

Greater Manchester Resilience Strategy

2020 - 2030

April 2021

Greater Manchester Resilience Forum

Foreword

Since setting out to develop this Strategy, Greater Manchester has faced a deadly terrorist attack, major flooding, moorland fires on an unprecedented scale, the effects of COVID-19 and a range of other emergencies. During this period we have also planned for the UK's exit from the EU and declared a Greater Manchester climate change emergency.

It is clear that resilience is, and needs to be, a major priority for the city-region, an area that is home to over 2.8 million people.

Just as people, businesses and our cultural heritage tend to be concentrated in our town and cities, risks and opportunities are focused here too. In this context, urban resilience, and the capacity for the places in which we live and work to survive and, if possible, thrive through disruption and crises, becomes fundamental to our collective success.

We live in a world where uncertainty is a fact of life. But this doesn't mean that our ability to create the future that we want should be limited. It doesn't mean that we'll wait for emergencies to happen before we act.

Greater Manchester has set out its plans for integrating health and social care services, boosting the economy, increasing the availability of affordable housing, reducing crime, enhancing community cohesion, and creating a better environment in which to live, work and visit.

But, in making these plans, we must consider the complex challenges we face and establish a pathway to maximise opportunities to build our resilience to the shocks and stresses that could affect us. Shocks such as the Boxing Day Floods in 2015 and, today, Covid-19 illustrate how impacts can be experienced unevenly across society, often hitting the most vulnerable and disadvantaged the hardest.

Urban resilience is about our capacity to deal with shocks or disruptive events such as severe weather or infrastructure failures that threaten to knock us off the path we have set for the future. But it is also dependent upon recognising and addressing chronic stresses such as poverty and social inequality that weaken the fabric of society and can undermine attempts to respond to crises and to create a stronger future in their aftermath.

Resilience must be about building the future in inclusive and integrated ways. This Strategy sets out a pathway towards that more resilient future. It recognises existing work that is vital to our resilience but also challenges us all to consider how our contribution to resilience could be enhanced.

As Chair of the Greater Manchester Resilience Forum that will lead this work, I invite you to join us on our journey towards greater resilience so that, together, we can make Greater Manchester one of the most resilient places in the world to grow up, get on and grow old together.

Nick Baily, Assistant Chief Constable, Greater Manchester Police, Chair of the Greater Manchester Resilience Forum

Introduction

This Resilience Strategy is the first of its kind for Greater Manchester. It builds on nearly two decades of multi-agency working to plan and to respond to civil risks and emergencies within the context of the Civil Contingencies Act 2004. It incorporates learning from efforts in Greater Manchester and across the world to reduce the risk of disasters and crises. It has been created using the processes and tools developed by 100 Resilient Cities (now the Resilient Cities Network) which aim to catalyse the strengthening of urban resilience in our cities and city-regions.

Emergencies have intensely personal and local impacts however the causes often reflect global trends. This is particularly evident in the case of climate change and its projected consequences for the city-region. However, the ways in which we are affected by emergencies and longer-term shocks, are compounded by pre-existing challenges in our society which often come to the fore in a crisis, whether a lack of community cohesion, insufficient funding for essential services, or degradation of the natural environment with a loss of biodiversity. This cycle can be mitigated by our approach to urban resilience and by baking resilience considerations into every investment decision we make.

The development of this Strategy has been steered by the multi-agency partnership that coordinates civil resilience in the city-region: the Greater Manchester Resilience Forum. Currently chaired by Greater Manchester Police, this Forum brings together over 80 agencies to assess civil risks, to mitigate these risks where possible, to plan to respond should an emergency occur and to support communities in the aftermath.

The first phase of developing this Strategy started in 2016 with an 'Agenda Setting Workshop', a scoping exercise involving a broad range of local stakeholders. Workshop sessions explored the shocks and stresses facing Greater Manchester and the priorities for strengthening our future resilience. This was followed by further workshops, consultation exercises, knowledge exchanges with other cities, delivering resilience-building projects and continuing to learn from emergencies. The resulting Preliminary Resilience Assessment, published in 2018, offered a resilience baseline for Greater Manchester and identified five 'Discovery Areas' (resilience challenges and opportunities) on which to concentrate.

Phase two, the drafting of this Strategy, was founded on experiences of implementing work in these five Discovery Areas. This was in addition to further consultation, engagement with a widening number of stakeholders and commissioning of specific research. It also drew on learning from recent shock events, such as the Manchester Arena attack in 2017, the moorland wildfires in 2018, rainfall damage to Toddbrook Reservoir in 2019 and, most recently, the Covid-19 pandemic.

This Strategy sets out our vision for a resilient Greater Manchester. In this changing and complex world, our vision is to create one of the most resilient places where everyone can grow up, get on and age well together. It describes five priority areas to guide our work through to 2030 and sets out key themes within these priorities. The Strategy will be accompanied by an action plan, reviewed regularly to ensure we stay on track.

The Strategy runs to 2030 since this is the date by which countries across the world, including our own, have committed to making a real difference to reducing the occurrence of disasters. This commitment is captured in the UN Sendai Framework for Disaster Risk Reduction 2015-2030 which, as one of its 7 targets, sets out to substantially increase the number of local disaster risk reduction strategies. Greater Manchester joins a growing number of cities that have taken up the challenge to deliver on this commitment.

We are grateful to all the many individuals, communities and organisations who have helped to shape this Strategy and we look forward to harnessing their enthusiasm as we get to work on its delivery. Together we can create a more resilient future.

Dr Kathy Oldham OBE, Chief Resilience Officer, Greater Manchester Combined Authority

Greater Manchester Facts

The 10 districts of Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford and Wigan are home to over 2.8 million people and together they form the Greater Manchester city-region. With a Gross Value Added of £65.6 billion (Office for National Statistics, 2017), Greater Manchester represents the largest functional economic area outside of London.

Greater Manchester has a proud history of innovation that includes the world's first passenger railway, the first stored-program electronic computer and, in our own time, the Nobel Prize-winning isolation of graphene. We have also driven social progress. The Chartists, the Trade Union movement, the Co-Operative movement, and women's suffrage were all born in the city-region. England's first civic university, the University of Manchester, was established here and the area is now home to five universities, all with a leading role in education, research and discoveries that have global importance.

Greater Manchester has seen major change over past decades and this is projected to continue. Our population and employment patterns are expected to evolve which, along with considerable environmental (including climate change) and technological changes, have the potential to bring opportunities but also to impact significantly upon our resilience.

Our communities face many ongoing challenges. For example, many people experience serious poor health and deep-rooted inequalities. People who live in Greater Manchester are likely, on average, to have a shorter life expectancy and a lower healthy life expectancy (years of life with good general health) than the average for England, with some areas experiencing a healthy life expectancy of below 50 years of age. And over 1 million of our residents live in areas amongst the 20% most deprived in England (University College London Institute for Health Equity, 2020). These drivers of vulnerability, if left unchecked, will mean that any shock events or emergencies will have greater consequences for our residents.

This Strategy sets out how we would like to make Greater Manchester more resilient: better able to respond to risks that do occur, to reduce where possible the risks we face, and to avoid where we can the creation of any new risks. But it also recognises

that resilience needs to be embedded in everything we do. That is why this Strategy supports and is supported by, a suite of local and city-region activity including:

- Greater Manchester Strategy
- Greater Manchester Infrastructure Framework 2040
- Greater Manchester Local Industrial Strategy
- Greater Manchester 5 Year Environment Plan
- Taking Charge of Our Health and Social Care
- Greater Manchester Police and Crime Plan 'Standing Together'
- Greater Manchester Age-Friendly Strategy
- Greater Manchester Digital Blueprint
- Greater Manchester Hate Crime Strategy
- Greater Manchester Transport Strategy

Some key facts about Greater Manchester include:

- 1.4m working in GM: +117k in 10 years
- 3rd busiest airport in the UK: 29.36m passengers per year
- 101km of tracks: Metrolink is the largest light rail network in the UK
- 123k businesses
- 226k more in employment since 2011
- 14 major hospitals in GM
- 91m passenger rail journeys across GM a year
- £65.6bn GVA. Largest city-region economy outside London
- £511bn e-commerce transactions in the UK in 2016
- £23.4m spent on flood defences since 2013

- +13% winter rain falls
- +6.5m sqm of office, warehouse and industrial space since 2016
- 500 square miles
- 10 Local Authorities
- +227m sqm of of housing and residential space since 2016
- 14 Rivers
- 2nd most populous metropolitan area outside of Greater London
- 1.7m people in GM own a mobile phone
- 6th UK most densely populated area
- 21% of residents are from ethnic minorities
- 2.8 million residents (+240k since 2000)

Strategy Overview

Our Vision

In this changing and complex world, our Vision is to create one of the most resilient places where everyone can grow up, get on and age well together.

