

**GREATER MANCHESTER SPATIAL FRAMEWORK**

**DRAFT TOPIC PAPER 6**

**INFRASTRUCTURE**

**October 2010**

## **INTRODUCTION**

The Manchester Independent Economic Review (MIER) and the Greater Manchester Strategy (GMS) identify Greater Manchester as a highly connected and coherent economic geography which is well placed to build more effectively on its agglomeration and create a virtuous cycle of long term sustainable economic growth. Infrastructure is central to delivering the city region's ambitions of growth, regeneration and enhanced levels of economic performance.

Greater Manchester is an agglomeration; - a built-up area which is a concentration, albeit uneven, of unique and connected neighbourhoods and employment centres. It is this density, and the variations within it, which provides such opportunities, but which also presents specific challenges in terms of infrastructure capacity. According to the MIER and other economic literature, the potential benefits of agglomeration include:

- Better and more cost-effective utilisation of common infrastructure (e.g. utilities, roads, public transport);
- Availability and diversity of labour and consumer markets;
- Easier access for firms to their respective suppliers and consumers;
- Increasing opportunities for knowledge transfers and innovation;
- Environmental benefits via a reduction in urban sprawl and more dense and energy-efficient built form and community design.

However, these benefits will only be realised if, along with other preconditions, we can ensure that the supporting infrastructure is in place to enable growth to happen, in order to:

- Significantly improve transport connectivity into and within the city region;
- Expand and diversify the city region's economic base through digital infrastructure;
- Achieve a rapid transformation to a low carbon economy; and
- Create quality places to meet the needs of a competitive city region.

Infrastructure is critical to the delivery of the GMS. If Greater Manchester fails to move this issue forward in a co-ordinated and expeditious manner there is a significant risk that future growth and regeneration will be constrained.

Our aim through the GM Spatial Framework is to recognise the connections and interdependencies between different geographical areas and to guide and focus investment and infrastructure provision to areas where it can have a positive impact beyond the purely local or neighbourhood level. It will draw from district core strategies and concentrate on issues and proposals which are important for the conurbation as a whole and may require a joint commitment, for example to secure necessary supporting infrastructure.

## **SCOPE**

This paper focuses on the infrastructure necessary to deliver the Greater Manchester Strategy. This paper also suggests working arrangements to ensure that infrastructure is given the appropriate priority and addressed in an integrated and co-ordinated way.

Although energy and transport are important elements of strategic infrastructure, these are being addressed through separately, so are not considered within this report. Waste infrastructure is also important and this issue is being addressed by the Greater Manchester Waste Disposal Authority and the Joint Waste Development Plan Document (DPD).

The scope of this paper is therefore limited to:

- Strategic infrastructure issues;
- Water – supply, waste water and flood risk;
- Green Infrastructure, and,
- Digital.

As already identified, infrastructure planning is a topic of critical cross-cutting importance to Greater Manchester as a whole and provides the support services that are necessary to create quality places and ensure sustainable and long term economic growth. However, it is not simply about the provision of new infrastructure, Greater Manchester also has to deal with existing infrastructure. Existing infrastructure has many challenges, capacity, resilience, distribution and age. Therefore, it is also about developing a strategy which can deliver an integrated and resilient infrastructure system.

Traditionally, infrastructure has been provided to support growth on a site by site basis rather than area or catchment wide. Infrastructure now needs to play a role and respond to the challenges of both climate change and the need for a low carbon economy and across much wider functional geographical areas.

GM has undertaken a significant amount of collaborative work in the area of infrastructure, in particular related to energy (outlined in the low carbon topic paper), flood risk, green infrastructure, digital and transport. Much of this work is still ongoing and the outcomes will inform further iterations of the GMSF when they become available.

Planning obligations are an important infrastructure delivery mechanism and are an accepted part of the planning system. The Coalition Government is committed to the principle of expecting developers to make a contribution towards the additional infrastructure needed to make developments sustainable and will introduce a single unified local tariff applicable to all residential and non-residential development (even a single dwelling), but at graded rates depending on the size of the development. Each local planning authority will set its own local tariff rates and will publish them in its local plan. Until the details of how tariffs will work are available from Government, planning obligations have been excluded from this paper.

