Review of water governance in Greater Manchester

DRAFT FINAL REPORT

to

Oldham MBC and the Natural Course project

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1. INTRODUCTION

1.1 BACKGROUND

There are significant future challenges - ecological, technological, social and political - facing the UK's water sector including climate change and the implications of Brexit (Robins et al. 2017). However, challenges also bring opportunities; the promotion of nature based solutions promises to not only manage flood risk, but to deliver water quality, biodiversity and health and well-being benefits. Within such a milieu, policy is promoting innovative water management solutions that cut across sectors and that deliver multi-functional benefits.

Coordinated, multi-level water governance and integrated catchment management are acknowledged as the main way of delivering innovation and joined-up strategies and solutions – as seen in the European Commission's (EC) Water Framework Directive (WFD) and UK government policy as affirmed in the recent 25-year Environment Plan (2018). However, recent experience shows that Water Framework Directive (WFD) aims of integration and coordination are still a long way off. In terms of flooding, the Pitt Review (2007) found that seventeen different types of organizations were involved in flood incidents, often with little coordination and lacking a common language. The situation has improved somewhat in ten years but there is a long way to go.

Water systems are likely to face growing challenges for the near future such as:

- climate change is projected to increase the incidents of extreme precipitation in the winter, and drought or heatwave in the summer, in the north-west of England;
- sea-level rise and saline incursion is projected for much of the nearby coastline, outside of Greater Manchester, but near enough to put pressure on land use and available resources for environmental management;
- new house building targets will put pressure on all available land, even sites that are at risk of flooding.
- austerity measures affect all public agencies and they may have to choose between maintenance and new investment;
- there are expert warnings that many floodplains are not fit for purpose, and that many native species are in terminal decline; and,
- Brexit could bring a rethinking of environmental standards and regulations, particularly where there are conflicts between agriculture, industry and water systems.

Critical to addressing these challenges is ensuring that the governance structures around water systems are robust enough (Hill, 2013). Governance takes place both formally, in designated organizations, and informally through partnerships, networks, lobby groups, with a growing role for active citizens. Any analysis of water governance also needs to reflect on the future challenges facing the water sector. There are a large number of water-related organizations, both within the sector and cross-cutting with other sectors. There is active academic and policy research into the nature of governance and the meaning of best practice, but at the same time recognition among practitioners that we need to learn more about the gaps, barriers and 'worst' practices.

Generally, it appears that water governance is a cross-cutting theme, which underpins a wide range of activities and sectors, with multiple scales and multiple actors. It calls for not only effective organizations, but also effective connections and partnerships between them. Therefore, water governance arrangements should be designed to suit this and make the best of it.

Brexit, the 25 year-Environment Plan and the general rethinking of environmental policy towards partnership approaches provide a window of opportunity for governance innovation. Greater Manchester (GM), possibly the leader of the devolved metropolitan areas, is an ideal test bed for policy innovation.

1.2 SCOPE

THE NATURAL COURSE PROJECT

This small-scale governance study has been carried out under the auspices of the EU-Life integrated 'Natural Course Project', funded to 20 million euros over ten years. The project partners include the Environment Agency, United Utilities, the Association of Greater Manchester Authorities, the Rivers Trust and Natural England. Natural Course aims to integrate water management approaches in the north-west of England and to use the partnership in order to deliver the objectives of the Water Framework Directive (WFD). In order to achieve this, Natural Course will:

- Promote innovative and multi-functional solutions for improving water quality, flood risk management and natural capital across the north-west of England;
- integrate water management approaches with the aim of delivering the North West England River Basin Management Plan (RBMP);
- address the barriers to delivering 'good' ecological status in the north-west's water bodies (as required by the WFD); and,
- build knowledge and learning on innovative solutions across stakeholders and to reduce policy mismatches and gaps.

AIMS OF THE STUDY

In the context of the Natural Course, this governance study aims to deliver:

- A baseline study of existing groups within Greater Manchester who work on water quality, quantity (flooding) and ecology.
- A review of best practice in integrated water management.
- Analysis of areas of connection, overlap and gaps in current water management governance arrangements in GM.
- A series of recommendations on how integrate water governance at GM level, with respect to local context and regional and national concerns.

STRUCTURE OF THIS REPORT

The report begins with an overview of the main issues in achieving integrated approaches to water. Section 3 outlines the methods undertaken in order to learn from examples within and outside of GM. Section 4 presents learning from good practice outside of GM. Section 5 analyses the water governance arrangements in

GM. Finally, section 6 makes recommendations for innovation in GM's water governance in order to progress integration across the various elements in the water system.

2. REVIEW OF ISSUES & CHALLENGES

2.1 INTEGRATED WATER MANAGEMENT AND CATCHMENT BASED APPROACHES

Ideas around integrated water management (IWM) and the catchment-based approach (CaBA) to managing water have been around for a number of years. Indeed, at international scale, organisations such as the UN and GWP consider IWRM as the 'only viable way forward for sustainable water use and management' (Rogers and Hall 2003: 30). However, like all good ideas, they have to be applied in an imperfect world and, consequently, there have been a number of challenges to realising integrated approaches in practice particularly in delivering amenable outcomes for the entire water sector (Engle et al. 2011). It should be noted that research into water governance notes the impacts of institutional organisation and, specifically, regulations. Local context also appears as important and it is unlikely that an 'ideal' governance model can be identified; such models will depend on the system to which it is intended to fit (Ostrom 1995).

The OECD (2015) identified a number of challenges for good water governance within a system. These include:

- *Mismatch in boundaries/scale*

Pre-existing political and administrative boundaries do not always map on to each other. This means that there may be overlapping remits and/or gaps in coverage.

- *Silos and the fragmentation of responsible authorities*

The water quality and flooding agendas have been dealt with separately and, for good reason, with different legislation. However, issues such as natural capital and natural flood solutions suggest that there are multiple synergies and co-benefits from combining efforts. In addition, the network of public and private actors that are, in some way, connected to the management of water means that responsibility is fragmented. This is particularly the case in flood risk management.

- *Divergent visions*

Participants in collaborative environments and partnerships may not necessarily share the same vision for the future of the water system, which may lead to conflicts.

- *Cost and funding issues*

A recent review of a catchment partnership reported that there conflicts tended to occur around issues of funding and competition over scarce resources (Foster et al. 2018).

- *Capacity issues (including institutional memory/inertia)*

Due to funding cuts, many organisations face difficulties in affording individuals enough time to participate in meetings (especially where these are so many). In addition, staff turnover can result in valuable information being lost.

- *Information gaps*

Different organisations collect different types of data for their own purposes and there are often issues around data sharing.

- *Issues on risk, transparency and accountability*

In collaborative environments, it can be difficult to identify a lead person or organisation who can assume responsibility for risk where things go wrong.

These challenges are summarised in the table below, structured by the 7-part 'water governance agenda' (Table 1; see next section).

Table 1: Water governance agenda: gaps & barriers

WATER GOVERNANCE AGENDA	***GAPS, BARRIERS, SYNDROMES***
Ecological agenda	• Lack of anticipatory thinking. • PES / TEEB works in principle but difficult in practice
Economic agenda	• Many economic stakeholders are missing from the structure. • Each actor has different remit, e.g. private water companies to shareholders, local authorities to the electorate. • Many competing priorities.
Territorial agenda	• Misfit of boundaries & responsibilities. • Multi-level working is not effective in results or in process
Social agenda	• Gaps between citizens and authorities. • Distrust of conventional politics. • Social inequalities run in parallel to environmental decline.
Political agenda	• Water and environment is in competition with social & economic priorities. • IWM and CaBA cross-political boundaries.
Policy-functional agenda	• Unclear remit of organizations / partnerships: human resources not used effectively
Institutional agenda	• Lack of transparency, • Barriers to communication • Continued austerity in public agencies.

2.2 ISSUES FOR GM

There are specific issues for GM in terms of water management that centre on the state of the economy, climate change, governance and regulation, and social issues. These issues were identified through a project undertaken with United Utilities that utilised scenario thinking (Carter and White 2013). These factors will affect the meeting of WFD objectives to which further collaboration could help as long as it is able to promote sharing and learning that is specific to GM and to move beyond simply attending to the minimum of statutory goals.

3. STUDY METHODOLOGY

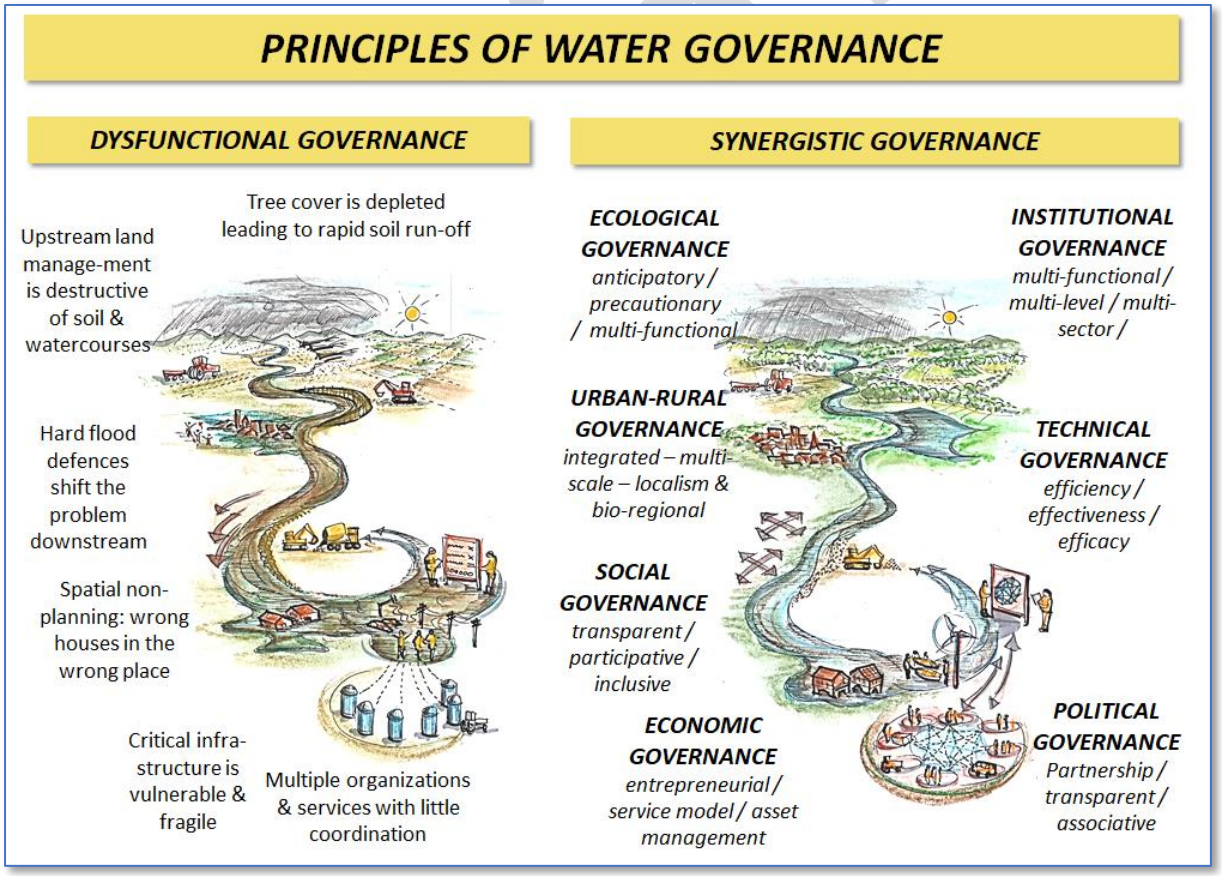
3.1 PRINCIPLES OF WATER GOVERNANCE

The overview of gaps and barriers shows many problems and many agendas for improvement. Putting these together, it is clear there is set of principles for good water governance, including:

- Ecological integration
- Social participation
- Policy effectiveness
- Economic enterprise
- Institutional multi-level
- Territorial integration, etc.