What is resilience?

The capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience. (100 Resilient Cities definition)

Our 5 Resilience Priorities

1. Communities: Building cohesive, healthy and resilient communities
 - Mobilising: Enhancing the capacity of communities to deal with emergencies and mobilising community participation in response and recovery
 - Cohesion: Dealing with hateful extremism through social cohesion
 - Resilience: Finding ways to increase community resilience, including by supporting intergenerational engagement
 - Support: Working with the voluntary and faith sectors at the local and national level to maximise the capacity to support communities
2. Discovery: Enhancing resilience understanding
 - Risk: Understanding hazards and vulnerability in Greater Manchester, including by identifying emerging and interdependent risk
 - Measuring: Measuring resilience through the use of metrics and baseline assessments

- Innovation: Developing new ideas to address risk and achieve resilience dividends, including by drawing on academic expertise
- Opportunity: Understanding and addressing the emerging challenges and opportunities of new technologies

3. Leadership: Shaping resilience within Greater Manchester

- Governance: Building on the governance structures and partnership working of the Greater Manchester Resilience Forum to coordinate and drive resilience building activities
- Shaping: Shaping and influencing resilience agendas across Greater Manchester, nationally and internationally to make them relevant and supportive to Greater Manchester's communities
- Outcomes: Ensuring that the delivery of the Resilience Strategy represents value for money and improves outcomes for people in Greater Manchester

4. Place: Being ready for future challenges

- Economy: Using a resilience lens to enhance our economy
- Urban Growth: Ensuring a resilient built environment – planning for resilient urban growth
- Natural Environment: Protecting and promoting the resilience value of the natural environment
- Funding: Leveraging funding to make us more resilient

5. Responding: Sustaining effective preparedness, response and recovery from emergencies

- Collaboration: Assessing the risk of civil emergencies through multi-agency collaboration
- Preparedness: Developing plans and capabilities to enable effective response and recovery following emergencies
- Training: Designing and delivering multi-agency training and exercising to improve responders' awareness and skills, and to validate plans.

- Information: Providing the public with information and guidance and supporting community resilience to increase emergency preparedness
6. Learning: Identifying and utilising learning from incidents to strengthen response and recovery arrangements

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Part 1: The Resilience Context

Our Journey

Urban resilience for Greater Manchester is about our ability to withstand and survive testing events or strains on the city and to grow and adapt when faced with such challenges. These challenges can be long-term such as deprivation, or come along suddenly, like flooding. We know that there are many issues that we need to address and that we will face times of adversity but, if we can work together, think differently, and build on our successes, we can become one of the most resilient cities in the world.

Greater Manchester, just like other places across the world, has experienced significant challenges. From the plague of 1645 to the Manchester Arena attack in 2017, many of the shocks we have faced have destroyed lives. Similarly, chronic stresses including deprivation, ageing infrastructure and poor air quality continue to undermine the fabric of our society and magnify the impacts of the emergencies we experience.

These challenges are exacerbated by the rate and intensity of global change which is forcing us to adapt and apply robust approaches to resilience to everything we do. In particular, globalisation, urbanisation, climate change and technological advances are amplifying the risks we face at a local, Greater Manchester, level, thereby increasing and adding complexity to known hazards, community exposure and vulnerabilities. In Greater Manchester, the notable shocks we face include:

- Natural hazards including flooding and, in future, heatwaves
- Infectious diseases such as Covid-19 and pandemic influenza
- Infrastructure or technology failures
- Those resulting from human activity, including terrorism

The rate and intensity of global change is significantly increasing the need for us to think differently about how we do things. Recognising that risks and emergencies do not respect city boundaries Greater Manchester continues to work with other cities

across the world to learn from their experiences, to understand emerging risks and to explore new ways of ensuring our cities are fit for the future.

Reducing the risks of disasters occurring and supporting communities to respond when we are faced with them, has been an international priority for over 3 decades. Our work supports the delivery of the targets outlined in the Sendai Framework for Disaster Risk Reduction 2015-2030 and the Sustainable Development Goals, both adopted by all UN member states. These international frameworks, alongside national policy, help to shape our thinking locally.

In 2014 we joined the UNDRR's Making Cities Resilient programme, joining over 3,000 cities in an international collaborative effort to reduce disaster risk. More recently we supported the launch of UNDRR's Making Cities Resilient 2030.

In 2017 Greater Manchester was invited to become a member of 100 Resilient Cities (now the Resilient Cities Network), an initiative pioneered by the Rockefeller Foundation. The Resilient Cities Network brings together cities from across the world that are committed to building and investing in urban resilience.

Partnerships such as these enable the city-region to strengthen our resilience by engaging with some of the foremost thinkers and practitioners in urban resilience. They help us to take new approaches to understanding our resilience and how we might strengthen it.

Some terms used when talking about resilience are:

- **Acute shocks** (Sudden, sharp events that threaten a city such as floods or disease, accidents or terrorist attacks)
- **Stresses** (Issues that weaken the fabric of a city often on a cyclical basis such as high unemployment, crime, poor transportation systems or pollution).
- **Resilience** (The capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience).

The Sendai Framework aims to drive a substantial reduction of disaster risk and associated losses, whether these are losses in lives, livelihoods and health or losses of economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries. As part of this, stakeholders can make voluntary commitments to support the implementation of the framework.

The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate change, environmental degradation, peace and justice. The 17 Goals are all interconnected, and in order to leave no one behind, it is important that we achieve them all by 2030.

Our Resilience Strategy

As the first of its kind for the city-region, our Resilience Strategy sets out our response to resilience challenges and opportunities.

At its heart, it points to a whole system, whole of society approach which reflects the complexity and interdependence of Resilience issues. It encourages innovation to address the changes we will continue to experience. But, importantly, it also recognises the resilience journey and the learning already undertaken in Greater Manchester.

Our Resilience Strategy:

- aligns with the Greater Manchester Strategy, helping to mitigate the impact of shocks on its outcomes.
- supports delivery of the Living With Covid Plan.
- has been developed thanks to the efforts of many different people from across Greater Manchester.
- will be delivered in partnership by agencies working across Greater Manchester.
- provides a framework for meeting our duties under the Civil Contingencies Act.
- runs to 2030 coinciding with the Sendai Framework and Making Cities Resilient 2030.
- builds on our Preliminary Risk Assessment and previous civil contingencies strategies.
- is informed by local and global learning and ideas.
- will be accompanied by an annual action plan.

Benefits of resilience to our city-region

- Improve our quality of life and wellbeing
- Attract investment and maintain our competitiveness
- Foresee and plan for crises that may affect communities and thwart the ambitions of our people
- Safeguard the unique characteristics of our city-region
- Build on the work of the many collaborations and partnerships in the city-region to drive innovation
- Embed resilience as we address physical, economic and social challenges
- Encourage socioeconomic stability

The development of this Resilience Strategy has provided the opportunity to consolidate the learning and knowledge developed in recent years. It also brings more structure to the resilience-building work which is already taking place.

The vision for our Resilience Strategy is as follows: In this changing and complex world, our vision is to create one of the most resilient places where everyone can grow up, get on and age well together.