## **STRATEGIC AIMS**

Greater Manchester has a spatial form which is basically well structured and which can be further enhanced by careful location of new development and supporting investment in infrastructure. The conurbation is currently supported by a network of infrastructure assets that sustains our quality of life, protects the environment and enables effective movement across the conurbation. This is provided on a functional, geographical basis and reflects catchments, networks, and natural resources, areas of demand and sources of supply. It does not follow administrative boundaries although there may be neighbourhood and site level issues.

GM has recognised the need to work collaboratively on this issue for some time – critical infrastructure was one of the ‘building blocks of the Multi Area Agreement in 2008. We have two strategic aims:

- to provide the right infrastructure in the right place to support GM’s growth ambitions;
- to respond to the challenges of both climate change and the need for a low carbon economy.

## **STRATEGIC OBJECTIVES**

As Greater Manchester grows and adapts to new challenges, we need to ensure that we have the necessary infrastructure to support our aspirations and objectives. By adopting an integrated approach to infrastructure planning we will:

- Develop a coordinated, integrated and agreed public and private sector understanding of the implications of growth, resource constraint and climate change on the long term viability of infrastructure provision.
- Develop a strategic view on how physical infrastructure developments can be integrated with economic growth ambitions and greater social inclusion.
- Develop infrastructure solutions that deliver our aspirations for carbon, water and waste neutrality, and human and materials movement into and across Greater Manchester, and integrate these within new developments and growth hubs.
- Establish a transparent process for collaboration across Greater Manchester and for engagement with infrastructure providers.
- Respond to existing and new challenges through innovation and enterprise and reshaping and enhancing existing infrastructure assets.
- Invest in additional infrastructure capacity in a planned, integrated and holistic way.

## KEY ISSUES AND CHALLENGES

Our work to date has identified a number of key issues and challenges, which are not unique to Greater Manchester, but which need to be addressed in order to achieve our strategic objectives:

- As with many other cities GM has to deal with existing infrastructure as well as the provision of new infrastructure. Existing infrastructure has many challenges, for example, age, capacity, resilience and distribution and needs to be managed to ensure that it is sufficiently robust to cater for growth.
- Different parts of GM will experience different pressures according to their geography, history, population characteristics and economic growth and there is a clear need to bring spatial planning much closer to infrastructure planning to improve the development of an integrated strategy and approach.
- Within GM growth will be accommodated through intensification and infill rather than urban expansion. Infrastructure exists in many cases but in terms of its location, scale, quality and capacity it may not be appropriate to fully support the requirements of growth or climatic risk. Such requirements may be cross cutting and infrastructure may need to perform multiple roles which provides both opportunities and challenges.
- Dense areas make renewable / low carbon energy systems such as heat networks more viable but conversely increasing intensification and density increases demand for services and may require new infrastructure such as electricity sub stations, enhancements to the sewer network or create pressures on green space or flood risk management. An informed and planned approach to infrastructure provision and investment is required to ensure that the full potential of infrastructure assets can be realised, new or enhanced provision appropriately located and any 'pinch points' in infrastructure addressed.
- Delivering infrastructure efficiently at the local scale requires collaboration through a strong spatial framework. Within this context the GMSF can set out a long term framework identifying the location of sub regional economic opportunities, and provide guidance and certainty to both utility companies and developers in their forward planning.
- Interventions and investments are needed both within the regional centre and in the wider connecting networks, to increase capacity in systems that support regional agglomerations.
- Strategic planning of infrastructure need and opportunity is needed to target interventions, maximise effectiveness and functionality and to

ensure that strategic relationships or negative side effects are avoided e.g. risks being passed on or heightened.

## **EFFECTIVE INFLUENTIAL ENGAGEMENT**

Much, if not most, of our work in this area requires us to develop and sustain effective working relationships with infrastructure providers, in order to influence their investment frameworks and processes to support the delivery of Greater Manchester's growth and regeneration priorities. This is a challenging new agenda requiring us to develop new skills and capacity within our own organisations, and to understand the business and technical imperatives which drive, or constrain, the activities of other organisations. Some specific issues are highlighted below:

### **(i) Industry imperatives and constraints**

- The deployment of integrated, cost effective, low carbon infrastructure such as district heating, water harvesting and sustainable drainage systems is recognised as having an important role in meeting the challenges of delivering sustainable growth and resilient built environment. However, there is currently a gap between our aspirations and what the industry is geared up to deliver.
- It is acknowledged<sup>1</sup> that driving down costs through 'sweating assets' whilst beneficial to shareholders and the customers (i.e. increased profits, investor confidence and reduced bills), makes longer term and strategic planning of infrastructure to support growth and climate change adaptation more difficult. Competing demands on scarce finance require financially viable solutions, as well as technically robust models and, in the case of district heating schemes the model will usually require some form of public sector investment and / or support.
- The regulatory framework for the utilities industry and many forms of infrastructure such as electricity, telecoms, gas water (potable and waste water) is highly complex and at times esoteric. There is a need for greater collaboration and a common language, between planners, engineers and developers as well as infrastructure providers.

### **(iii) Building our own skills and capacity**

- The planning and delivery of an integrated strategy is a complex and new challenge. Greater Manchester will need new skills, knowledge, understanding and expertise to close the gap in order to develop, co-ordinate and communicate the delivery of a resilient infrastructure system.

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<sup>1</sup> Ofgem (2010), Project Discovery: Options for Delivery Secure and Sustainable Energy Supplies.

- New skills are required to understand the impact of climate change, waste neutrality, decentralised energy, carbon reduction targets and socio-technological infrastructure systems.
- New standards for development projects including, for example, water neutrality, climatic risk, decentralised energy and carbon reduction targets require innovation and new approaches to delivery.

## **INFRASTRUCTURE COMPONENTS OF GMSF**

### **WATER**

This section is divided into water supply and quality waste water and drainage, and flood risk management.

#### **WATER SUPPLY**

Water infrastructure covers the supply of potable water and treatment of foul water. Within Greater Manchester this service is provided by United Utilities. Water supplies to the majority of the region (comprising 95% of the total population) are managed in a fully integrated manner through a single resources zone (Integrated Resources Zone). The Integrated Resources Zone serves people living in South Cumbria, Lancashire, Greater Manchester, Merseyside, most of Cheshire and a small part of Derbyshire.

The integrated zone is centred upon the major aqueducts which deliver water from the Lake District to South Cumbria, Lancashire and Greater Manchester and from mid-Wales and the River Dee to Cheshire and Merseyside. There are connections from the aqueducts to all towns and centres of population in these areas, so that local sources (impounding reservoirs and boreholes) can be operated in a fully integrated manner with the major regional sources. Following the 1995-96 droughts, a new strategic pipeline was constructed to link the Merseyside and Manchester supply systems. This will be supported in 2012 by a new bi-directional pipeline known as the East – West pipeline that will link Greater Manchester to Merseyside.

A process exists for water resource management over a 25-35 year period to guide production of the Environment Agency and United Utilities water resource Management Plan (WRAP) and subsequent water company business planning and investment processes. These processes and plans are reviewed every 5 years so will take account of investments, emerging evidence, economic growth and demand management interventions as well as increased understanding climate change impacts.

Overall our understanding from dialogue with United Utilities (UU) is that waste water supply and treatment should not be an issue for Greater Manchester in the short term (next 5 years), although issues may arise in the future (10 years), unless water resources are managed sustainably and demand reduced.

Environmental water quality relates to water bodies such as lakes and rivers. Water quality can vary significantly due to different environmental conditions, ecosystems, and human uses. Toxic substances and high populations of certain microorganisms can present a health hazard for non-drinking purposes such as swimming, fishing, rafting, boating, and industrial uses. These conditions may also affect wildlife which use the water for drinking or as a habitat. In GM generally, water quality has improved as evidenced for example by the increasing fish population in Salford Quays however it is essential that improvements are sustained.

## **IMPLICATIONS OF THE WATER FRAMEWORK DIRECTIVE**

The Water Framework Directive is an important piece of legislation concerning the need to protect and improve the water environment and describes how this should be planned in an integrated way. It aims to protect and improve the 'status' of rivers lakes, groundwater, estuaries and coastal waters, collectively referred to as 'water bodies'.

The first River Basin Management Plans (RBMPs) were published in December 2009 and established the current status of water bodies, identified the significant water management issues within each RBD and set out the management measures required to meet the objectives of the WFD. The RBMPs will be reviewed and updated on a 6-year cycle.