An overview of such principles, with a comparison of 'dysfunctional' and synergistic governance, is shown in Figure 1.

Figure 1: principles of water governance



Taking this further, analytic framework from the project proposal has been updated and applied as a template for the case studies and review of individual organisations. As shown in Figure 1, the framework outlines the

principles of 'synergistic governance': and recognises the many agendas for the governance of socio-ecological systems. The framework can be used in order to see commonalities in approach as well as potential gaps in focus or mismatches between stakeholder objectives.

Table 2 outlines the scope of each principle. This is then the basis for the analytic method, the case studies, and the proposals in the following sections.

Table 2: Scope of the principles of synergistic governance

'AGENDAS' in SYNERGISTIC GOVERNANCE	***APPROACHES***	***KEYWORDS***
Ecological agenda	Approach to water systems and ecological issues, which could be anticipatory, precautionary, or multi-functional.	*anticipatory / precautionary / multi-functional*
Economic agenda	Economic management, which could be entrepreneurial, based on a service model, or long-term asset management.	*entrepreneurial / service model / asset management*
Territorial agenda	territory of focus which could be integrated, multi-scale or locally-focussed on bio-regions	*integrated – multi-scale – localism & bio-regional*
Social agenda	incorporating wider stakeholders and could be transparent, participatory, inclusive	*transparent / participative / inclusive / associative*
Political agenda	Working in partnerships, which could be deliberative, pluralist, or aiming at conflict management.	*Deliberative / pluralist / associative*
Policy-functional agenda	organisational objectives and capabilities which may aim at effectiveness, efficiency or efficacy	*efficiency / effectiveness / efficacy*
Institutional agenda	Overall agenda and approach to working across institutions, which could be multi-functional, multi-sector, or multi-level.	*multi-functional / multi-level / multi-sector /*

3.2 RESEARCH APPROACH

3.2.1 STAKEHOLDER ANALYSIS

The identification of governance actors and other stakeholders can provide insight into which groups/organisations could contribute to the development and implementation of water-related strategies. On a secondary level, it is crucial to identify those groups/organisations affected by decisions. Such an in-depth analysis can clarify roles, responsibilities and functions, relevant knowledge brokers, and what scale that governance actors and stakeholders operate at. This can help to identify who should be involved and what their potential contribution might be (i.e. their sphere of influence, e.g. access to resources, information sharing, and so on (Reed et al. 2009). Therefore, each group/organisation needs to be categorised in terms of their role (in order to prevent over-representation) and how much influence, level of interest and importance

that they might have. It becomes possible to understand how to manage stakeholder involvement and the activities that each stakeholder participates in. However, further analysis needs to be undertaken in order to understand barriers and challenges when bringing stakeholders together.

Understanding the institutional arrangements is also important such as formal and informal governance structures that shape group behaviour and facilitate their coordination. This may derive from particular policies and management processes. Therefore, understanding statutory requirements and non-statutory obligations becomes important in order to frame the analysis of governance actors.

3.3 ANALYTIC FRAMEWORK

Utilising specialist knowledge of GM governance structures, an initial list was identified in order to explore their roles, responsibilities, and direction of power/influence. The terms of reference for each group was identified in order to understand who is represented on particular partnerships and groups.

The template here is a rough guide to analysis. Good information is generally very patchy. Desk study has to combine with background knowledge, consultations or interviews.

The template in use is a series of open questions for each category (only the boxes that were relevant were filled):

- Does the case study show success or failure in this category?
- If so what were the factors of success / failure?

A governance case study can focus on various things: an organization / network / partnership / inter-connected system. These can be formal / informal / combined, it may focus on a particular policy / program / project / innovation, or the governance case study can be various combinations of these.

Governance qualities need careful research as 'what you see is not necessarily what you get'. Case studies are often presented over-positively. Formal structures may be completely different to informal realities of how the system works. To explore this we flag up the principles of 'systemic collective intelligence': direct information on these is very scarce but we can start to ask meaningful questions.

The template below consists of five tables and was applied to the UK case studies in the first instance. This will be extended in the next phase to look at 'governance systems', i.e. larger communities of stakeholders who all need to interact & collaborate.

3.3.1 GENERAL CASE STUDY PROFILE

Questions: which sectors are involved: what kind of powers and resources: territory covered: general functions?

GENERAL PROFILE		***NOTES***
Name, location, area, population		
Sectors mainly involved	Public / private / civic / academic / citizens	
Powers & resources	Statutory / delegated / lobby /	

	voluntary. Public funding / private enterprise / partnership / membership	
Territory covered	Region / catchment / water body / landscape body / admin unit	
General functions	Formal planning / regulation / investment. Informal partnership / networking. Knowledge, learning, communications.	

3.3.2 SECTOR / MULTI-LEVEL ANALYSIS

Which sectors are involved at which levels? Are these relationships formal / informal?

STAKEHOLDERS	***PUBLIC SECTOR***	***PRIVATE SECTOR***	***CIVIC SECTOR***	***CITIZENS***
	National govt *Govt agencies* *Public services* *Local govt*	*Primary, utilities* *Industry, construction* *Services, utilities* *Finance, development*	*Research / innovation* *Professions* *Culture / media* *NGOs & interest groups*	*Owners / residents* *SMEs, social enterprise* *Special groups* *Community groups*
NATIONAL LEVEL				
MESO-LEVEL				
LOCAL LEVEL				

3.3.3 WATER SYSTEM ISSUES

Which types of water systems does the case study work with? What are the factors of success / gaps?

WATER SYSTEMS	***SECTORS INVOLVED***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Rivers & water bodies			
Ground water, soil etc			
Flood & extreme events			
Potable water supply			
Industrial / agri supply			
Drainage & waste			

3.3.4 GOVERNANCE SYSTEM ISSUES

Which 'governance agenda' qualities are shown in the case study? What are the gaps and challenges: or, success and opportunities?

GOVERNANCE	***CAPABILITIES***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Territorial agenda	*integrated – multi-scale – localism & bio-regional*		
Ecological agenda	*anticipatory / precau-tionary / multi-functional*		
Economic agenda	*entrepreneurial / service model / asset management*		
Social agenda	*transparent / participative / inclusive / associative /*		
Technical agenda	*efficiency / effectiveness / efficacy*		
Institutional agenda	*multi-functional / multi-level / multi-sector /*		

3.4 CASE STUDY SELECTION

The project aimed to understand learning and good practice in other cities and in particular research projects. Case studies were chosen on the basis of:

Location: urban/rural: Urban case studies were preferred as there was a greater chance that GM processes can fit with these.

Problem Framing: How are the actors involved perceiving/ framing the problems that they are addressing (i.e. what are their motivations)?

Tangible outcomes: Case studies should present governance strategies which have resulted in concrete outcomes that can be attributed to the new governance arrangements (i.e. would not have been possible without different arrangements).

Easy access to information: The case study should be well-documented in documentary evidence and, where possible, supplemented with interviews of key actors. This resulted in one interview with Newcastle City Council.

The chosen case studies are Glasgow and Newcastle. In the course of the research, it was not possible to find an example of fully integrated water governance (covering water quality, flooding and drainage) at metropolitan level. Therefore, each case study focuses on a particular part of the water cycle but with attendant benefits. In Glasgow, the focus is on drainage and, in Newcastle, the case study looks at innovative ways of managing flooding through a partnership approach. Each case study provides an overview of the background to the case, the partners involved, and the outcomes of the governance arrangements. These are assessed on the same template as the individual stakeholders in GM.

3.5 ANALYSIS OF WATER GOVERNANCE IN GM

In discussion with members of the Natural Course project, an initial list of stakeholders and partnerships in GM's water governance was drawn up. Terms of reference for four partnerships were provided which allowed for a more detailed analysis of the organisations involved in each partnership. The terms of reference provided allowed for an analysis that followed the template provided in Section 3.3.

Additionally, given the time limitations of the project, and along with the acknowledged deficiencies in providing a desk-based review only, we undertook interviews with two key stakeholders involved in water governance. Interviewees were drawn from the Environment Agency and United Utilities. The interview topic list is available in the Annex.

4. RESULTS

4.1 MULTI-LEVEL WATER POLICY & GOVERNANCE IN ENGLAND

Table 3 provides an overview of key pieces of legislation that impact on GM's water system. There are strategic, political drivers for increasingly accounting for the value of natural capital & services in decision-making. Such drivers are linked to the implementation of the WFD and in terms of the wider co-benefits that investment in natural capital may bring (e.g. health and well-being). Such drivers include the National Ecosystem Assessment (NEA), the Water Act, The National Adaptation programme, and the 25 Year Environment Plan. However, the management of water quality is entrusted to a wide range of diverse organisations that leads to fragmentation in delivery (Robins et al. 2017).

Responsibility for flooding is a statutory requirement for a number of organisations. The Environment Agency deals with flooding from rivers and sea; local authorities are responsible for surface water flooding whilst water companies are responsible for sewer flooding. Other responsibilities are set down to riparian owners. Under the Floods Directive, England has publicly available flood risk maps. Lead Local Flood Authorities are responsible for undertaking flood risk management plans for their jurisdiction. Thus, there is a patchwork of agencies who deal with different types of floods that can be confusing to those whose remit does not include dealing with water quantity.

The planning system (through the National Planning Policy Framework) discourages building on floodplains except in exceptional circumstances and directs that resilience measures should be incorporated. There are national guidelines for Sustainable Drainage Systems (SuDS) but it is often felt that these do not go far enough to encourage the widespread uptake of SuDS.

There are a number of policy hooks that promote integrated governance working for water quality and flooding in England. The North West River Basin Management Plan, resulting from the WFD, broadly seeks to protect and improve the water environment with significant consequences for land use within the unit of the river basin district that maps onto natural geographical and hydrological boundaries. The North West Flood Risk Management Plan, prompted by the Floods Directive, also works based on river basin districts in order to manage the risks from various flooding sources. However, there is a gap in understanding how the objectives and measures under both plans can be suitably coordinated.