Within the Strategy there are 5 core priorities or resilience pillars:

1. Communities: Building cohesive, healthy and resilient communities
2. Discovery: Enhancing resilience understanding
3. Leadership: Shaping resilience within Greater Manchester
4. Place: Being ready for future challenges

5. Responding: Sustaining effective preparedness, response and recovery from emergencies

Each priority is broken down into several key themes that are described in part 2 of this document. These themes will form the basic building blocks on which we will develop our action plans to ensure we deliver against each priority in support of our overall vision. The action plans will provide details of the timeframe and responsible owners for each action.

In **part 2** we have also used some of our recent and on-going work to illustrate the types of actions that are likely to be included in our action plan.

As the Steering Group responsible for ensuring delivery, the Greater Manchester Resilience Forum will co-ordinate and oversee progress on delivering the Resilience Strategy and accompanying action plans.

Measuring the resilience of our city-region and the success of this Strategy will involve multiple approaches. We will:

- continue to measure progress in addressing chronic stresses through existing Greater Manchester evaluation frameworks, for example, those already in place to measure school/life readiness, unemployment, health outcomes, crime rates
- continue to undertake regular assessments of the shocks that Greater Manchester may experience
- continue to undertake debriefs and reviews following significant civil emergencies to identify what is working well and where we can improve further
- continue to engage in international city-to-city knowledge transfers, in networks that foster learning and in adopting new tools to keep moving forward and to ensure we do not fall behind
- continue to use tools designed to measure resilience, as well repeat the use of those previously applied

- collect any additional evidence of success, including through public and other stakeholder perceptions and feedback

Our Resilience Strategy is for

- **Everyone:** By harnessing the strengths of people across Greater Manchester including our residents, the voluntary, community and social enterprise sector, businesses, academic institutions, and civic leaders, we can build resilience into everything we do.
- **Our City-Region:** Like many urban areas across the world, we are growing. Through resilient growth and recognition of our global connections, we can build resilience to protect our wellbeing and our economy to ensure our city-region thrives.
- **Our Civic Leaders:** This is an opportunity to take a close look at what might knock Greater Manchester off track in achieving its ambitions and to deliberately invest in ensuring we can be resilient in the face of disruption.

In drawing up this Strategy we have found that the term ‘urban resilience’ can mean different things to different people and, across the world, cities have been working to understand and to define it. The following 7 qualities of resilience have repeatedly assisted our stakeholders to understand urban resilience and they will provide the basis for delivering the outcomes we want to achieve by 2030.

Reflective (Using past experience to inform future decisions)

We will continue to debrief following emergencies and to use the learning identified to improve what we do in the future. We will continue our partnerships with universities and other institutions to learn and to innovate. We will learn from the experience of other cities through the city networks of which we are a member.

Resourceful (Recognising alternative ways to use resources)

We will recognise what is best done at a local level and where economies of scale give benefit to working at a Greater Manchester level. We will seek to drive efficiency and maximise benefits by addressing multiple challenges at once. We will continue to collaborate and work in partnership to find new ways of using our collective resources.

Robust (Well-conceived, constructed, and managed systems)

We will continue to use a strong evidence base to inform our decisions. We will seek to involve communities in designing new approaches and we will work in partnership across public, private, voluntary and academic sectors. We will validate emergency plans through exercises. We will ensure we are accountable with effective governance that provides assurance and scrutiny.

Redundant (Spare capacity purposively created to accommodate disruption)

We will continue to assess risks and to use this information to help to design protective processes and infrastructure. We will promote a proportionate approach to risk that balances appropriate levels of contingency with the investment needed.

Flexible (Ability to adopt alternative strategies in response to changing circumstances)

At no point will we stand still. We will work hard to identify new and emerging risks. We will adapt and evolve in light of new challenges, opportunities and experiences. We will continually seek to learn.

Inclusive (Prioritise broad consultation to create a sense of shared ownership in decision making)

The needs of people will continue to be the central drivers of our resilience plans. We will look for new ways to involve people in resilience. We will communicate about risks and actions people can take to prepare for emergencies. We will continue to

warn people about emergencies and to inform them of the action they should take. We will involve those affected by emergencies in plans to recover from them.

Integrated (Bring together a range of distinct systems and institutions)

We will build on our existing collaborative approach to make Greater Manchester more resilient. We will continue to engage with other cities around the world to draw on global innovation and creative solutions and will also continue to support internationally agreed targets.

Outcomes

- Reduced impact of shocks and stresses on people, the physical environment and economy, accelerating recovery and improving quality of life
- Avoidance of new risks, reduction of existing risks and effective management of residual risks
- Co-benefits realised on investments across sectors and stakeholders, in particular benefitting the poorest and most vulnerable.

The Global Risk Landscape

International Risk Amplifiers

Throughout the world, the 21st-century global trends mentioned earlier, such as urbanisation, climate change, globalisation, and technological development, are being associated with the risk of an extensive and diverse range of emergencies, adverse events and negative outcomes for local people.

Local places have always faced shocks and stresses but today's global risk amplifiers are drastically challenging our understanding of, and ability to respond to, the issues we face.

"If I had to select one sentence to describe the state of the world, I would say we are in a world in which global challenges are more and more integrated, and the responses are more and more fragmented, and if this is not reversed, it's a recipe for disaster". António Guterres, United Nations Secretary-General, 2019

Urbanisation

Greater Manchester, like many other urban centres, is an engine of economic growth and a place of social opportunity.

Looking forward, the population of Greater Manchester is predicted to grow by 10% over the next 20 years. This equates to 190,000 - 240,000 more people living in the city-region which will require around 179,000 new homes by 2037. This growth is also expected to create up to 100,000 new jobs by 2037 (Greater Manchester Spatial Framework Publication Plan, 2020).

Well-designed urban areas can reduce the exposure and vulnerability of people to risk and can help them to cope when the unexpected occurs. As well as protecting people, good urban design can protect businesses, the economy and people's livelihoods.

Equally, if potential risks are not addressed they can have significant consequences. As an example, the estimated health and social care costs by 2035 of not tackling air pollution in England are nearly £5.3 billion (Greater Manchester 5-year Environment Plan, 2019).

We therefore need to build resilience into Greater Manchester's plans for the future. Work has already started on this with resilience considerations included in, for example, the Greater Manchester Spatial Framework and Greater Manchester 5-year Environment Plan.

"Cities are like magnets. Just as magnets can either attract or repel, so can cities. A city with a strong magnetic pull draws in new residents, visitors and business investment...The city's economy grows. Equally, cities can also repel. A city with magnetic push casts off residents and businesses as people pack their bags and move to cities with greater magnetic pull... The city's economy shrinks". KPMG, 2015

Climate Change

The Kyoto Protocol and the 2015 Paris Agreement have driven international efforts to reduce global warming to 1.5°C above pre-industrial levels. However, current projections suggest we will exceed this target by the late 2030s. The Greater Manchester Combined Authority declared a climate emergency in July 2019 and believes that the impacts of global temperature rise above 1.5°C are so severe that governments at all levels must work together and make this their top priority.

Greater Manchester recognises it has work to do. As a city-region at the centre of the industrial revolution, we have been, and continue to be, responsible for significant CO₂ emissions, currently equating to about 3.6% of the UK annual total (Greater Manchester 5-Year Environment Plan, 2019). In addition to tackling climate change, Greater Manchester is also committed to maximising the economic opportunities presented by the move to carbon neutrality.

"Climate change is the single biggest threat the world faces". GM 5-Year Environment Plan, 2019

The consequences of climate change require us to plan for potential emergencies. The UN has stated that "90% of recorded major disasters caused by natural hazards from 1995 to 2015 were linked to climate and weather including floods, storms, heat waves and droughts (UN, 2015)".