Whilst economic growth can contribute to an improved water environment, it can also have an adverse impact. As a result, spatial planners are having to become increasingly aware of the fundamental need to manage development pressure against a background of challenging water-related issues and constraints.

For example, growth locations when proposed, should be assessed against:

- available water resources;
- existing capacity for sewage treatment;
- the potential environmental impacts discharges of treated effluent might have on receiving water bodies; and
- How any these changes in land use and new developments could affect ecological and chemical quality and physical characteristics of water bodies.

The GMSF therefore represents the framework by which spatial planning activities in Greater Manchester will be able to play their role in helping achieve the requirements and objectives of the WFD. As a result, the development of the GMSF will require early engagement and discussions between AGMA, the Environment Agency and United Utilities to help develop an understanding of what is needed in terms of water services infrastructure and any environmental capacity issues when planning future development locations.

This will ensure the GMSF and its principles influence the spatial interventions necessary to ensure they do not create adverse pressures on the water environment that could compromise our ability to meet WFD objectives.

## **WASTE WATER AND DRAINAGE**

Waste Water within Greater Manchester is treated at 48 Waste water Treatment Works (WWTWs). Parts of Wigan are served by the Warrington WWTW. Five WWTWs serve more than one individual district, these are:

- Oldham - Oldham and Rochdale,
- Rochdale - Oldham and Rochdale,
- Davyhulme - Manchester, Rochdale, Stockport, Tameside and Trafford
- Bolton - Bolton, Bury and Salford and
- Bury - Bury and Rochdale.

Overall our understanding from dialogue with United Utilities (UU) is that waste water treatment should not be an issue for Greater Manchester in the short term (next 5 years), although issues may arise in the future (10 years) unless measures are taken to remove surface water from the sewer network.

## **FLOOD RISK MANAGEMENT**

Flooding is a natural process and does not respect political and administrative boundaries; it is influenced principally by natural elements of rainfall, geology, topography, rivers and streams and man made interventions such as flood defences, roads, buildings, sewers and other infrastructure. As was seen in the recent past in many parts of the country, flooding can cause massive disruption to communities, damage to property and possessions, loss of critical infrastructure and services, and even loss of life.

The risk of flooding from rivers, surface water, sewers, groundwater, canals and reservoirs has been explored for Greater Manchester within the Sub Regional Strategic Flood Risk Assessment (2008) and district level assessments (2009 – 2010). It is one of the highest rated risks in the Greater Manchester Community Risk Register which explores the risks of different types of emergencies occurring in Greater Manchester.

Major river catchments drain from the Pennines into the sub-regional centre and then into the Manchester Ship Canal. These areas coincide with the main urban areas across Greater Manchester and in particular the regional centre.

Through the work on SFRA's and in planning an emergency response, the Greater Manchester districts, the Environment Agency and United Utilities have established partnerships and begun the process of working in a consistent manner, across boundaries, to deliver water management solutions. This is also reflected in current collaborative projects to develop a GM Surface Water Management Plan (SWMP), and to assess the capacity of the AGMA local authorities and their partners to meet the requirements of the Flood and Water Management Act. These projects are developing a

comprehensive evidence base to support future decisions in spatial planning; investment in infrastructure resilience, preventative work to mitigate flooding risk and strengthening of the emergency response.

Within GM regeneration and economic priorities are frequently co-located. There are also a high number of reservoirs both within Greater Manchester itself and this could impact on the conurbation, together with canal systems and a sewer network dating back to Victorian times. Directing new development away from existing communities is not a viable or sustainable option.

Providing high-quality development that is economically and environmentally sustainable in the face of existing risk and climate change is a significant challenge. Therefore, a range of actions to manage flood risk will be necessary, some of these actions will be structural and involve new infrastructure, whereas others will involve partnerships to share data and direct resources to key hot spots. Additional flood risk management will be necessary to serve existing communities and new development within Greater Manchester.

## **GREEN INFRASTRUCTURE**

Green Infrastructure (GI) is essentially the network of open space and water features which comprises the 'natural' outdoor environment around us. It provides a strategic network of multi-functional green and water space which supports natural and ecological processes and delivers a broad range of functions for sustainable growth and communities and achieving quality places.