Table 3: overview of key pieces of legislation on inland water management

	Water Quality	Flood Risk Management	Climate Change Adaptation and Resilience	Planning and Development	Ecology & ecosystem services
European Scale	Water Framework Directive (WFD) (2003) Blueprint to Safeguard Europe's Water Resources (2012)	Floods Directive (2007)			Birds, Habitat and Marine Strategy Framework.
National Scale	Water Framework Directive Regulations (2004) Water Act (2014)	Flood Risk Regulations (2009) Flood and Water Management Act (2010) National Flood and Coastal Erosion Management (FCERM) Strategy (2011)	Climate Change Act (2008) National Adaptation Plan (2013, forthcoming) Climate Change Risk Assessment (2012; 2017)	National Planning Policy Framework (2012) Localism Act (2011)	25 year Environment Plan (2018) Biodiversity 2020 (2011) National Ecosystem Assessment (NEA) (2011).
Regional	North West River Basin Management Plan (2016)	NW Flood Risk Management Plan (FRMP) (2015)			
GM Level	Catchment Management Plans	Strategic Flood Risk Assessment Surface Water Management Plans Catchment Management Plans	CCLES Implementation Plan (2016) GM Resilience Strategy GM Resilience Assessment (forthcoming)	Greater Manchester Strategy (2017) GM Spatial Framework (draft)	GM Green Infrastructure Framework (2008)
Local Level		Local Flood Risk Assessment	Local Adaptation Strategies	Local Plans	Biodiversity Action Plans

Such gaps are accentuated by the removal of the River Basin Liaison Panels. The Liaison panels were established to work with their organisations and sector or catchment networks, and to advise the Environment Agency with matters relating to the WFD. However, the Liaison Panels were disbanded in 2017, and this has left a significant gap in governance arrangements at regional scale with specific remit on the WFD. Currently, Natural England (NE) and the Environment Agency (EA) are now working on the areas across England, of which there are two in the north west, in order to plug the gap left with the demise of the liaison panels.

There are multiple benefits of interventions working with the natural environment from flood risk to water quality and quantity. Integrated CaBA is the preferred means of achieving this and the approach is underpinned by a range of associated policies that cover both water quality and flooding agendas. The National Flood Resilience Review (2016) promotes CaBA, as does the 25 Year Environment Plan (2018). This builds on the successful piloting of the catchment based approach by Defra in 2010 – 12. The Catchment Partnerships were set up to help deliver WFD objectives, but also have a wider remit in improving general water quality. They are also able to make catchment plans for their area.

4.2 INTEGRATED APPROACHES TO WATER MANAGEMENT: LEARNING FROM PREVIOUS PROJECTS

There are a number of existing projects that have sought to review and/or implement integrated approaches to water management. Whilst only three are examined in detail here, it is clear that collaborative-

participatory, ecosystem service approaches are very much in the forefront (see the Eklipse platform, http://www.eklipse-mechanism.eu/)

4.2.1 WATER CO-GOVERNANCE FOR SUSTAINABLE ECOSYSTEMS (WATERCOG)

WaterCog investigates the top-down integration of EU directives with bottom-up participatory initiatives, in order to understand how the frameworks can be implemented whilst also realising social, economic and environmental benefits.

The project, funded by Interreg, is testing innovative, collaborative-participatory, ecosystem service based approaches with pilot projects in:

Oude Diep (NL) http://www.northsearegion.eu/watercog/pilot-projects/oude-diep-nl/

Roud Table "Grossenkneten" (GER): http://www.northsearegion.eu/watercog/pilot-projects/round-table-grossenkneten-ger/

Upper Wharfe Catchment (UK): http://www.northsearegion.eu/watercog/pilot-projects/upper-wharfe-catchment-partnership-uk/

None of the pilots contain any major urban settlements. Additionally, there are very little outputs present on the website. WaterCog is due to finish in 2019 and the outputs may have relevance to GM. There may be valuable lessons coming from such rural areas for application in urban or peri-urban areas.

4.2.2 DELIVERING INTEGRATED CATCHMENT MANAGEMENT - IRELAND

The RaptorLIFE €3million LIFE+ project is a 4.5 year project and aims to work with the local community to achieve a better environment in Duhallow, Ireland. Part of the research examined how the integrated CaBA approach could be used to link planning, water services delivery and WFD implementation (See Ballinger 2015). Case studies from Ireland (10) and internationally (8) were examined along with the following of a catchment management group in action. The examination allowed for an analysis gaps and barriers to realising CaBA. These were:

- There is a need to secure funding before undertaking projects. The value of resources to sustain collaboration and to lead to implementation is critical since lack of action may hinder future community engagement;
- creative 'hooks' are needed to ensure as wide a representation from community interests during the CaBA process;
- a recognised authority with statutory duties should lead projects due to their resources and technical expertise. Alternatively, a 'neutral broker' should manage the process; and,
- governance structures within statutory authorities in order to underpin cooperation and support action.

4.2.3 OPEN UNIVERSITY – RIVER IRWELL

A research team at Open University, who had previously worked on the Climate Adaptation and Water Governance project (www.cadwgo.net), used the Irwell catchment Partnership as a case study to test two conceptual models that could help us move towards good water governance (Foster et. al. 2018). These conceptual models consist of:

- *A Framework for Action*: the framework starts from the premise that the catchment based approach results in a governance disconnect between top-down initiatives and bottom-up approaches. Power lies with the top-down actors.[1] This needs to be rethought so that the actors remain the same, but the power relations become horizontal (power-with rather than power-over). Recommendations include dialogues based on interest rather than positions, separating obligations from needs and wants, and efficient ways of sharing learning.
- *Methods for Action:* this conceptual model reworks the sustainable development pillars in terms of systems thinking, social learning and collaborative action. The focus needs to be on the process of learning and doing, rather than on any outcomes.

The analysis fits well for the catchment based approach; however, the disconnect between policy and practice assumes a simple relationship between national government (and its agencies) and grassroots level. When looking at the situation from GM level (rather than catchment scale), a further layer of political complexity is added that sits in-between catchments and national level and which may have its own objectives, visions and requirements.

4.3 LEARNING FROM UK CASE STUDIES

Two examples of good practice at the UK level were analysed in order to draw out the learning for GM: Glasgow and Newcastle.

4.3.1 THE METROPOLITAN GLASGOW STRATEGIC DRAINAGE PARTNERSHIP (MGSDP)

Background

The Metropolitan Glasgow Strategic Drainage Partnership (MGSDP) is made up of Scottish Water, Glasgow City Council, Scottish Canals, Clyde Gateway, Scottish Enterprise, the Scottish Environment Protection Agency (SEPA), The Scottish Government, Clydeplan, and four other local authorities. The MGSDP aims to 'transform how the [Glasgow] city region thinks about and manages rainfall to end uncontrolled flooding and improve water quality.'

The MGSDP ties into Scotland's 'Hydro Nation Agenda' which was set up to advance the sustainable use of Scotland's water resources in ways that make the most of the economic, health and well-being of people, and environmental benefits of water.

Problem Framing

In July 2002, Glasgow suffered an extreme pluvial event where, over the course of ten hours, one month worth of rain in one afternoon (with a maximum of 95mm in one hour). The flood cost £100 million of damage, 500 homes flooded and severe impacts on road, rail and underground (Ellis 2010). It became clear that a new approach to managing the city's drainage problems was needed which was lent additional weight by the city's water quality being below that required by the Water Framework Directive.

[1] It should be noted that during the interviews within GM, it was felt that catchment partnerships were driven from the bottom-up with insufficient buy-in from authorities at the top end.

Governance innovation

Glasgow City Council and Scottish Water spearheaded the development of a partnership to manage water quantity and quality associated with the drainage system. Following an in-depth review which comprised of four stages and was completed in 2012 (check), the fragmented nature of organisations with overlapping responsibilities needed to be rationalised (Ellis 2010).

The partnership delivered a masterplan to cover the sewerage and drainage system. The key objectives of the GSDP masterplan are (Ellis 2010): flood risk reduction; river quality improvement; habitat and watercourse improvement; enabling economic development; and support for future integrated and optimized investment planning.

An academic review of current MGSDP plans states that: 'Since its inception the partnership has sought innovative and sustainable ways to manage urban water systems and which support the continued growth of Glasgow.' (CREW, n.d: 1). Given its on-going activities, the MGSDP has become a National Planning Framework 3 (NPF3) 'National Development' - a nationally significant exemplar of catchment-scale water and drainage infrastructure planning.

Tangible Outcomes

- The Masterplan
- City deal funding for improvement works.

Glasgow City Council estimate that the MGSDP will deliver improvements that will bring an annual economic boost of over £65million to the city-region and allow the building of 22,000 new homes on brownfield sites (in the north of the city) whose development is currently not economically viable (Glasgow City Council, 2016). In addition, the work will reduce the risk of flooding for more than 7,000 existing properties and over 30km of roads, delivering an annual £2.3million reduction in average damages and a drainage capacity of 4,747 litres per second.

In the Glasgow City Region City Deal, £45 million was allocated to MGSDP projects including structural interventions in the east of the city. More recent developments on establishing a specific focus in the north of the city, in order to permit development on existing brownfield land, are regarded as sound and include a recommendation to have two separate partnerships, one covering developers (led by Glasgow City Council) with responsibility for regeneration works (with a variable attendance depending on the sites involved) and another covering drainage (particularly maintenance and operation) (Led by Scottish Canals). The two partnerships need to be supported by a robust legal agreement (covering funding, liabilities, and responsibility for on-going maintenance) and operational agreements (See CREW, n.d.).

Key Lessons

- Partnerships take time to develop trust and understanding
- Long lead in time to understand the problems and develop a shared vision
- The understandings of the links between water and the economy have enabled funding to be leveraged.

4.2.2 NEWCASTLE: LEARNING AND ACTION ALLIANCE

Problem Framing

In 2012, Newcastle suffered from two pluvial flood events in quick succession that caused multiple damage and destruction. In addition, whilst the city is largely flat with steep slopes to the River Tyne (which is tidal); it can be prone to river flooding. However, it is the localised surface water flooding but difficult to predict the impact. Whilst there have been piecemeal initiatives to address flooding through natural measures (e.g. GI), there was no overall vision or masterplan to manage flood risk (O'Donnell et al. 2018). In 2014, under the auspices of the Blue-Green City project (http://www.bluegreencities.ac.uk/), a Learning and Action Alliance (LAA) was set up within the Newcastle catchment.

Governance Innovation

LAAs are provide individuals and organisations, within a given geographical area and with a shared interest, a collaborative and informal space in order to develop and enact innovate changes. The concept, based on the principles of social learning, was initially developed and tested through the EU MARE project (see Ashley et al. 2012).

LAAs do not follow a prescribed framework. Instead, participants create a joint understanding of a problem and stakeholders are encouraged to bring their knowledge and expertise and talk freely outside the constraints of existing formal institutional settings. There is no fixed structure in a LAA as each one develops a vision that evolves over the course of the LAA. One of the key goals of the LAA is to bring together people who may not typically meet on a regular basis. There are three phases: an initiation phase that consists of a core group of interested parties, a scoping phase of understanding the stakeholders and setting the objectives; and a visioning stage where a shared vision will be developed.