In Greater Manchester climate change effects are predicted to include:

- More powerful storms increasing the risk of severe flooding
- More extreme temperatures increasing the risk of drought in summer and disruption to services in winter
- Overall non-linear change in hazard intensity and frequency

Summary of urgent climate change risks for the UK:

- **Heatwaves:** By the 2020s summer heatwaves, like the one experienced in the UK in 2003, are expected to become the norm
- **Flooding:** The impacts of flooding and coastal change in the UK are already significant and expected to increase as a result of climate change
- **Diseases:** The impacts of new and emerging pests and diseases are potentially high for otherwise healthy people, animals and plants. The warmer, wetter conditions expected with climate change will allow some pests and diseases to extend their range
- **Food:** The affordability of food for the UK population is subject to domestic and international risks affecting production and prices
- **Nature:** Climate change presents a substantial risk to the UK's native wildlife and the vital goods and services provided by natural capital, including food, timber and fibre, clean water, carbon storage, and the cultural benefits derived from landscapes

Globalisation

Over the past 200 years international trade has transformed Greater Manchester's economy and enabled the city-region to forge connections with every corner of the globe. From the construction of the Ship Canal and the world's first inland port in the 19th century to the development of Manchester Airport, which is one of the largest

airports in Europe, connection to international markets has been at the core of Greater Manchester's economic strategy.

In embracing the opportunities of globalisation, we must do so in ways that promote resilience. Risks can now operate across borders. Perpetrators of cybercrime are often located many thousands of miles away from those that they target, the Interconnectivity that globalisation brings can enable infectious diseases to spread quickly, and international terrorism can have devastating impacts in our local communities. Through our resilience work we are seeking to understand current and emerging global risks, to develop approaches to help to prevent local impacts and protect communities, to assist people in staying safe and to work as part of a global community intent on reducing disaster risk.

We are now firmly established both as a key international gateway to the UK and from the UK to the world. Our long-term vision is to become a top 20 global city by 2035. Greater Manchester Internationalisation Report, 2017

“The 21st century has already been marked by major epidemics. Old diseases - cholera, plague and yellow fever - have returned, and new ones have emerged - SARS, pandemic influenza, MERS, Ebola, Zika and Coronavirus. Another Ebola epidemic, another plague epidemic or a new influenza pandemic are not mere probabilities, the threat is real. Diseases all have the potential to spread internationally highlighting the importance of immediate and coordinated response”. World Health Organisation, 2018

Technology

Greater Manchester has the ambition to be a top-five European digital city-region and recognised globally for its innovation. But most importantly it is committed to putting the city-region's people at the heart of its plans.

“We want our citizens' lives to be bettered, and for them to be empowered by the myriad of opportunities a digitally fuelled city -region provides”. Greater Manchester Internationalisation Report, 2017

Technological development can enable our citizen's lives to be bettered, to improve public services and help drive economic activity. However new technology pulls together the various networks that constitute modern life and fuses them into a complex 'system of systems', in which risks become difficult to identify and even more difficult to measure.

We can point to relatively isolated technological risks such as the risk of a cyberattack interrupting business operations seen when the WannaCry ransomware attack led to disruption in one-third of hospital trusts in England (National Audit Office, 2018). But in an increasingly interconnected world, the consequences can be much greater. Consider, for example, the immediate cascading impact of a cyberattack that knocks out a provider of critical infrastructure.

And the changes in technology that impact our resilience are not limited to the digital sector. For example, diesel cars have helped contribute to worsening air quality, despite the initial promise of cutting carbon dioxide emissions. However, improvements in technology have enabled electric vehicles to be more affordable and commonplace, providing an opportunity to radically improve the air we breathe. This demonstrates the potential value new technology can bring to our most pressing resilience challenges, whilst also showing the possibility for unintended consequences.

To be resilient we need to embrace the role new technology can play in improving lives, whilst also ensuring that we try to understand any associated risks. In the face of uncertainty, we must ensure that our plans are flexible and adaptable to meet the needs of a rapidly changing future.

Shocks

The previous section explored how risks across the world can impact us within Greater Manchester. However, strengthening our local resilience requires us to try to understand to which risks we are susceptible locally – shocks – together with any factors that may exacerbate the impact of these risks and, potentially, worsen the consequences such as poverty or inequalities – stresses. A sudden shock can expose our chronic stresses whilst existing stresses often increase the impact of that shock and the fallout from it.

The causes of emergencies and how they impact the city-region and its communities are complex and cross-cutting. They can cross administrative boundaries, require action by many different organisations and touch individual lives in diverse ways.

The Greater Manchester Resilience Forum, established in 2005, brings over 80 public, private, voluntary and academic organisations together in a multi-agency partnership that focuses on coordinating activity to prepare for shocks and emergencies. This is part of a national approach to emergencies that enables national government and local communities to work together in times of crisis.

In particular, the Greater Manchester Resilience Forum:

- Assesses the risks Greater Manchester may face, publishing a Community Risk Register
- Plans for emergencies and encourages organisations to plan for business continuity management, through training and exercising
- Establishes arrangements to warn and inform the public in times of emergency

The Greater Manchester Resilience Forum operates within a network of other partnerships across Greater Manchester. Some support its core functions around civil risks, such as the GM Contest Board, whilst other groups within Greater Manchester respond to issues that can cause stresses.

The Greater Manchester Resilience Forum assesses over 100 civil risks as part of a rolling programme. Using a national framework, we assess the likelihood, severity

and foreseeable consequences, together with the capabilities available to respond should a particular type of emergency occur. The risks can be grouped as:

- Natural hazards including diseases
- Infrastructure or system failures
- Terrorism or those due to malicious acts
- Accidents including those leading to exposure to hazardous materials

An emergency [shock] is defined in the Civil Contingencies Act 2004 as ‘an event or situation which threatens serious damage to human welfare, an event or situation which threatens serious damage to the environment, and war, or terrorism, which threatens serious damage to the security of the UK’. HM Government, 2004.

Top Risks in Greater Manchester

Severe Winter Weather

Severe cold and snow disrupts communities and bring risks to health, putting pressure on our urgent care systems during the winter. All districts in Greater Manchester face these risks, particularly in the northern and eastern areas over the moors and Pennines.

Flooding

Expert modelling shows we may experience flooding from short, intense storms, seen in areas of Stockport in summer 2016, as well as periods of continuous, prolonged rain, such as that experienced in Storm Eva in 2015.

Infectious disease

“Compared to other areas in England, Greater Manchester has been particularly affected by Covid-19. The impact has been unequal and unfair, highlighting and deepening the inequalities that have existed for many years and which we have been working to change”. Public Health England, 2018

For many years public health experts have highlighted the risks of infectious disease pandemics, particularly of an influenza pandemic such as the 1918 Spanish flu.

The work preparing for an influenza pandemic helped inform the initial stages of the response to Covid-19.

Although not the influenza virus, SARS-CoV-2 has caused widespread infections. In addition to the associated morbidity and mortality, it has impacted all areas of society including the education of children and young people, livelihoods and the economy, together with social norms and population mental health. Recovery from the pandemic will be a priority for years to come.

However, health risks are not limited to known and emerging infectious diseases. Antimicrobial resistance, with the rapid spread of increasing numbers of drug-resistant pathogens, threatens our ability to treat common infections both now and in the future. Tackling antimicrobial resistance is one of the key resilience challenges we must all deal with and sooner rather than later.

Accidents including those leading to exposure to hazardous materials

The UK has robust regulatory and inspection regimes designed to keep people safe from risks that could have high consequences to people, the environment or the economy but that are unlikely to happen. Examples include industrial processes that use hazardous materials, infrastructure such as reservoir dams or major pipelines that could cause widespread damage if breached, or release of radiation. Greater Manchester is a complex urban area with a long industrial heritage and plans are maintained in case of accidents or emergencies involving higher risk sites.

Failure of national electricity infrastructure

Power outages have the potential to cause significant disruption including impacts on essential services such as hospitals, transport systems, mobile communications, heating systems and electronic trading systems. For example, our transport infrastructure (traffic signals, rail and Metrolink services) is heavily reliant on electricity to function. Other consequences of losing power supplies include poor

sanitation and loss of drinking water; limited availability of telecommunications, TV, radio or internet services; financial transactions being limited due to cash machines and payment cards not working; together with risks to vulnerable people who have a greater dependency on essential services.

Malicious activity including terrorism

As with the rest of the UK, Greater Manchester continues to face a serious and sustained threat from terrorism, including from international groups and domestic extremists. The UK threat level sets out the broad indication of the likelihood of a terrorist attack.

Potential terrorists include a wide variety of individuals and groups of varying backgrounds. Online radicalisation is a serious problem and allows international groups to recruit from inside western countries. Many of the networks and individuals who pose a terrorist threat seek to cause physical harm as well as fear and harm to social cohesion.