Key GI functions in Greater Manchester include projecting a positive image and sense of place, flood risk management, accessible landscapes for tourism and countryside recreation, providing active travel networks, conserving and promoting biodiversity, carbon storage and reducing urban heat stress, managing pollution and supporting health and well-being.

A network of green spaces, water features and corridors across Greater Manchester performs this multi functional role at different spatial scales for the entire City Region, within and between districts and down to the neighbourhood scale. Small, neighbourhood scale assets and interventions can have a wider role through being part of a bigger spatial network or through their cumulative value. It is important to have an approach and framework for GI planning which captures the full spatial and multi functional value of GI for Greater Manchester's strategic infrastructure needs and growth agenda but which also serves valuable local functions.

Greater Manchester is developing a strategic approach to GI planning aligned to other infrastructure planning activities e.g. for flood risk management, climate change adaptation and biodiversity. A report 'Towards a Green Infrastructure Framework for Greater Manchester' (AGMA, TEP 2008) sets out strategic GI functions for Greater Manchester and maps the location of key assets against these strategic functions.

The framework provides a spatial illustration of the core strategic connectivity and relationships within and between districts based primarily on Greater Manchester's rivers and canals and the wider countryside including the South and West Pennine moorlands and wetlands / flashes. It illustrates the strategic relationship between delivering growth in key locations such as the regional centre and the existing Green Infrastructure network. The framework demonstrates that for particular pinch points (i.e. areas where provision of Green Infrastructure is limited) additional Green Infrastructure is required to support economic growth, regeneration and / or existing communities.

Within this strategic spatial framework, AGMA has carried out further work at different spatial scales to illustrate and examine the growth support functions of GI including that of urban green space networks within and between strategic corridors.

AGMA with support from stakeholders such as Natural England and the Environment Agency is currently working towards a City Region GI Strategy setting out objectives and priorities to support low carbon economic growth and housing growth, address climate change and reduce carbon, manage flood risk and deliver health and well being benefits for communities. The Strategy will be informed by the GMS and related activities and a wide range of existing and emerging evidence at district and GM level including district core strategies, green space surveys, prioritisation of cycling and walking and the use of public rights of way, strategic flood risk assessments and surface water management plans, community forest plans and the GM Tree Audit.

In conclusion, a cross cutting approach to GI planning and delivery is necessary to ensure that growth and regeneration are supported by a robust network of high quality assets providing an appropriate range of related functions. Green assets must be provided, enhanced and managed in areas of priority informed by the needs of Greater Manchester's objectives for growth, regeneration, health and quality places. The relationship between strategic and local GI assets and actions in helping to deliver Greater Manchester's growth priorities and address issues such as climate change adaptation and flood risk management needs to be understood and embedded in development and regeneration projects.

## **DIGITAL COMMUNICATIONS INFRASTRUCTURE**

The provision of world-class digital communications infrastructure, particularly next-generation broadband, is a strategy priority for Greater Manchester, with the Greater Manchester Strategy stating a need to: "Develop a clear and funded programme for the Manchester city region to pioneer provision of, and applications for, the next level of Next Generation Broadband (NGB)".

The Government has confirmed the importance of digital communications to the UK, pledging: "to deliver the best superfast broadband network in Europe by 2015" (Department for Culture, Media and Sport Structural Reform Plan, 15 July 2010, Departmental Priority 4).

The full benefits of digital communications are realised by providing as close to universal connectivity as possible – in terms of households, businesses, and other organisations. The Government has made a Universal Service Commitment to provide basic broadband (of 2 Mb/s) to every household within the lifetime of this Parliament.

The two providers in Greater Manchester – BT and Virgin Media – are currently making major investments in next-generation broadband. The majority of this investment is rolling out fibre-optic infrastructure to street cabinets (fibre-to-the-cabinet (FTTC)), using existing copper telephone lines or coaxial cable to provide the final connection to premises.

The operators have prioritised investment according to where the greatest commercial returns can be realised. Mapping by Analysys Mason for NWDA suggests that by 2012, investment in FTTC by incumbents will cover at least 90 % of Greater Manchester's residential and non-residential premises, with the main gaps in coverage around the rural periphery of the conurbation. In addition, BT has announced that 25 % of their investment will rollout fibre all the way to premises, providing even higher levels and quality of connectivity.