In Newcastle, the LAA developed a vision for Newcastle to 'maximis[e] opportunities to achieve multiple benefits of Blue-Green approaches to surface water management. This includes reducing flood risk; enhancing social capital through better relationships with water and green infrastructure; improving air quality and urban biodiversity; reducing urban heat, and; creating healthier communities with improved quality of life' (O'Donnell et al. 2018).

For Newcastle, core stakeholders included;

- Institutional stakeholders (e.g. local authorities), major land owners and the local Water Company
- Local environment organisations and not for profit organisations
- Governmental bodies
- Infrastructure and utilities (energy, electricity, transport)
- Retail and business (local businesses and business development partnerships)
- Academics
- Industry

Core partners in the Newcastle LAA have spearheaded the Newcastle Blue and Green Declaration that aims to commit signatories to the prioritisation of Blue-Green infrastructure in managing flood risk. The LAA is comprised of 30 stakeholders who meet three times per year and use virtual methods to keep in contact throughout the year (http://www.urbanfloodresilience.ac.uk/documents/newcastle-laa-terms-of-reference.pdf). In practice, this is split into a series of levels (See Figure 2):

1) An organising group (useful to have a champion)
2) A core group who attend regular face-to-face meetings
3) A wider group who may attend one-off events and participate in online discussions.

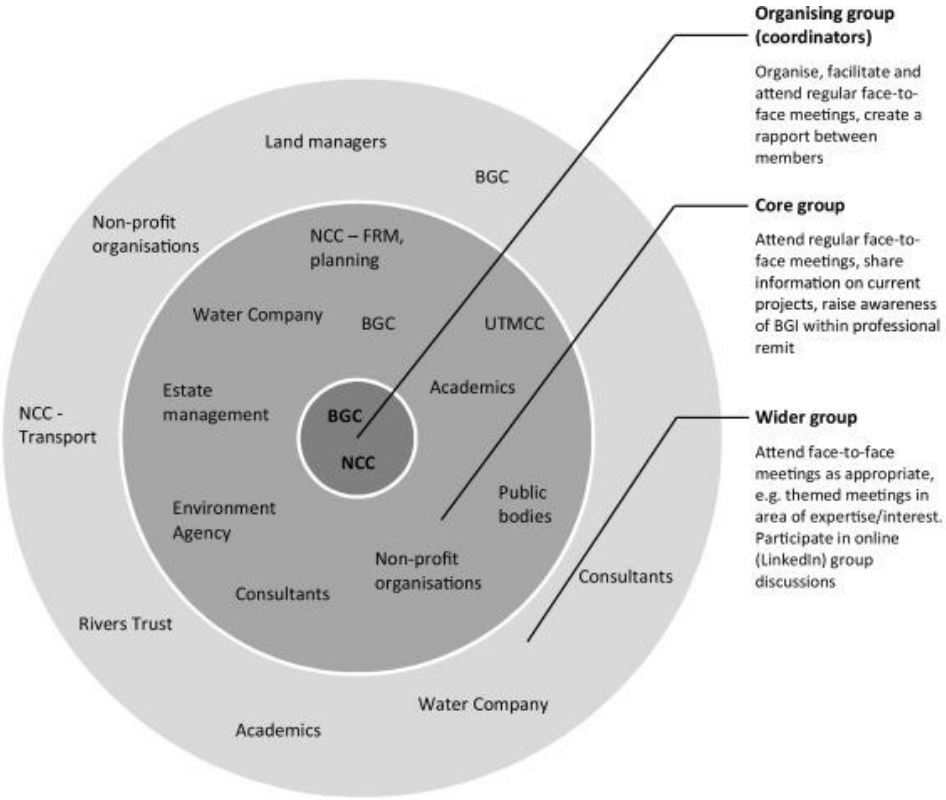


Figure 2: Newcastle LAA membership. BGC: Blue-Green Cities team, NCC: Newcastle City Council, UTMCC: Urban Traffic Management Control Centre, FRM: Flood Risk Management team. Source: O'Donnell et al. 2018.

The Newcastle LAA has proved to be a good forum for dealing with difficult to deal with the issues where there are obstructions to moving forward with solution (Interview, Newcastle City Council, 16 April 2018). Different organisations – who may not have met before or have an appreciation of each other's role – exchange ideas and share learning and approaches. A few housing developers are included but more thought could be given as to how they enact water management in new developments. Recent meetings have included learning events for participants to understand the entire processes that happen within a river catchment, which proved to be a good way to advance learning about the multitude of organisations with a stake in what happens in the river catchment.

At present, the LAA needs to move from learning into implementing actions, but this will take time. The LAA benefits from key statutory partners – Newcastle City Council, Northumbrian Water and the Environment Agency, sharing roughly the same boundaries in terms of their remit that makes working together easier.

Key Lessons

- Many organisations within a catchment do not have an understanding of all of the roles and responsibilities – shared forums can assist with learning.
- Tiered system within the LAA so that core partners meet regularly (to reduce the number of meetings for all stakeholders)
- Difficulty in getting buy-in from housing developers and landowners – this takes time.

5. WATER GOVERNANCE IN GREATER MANCHESTER

5.1 OVERVIEW OF ISSUES

The governance situation in Greater Manchester is undergoing much organisational change because of devolution. The GMCA, comprising of ten local authorities, was statutorily recognised in 2011 to focus on economic development, regeneration and transport. To date, the governance model is made up of elected members as well as representatives from the private sector, particularly through the GM Local Enterprise Partnership (LEP) which is an economic growth focused partnership between private sector organisations, the education sector and local authorities. The GMCA has a number of devolved powers from central government, such as responsibility for the health and social care budget. As part of the agreement with central government, powers can be devolved in other areas where a good case can be made for doing so.

The range of organisations working on water governance at GM is large. The water quality and flooding agendas are dealt with separately and GM sits at the in-between scale of governance between national and regional obligations and local authorities and local communities. It is not clear how the synergies between the various groups may be joined up.

The development of the Greater Manchester Spatial Framework (GMSF) offers one such over-arching endeavour that has to engage with all aspects of the water system. The Greater Manchester Strategy (GMS) has the hooks on green space and water management (and the link to an economically competitive, healthy city) that suggest closer working together. For example, the GMS Implementation Plan notes the need to develop cross sector partnerships to plant 3m trees by 2035 and improve the management of key habitats and environmental assets to support ecosystem services (GMCA 2017: Priority 7)

However, further action is required to understand how these could be brought together to fully understand the synergies across GM and the multiple benefits of interventions working with the natural environment from flood risk to water quality and quantity. For example, policies have resulted in a patchwork of organisations with formal statutory duties and informal interests and roles. In Greater Manchester, there are three main statutory bodies:

- Local authorities
- United Utilities
- The Environment Agency (regulatory role)

The GMCA is the key link between the local authorities. Issues around risk and resilience may be a way to join up the various domains in GM policy. The spatial patterns of risk, for example, could be connected to development and economy in order to understand the synergies between them and investment opportunities. Moody's Credit Rating Agency, for example, has begun to downgrade cities credit ratings based on extreme weather and climate risk (Bloomberg, 2017). Such external pressures may prompt the development of stronger synergies between climate change, environment, economy and resilience to ensure an integrated approach to risk. A joined up approach is possible given the existing governance framework within GM with

the essential policy hooks existing at both sub-regional and local level. However, more attention needs to be paid to how such a joined up approach might operate given existing partnerships and organisations.

5.2 STAKEHOLDERS IN GM WATER GOVERNANCE

This section considers the various partnerships and organisations that work on water governance in GM in order to understand the synergies and gaps in provision.

5.2.1 PARTNERSHIPS

There are a number of existing partnerships within GM that bring together a range of stakeholders to work on specific issues or geographic areas (Table 4). Certain stakeholders directly work on water issues but none integrate all functions of the water system.

Table 4: Existing partnerships responsible for the water system (Table 4)

Groups	Domain	Level	Partnership or Individual Organisation	Access to Terms of Reference
NW Regional Flood and Coastal Committee	Flood risk management	Regional	Partnership	No
GM Floods and Water Management Board	Flood risk management	Sub-regional	Partnership	Yes
GM Flood Risk Officers Group	Flood risk management	Sub-regional	Partnership	Yes
GM Natural Capital Group	Natural Capital	Sub-regional	Partnership	Yes
Irwell Catchment Partnership	WFD	Sub-regional	Partnership	Yes
Upper Mersey Catchment Partnership	WFD	Sub-regional	Partnership	No
Douglas Catchment Partnership	WFD	Sub-regional	Partnership	No
Pennine & Potteries Waterways Partnership	Canal managers	Local	Partnership	No

There are also groups that cover issues not related to water but their remit may require an engaging strongly with the water agenda particularly around planning and resilience. These are outlined in Table 5.

Table 5: Other partnerships/groups in GM that deal with indirectly deal with water

Group	Domain	Level	Partnership or Individual Organisation	Access to Terms of Reference
GM Planning Officers Group	Planning and Development	Sub-regional	GM group	No
GM Infrastructure Advisory Group	Planning and development	Sub-regional	Partnership	No
District Managers Group	Planning and Development	Sub-regional	Partnership	No
GM LEP	Planning and Development	Sub-regional	Partnership	No
Greater Manchester Resilience Forum	Civil Contingencies	Sub-regional	Partnership	No
Greater Manchester Integrated Support Team	Greater Manchester Integrated Support Team	Sub-regional	GM group	No

5.2.2 OTHER ORGANISATIONS AND GROUPS

Within the partnerships, a number of individual organisations can be identified (Table 6). Some of these organisations sit on more than one partnership. However, this does not necessarily mean that there is the requisite amount of integration across the water system. The Environment Agency (EA), for example, has different teams working on water issues and it may be that different individuals represent water issues for the EA but do not necessarily have much cross-over in their day-to-day activities within the EA.

There is a good range of public and civic bodies represented across partnerships. Private sector companies tend to be larger entities and may represent only their own interests rather than those of their wider sector.

Table 6: Identified stakeholders in GM's water system. Categorised by domain, level, type and the partnerships that they sit on.