Tragically, Greater Manchester was subject to a cowardly terrorist attack in 2017 at the Manchester Arena. Following this horrific event, the Mayor commissioned two pieces of work. Firstly, an Independent Review which has made a series of recommendations in relation to the nine-day response which took place after the attack. Secondly, the Preventing Hateful Extremism and Promoting Social Cohesion Commission which has made recommendations for tackling and confronting hateful extremism in all its forms and from wherever it emanates. An independent public inquiry into the Manchester Arena attack was commissioned by the Home Secretary on 22 October 2019.

Stresses

When partners on the Greater Manchester Resilience Forum assess risks, part of the process includes considering the consequences.

Many different shocks and emergencies can result in similar outcomes such as injuries or death, temporary or permanent loss of homes and the need for shelter, financial disruption to personal incomes or the broader economy including through loss of businesses and livelihoods, environmental damage or damage to infrastructure and services that are essential to day-to-day life.

However, underlying pre-existing urban problems [stresses] can make such consequences worse and we know that the impacts experienced during shocks are rarely the result of the shock alone. With myriad connections across the city-region, shocks are easily compounded, resulting in multiple adverse impacts, cascading failure of systems and functions, and differential outcomes between communities due to existing vulnerabilities.

The wildfires experienced across the northern fringes of Greater Manchester in 2018 provide a good example of the complex interaction between shocks and stresses. The chronic stress of pollution caused by the industrial revolution in the 18th and 19th centuries severely degraded the surrounding moorlands, killing off protective flora and exposing bare peat.

The moorland flora, especially a small plant called sphagnum moss, can hold 20 times its own weight in water and, when in good health, can act as huge sponge helping to protect Greater Manchester from flooding. In addition, this plant is essential in building the peat that lies beneath it, which itself is the biggest store of atmospheric carbon in the UK. The moss and peat together also help to filter our drinking water.

So, when a shock event like a wildfire occurs on this landscape, we can lose the resilience benefits of flood protection and carbon storage that peat offers whilst, at the same time, releasing carbon into the atmosphere, exacerbating climate change and, in turn, making these shock events even more likely.

The Boxing Day floods in 2015 demonstrated how acute shocks can amplify pre-existing chronic stresses with flooding disproportionately affecting those in more

deprived areas. Conversely civil disruption experienced in 2001 and 2011 was arguably a response to stresses including social tensions and a lack of social cohesion.

So, whilst Greater Manchester can be proud of its successes, the fabric of its society has vulnerabilities that can exacerbate the impact of acute shocks, as well as causing a daily strain on the quality of people's lives. Of course, these chronic stresses are not new or unique to Greater Manchester.

The very existence of public services is driven by a recognition of the broad range of needs, including social, environmental and economic, that need to be met for people to live happy, healthy lives. And the Greater Manchester Strategy and its accompanying policies sets out the city-region's ambitions for tackling many of these issues.

The figures below summarise some of our most significant current challenges that can be associated with existing or potential chronic stresses for the city-region.

- 78.1 years male life expectancy - below England average of 79.8
- £1.85bn gap between public spend and tax income in 2017/18
- 81.7 years female life expectancy – below England average of 83.4
- 2.84m population - growth of 196,000 in last decade
- 11,583 net additional new dwellings in 2018/19
- 70.2k unemployed in 2019
- 12,000 children not achieving expected early years foundation stage goals (2019)
- 459k aged +65 - growth of nearly 78k in last 25 years
- 27,204 16-24 years olds unemployed in January 2021 - 14,230 higher than January 2020
- NO2 levels in Greater Manchester in breach of legal limits
- 4th most deprived Local Enterprise Partnership in England
- 77 rough sleepers in January 2021

- 6th most deprived Local Enterprise Partnership in England for income deprivation affecting children
- 1 in 4 residents will be over 60 by 2040 and more than 1 in 6 will be over 70
- £4.4M investment received by Manchester University NHS Foundation Trust in 2019 to fight antimicrobial resistance

Summary and Conclusions

The Rockefeller Foundation's former President, Judith Rodin, described what resilience means to modern cities in her book, *The Resilience Dividend*, writing that resilience is, "The capacity of any entity... to prepare for disruptions, to recover from shocks and stresses and to adapt and grow from a disruptive experience'. Ideally, it is able to take advantage of new opportunities in good times or bad and to thereby realise a resilience dividend – it is not just about returning to normal, as important as that is, but it is also about yielding benefits." Rodin, 2015

Greater Manchester has a long history of resilience. For decades, our many agencies have collaborated to assess risks, prepared for emergencies and worked together to address the stresses we face. This is in addition to learning from the shocks we and other cities across the world have had to deal with.

However, the challenges we have experienced and overcome before are not necessarily the same as those we face today. The 21st century brings new risks such as climate change and antimicrobial resistance, together with the capacity for risks to have multiple and unexpected consequences due to globalisation and the interconnectivity of societies across the world.

Our ability to respond to, and recover from, acute shocks and civil emergencies is well tested. We have been working hard to contribute to international thinking and emerging approaches to enhance resilience for Greater Manchester, the UK and worldwide. This is something we will build on if we are to realise our resilience vision.

We are a UN role model for disaster risk reduction and a member of the Resilient Cities Network. We also seek to influence national

government to adopt approaches that will support Greater Manchester's resilience. Our inputs are not based simply on the work we have done to date, they acknowledge our understanding of the need to do more - maintaining resilience requires us to continually learn, reflect, anticipate and adapt to take account of constant change.

Our resilience is our ability to survive and thrive regardless of the challenges we face. Resilience is a key enabler of the Greater Manchester Strategy, helping to

improve the quality of life for all. The Greater Manchester Strategy is also a key enabler of resilience, as its aims are driven by the challenges we face.

Part 2: Resilience Priorities

Strategy Vision

In this changing and complex world, our vision is to create one of the most resilient places where everyone can grow up, get on and age well together

Priority 1 - Communities: Building cohesive, healthy and resilient communities

Themes

Mobilising: Enhancing the capacity of communities to deal with emergencies and mobilising community participation in response and recovery

Cohesion: Dealing with hateful extremism through social cohesion

Resilience: Finding ways to increase community resilience, including by supporting intergenerational engagement

Support: Working with the voluntary and faith sectors at the local and national level to maximise the capacity to support communities

Resilient cities are created by the communities who live and work in them and the people of Greater Manchester have the power and potential to create strong, safe and resilient places for everyone. A resilient community is characterised by minimal exposure to disaster risk, together with fewer urban stresses, and therefore a lower vulnerability and a greater coping capacity when shocks do occur.

“VCSE organisations are an integral part of thriving communities, and are a way for local people to deliver solutions to problems or ambitions that they have identified. They offer activities, which if amplified, developed and embedded as part of support and services for people and communities, could really make a difference for Greater Manchester”. Greater Manchester VCSE Leadership Group, 2020

We want to equip individuals and communities with the knowledge and ability to withstand and even thrive in the face of the shocks and stresses they face. We want them to be empowered and engaged.

This ambition is far from new in Greater Manchester – it is made explicit through our principles for public service reform and is being addressed throughout many areas of public policy.

The Greater Manchester Strategy highlights the need to take a proactive approach to create new partnerships and encouraging more diverse voices across Greater Manchester to have an active role in shaping and challenging policy.

Case Study 1: Enhancing the capacity of communities to deal with emergencies and mobilising community participation in response and recovery

In the immediate aftermath of the Manchester Arena attack in May 2017, a Community Recovery Group was established alongside a Commission to consider any learning concerning community cohesion and integration. The work of the Community Recovery Group, now meeting as 'A Shared Future', has evolved with the implementation of positive actions in four priority areas:

1. Consistent tensions monitoring processes across Greater Manchester
2. Greater Manchester-wide roll out of "holding difficult conversations" training
3. Greater Manchester approach to Countering "Narratives"
4. Community engagement principles

Case Study 2: Dealing with hateful extremism through social cohesion

Building on Boston's work in addressing deep-rooted issues of racial disparity and systemic inequity through its resilience-building efforts, Chief Resilience Officers and city representatives from Greater Manchester and seven other cities in the United States and Canada had the opportunity to collaborate with Boston officials and other partners to share practices and tactics local leaders can use to promote racial equity outcomes across city systems and in the delivery of core services.

