annual sales of over £6.4billion, showing annual growth of around 4% with particular growth in the renewable energy sector at 5.6%.
Improved efficiency of operations	ENWORKS business support programme to assist SMEs in improving resource efficiency. Low Carbon Investment Programmes to deploy low carbon infrastructure.
Increased energy security	Greater Manchester's network operator Electricity North West is pioneering new smart grid management techniques to enable rapid deployment of renewables, more active demand shift and novel information platforms. In partnership with Greater Manchester these initiatives seek to improve the security and affordability of energy in GM.
Increased infrastructure investment	Greater Manchester has established a low carbon Investment Fund, and Low Carbon Investment Portfolio of small, mid and large scale schemes. It has earmarked significant amounts of European and national development funding alongside private and public capital investment to deliver heat networks, smart energy, energy efficiency and other schemes.
Increased energy security	Greater Manchester is investigating the establishment of a localised energy trading and retail mechanisms to increase the rate of flow of investment between local energy consumption and generation, to innovate on affordable tariffs and to decrease reliance on volatile global energy markets.

**(6.1) Does your city collaborate in voluntary partnership with businesses in your city on sustainability projects?**

Yes

**(6.1a) Please provide some key examples of how your city collaborates with business in the table below.**

Collaboration area	Description of collaboration
Energy	Greater Manchester undertakes a range of collaboration with Businesses on carbon reduction, resource efficiency and wider sustainability issues. This can be driven both through use of its procurement powers but also through wider funded business support around low carbon as well as business development opportunities in the low carbon goods and environmental sector. An example of this is the long running Enworks programme <a href="http://www.enworks.com/">http://www.enworks.com/</a> who have and do deliver various funded carbon and resource efficiency support programmes and provide wider advocacy/leadership/inspiration to business via initiatives like the 'Green Growth Pledge' <a href="https://www.green-growth.org.uk/">https://www.green-growth.org.uk/</a> examples of companies successfully saving carbon and money can be found on <a href="https://www.green-growth.org.uk/case-studies">https://www.green-growth.org.uk/case-studies</a> pages of the green growth website.

**(6.2) List any emission reduction, adaptation, water related or resilience projects you have planned within your city for which you hope to attract financing and provide details on the estimated costs and status of the project. If your city does not have any relevant projects, please select No relevant projects under Project Area.**

## Local Government Emissions

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## Local Government Operations GHG Emissions Data

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**(7.0) Do you have an emissions inventory for your local government operations to report? Reporting a Local Government Operations emissions inventory is optional.**

Intending to undertake in the next 2 years

## Energy

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**(8.0) Does your city have a renewable energy or electricity target?**

Intending to undertake in the next 2 years

**(8.0b) Please explain why you do not have a renewable energy or electricity target and any plans to introduce one in the future.**

	Reasoning	Comment
Please explain	Target is under development / consideration	

**(8.1) Does your city have energy consumption data to report?**

No

**(8.6) Does your city have a target to increase energy efficiency?**

Intending to undertake in the next 2 years

**(8.6b) Please explain why you do not have an energy efficiency target and any plans to introduce one in the future.**

	Reasoning	Comment
Please explain	Target is under development / consideration	

## Transport

**(10.0) Do you have mode share information available to report for the following transport types? Select all that apply.**

Please select

**(10.5) Please provide the total fleet size and number of vehicle types for the following modes of transport:**

	Number of private cars	Number of buses	Number of municipal fleet (excluding buses)	Number of freight vehicles	Number of taxis	Transport Network Companies (e.g. Uber, Lyft) fleet size	Customer-drive carshares (e.g. Car2Go, Drivenow) fleet size
Total fleet size							
Electric							
Hybrid							
Plug in hybrid							
Hydrogen							

*GM would have to collate this information expressly for CDP - if we decide to do this, we will submit as an amendment*

**(10.7) Do you have a low or zero-emission zone in your city? (i.e. an area that disincentivises fossil fuel vehicles)**

Please select

## Food

**(12.0) How many meals per year are served through programs managed by your city? (this includes schools, canteens, hospitals etc.)**

**(12.4) Does your city have any policies relating to food consumption within your city? If so, please describe the expected outcome of the policy.**

	Response	Please describe the expected outcome of the policy
Please complete	Do not know	

## Water Security

## Water Supply

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**(14.0) What are the sources of your city's water supply? Select all that apply.**

- Surface water
- Ground water
- Rainwater

*primarily GM is supplied (for potable uses) from rainwater transferred into treatment works via aqueducts and other infrastructure (stored in local reservoirs). the bulk of this comes from water supply sources outside of GM. but United Utilities the water company operates an integrated water supply management zone with ability to transfer within this, the wider supply mix also includes other local storage, other remote bulk storage and supply and other sources such as groundwater. there are also private supply. this makes the wider NW river basin, within which GM is supplied (primarily from a smaller number of large sources) quite sophisticated and complex with redundancy, interdependence and other opportunities and sometimes pressures on supply within and outside of GMCA boundary*

**(14.1) Where does the water used to supply your city come from?**

From adjacent river basins (by water transfer schemes) outside the city boundary

**(14.2) What percentage of your city's population has access to potable water supply service?**

100

**(14.3) Are you aware of any substantive current or future risks to your city's water supply?**

Do not know

## Water Supply Management

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**(14.5) Does your city have a publicly available Water Resource Management strategy?**

Not intending to undertake

**(14.5b) Please explain why your city does not have a public Water Resource Management strategy.**

	Reason	Explanation
Please explain	Water Resource Management is covered in other plans	Water resource planning (and regulation) is the responsibility of the privatised water company United Utilities

## Submit your response

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**What language are you submitting your response in?**

English

**Please read and accept our Terms and Conditions**

I have read and accept the Terms and Conditions

**Please confirm how your response should be handled by CDP.**

	Public or non-public submission
I am submitting my response	Publicly (recommended)