Groups	Domain	Level	Type of organisation	Partnerships involved in
Canal and Rivers Trust	Canal managers	Local	Civic	Irwell Catchment Partnership
Manchester Ship Canal Company	Canal managers	Local	Private	Irwell Catchment Partnership
GM Civil Contingencies Unit	Civil Contingencies	Sub-regional	Public	Floods and Water Management Board
GM Local Authorities	Cross-cutting	Local	Public	All
Peel Holdings	Cross-cutting	Local	Private	Irwell Catchment Partnership
GM's Universities	Cross-cutting	Local	Public	Natural Capital Group Irwell Catchment Partnerships
Natural England	Cross-cutting	National	Public	Irwell Catchment Partnership

				Upper Mersey Catchment Partnership
The Environment Agency	Cross-cutting	National	Public	All
Slow the Flow / Cumbria Wildlife Trust	Cross-cutting	Sub-regional	Civic	Irwell Catchment Partnership
National Union of Farmers	Cross-cutting	National	Civic	Irwell Catchment Partnership Upper Mersey Catchment Partnership
Derbyshire Council	Cross-cutting	Local	Public	Floods and Water Management Board
Lead Local Flood Authorities	Flood risk management	Local	Public	Floods and Water Management Board; Technical Flood Risk Officers Group
National Flood Forum	Flood risk management	National	Civic	Floods and Water Management Board
GM Environment Team	Natural Capital	Sub-regional	Public	Natural Capital Group Irwell Catchment Partnership
Campaign to Protect Rural England	Natural Capital	National	Civic	Natural Capital Group
The Wildlife Trust for Lancashire, Manchester and North Merseyside	Natural Capital	Regional	Civic	Natural Capital Group
Transport for Greater Manchester	Planning and development	Sub-regional	Public	Flood and Water Management Board
The Co-operative Group	Planning and Development	Local	Private	Natural Capital Group
Bruntwood	Planning and Development	Local	Private	Natural Capital Group
Greater Manchester Archaeology Advice Service	Planning and Development	Sub-regional	Public	Irwell Catchment Partnership
Royal Society for the Preservation of Birds	Planning and Development	National	Civic	Irwell Catchment Partnership
United Utilities: "blue" and "brown" water	Water management	Sub-regional	Private	All
NW Regional Flood and Coastal Committee	Water Management	Regional	Public	Floods and Water Management Board
Mersey Rivers Trust	WFD	Sub-regional	Civic	Upper Mersey Catchment Partnership Irwell Catchment Partnership
Groundwork MSSTT	WFD	Sub-regional	Civic	Irwell Catchment Partnership
Groundwork CLM	WFD	Sub-regional	Civic	Douglas Catchment Partnership

Groundwork BBOR	WFD	Sub-regional	Civic	Irwell Catchment Partnership
The Conservation Volunteers	WFD	Sub-regional	Civic	Irwell Catchment Partnership
Moors for the Future Partnership	WFD	Sub-regional	Civic	Irwell Catchment Partnership

5.1 OVERVIEW OF GM PARTNERSHIPS

This section reviews a sample of GM's water related partnerships in order to understand their gaps in provision, potential overlaps in remits, and to understand what currently works well. The four partnerships analysed are: the Irwell Catchment Partnership (ICP); The Natural Capital Group (NCG); the Floods and Water Management Board (FWMB); and the Technical Flood Risk Officers Group (T-FROG)

IRWELL CATCHMENT PARTNERSHIP

ICP is a voluntary, non-statutory body (mandated by the Environment Agency) which has a wide remit to ensure that 'a healthy water environment [is] a positive aspect of people's daily life through delivery in partnership'

There are 29 organisations represented on the panel. This means that the ICP is multi-functional and covers a wide range of sectors. However, there is only one private sector member which suggests that, given current funding priorities, the private sector could be better represented.

The ICP is successful at:

- Drawing in investment and funding
- Collecting data
- Engaging with citizen representatives
- Clear governance structure

A recent review of the ICP (Foster et al. 2018) found that:

- Some organisations tend remain locked into their silo and could only represent their own issues.
- There are many different projects delivered by different organisations which leads to concerns about the lack of seeing the 'bigger picture' and thinking holistically (p.10)
- Funding issues can cause conflict and 'unhelpful competition' (p. 11)

Furthermore, there is a lack of clarity around how the ICP connects into wider GM processes since it does not operate at the administrative boundary. Catchment Partnerships report to the CaBA National Support Group, which helps to allocate funds from Defra as part of their remit. This means that WFD issues tend to be lost at GM level, which is precisely the spatial scale that these issues need to be addressed. The chair of the ICP attends the Natural Capital Group, but can only represent catchment-specific issues. There may be a need to understand how the various catchment partnership groups in GM can be brought together and connected into GM processes.

There are two other Catchment Partnerships in GM: the Upper Mersey Catchment Partnership and the Douglas Catchment Partnership. It is not known how the three interact with one another.

THE NATURAL CAPITAL GROUP

The Natural Capital Group is GM's Local Nature Partnership (at the behest of the 2011 Natural Environment White Paper) and reports to GM's Low Carbon Hub. The NCG meets quarterly. The Natural Capital Group (NCG) is potentially involved in all but the remit is wide: 'to lead and oversee delivery of the GM Natural Capital Group's business plan and to provide advice to the Combined Authority on strategic natural environment issues.' Currently, this includes

- The delivery of the Natural Course Project 'to reform how catchment delivery is managed and accelerate water quality and management issue resolution'
- Identifying the key green and blue infrastructure and biodiversity assets for GM
- Quantifying the value of key natural environment assets for GM

The NCG includes a range of representatives from the public, private and civic sector although the private sector is limited to three companies. There is no citizen representation. Whilst the NCG has a broad remit that can potentially encapsulate a wide range of water-related issues, the wider focus of championing the natural environment may mean that smaller agendas become lost. It is felt, however, that the NCG has potentially good links into the economic and development agenda at GM level and would need to be connected to, or even reformed, to encompass renewed governance frameworks that focus on water quality and flood risk management. For example, the Floods and Water Management Board sits at the same level as the NCG but runs in parallel rather than being formally linked.

GM FLOODS AND WATER MANAGEMENT BOARD

The GM Floods and Water Management Board (GMFWMB) provide strategic direction on flood and water management issues (e.g. drainage) across GM and links up to the Regional Flood and Coastal Committee (RFCC) that operates at a higher spatial scale. . Each of GM's ten local authority districts is represented by respective representatives from GM's Planning Officers Group (POG). The GMFWMB reports upwards to the Head of Planning Strategy and is ultimately accountable to the GMCA's wider leadership team.

Membership of the GMFWMB is skewed towards public bodies at a range of scales, but mainly local and GM level. This will partly be due to the statutory functions relating to floods that are incumbent on local government. United Utilities is the only main private sector representative. In terms of successful initiatives, the GMFWMB occasionally has representation from neighbouring jurisdictions, such as Derbyshire County Council, whose water management decisions can affect GM.

In terms of opportunities, the GMFWMB operates mainly at the administrative unit rather than the watershed. However, there is occasional representation from local authorities outside of GM, such as Derbyshire. The GMFWMB has no focus on water quality. There could be more involvement and representation from citizens and the private sector. For example, there is increased focus on the role that agricultural land in the uplands may play in stemming the flow of water into GM and so farmers and other land use managers are a key category. As noted above, there are shared synergies with the Natural Capital Group, but the two run in parallel and report to different GM entities. New Economy is represented on the GMFWMB, but it is not clear the impact of this on connecting flooding (and wider resilience to flooding) to the economic development agenda

A recent review of the governance position of the GMFWMB notes that there are opportunities for more innovative engagement methods and that changes to the governance framework may be needed in order to account for disconnects between planning and flood risk, as well as to connect to other partnerships on cross-cutting issues such as nature based solutions.

TECHNICAL FLOOD RISK OFFICERS GROUP

In addition to the GMFWMB, there are the more focussed meetings of the Technical Flood Risk Officers Group (T-FROG). T-FROG exists to "serve as the technical lead partnership overseeing and designing the operational delivery of flood risk management across Greater Manchester." Membership is comprised of GM's ten local authorities as well as United Utilities, the Environment Agency and representatives from planning and housing and GM level.

T-FROG has a very narrow remit and focuses on technical issues in the main. The group meets quarterly and reports to the GMFWMB. There are fewer opportunities for citizen involvement because of the narrow focus and there is little or no attention paid to matters relating to water quality. Such a focussed group is necessary but there may be opportunities for seeking to connect T-FROG into other partnerships.

INDIVIDUAL ORGANISATIONS

In the analysed partnerships and organisations, there were some notable examples of unrepresented stakeholders. This is not to say that these groups are not engaged in the governance frameworks entirely, it is simply that their involvement and influence are more opaque. These organisations tend to be in the private sector as the analysis shows that the public sector is well-represented. In certain cases, such as the catchment partnerships, the civic sector are represented well which suggests a good bottom-up driven approach; however, it is difficult to see the extent to which there is buy-in from the organisations that can help to implement actions.

At scale, other stakeholders are auspicious by their absence in any of the current governance frameworks. Architects and urban designers, including the bodies that represent these groups, are well-placed to consider innovative solutions to environmental design problems in cities. Such groups may be considered as those to 'keep informed' about issues as they tend to have influence whilst not necessarily having power except on a site-by-site basis. Commercial and domestic property developers, including those represented through the Home Builders Federation (HBF) also have a stake in the issues of water quantity and flooding and are currently under-represented. Both groups have the potential to hold much power and influence and must, therefore, be kept close to, and on-board with, any potential policy developments.

In terms of land use change, land us managers as well as farmers will have an important role to play in the governance of water quality and flooding, particularly in light of the move towards nature based solutions and the implications of climate change. For example, it may be better to manage GM's flood risk by stemming the flow of water from higher ground towards the Pennines.

Businesses, particularly the insurance industry, are under-represented at local levels in terms of water quality and flooding. Insurance, in particular, may have interests in funding innovative solutions if this can conceivable reduce the risk profile in GM.

Interviewees also highlighted that Transport for Greater Manchester (TfGM) could have more of a stake in water quality issues. Table 6, however, shows that TfGM currently only sits on the GM FWMB. There may be scope for the greater inclusion of TfGM; for example, around integrating green infrastructure into their network developments.

In addition to the partnerships and organisations, there are a number of time-limited projects of which the Natural Course is one. Such prominent GM projects can help to gather momentum around change and reorganisation, particularly in the delivery of specific outputs. However, it is not clear how and whether they

should fit into governance arrangements. In addition, they may provide models of learning for integrated working going forward. For example, Business in the Community (BiTC) is leading the GM Water Resilience Project which is seeking to provide viable models for instituting sustainable drainage systems (SuDS) in schools. BiTC has used GM as a pilot area in order to explore how SuDS could be implemented in the non-domestic sphere (firstly in schools) by reinvesting subsequent savings from surface water drainage (www.urbanwater-eco.services/project/urban-demonstrator-water-resilient-cities. To date, one system is currently being constructed in the Trafford area. GM is also a Defra Urban Pioneer area.

GM has been selected as one of four 'Pioneer' projects by Defra in order to test and support initiatives that fulfil the UK Government's 25-year Environment Plan. As part of GM's Urban Pioneer activities, GM will:

- Test tools and methods as part of the natural capital approach;
- Demonstrate a joined-up integrated approach to delivery
- Pioneer and 'scale-up' the use of new funding opportunities
- Sharing lessons and best practice around what works when deploying the natural capital approach.

6. WAYS FORWARD

6.1 PRINCIPLES OF SYNERGISTIC GOVERNANCE

This follows on from the outline of principles of water governance in Section 3. We take the concept further, in order to make a bold proposition for the re-empowerment of water governance in GM.

This draws on the synergistic principles of governance and ecological management, in the context of strategic policy intelligence. This was recently applied to the UK Future of Cities Foresight for the Government Office of Science. (Ravetz & Miles 2016: Ravetz 2015: Ravetz 2014).

On the basis, that governance is the management of complex systems in society (social, economic, ecological etc.); it follows that the level of system organization in governance needs to match with its object. Society is not only a machine, and more than a self-organizing ecosystem, it is composed of humans who learn, think, create and reflect. On that basis, we can define a range of different modes of governance system organization.