This collaboration identified the following key principles:

- Open and courageous leadership is critical to tackling the stress of structural racism in cities
- Cities need to rely on their existing and diverse array of levers to build racial equity and resilience
- Communities must be co-creators in solutions to forge new paths to equitable and resilient cities
- Cities must focus on systems and institutions, as well as people and communities
- Data and impact measurement are critical but must look beyond numbers to tell the whole story

Case Study 3: Finding ways to increase community resilience, including by supporting intergenerational engagement

Building community resilience cannot take place without the participation of communities themselves in the design and the delivery of resilience-building programmes. Recognising this, Ambition for Ageing have researched how marginalized older people cope with emergencies and have developed recommendations for how we can encourage and enable community participation in planning for emergencies.

Following the publication of the report 'Resilience in an Ageing Greater Manchester', which has been recognised by the UN as international good practice, the Greater Manchester Resilience Unit worked with a local primary school and a church group in Bolton to pilot an intergenerational project called 'Take Care'. This project was designed to:

- Enable older people to pass on their experience and learning to younger residents
- Help younger people cope with emergencies
- Decrease the levels of social isolation through intergenerational dialogue

Case Study 4: Working with the voluntary and faith sectors at the local and national level to maximise the capacity to support communities

During the Covid-19 pandemic, Greater Manchester's Voluntary Community and Social Enterprise infrastructure, which includes organisations such as Action Together (Oldham, Rochdale and Tameside), Salford CVS and MACC, continue to be an integral part of the locality-led community response. They are embedded in community hubs and volunteering structures, supporting activities that include the vaccination programme as well as the humanitarian response. National charities such as the British Red Cross have worked closely with local organisations and are offering specific support such as the British Red Cross Hardship Fund.

Priority 2 - Discovery: Enhancing resilience understanding

Themes

Risk: Understanding hazards and vulnerability in Greater Manchester, including by identifying emerging and interdependent risk

Measuring: Measuring resilience through the use of metrics and baseline assessments

Innovation: Developing new ideas to address risk and achieve resilience dividends, including by drawing on academic expertise

Opportunity: Understanding and addressing the emerging challenges and opportunities of new technologies

A basic foundation for building resilience is understanding risk, including the potential for shocks and stresses.

The Sendai Framework breaks down risk into the dimensions of hazard, exposure and vulnerability, which are mitigated by coping capacity. Reducing existing risk and preventing the creation of new risk requires us to address all dimensions.

Many of the risks relevant to Greater Manchester are well known, largely due to the issues we have already experienced, such as flooding, terrorism, poor health outcomes and homelessness. However, the risk we know is not necessarily the risk we face, and we must be prepared to address gaps in our knowledge.

In addition, accepting that today's risk is not necessarily the reality of tomorrow is also crucial to the mindset we need to have. This mindset is about maintaining a grasp on the issues that emerge and evolve before us, against the challenging context of a rapidly changing world.

Whilst anticipation and flexibility are key to our ability to respond to new or evolving risk, we must also prioritise efforts to prevent the creation of new risk, paying particular attention to the role of human activity in increasing exposure and adding

complexity. This requires everyone to consider the impact of their actions, regardless of their pursuit.

Understanding risk involves

- Knowledge: building and maintaining knowledge of potential shocks and chronic stresses which could affect the city-region
- Identifying and understanding new and emerging risk, such as anti-microbial resistance and evolving climate change scenarios
- Tracking the changing dynamics of risk and understanding how risk alters over time
- Exposure: understanding levels of exposure to hazards, threats and stresses
- Vulnerabilities: understanding vulnerabilities of people, place and the economy
- Capacity: understanding the capacity of our people, place and economy to withstand shocks and stresses
- Applying multi-hazard thinking to understand accumulative risk
- Identifying interdependencies between all aspects of society and how they could potentially exacerbate risk

“Resilience is about the ability to continue to function effectively in the face of future challenges. The requirements to achieve it change over time, as challenges alter. This means that thinking about resilience encourages a dynamic and holistic approach, one that looks at the system as a whole over time and the service that it delivers, rather than focussing on the risks to individual assets ... a truly resilient system is also able to respond effectively to as yet unknown, or difficult to predict challenges”. National Infrastructure Commission, 2019

Case Study 1: Understanding hazards and vulnerability in Greater Manchester, including by identifying emerging and interdependent risk

In Greater Manchester organisations have been working together for over a decade to assess the risk of acute shocks that communities may face. The process involves drawing on expertise and knowledge at both a local and national level. The European Climate Risk Typology created by researchers at the University of Manchester is an example of such collaboration.

Freely available through an interactive online portal (www.european-crt.org) the typology includes:

- Interactive maps showing groups of European cities and regions that share similar climate risk characteristics.
- Information on a wide range of climate risk indicators supported by maps, charts and diagrams.
- Use cases to provide insights into how the typology can be applied to inform adaptation planning and action.

The portal allows us to see European cities and regions that share Greater Manchester's climate risk type - North West Urban. They are predominantly inland, urbanised, have relatively low hazard exposure compared to other European cities and regions, are projected to experience increases in very heavy rainfall and have GDP and employment prospects that are above the European average.

Case Study 2: Measuring resilience through the use of metrics and baseline assessments

We have used several tools developed through the Making Cities Resilient programme and 100 Resilient Cities network to measure our resilience and to give us a baseline from which to measure changes. These include the Disaster Resilience Scorecard for Cities (UNDRR) and City Resilience Index (100 Resilient Cities). As the world about us shifts and changes, so our resilience may alter, and these tools help us to assess where best to target our efforts.

Within the UK, in addition to the national framework for developing Community Risk Registers, the Cabinet Office has developed a set of Resilience Standards against which Greater Manchester assesses its work. The Cabinet Office also conducts a biennial national survey of the capabilities available to respond to emergencies.

We have contributed to other tools to help measure and better quantify approaches to resilience. These include:

- Contribution to the BS67000, the British Standard for City Resilience (2019) released by the British Standards Institute (BSI) and intended for use by all stakeholders who contribute to city resilience, whether from the private, public or third sector as applied across communities, governance, the environment and infrastructure.
- Piloting new tools for measuring resilience, such as the Smart Mature Resilience toolkit designed through a European funded project to assist cities in building their resilience.
- Tools to explore specific resilience themes such as the City Water Resilience Approach (CWRA) which helps cities plan and implement actions to build resilient urban water systems.

Case Study 3: Developing new ideas to address risk and achieve resilience dividends, including by drawing on academic expertise

Techniques to assess city resilience help policymakers to make evidence-based decisions. To improve the range of tools available to policymakers, Greater Manchester and the University of Manchester led an EU project, the Uscore2 project, to design and test the world's first city-to-city, disaster risk reduction peer review tool. Other collaborators included the municipalities of Amadora and Viggiano, UNDRR, the Ministry of Housing, Communities and Local Government (UK), the Portuguese National Authority of Civil Protection and the Associazione di Protezione Civile Gruppo Lucano.

The project was designed to help cities to assess their approaches to disaster risk reduction, based on their risk profile. The final tool was aligned to the indicators for the Sendai Framework and Making Cities Resilient programme so that the peer reviews of local civil protection mechanisms could offer an independent and transparent assessment to assist cities in the challenge of strengthening their implementation of disaster risk reduction.

The peer review tool developed through Uscore2 was piloted in Viggiano, Salford and Amadora. These three cities have different disaster risk profiles, geographical and demographic characteristics, and statutory and regulatory frameworks. The effectiveness of the peer review tool was evaluated using a methodology developed by the University of Manchester. More information can be found here: www.gmemergencyplanning.org.uk/projects/uscore2-city-to-city-local-level-peer-review/

Case Study 4: Understanding and addressing the emerging challenges and opportunities of new technologies

Open data maps enable new ways of sharing of risk information with different stakeholders and the public. Mapping Greater Manchester provides a series of open data maps to support an open and inclusive approach to sustainable and resilient development in Greater Manchester. The maps enable the visualisation of spatial information through use of planning, housing, environmental, social, economic and demographic data.