Current UK government policy is to explore the options for stimulating private sector investment and/or intervention to ensure that the 'final third' of premises across the UK that will not get next-generation broadband through commercial investment get access.

The aspiration is to position Greater Manchester as a competitive European location for connectivity, whilst also helping the public sector operate more efficiently and effectively. By providing high-level connectivity currently only found in a small number of global cities, Greater Manchester can position itself as the location of choice for growth industries looking to exploit next-generation broadband.

In order to maximise the benefits of infrastructure investment, Greater Manchester is also exploring with private sector partners the options for European funding to stimulate demand and take-up amongst end users, which itself should further encourage private investment.

If as a country we are going to realise the ambition to have Europe's best superfast broadband network, then as the UK's second city for economic growth, the majority of GM's digital connectivity should be fibre-to-the-premises by 2015. This will also prevent the need for a further round of investment to upgrade networks to full FTTP a few years after the initial investment in FTTC.

To deliver widespread FTTP will require additional investment in connectivity than that forecast through current commercial investment plans. Greater Manchester wishes to build upon the "Next Generation Digital Infrastructure pilot project" in the Corridor area, which is currently being implemented by Geo. This pilot is a 'test-bed' deployment of next-generation broadband, based on fibre to the premises and advanced wireless (linked to the fibre), to create an open-access network that is open to all providers.

Options for connecting key employment sites and town centres across Greater Manchester (as already identified in existing strategies) are being

explored, looking to leverage private sector investment through the strategic use of public funds, such as Evergreen, and the reuse of public assets and contract opportunities. A long-list of sites for initial priority has been agreed by AGMA, however this will need to be reviewed once demand side studies looking at town centres and employment land have been finalised.

There is strong private sector interest in investing in next-generation broadband in Greater Manchester. The role of the public sector is to ensure that investment provides Europe-leading levels of connectivity, full open access, and connectivity to strategic locations in Greater Manchester. It is important that public investment does not crowd out private investment, but instead works collaboratively with the private sector to leverage net additional benefits for Greater Manchester.

## **Energy**

The priorities for action in respect of climate change and energy capacity are set out in the accompanying Low Carbon Topic Paper.

## **PROPOSED SPATIAL POLICY FRAMEWORK**

This section proposes an initial set of spatial principles to be developed and agreed through the GMSF to address infrastructure issues and challenges:

### **Spatial Principles**

- To move towards an integrated, systems-based approach to energy, waste, water, green infrastructure, transport and ICT;
- To encourage connections to neighbourhood infrastructure systems through the delivery of new development;
- To capture waste heat from intensive energy uses (e.g. data centres, manufacturing and energy generation) and supply to adjacent land uses (e.g. residential, office, leisure);
- To concentrate energy actions within key areas of opportunity (e.g. new development and retrofit within the same geographical area);
- To maximise interconnectivity between separate infrastructure systems (e.g. use of green space for food production, water management and biomass fuel supply; use of SuDs for building cooling);
- To use Sustainable Drainage Systems (SuDS) to deal with surface-water management and attenuation on or adjacent to development, without the need for public sewer connection;
- To ensure that cross cutting opportunities to deliver a range of priorities such as flood risk management, addressing climate change impacts and reducing carbon, low carbon energy, promoting tourism and recreation, increasing health and well being and increasing biodiversity are supported and delivered;

- To ensure that the opportunities for and potential of urban green networks and small scale interventions to deliver strategic GI functions are fully captured and maximised;
- Where green space is limited, to maximise use of green roofs, as an integral component of a SuDS system, to provide additional cooling, thermal performance, biodiversity, air quality and public health benefits;
- To focus interventions and investment strategies (including JESSICA and EVERGREEN) on the regional centre, town centres and pinch points relating to key growth areas;
- To direct the most vulnerable development and critical infrastructure to areas of least flood risk to reduce the need for additional infrastructure.