- Hierarchical governance (mode-I) – based on traditional concepts of government by elite politicians & experts, but lacks the feedback loops to be responsive to complex problems
- Entrepreneurial governance (mode-II) – tends to look for market or competitive solutions
- Collaborative governance (mode-III) – distributed co-production, with many feedback & learning loops: responds better to multi-actor multi-valent problems & opportunities, with opportunities for community collaboration, or which may be complex or controversial.

Synergistic governance combines all three modes, depending on which is most relevant for the situation. To do this depends on forming synergies, i.e. collaborative links between stakeholders, organizations, or communities. To put these synergies into practice involves a process of capacity building, with four visible stages:

- co-learning: different organizations can learn about the needs and resources of the others (e.g. water companies can learn about farming practices that accelerate runoff);
- co-knowledge: different organizations can share that knowledge, on some kind of platform with a minimum of gaps and barriers;
- co-creation: different organizations can co-create synergies, ideas, opportunities and innovations, to solve complex problems; and,
- co-production: different organizations can co-produce responses and solutions (e.g. community involvement in river bank maintenance).

This cycle of capacity / synergy building calls for governance structures with suitable qualities: these can be summarized with three dimensions:

- '***wider'*** synergies between all stakeholders around the table, (or a whole series of tables).
- '***deeper'*** synergies, to work not only with material values, but social, cultural, ecological or ethical values.
- '***further'*** synergies, not only solving problems within the organization boundaries, but looking upstream and downstream.

This then informs each of the 'governance agendas' which were set out in Section 3, including:

- Ecological integration

- Social participation
- Policy effectiveness
- Economic enterprise
- Institutional multi-level
- Territorial integration, etc.

These principles are then applied to the recommendations below, with a modest proposition, and ways forward. They also appear in current thinking, such as 'Ten ways to get water policy flowing' (Robins et al. 2017), as summarised in Table 7.

Table 7: 'Ten ways to get water policy flowing' recommendations (Robins et al. 2017) mapped against the principles of synergistic governance.

Recommendation	Synergistic governance principle
Put in place a system-wide water policy	*Ecological agenda*
community-led nested river basin planning management	*Territorial agenda*
Properly fund river basin planning and management	*Economic agenda*
Re-focus the policy framing.	*Technical agenda*
Use the best-available data and information	*Technical agenda*
Create conversational spaces	*Social agenda*
Mobilise people.	*Social agenda*
Support and sustain core community networks	*Territorial agenda*
Underpin river basin plans with regulatory provisions	*Institutional agenda*
Address systemic institutional amnesia.	*Institutional agenda*

6.1 MODELS FOR SYNERGISTIC GOVERNANCE

Each governance agenda has a particular 'model', i.e. a policy or social innovation which is demonstrated and promoted in various examples (Table 8). These are some of the most common:

- Ecological agenda: ecosystems services model for analysis & management
- Economic agenda: payments and markets in ecosystems services
- Territorial agenda:
- Social agenda: citizen & community co-production, for data, management, awareness etc.
- Political agenda: leadership in the form of a champion, or mayor, with suitable powers, resources and accountability
- Policy-functional agenda
- Institutional agenda

Table 8: Models for synergistic governance

Principles of synergistic governance	Definition	GOVERNANCE MODELS e.g.
Ecological agenda	Approach to dealing with ecological issues which could be anticipatory, precautionary, or multi-functional.	Integrated climate adaptation model: looks for creative solutions with whole value-added to all stakeholders present & future
Economic agenda	Economic management which could be entrepreneurial, based on a service model, or regards asset management.	Social return on investment model; Socio-eco-enterprise service model; stakeowning/ crowd-sourcing model.
Territorial agenda	Territory of focus which could be integrated, multi-scale or locally-focussed on bio-regions	Active territorial definitions, e.g. eco-neighbourhood / bio-community model
Social agenda	Incorporating wider stakeholders: could be transparent, participatory, inclusive or associate.	Active network / social / adaptive learning model 'Deliberative inclusive participatory' model
Political agenda	Working in partnerships which could be deliberative, pluralist or aiming at conflict management.	'Champion' or 'mayor' leadership model. Round table governance model
Policy-functional agenda	Organisational objectives and capabilities which may aim at effectiveness, efficiency or efficacy	Foresight model Deliberative evaluation model Collaborative regulation / negotiated consent
Institutional agenda	Overall agenda and approach to working across institutions which could be multi-functional, multi-sector, or multi-level.	Design thinking model Multi-level governance model

6.2 PROPOSITION FOR AN INTEGRATED WATER GOVERNANCE 'CIRCLE'

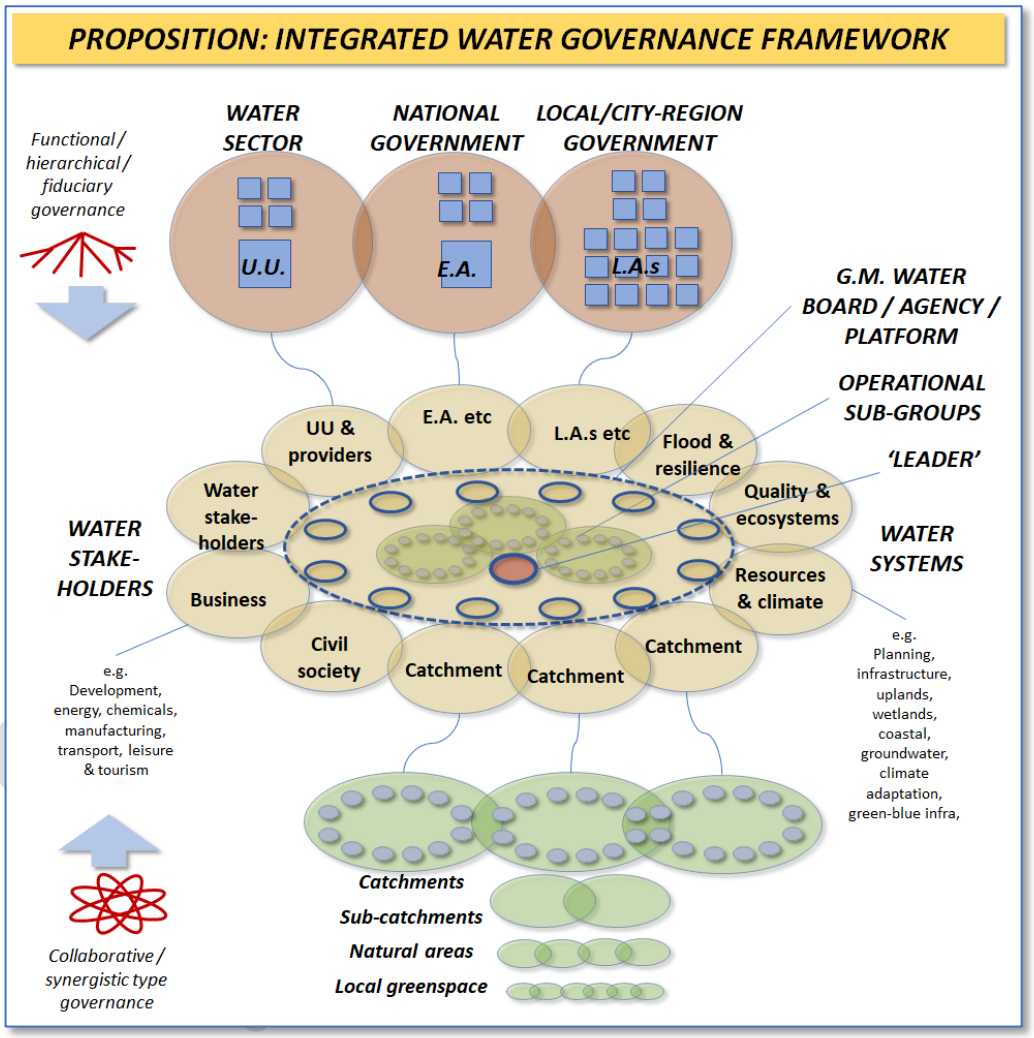
One way to combine all the above is shown in the 'proposition' below which is a creative contribution for debate and discussion (Figure 3). Our view is that piecemeal adjustments may not achieve much, and the time is ideal for a more fundamental change in the water governance. GM, and its role in the Natural Course program, is possibly the best location for an initiative such as this.

The main point of a 'circle' is integration, between the components of the water system, between sectors, and between the different territories of catchments and authorities. The primary 'circle' is established at the city-region level (adjusted for catchment boundaries). It includes representatives

- Statutory providers: water firms, national regulator, local authorities with city-region bodies
- Water stakeholders (farmers, landowners, large users):

- Business, civil society, public services and other stakeholders:
- Water systems, including: flood and resilience: quality and ecosystems: water resources and climate change.
- Catchments (3 in GM). Each of the catchments then has multi-level structure all the way to natural areas and local green-blue spaces.

Figure 3: Proposition for an integrated water governance 'circle'



The 'circle' is coordinated by a leadership role, i.e. champion, commissioner, 'blue-mayor' or similar role. This would be a professional / political position, with resources and statutory powers.

The 'circle' would be supported with high-level information and shared learning such as an online platform that can complement face-to-face activities.

This 'circle' is the main body with fiduciary powers and resources. It will then maintain and coordinate various cross-cutting sub-groups or task groups, such as:

- Spatial planning

- Finance, social, ecosystems values and markets
- Emergencies, disaster response and recovery.

Figure 3 also shows on the left corners, the combination of a 'functional / hierarchical / fiduciary' governance model: with a more 'collaborative / co-production / synergistic' type governance.

6.2 RECOMMENDATIONS TO POLICY

To be filled out:

Identify

- *stakeholder roles with formal mandate & fiduciary decision-making process.*
- *Tangible links between each part of a water cycle: need to coordinate*
- *Other stakeholders with tangible interests: need to be involved*
- *Other stakeholders with indirect interests: need to be informed*

Demonstrate

- *Partnership model (building on success with Irwell etc) with terms which reflect the above.*
- *Promote local champions & socio-eco-entrepreneur model*
- *Promote new forms of social investment & return (e.g. property values)*

Form new models for synergistic governance:

- *'**Wider'** synergies between all stakeholders around the table, (or a whole series of tables). E.g. farmers, developers, schools, sports, tourism,*
- *'**Deeper'** synergies, to work not only with material values but social, cultural, ecological or ethical values. E.g. socio-ecological values, cultural community values etc.*
- *'**Further'** synergies: pro-active and anticipatory approach to future of water, landuse, urban development, public services, climate adaptation. etc*

Innovate:

- *Use the principles of the 'urban living labs' to form a 'water living lab'*
- *Use the principles of the learning loop to inform this (e.g. www.looperproject.eu)*

6.2 CONCLUSIONS & NEXT STEPS

To be discussed

7. ANNEX

7.1 REFERENCES

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7.2 DEFINITIONS

Ideas around integrated water resources management and catchment based approaches have appeared in policy and literature for a number of years. Therefore, it is important to outline a working definition of the terms and allied terms such as 'ecosystem service based approaches'. Governance can also be a slippery term to define and so we briefly outline the understanding used in this research.