The Greater Manchester Open Data Infrastructure Map (GMODIN) was originally produced to provide developers and planners with infrastructure and housing related information across Greater Manchester on a single, easily accessible map.

By drawing upon a range of public and private sector data, including data on flood risk areas and critical infrastructure, this work also benefits Greater Manchester in other aspects of disaster risk management, including through the development of emergency plans and live use of digital maps during emergency response.

<https://mappinggm.org.uk/gmodin/>

Priority 3 - Leadership: Shaping resilience within Greater Manchester

Themes

Governance: Building on the governance structures and partnership working of the Greater Manchester Resilience Forum to coordinate and drive resilience building activities

Shaping: Shaping and influencing resilience agendas across Greater Manchester, nationally and internationally to make them relevant and supportive to Greater Manchester's communities

Outcomes: Ensuring that the delivery of the Resilience Strategy represents value for money and improves outcomes for people in Greater Manchester

Greater Manchester is recognised for its strong leadership and strong communities. We are willing to do things differently and these qualities have put the city-region at the forefront of devolution.

Building on over a decade of work, the multi-agency, cross-sector Greater Manchester Resilience Forum will continue to provide the backbone for our wide-reaching, flexible resilience network, spearheading the resilience agenda. This will require continued engagement with:

- Other governance structures in Greater Manchester
- Cross-border and other city-region/large urban Local Resilience Fora
- National government including MHCLG Resilience & Emergencies Division as well as Cabinet Office and Lead Government Departments
- International partners including .through the UN Office for Disaster Risk Reduction, the Resilient Cities Network and the Counter-Terrorism Preparedness Network

We will continue to work with a range of stakeholders, locally, nationally and internationally, to encourage and support new ideas to shape our practices.

Case Study 1: Building on the governance structures and partnership working of the Greater Manchester Resilience Forum to co-ordinate and drive resilience-building activities

When Covid-19 first emerged as a global risk, Greater Manchester Resilience Forum established Greater Manchester's multi-agency command and control structures to oversee the response. These include a Recovery Co-ordinating Group which has authored a one-year Greater Manchester Living with Covid-19 Resilience Plan.

The plan considers the impacts arising from Covid-19 and sets out actions to be taken over 12 months to support Greater Manchester's people, places and businesses to build resilience to further outbreaks of the virus or other emergencies, support Greater Manchester to rebuild and develop our economy and society, and to respond to inequalities revealed or exacerbated by Covid-19.

The Living with Covid-19 Resilience Plan provides a bridge between the existing Greater Manchester Strategy and its refresh, which is due to take place in 2021.

Case Study 2: Shaping and influencing resilience agendas across Greater Manchester, nationally and internationally to make them relevant and supportive to Greater Manchester's communities

Greater Manchester, together with other cities from across the world, helped the UN Office for Disaster Risk Reduction to launch Making Cities Resilient 2030 (MCR2030) in early 2021. The successor to the Making Cities Resilient programme, this is a unique cross-stakeholder initiative for improving local city resilience. Through a 3-stage roadmap to urban resilience it will provide resilience-building tools, enable access to knowledge and help with monitoring and reporting progress.

Greater Manchester, as a member of MCR2030's European Steering Committee, will be in a position to shape the work of this initiative, drawing on the approaches and resources on offer, whilst also ensuring MCR2030 meets the needs of city-regions such as ours.

Case Study 3: Ensuring that the delivery of the Resilience Strategy represents value for money and improves outcomes for people in Greater Manchester

As we rebuild our economy and society in Greater Manchester following the crisis caused by Covid-19, Greater Manchester is looking to use social value to tackle inequalities and make the things that we do, good, fair and sustainable. The Social Value Framework encourages every organisation in Greater Manchester to carry out its primary activity, whilst considering the following 6 priorities:

- Providing the best employment that you can
- Keeping the air clean in Greater Manchester
- Creating the employment and skills opportunities that we need to build back better
- Being a part of a strong local community
- Making your organisation greener
- Developing a local, Greater Manchester-based and resilient supply chain

A Greater Manchester Social Value Network (<https://gmsvn.org.uk>) has been established to encourage organisations in every sector to implement the Framework.

Priority 4 – Place: Being ready for future challenges

Themes

Economy: Using a resilience lens to enhance our economy

Urban Growth: Ensuring a resilient built environment – planning for resilient urban growth

Natural Environment: Protecting and promoting the resilience value of the natural environment

Funding: Leveraging funding to make us more resilient

Greater Manchester is a city-region that is undergoing significant change including an evolving economy, population growth and the need for new housing, changing demands on infrastructure, and the impact of changing climate on our natural environment. To be a resilient place means that we must be prepared for the consequences of these changes and, where possible, shape our future to improve our resilience.

Although recent growth and diversification have strengthened the city-region's economy, it remains susceptible to acute shocks that can cause sudden disruption and chronic stresses that can hamper economic growth. Examples of shocks that caused substantial financial damage include the loss of a significant portion of our industrial base during the 1970s, '80s and '90s, the global financial crisis of the late 2000s, and most recently the economic impacts of measures to control the spread of Covid-19.

Our growing population and changing economic and societal needs mean that we need to build new homes and develop new infrastructure, whilst at the same time ensuring that the homes, businesses and infrastructure that we currently have are resilient to both shocks and stresses.

Greater Manchester's plans for future land use and development, together with the Greater Manchester Infrastructure Framework recognise that approaches to land use, development, the built environment and critical infrastructure will have a major

impact on the resilience of the city-region, with the potential to both create new risk as well as increase resilience.

Equally, the natural environment is integral to all aspects of life. Whilst Greater Manchester's landscape is predominantly urban or high-density urban, it is also home to a wealth of natural habitats and varied wildlife, including moorlands, wooded valleys, agricultural land, urban parks and suburban gardens.

The natural environment delivers against several basic needs and drivers for a resilient city-region whilst having the potential to protect us from acute shocks such as floods. A damaged environment can reduce our resilience by exposing us to increased risk resulting from climate change and environmental degradation. Urban resilience is, therefore, reliant on a healthy environment and how we use it to mitigate these risks.

Case Study 1: Using a resilience lens to enhance our economy

Our approach to recovery from large-scale shocks is underpinned by the Greater Manchester Strategic Recovery Guidance which provides guidance on considering, amongst other topics, restoration of the economy.

We have agreed a specific Greater Manchester Economic Shock Response Plan which describes the response arrangements of partner agencies to an economic shock or other incident which causes significant job losses and hardship within Greater Manchester.

The plan offers a flexible and scalable framework setting out core principles and components needed to form the platform from which responses will be coordinated and delivered, as well as providing options and capabilities which may be called upon depending on the scale and nature of the economic shock. This includes arrangements to draw upon expertise to provide vital advice and support to businesses.

Case Study 2: Promoting a resilient built environment – planning for resilient urban growth

Our ambition is to encourage resilience to be considered in all building projects to avoid creating new risks, reduce existing risks and mitigate residual risks. We have been using a Project Scan Tool from the Resilient Cities Network to identify the resilience challenges and opportunities of projects. One of its first uses was in the planning process to upgrade our water infrastructure.

To meet the increasing water demand of our rapidly growing urban population United Utilities, the water utility provider for much of Greater Manchester, has been upgrading its core infrastructure including its aqueduct system. This transports potable water 134km from the Lake District to 1.5 million people within the city-region.

As part of the upgrade process, several options were drawn up with each option varying in cost, ability to address shocks and stresses, and the level of service disruption. United Utilities recognised the implications of this project for Greater Manchester's overall resilience and saw an opportunity to ensure the project delivered resilience value through use of the Project Scan Tool to assess the resilience benefits of each option.

Case Study 3: Protecting and promoting the resilience value of the natural environment

As part of the natural environment trees offer resilience benefits such as providing cooling during heatwaves and intercepting rainfall to reduce flooding; locking away carbon which is essential if we are to address climate change; helping to create safer places by preventing access of unauthorised vehicles to pedestrian and public places; addressing air pollution; contributing to health and mental wellbeing; creating habitats for wildlife and enabling greater biodiversity.