## **PRIORITIES FOR FURTHER WORK**

This section sets out some key actions for further collaborative work by Greater Manchester in the coming years:

### **Water Supply**

- To work with partners such as United Utilities, the Environment Agency and other stakeholders to ensure that growth and regeneration is supported by adequate water supply infrastructure and that this contributes to delivering the requirements of the Water Framework Directive;
- To understand and plan for the implications on water supply and distribution infrastructure arising from the location and timing of growth and development beyond 2015;
- To develop an evidence base to inform higher levels of demand management and the impacts of this on scheme viability. To use this evidence base to inform planning policy development in relation to increased water efficiency levels;
- To work with others, including the Homes & Communities Agency and the private sector to encourage exemplar projects to come forward on the ground which demonstrate best practice approaches to demand management;
- To work with partners to understand how the wider retrofitting of water efficiency measures and behaviour change can be achieved in moving the sub region towards the 130 l/h/d aspirational target;
- To examine the effectiveness of the current utility regulatory mechanism for the delivery of investment in water supply infrastructure to support the sustainable growth of Greater Manchester.

### **Waste Water and Drainage**

- To understand the implications of planned development for surface water drainage, particularly through the sewer network and the

solutions needed to manage the water quality and flooding impacts of this;

- To take a strategic approach to flood risk management, progress a GM Surface Water Management Plan (SWMP), building upon the findings of the local level Strategic Flood Risk Assessments<sup>2</sup> across Greater Manchester.
- To ensure this contributes to work to develop Greater Manchester's Green Infrastructure which can help manage sewer flood risk and impacts of runoff on the sewer network, its overflow system and diffuse pollution.
- To examine the effectiveness of the current utility regulatory mechanism for the delivery of investment in wastewater / sewerage and related flood risk to support the sustainable growth in Greater Manchester.
- To maintain the partnership and collaborative approach with EA and UU to bring about more sustainable water management at the development and community scale and deliver necessary investment in a coordinated manner.
- To work with UU to deliver AMP 5 projects and investments.
- To help implement other investments such as flood resilience at waste water treatment works that are at risk and public surface water sewer networks which may come forward through AMP 6 (2016 - 2020) and AMP 7 (2021 - 2025) investment, if necessary development will be phased development to coincide with AMP investments.
- To develop a Green Infrastructure strategy as part of the GMSF and progress the Surface Water Management Plan for Greater Manchester.

### **Flood Risk Management**

- Improve the extent to which new developments can stand up to flooding and work to introduce a system of strategic planning for surface water and sewerage systems;
- Protect more people by creating more, and improving the quality of existing, defences and other mitigation measures;
- Work with natural processes to manage flood risk - for example, by changing the way land is managed, and creating new wetlands and habitats that absorb water and prevent flooding;
- Plan ahead for flood risks, adapt to the effects of climate change and to other factors that make flooding more likely (such as new building development) and help others to do the same.
- Maintain the partnership and collaborative approach with EA and UU to bring about more sustainable water management at the development and community scale and deliver necessary investment in a coordinated manner.

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<sup>2</sup> Filling the data gaps in the Greater Manchester wide Level 1 SFRA, hybrid Level 2 SFRAs are being undertaken across Greater Manchester by districts (e.g. Bolton), or functionally linked clusters of districts (e.g. Bury-Rochdale-Oldham and Manchester-Salford-Trafford). A consistent approach and methodology is being used for the Level 2 SFRAs, which once completed will produce a coherent suite of Level 2 SFRAs covering Greater Manchester.

- Work with communities to strengthen their resilience to the consequences of flooding.

### **Green Infrastructure**

- Deliver a Greater Manchester GI framework which incorporates a strategic GI network ;
- Identify strategic GI need and interventions and ensure they are well targeted to support City Region priorities as expressed in the GMS and GM Spatial Framework;
- Maintain and extend a strong partnership approach to GI planning and delivery across AGMA districts and key stakeholders;

### **Digital Communication Infrastructure**

- Work collaboratively with the private sector to leverage private investment into Greater Manchester
- Create Europe-leading connectivity – provide full fibre-to-the-premises connectivity wherever viable
- Focus on key employment sites for initial rollout, but with high-speed coverage to all users being the ultimate aspiration
- Ensure all new developments are fibre-ready, by working with the private sector to provide ducting and connections into premises to significantly reduce the investment required to deliver FTTP connectivity
- Create open-access networks to maximise competition and choice for all users whilst creating opportunities for new service providers to develop
- Put in place demand stimulation measures
- When making all new public sector investments in infrastructure, procuring services, and delivering public services, consider the wider potential to leverage additional private sector investment in support of Greater Manchester’s strategic aims.