Integrated Water Resources Management (IWRM)

The Global Water Partnership (GWO), multi-stakeholder partnership that supports communities and countries to improve the way they manage water, defines integrated water resources management as a 'process which promotes the co-ordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner, without compromising the sustainability of vital ecosystems' (GWP 2017: https://www.gwp.org/en/About/why/the-need-for-an-integrated-approach/)

Catchment Based Approach (CaBA)

There are a number of definitions of the term 'catchment'. Generally, a catchment is' a geographic area defined naturally by surface water hydrology' (Cascade et al. 2013). However, sometimes it has been necessary to use administrative boundaries for water abstraction and/or flood issues.

The aim of the Catchment Based Approach (CaBA) is to 'is to balance environmental, economic and social demands and align funding and actions within river catchments to bring about long-term improvements' (Ibid).

Governance

Modern governance is characterised by this blurring of lines between state and non-state actors (Rhodes, 1997). Traditional models of command-and-control centralised bureaucracies have given way to networks and partnerships that are built on trust and, consequently, 'governance refers to governing with and through networks' (Rhodes 2007: 1246).

Water governance

Water governance is a cross-cutting issue across the range of water services and resources such as water abstraction, water quality, flooding and ecology. 'Water governance refers to the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the delivery of water services, at different levels of society' (GWP 2000)

7.3 CASE STUDY ANALYSIS - GLASGOW

General profile of the case study – basic description of institutions & stakeholders

GENERAL PROFILE		
Name, location, area, population		***Metropolitan Glasgow Strategic Drainage Partnership, Greater Glasgow, Pop:***
Sectors mainly involved	Public / private / civic / academic / citizens	***Public/private/civic***
Powers & resources	Statutory / delegated / lobby / voluntary. Public funding / private enterprise / partnership / membership	***Public funding*** ***Delegated powers***
Territory covered	Region / catchment / water body / landscape body / admin unit	***Admin unit***
General functions	Formal planning / regulation / investment. Informal partnership / networking. Knowledge, learning, communications.	***Formal planning, investment, knowledge, learning and communications***

Which sectors are involved at which levels?? Are these relationships formal / informal ?

STAKEHOLDERS	**PUBLIC SECTOR**	**PRIVATE SECTOR**	**CIVIC SECTOR**	**CITIZENS**
	National govt *Govt agencies* *Public services* *Local govt*	*Primary, utilities* *Industry, construction* *Services, utilities* *Finance, development*	*Research / innovation* *Professions* *Culture / media* *NGOs & interest groups*	*Owners / residents* *SMEs, social enterprise* *Special groups* *Community groups*
NATIONAL LEVEL	The Scottish Government SEPA Forestry Commission Scotland Scottish Natural Heritage (SNH)	Scottish Water Scottish Enterprise Transport Scotland Network Rail	Scottish Canals	
MESO-LEVEL	Clydeplan Clyde Gateway		Glasgow and the Clyde Valley Green Network Climate Ready Clyde Central Scotland Green Network	
LOCAL LEVEL	Glasgow City Council East Dunbartonshire Council Renfrewshire Council North Lanarkshire Council South Lanarkshire Council			

CHARACTERISATION OF PARTNERS IN THE MGSDP. CORE PARTNERS ARE IN BLACK. SECONDARY PARTNERS ARE IN RED.

Which types of water systems does the case study work with?? What are the factors of success / gaps??

WATER SYSTEMS	***SECTORS INVOLVED***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Rivers & water bodies	***Yes***		***Plan includes habitat and watercourse improvements. General remit to improve water quality*** ***Long-term visioning until 2060***
Ground water, soil etc	***No***		
Flood & extreme events	***Yes***		***Securing funding for drainage improvements to release land.*** ***Long-term visioning until 2060***
Potable water supply	***Yes***		
Industrial / agri supply	***Unsure***		
Drainage & waste	***Yes***		***Securing funding for drainage improvements to release land*** ***Long-term visioning until 2060***

Which governance systems qualities are shown in the case study? What are the factors of success / gaps?

GOVERNANCE	***CAPABILITIES***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Territorial agenda	*integrated – multi-scale*		***Works across local authorities and different sectors involved in managing drainage***
Ecological agenda	*Anticipatory; multi-functional*		***Looks to reduce flooding and also to tie into health and well-bring and economic improvements***
Economic agenda	*entrepreneurial*		***Obtained City Deal funding for drainage works to permit the construction of properties on brownfield land***
Social agenda	*Not clear*	***Lack of citizen bodies***	
Technical agenda	*efficiency*		***Supported by regulatory framework on SuDS***
Institutional agenda	*multi-functional / multi-level / multi-sector /*		

7.4 CASE STUDY ANALYSIS - NEWCASTLE

General profile of the case study – basic description of institutions & stakeholders

GENERAL PROFILE		
Name, location, area, population		***Newcastle Learning and Action Alliance***
Sectors mainly involved	Public / private / civic / academic / citizens	***Public/private/academic***
Powers & resources	Statutory / delegated / lobby / voluntary. Public funding / private enterprise / partnership / membership	***Partnership***
Territory covered	Region / catchment / water body / landscape body / admin unit	***Catchment***
General functions	Formal planning / regulation / investment. Informal partnership / networking. Knowledge, learning, communications.	***Informal partnership; knowledge learning and communication.***

Which sectors are involved at which levels?? Are these relationships formal / informal ?

STAKEHOLDERS	***PUBLIC SECTOR***	***PRIVATE SECTOR***	***CIVIC SECTOR***	***CITIZENS***
	National govt *Govt agencies* *Public services* *Local govt*	*Primary, utilities* *Industry, construction* *Services, utilities* *Finance, development*	*Research / innovation* *Professions* *Culture / media* *NGOs & interest groups*	*Owners / residents* *SMEs, social enterprise* *Special groups* *Community groups*
NATIONAL LEVEL			***Blue-Green Cities Research Group***	
MESO-LEVEL	***Environment Agency***	***Consultants*** ***Northumbrian Water***		
LOCAL LEVEL	***Newcastle City Council*** ***Newcastle City Council – Transport*** ***Newcastle City Council – Flood Risk Management and Planning*** **Urban Traffic Management Control**(UTMC) **centre**	***Housing Developers*** ***Land Owners***	***Academics*** ***Rivers Trust***	***Not-for-profit groups***

Which types of water systems does the case study work with?? What are the factors of success / gaps??

(note – alternative water system matrix is in the Annex)

WATER SYSTEMS	***SECTORS INVOLVED***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Rivers & water bodies			***Adoption of the blue-green declaration***
Ground water, soil etc			
Flood & extreme events		***Needs to have more buy-in from developers and land-owners***	***Close working relations with the key statutory organisations***
Potable water supply			
Industrial / agri supply			
Drainage & waste			***Connections across all stages of the water cycle***

Which governance systems qualities are shown in the case study? What are the factors of success / gaps??

GOVERNANCE	***CAPABILITIES***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Territorial agenda	*integrated – multi-scale*	***Difficult to move from learning into action***	***Boundaries of the main players map onto one another***
Ecological agenda	*Anticipatory; multi-functional*	***Difficult to move from learning into action***	***Sharing and learning about roles and responsibilities***
Economic agenda	*entrepreneurial*	***Difficult to move from learning into action***	***Possibility for pooling of finances***
Social agenda	*Participatory, inclusive*	***Difficult to move from learning into action***	
Technical agenda	*efficiency*	***Difficult to move from learning into action***	***Representation from technical groups***
Institutional agenda	*multi-functional / multi-level / multi-sector /*	***Difficult to move from learning into action***	***Sharing and learning about roles and responsibilities***

7.5 GM PARTNERSHIP GROUPS ANALYSIS

7.5.1 GM FLOODS AND WATER MANAGEMENT BOARD

General profile of the case study – basic description of institutions & stakeholders

GENERAL PROFILE		
Name, location, area, population		***Flood and Water Management Board***
Sectors mainly involved	Public / private / civic / academic / citizens	***Public***
Powers & resources	Statutory / delegated / lobby / voluntary. Public funding / private enterprise / partnership / membership	***Delegated***
Territory covered	Region / catchment / water body / landscape body / admin unit	***Admin Unit***
General functions	Formal planning / regulation / investment. Informal partnership / networking. Knowledge, learning, communications.	***Formal planning/regulation*** ***Knowledge, learning, communications***

Which sectors are involved at which levels?? Are these relationships formal / informal ?

STAKEHOLDERS	***PUBLIC SECTOR***	***PRIVATE SECTOR***	***CIVIC SECTOR***	***CITIZENS***
	National govt *Govt agencies* *Public services* *Local govt*	*Primary, utilities* *Industry, construction* *Services, utilities* *Finance, development*	*Research / innovation* *Professions* *Culture / media* *NGOs & interest groups*	*Owners / residents* *SMEs, social enterprise* *Special groups* *Community groups*
NATIONAL LEVEL	***Environment Agency*** ***GM RFCC Members*** ***NW RFCC Chair***			***National Flood Forum***
MESO-LEVEL	***GM CCRU*** ***GM Low Carbon Hub*** ***GM New Economy*** GMIST ***GM Planning and Housing*** ***TfGM***	***United Utilities***		
LOCAL LEVEL	***Rochdale MBC*** ***Bolton MBC*** ***Bury MBC*** ***Manchester CC*** ***Oldham MBC*** ***Salford CC*** ***Stockport MBC*** ***Tameside MBC*** ***Trafford MBC*** ***Wigan MBC*** Derbyshire County Council			

Which types of water systems does the case study work with? What are the factors of success / gaps?

WATER SYSTEMS	***SECTORS INVOLVED***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Rivers & water bodies			
Ground water, soil etc	***Yes***	***Unconnected to water quantity agenda***	***Potential for more private sector/citizen involvement in an informal capacity***
Flood & extreme events	***Yes***	***Unconnected to water quantity agenda***	***Potential for more private sector/citizen involvement in an informal capacity***
Potable water supply			
Industrial / agri supply			
Drainage & waste	***Yes***	***Unconnected to water quantity agenda***	***Potential for more private sector/citizen involvement in an informal capacity***

Which governance systems qualities are shown in the case study? What are the factors of success / gaps?

GOVERNANCE	***CAPABILITIES***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Territorial agenda	*integrated – multi-scale – localism & bio-regional*	***Operates at the admin unit rather than the watershed***	***Includes representatives from neighbouring local authorities***
Ecological agenda	*anticipatory / precau-tionary / multi-functional*	***Could be connected to the water quality agenda***	
Economic agenda	*entrepreneurial / service model / asset management*	***Few opportunities to be entrepreneurial because of statutory functions***	***Includes representation from New Economy but the impact is unclear***
Social agenda	*transparent / participative / inclusive / associative /*	***Could include more representation from private sector/ citizens in an informal capacity***	
Technical agenda	*efficiency / effectiveness / efficacy*	***Needs to be connected to other partnerships and groups (focussed on flood risk only)***	***Focussed technical agenda***
Institutional agenda	*multi-functional / multi-level / multi-sector /*	***Could cover more sectors Could be connecred to more functions (i.e. water quality)***	

7.5.2 GM IRWELL CATCHMENT PARTNERSHIP

General profile of the case study – basic description of institutions & stakeholders

GENERAL PROFILE		
Name, location, area, population		***Irwell Catchment Partnership***
Sectors mainly involved	Public / private / civic / academic / citizens	***All sectors***
Powers & resources	Statutory / delegated / lobby / voluntary. Public funding / private enterprise / partnership / membership	***Voluntary/ partnership***
Territory covered	Region / catchment / water body / landscape body / admin unit	***Catchment***
General functions	Formal planning / regulation / investment. Informal partnership / networking. Knowledge, learning, communications.	***Informal partnership, investment, knowledge and learning, regulatory***

Which sectors are involved at which levels?? Are these relationships formal / informal ?