Within Greater Manchester, City of Trees brings communities, organisations and companies together to revitalise the environment. This includes planting 3 million trees - one tree for every person living in Greater Manchester - and bringing 2,000 hectares of unmanaged woodland back into use for the community.

City of Trees has also produced, 'All our Trees, a Tree Strategy for Greater Manchester' containing maps that demonstrate where tree planting can help address single and multiple resilience issues such as flooding, air quality, the urban heat island effect and habitat fragmentation.

Case Study 4: Leveraging funding to make us more resilient

Extreme weather events are becoming an increasing part of urban life and Greater Manchester is seeing these hazards evolve and intensify as both climate and urban areas change.

The IGNITION project is a ground-breaking project that aims to develop innovative financing solutions for investment in Greater Manchester's natural environment. This investment will help to build the city-region's ability to adapt to the increasingly extreme impacts of climate change. It is estimated that Greater Manchester requires a 10% uplift in urban green infrastructure to adapt to the projected climate change impacts of flooding and overheating and to increase its climate resilience by 2038.

Working with nature, solutions such as rain gardens, street trees, green roofs and walls and the development of green spaces can help to tackle socio-environmental resilience challenges including an increase in flooding events, water security, air quality, biodiversity and human health and wellbeing.

The IGNITION project, backed by €4.5 million from the EU's Urban Innovation Actions initiative, brings together 12 partners from local government, universities, NGOs and business. The aim is, by April 2022, to develop the first model of its kind that enables major investment in large-scale environmental projects which can increase climate resilience.

Priority 5 - Responding: Sustaining effective preparedness, response and recovery from emergencies

Themes

Collaboration: Assessing the risk of civil emergencies through multi-agency collaboration

Preparedness: Developing plans and capabilities to enable effective response and recovery following emergencies

Training: Designing and delivering multi-agency training and exercising to improve responders' awareness and skills, and to validate plans

Information: Providing the public with information and guidance and supporting community resilience to increase emergency preparedness

Learning: Identifying and utilising learning from incidents to strengthen response and recovery arrangements

A resilient city-region is one that seeks to reduce the risk of acute shocks occurring through a range of measures, including limiting exposure to hazards and reducing vulnerability. A resilient city-region is also one that is prepared for the emergencies that do occur, having the ability to respond in a way that not only addresses the consequences caused but also takes the opportunity to identify learning from the crisis, to reduce future risk where possible and to build back better.

Greater Manchester, like other areas in the UK, prepares for emergencies by using the model of Integrated Emergency Management (IEM) which has 6 steps:

- Anticipation
- Assessment
- Prevention
- Preparation

- Response
- Recovery

Using this approach the preparation for, response to, and recovery from emergencies focuses on the consequences and wider impacts of events rather than solely on their causes.

Preparation for emergencies is led by the Greater Manchester Resilience Forum. Established over a decade ago as a requirement of the Civil Contingencies Act 2004, the Greater Manchester Resilience Forum (GMRF) has continued to lead multi-agency emergency planning across the city-region ever since. Planning for shocks is achieved through multi-agency joint working, co-ordinated through a clear, shared structure.

Our experience shows that existing relationships and partnerships provide a fundamental foundation for effective response and recovery. In particular, these enable a good level of knowledge about the strengths and capabilities of organisations from the outset of any emergency response, as well as a clear direction of travel for longer-term coordination and the provision of any support required.

This partnership working underpins not just planning and preparing for emergencies, but also the deployment of resources and the protocols used in responding. Within the UK and Greater Manchester, the Joint Emergency Services Interoperability Principles (JESIP) guide the partnership response.

Case Study 1: Developing plans and capabilities to enable effective response and recovery following emergencies

Following the Manchester Arena attack in 2017 the Mayor of Greater Manchester made it clear that the experiences of bereaved families, the injured and others directly affected, together with their need for emotional support, should be at the heart of service delivery and learning.

The Manchester Resilience Hub was launched on 17 July, seven weeks after the attack. Staffed by clinicians from child, adolescent and adult mental health services the Hub provides mental health care and treatment, using a customised web-based clinical system.

Building relationships with families allows the Hub to check in with them regularly, recognising that strengthening a family's day-to-day support structure is crucial. Learning from the Hub has also demonstrated that referring initially to the NHS is the best safeguard we have in ensuring appropriate, evidenced help is available to those affected.

This and wider learning have now been built into Greater Manchester's Psychosocial Strategic Response Plan.

Case Study 2: Developing plans and capabilities to enable effective response and recovery following emergencies

Greater Manchester runs a comprehensive training and exercising programme to help emergency responders to practice their skills and to validate emergency plans.

Exercise Triton II is an example of one of these exercises. Held in 2016 it was one of the largest live exercises of its kind ever held in the North West, involving over 35 organisations. The complex scenario used in the exercise was designed to test how emergency services and other partners including the military, local and central government, health services, utility companies and voluntary agencies were equipped to tackle a major emergency characterised by high rainfall, river flooding and the breaching of a reservoir dam.

Although incidents like the one exercised in Exercise Triton II are unlikely, the events at Toddbrook reservoir in 2019 proved the necessity of preparing for these eventualities to ensure Greater Manchester residents are protected as far as possible.

Case Study 3: Providing the public with information and guidance and supporting community resilience to increase emergency preparedness

A well-informed public is more resilient, better able to respond to an emergency and to minimise its impact. In the Covid-19 pandemic a multi-agency approach has been used to communicate essential public health advice to both members of the public and local businesses with an expert communications group established to coordinate messages.

A wide variety of communication methods have been used including a weekly public live broadcast with the Mayor of Greater Manchester.

The communications group has also been seeking to understand our communities' concerns and needs. This can help to ensure any communications recognise the perceptions that may exist within different sectors of society.

Behavioural insight research, conducted through interviews and polls, has allowed us to test and improve our communication ensuring we give people the best information possible in ways most suited to them.

Case Study 4: Identifying and using learning from incidents to strengthen response and recovery arrangements

Risks and threats evolve and, if we are to be prepared for unexpected shocks, sharing learning from incidents that do happen is crucial.

Greater Manchester is a member of The Counter-Terrorism Preparedness Network (CTPN) together with London, Paris, Barcelona, Rotterdam and Stockholm. The Network is supported by several academic partners.

This Network has been established to harness the benefits of collaboration between domestic and international partners to identify lessons, share experience and develop arrangements for preparedness and societal resilience in relation to terrorism. It serves as a knowledge exchange between subject matter experts to highlight notable practice and present a series of recommendations to influence the arrangements of participating cities.

Summary and Conclusions

Part 2 has detailed the priorities and themes that we have determined to be important for building upon Greater Manchester's resilience. They are specific enough to allow us to focus on the key activities that must occur, whilst also being broad enough in scope to allow for future changes and evolving risks over the coming decade.

Our priorities start with our people and our communities who are at the heart of our approach and this person-centred approach runs right through everything we want to do.

We need to learn, develop and discover new ways to be resilient to 21st-century risks, ensuring we capitalise on new technology and the wealth of academic expertise that exists in our city-region.

We need to ensure our governance structures are up to the demands of these resilience challenges and that activity is appropriately funded.

We need to build and develop our places in a resilient manner, support our economy, and push through changes that allow the natural environment to flourish and to protect the places in which we live.

And we need to ensure that we respond and recover from emergencies in the best possible way, minimising human suffering, environmental degradation, and economic losses where at all possible.

We have illustrated each of the themes within our 5 resilience priorities with recent and ongoing examples of our work to demonstrate the kinds of activity we wish to see over the next ten years. Each year we will produce an action plan to set out where our focus will be against each of the themes.

It will be through the drive and determination of the diverse communities and stakeholders that make up Greater Manchester that we will be able to look back in ten years and be proud of our achievements.

We hope that this Strategy provides the roadmap that enables Greater Manchester, in this changing and complex world, to create one of the most resilient places where everyone can grow up, get on and age well together.

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