STAKEHOLDERS	***PUBLIC SECTOR***	***PRIVATE SECTOR***	***CIVIC SECTOR***	***CITIZENS***
	National govt *Govt agencies* *Public services* *Local govt*	*Primary, utilities* *Industry, construction* *Services, utilities* *Finance, development*	*Research / innovation* *Professions* *Culture / media* *NGOs & interest groups*	*Owners / residents* *SMEs, social enterprise* *Special groups* *Community groups*
NATIONAL LEVEL	***Environment Agency*** Natural England		***RSPB***	***The Conservation Volunteers*** National Union of Farmers / Canoe England
MESO-LEVEL	***GMEU*** GMCA / Natural Course Moors for the Future Partnership Greater Manchester Archaeology Advice Service ***NW Regional and Flood Coastal COmmittee***	***United Utilities***	***Lancashire Wildlife Trust*** Slow the Flow / Cumbria Wildlife Trust ***Irwell Rivers Trust*** ***Healthy Rivers Trust***	
LOCAL LEVEL	***Manchester City Council*** ***Oldham Council*** ***Rochdale Borough Council*** ***Rossendale Council*** ***Salford City Council*** ***Bolton Metropoilitan Borough Council*** ***Bury Council***		***City of Trees*** ***University of Salford*** ***Manchester Met. University*** ***University of Manchester***	***Groundwork MSST*** ***Salford Friendly Anglers / Mersey Basin Rivers Trust*** Groundwork BBOR

Which types of water systems does the case study work with?? What are the factors of success / gaps??

(note – alternative water system matrix is in the Annex)

WATER SYSTEMS	***SECTORS INVOLVED***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Rivers & water bodies	***Yes***	***Lack of private sector involvement***	***Charged with developing and implementing a plan Citizen groups involved – could bring in more Wide administrative boundary with representation from neighbouring public bodies***
Ground water, soil etc	***Yes***	***Lack of private sector involvement***	***Charged with developing and implementing a plan Citizen groups involved – could bring in more Wide administrative boundary with representation from neighbouring public bodies***
Flood & extreme events	***Yes***	***Lack of private sector involvement***	***Charged with developing and implementing a plan Citizen groups involved – could bring in more Wide administrative boundary with representation from neighbouring public bodies***
Potable water supply	***Yes***	***Lack of private sector involvement***	***Charged with developing and implementing a plan Citizen groups involved – could bring in more Wide administrative boundary with representation from neighbouring public bodies***
Industrial / agri supply	***Unsure***		
Drainage & waste	***Yes***	***Lack of private sector involvement***	***Charged with developing and implementing a plan Citizen groups involved – could bring in more Wide administrative boundary with representation from neighbouring public bodies***

Which governance systems qualities are shown in the case study? What are the factors of success / gaps??

GOVERNANCE	***CAPABILITIES***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Territorial agenda	*integrated – multi-scale – localism & bio-regional*	***Catchment partnerships do not match onto GM admin boundaries***	***Looks to work across scales***
Ecological agenda	*anticipatory / precau-tionary / multi-functional*		***Takes a broad approach to maintaining healthy water environments and is driven by an ecological agenda***
Economic agenda	*entrepreneurial / service model / asset management*		***Partnership model allows funding to be drawn in.***
Social agenda	*transparent / participative / inclusive / associative /*		***The ICP is relatively inclusive across most groups and has an open and participative agenda***
Technical agenda	*efficiency / effectiveness / efficacy*		
Institutional agenda	*multi-functional / multi-level / multi-sector /*	***Multi-sector but could include more private sector involvement***	***Has a multi-functional and wide remit.***

7.5.3 NATURAL CAPITAL GROUP

General profile of the case study – basic description of institutions & stakeholders

GENERAL PROFILE		
Name, location, area, population		***Natural Capital Group***
Sectors mainly involved	Public / private / civic / academic / citizens	***Public/private/academic***
Powers & resources	Statutory / delegated / lobby / voluntary. Public funding / private enterprise / partnership / membership	***Public funding*** ***Delegated powers***
Territory covered	Region / catchment / water body / landscape body / admin unit	***Admin unit***
General functions	Formal planning / regulation / investment. Informal partnership / networking. Knowledge, learning, communications.	***Formal planning, investment, networking***

Which sectors are involved at which levels?? Are these relationships formal / informal ?

STAKEHOLDERS	***PUBLIC SECTOR***	***PRIVATE SECTOR***	***CIVIC SECTOR***	***CITIZENS***
	National govt *Govt agencies* *Public services* *Local govt*	*Primary, utilities* *Industry, construction* *Services, utilities* *Finance, development*	*Research / innovation* *Professions* *Culture / media* *NGOs & interest groups*	*Owners / residents* *SMEs, social enterprise* *Special groups* *Community groups*
NATIONAL LEVEL	***Environment Agency***	***Co-operative Group***		
MESO-LEVEL	***New Economy*** ***GMEU*** ***GM Environment Team*** ***CCRU*** ***Planning and Housing Team***	***United Utilities***	***Canals and Rivers Trust*** ***CPRE*** ***The Wildlife Trust for Lancashire, Manchester and North Merseyside***	
LOCAL LEVEL	***Oldham Council*** ***Salford City Council***	***Bruntwood***	***The University of Manchester*** ***University of Salford*** ***City of Trees***	

Which types of water systems does the case study work with? What are the factors of success / gaps?

WATER SYSTEMS	***SECTORS INVOLVED***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Rivers & water bodies			
Ground water, soil etc			
Flood & extreme events			
Potable water supply			
Industrial / agri supply			
Drainage & waste			

Which governance systems qualities are shown in the case study? What are the factors of success / gaps??

GOVERNANCE	***CAPABILITIES***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Territorial agenda	*integrated – multi-scale*		***Works across local authorities and different sectors involved in managing drainage***
Ecological agenda	*Anticipatory; multi-functional*	***Focus on championing the natural environment, so not specifically focussed on water per se.***	***Has a broad remit which can bring in a number of issues under its umbrella***
Economic agenda	*entrepreneurial*		***Seeks to enhance the economic resilience of GM***
Social agenda	*Not clear*	***No citizen bodies included***	
Technical agenda	*efficiency*	***No real technical expertise on the panel***	
Institutional agenda	*multi-functional / multi-level / multi-sector /*	***Multi-functional/multi-sector***	

7.5.4 TECHNICAL FLOOD RISK OFFICERS GROUP

General profile of the case study – basic description of institutions & stakeholders

GENERAL PROFILE		
Name, location, area, population		***Flood and Water Management Board***
Sectors mainly involved	Public / private / civic / academic / citizens	***Public***
Powers & resources	Statutory / delegated / lobby / voluntary. Public funding / private enterprise / partnership / membership	***Delegated***
Territory covered	Region / catchment / water body / landscape body / admin unit	***Admin Unit***
General functions	Formal planning / regulation / investment. Informal partnership / networking. Knowledge, learning, communications.	***Formal planning/regulation*** ***Knowledge, learning, communications***

Which sectors are involved at which levels?? Are these relationships formal / informal ?

STAKEHOLDERS	***PUBLIC SECTOR***	***PRIVATE SECTOR***	***CIVIC SECTOR***	***CITIZENS***
	National govt *Govt agencies* *Public services* *Local govt*	*Primary, utilities* *Industry, construction* *Services, utilities* *Finance, development*	*Research / innovation* *Professions* *Culture / media* *NGOs & interest groups*	*Owners / residents* *SMEs, social enterprise* *Special groups* *Community groups*
NATIONAL LEVEL	***Environment Agency***			***National Flood Forum***
MESO-LEVEL	***GM Assistant Planning Strategy Manager*** ***GM Strategic Flood Risk Management Co-ordinator***	***United Utilities***		
LOCAL LEVEL	***Rochdale MBC*** ***Bolton MBC*** ***Bury MBC*** ***Manchester CC*** ***Oldham MBC*** ***Salford CC*** ***Stockport MBC*** ***Tameside MBC*** ***Trafford MBC*** ***Wigan MBC***			

Which types of water systems does the case study work with?? What are the factors of success / gaps?

WATER SYSTEMS	***SECTORS INVOLVED***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Rivers & water bodies		***Unconnected to water quantity agenda***	
Ground water, soil etc	***Yes***	***Unconnected to water quantity agenda***	
Flood & extreme events	***Yes***	***Unconnected to water quantity agenda***	***In-depth technical expertise***
Potable water supply			
Industrial / agri supply			
Drainage & waste	***Yes***	***Unconnected to water quantity agenda***	

Which governance systems qualities are shown in the case study? What are the factors of success / gaps?

GOVERNANCE	***CAPABILITIES***	***GAPS & CHALLENGES***	***SUCCESS & OPPORTUNITIES***
Territorial agenda	*integrated – multi-scale – localism & bio-regional*	***Operates at the admin unit rather than the watershed***	
Ecological agenda	*anticipatory / precau-tionary / multi-functional*	***Could be connected to the water quality agenda***	
Economic agenda	*entrepreneurial / service model / asset management*	***Few opportunities to be entrepreneurial because of statutory functions***	
Social agenda	*transparent / participative / inclusive / associative /*	***in an informal capacity***	
Technical agenda	*efficiency / effectiveness / efficacy*	***Needs to be connected to other partnerships and groups (focussed on flood risk only)***	***Focussed technical agenda***
Institutional agenda	*multi-functional / multi-level / multi-sector /*	***Could cover more sectors Could be connected to more functions (i.e. water quality)***	

7.6 LIST OF INTERVIEW TOPICS

Participants were provided with a briefing document that gave an overview of the water governance project and signed a consent form. Questions were sent to participants in advance. Interviews lasted for around 60 minutes.

1. Could you describe your role in X organisation?
2. In what way does your organisation operate within the governance of water in Greater Manchester?
3. How do you understand the term 'Integrated Catchment Management'? Could you explain your answer in more detail?
4. What currently works well in terms of water governance in Greater Manchester?
5. What currently does not work well in terms of Greater Manchester's water governance?
6. What improvements, if any, would you like to see in terms of the way that water is governed in Greater Manchester?

If not already covered in the discussion by the previous questions, and if there is time:

7. To what extent would you say that the management of water quality and the different types of flooding should be more closely integrated?
8. What potential problems may arise if water quality and flood issues are managed in a more integrated way?
9. What potential opportunities may arise if water quality and flood issues are managed in a more integrated way?