November 2015

PAYMENT FOR ECOSYSTEM SERVICES – IRWELL CATCHMENT

Final report prepared by

Centre for Local Economic Strategies and Wildlife Trust for Lancashire, Manchester and North Merseyside.

Presented to

DEFRA
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EXECUTIVE SUMMARY

Background

The Wildlife Trust for Lancashire, Manchester and North Merseyside (LWT), in partnership with the Environment Agency (EA), Centre for Local Economic Strategies (CLES), CityCo and the University of Salford; was commissioned by Defra, to research the practical development of a Payment for Ecosystem Services (PES) for the River Irwell in the city centre of Manchester and Salford.

The River Irwell is a catchment which is under significant pressure linked to its urban character which impacts upon the quality and function of the river environment. The aim of this study was to contribute to other existing initiatives within the catchment to identify practical ways to deliver new and additional investment in the natural environment of the River Irwell.

The study built upon existing ecosystem services (ES) research at a Greater Manchester (GM) level to specifically focus on exploring the feasibility of establishing a new PES scheme within a local area of the River Irwell with one type of prospective buyer, commercial businesses. The study area of the city centre of Manchester and Salford was selected linked to the density of commercial businesses adjacent to the River Irwell. The additional presence of existing partnership structures for commercial businesses in this area, specifically the HEART Business Improvement District, was also valuable linked to the potential for facilitated engagement with individual businesses and collective buying of ES’s.

Methodology

The methodology was influenced by the DEFRA Payments for Ecosystem Services: A best practice guide although not used in a structured way.

Stage 1 was to gauge awareness and identify if there was a clear demand for enhancements to an ecosystem service amongst commercial businesses in the section of the Irwell. Previous studies indicated a range of priorities for potential investment in ecosystem services around surface water and fluvial flood management and cooling of urban heat islands around use of green infrastructure. However, it became clear that given the complexity of different partnership initiatives operating, that the focus of this pilot would need to be much more narrowly defined which did restrict the scope of the pilot more than expected (see later lessons learnt section).

In stage 1, following desk based review and site visits a series of potential opportunities for ES enhancements were identified along with an initial assessment of the impact of these enhancements, benefits to commercial businesses and risk factors associated with their implementation. Key ES enhancements and their key benefits to commercial businesses include:

- **‘Greening’ impoundment walls.** Enhancements to the visual quality of the impoundment walls has the potential to increase property values and rental rates (residential and commercial), increase property development and visitor spending.
- **Eradication or control of invasive species.** Reduced costs and liability risks associated with structural repairs and insurance claims; as well as negating potential impacts on land property values.
- **Control and removal of litter in the River Irwell.** Increased desirability and quality of life for individuals living within residential accommodation (major plans for more residential accommodation) has the potential to positively impact upon property values and rental rates, increase property development and visitor spending. Enhanced environmental quality will help reduce prevalence of crime and associated costs to businesses.
- **Improving the quality of greenspaces alongside the River Irwell.** High quality greenspace within walking distance of existing and planned residential properties will increase property values and rental rates, increase property development and visitor spending. Enhanced greenspace will help address the urban heat island effect.
- **Improving the morphological diversity of the River Irwell.** Increased biodiversity value and aesthetic quality of the river has the potential to increase visitor spending, address the urban heat island effect and positively contribute to improved health and well-being of employees and residents which has been shown to increase employee productivity levels.

Following this initial review and identified options for ES enhancement, interviews with prospective buyers (commercial businesses; tenants and landlords), were undertaken. 80 commercial businesses / landowners...
within the study section were contacted; 21 responded positively and 12 were interviewed as part of stage 1.

Findings from stage 1

- **Negative impacts of the River a common theme.** Opposed to businesses perceiving the value, just under half of all businesses consulted strongly felt that the Irwell had an indirect negative impact on their company or on the surrounding area. This negative perception has the potential to be a catalyst for investment in the River Irwell.

- **Opportunities for environmental improvements with possible commercial value.** Over half of the businesses consulted recognised the indirect or latent value of the River to their company or the City as a whole.

- **Little willingness amongst commercial businesses to pay.** In light of the fact that the majority of businesses report no direct commercial value from their close location to the Irwell, businesses were naturally reluctant to incur costs to enhance and maintain the River. Key to turning this around then would be to move thinking of the Irwell from a liability into a potential asset going forward.

- **Any benefits are localised and specific.** The perception of the Irwell’s direct and indirect commercial impact upon businesses is dependent upon both the specific part of the River alongside which businesses are located as well as the sector in which the business operates. The local focus of businesses highlights that understanding the spatial scale of beneficiaries and ES benefits is important when targeting businesses, particularly if the scheme is targeted at multiple businesses.

- **Key barriers restricting maximising the environmental value of the river.** A number of both long- and short-term barriers were identified which restrict the potential for the development of enhancements to the visual and recreation value of the Irwell (indirect commercial value). Included in this were: the lack of clear guidance and information along the Irwell’s network footpath and issues of public safety.

- **Better link between existing business tax and improvements.** All businesses evidenced reluctance to a financial contribution linked to their existing taxes and business rates. However, just under half of businesses indicated that they may consider contributing financially for work which was transparent and had distinct and additional benefits to those received through their existing business tax.

Following stage 1 tranche of interviews a number of possible areas for improvement were identified by commercial businesses. Steering group partners decided to select two options to take forward for further exploration to assess the feasibility of developing a PES scheme with commercial businesses.

These two options were litter removal and enhancing the visual appearance of channel walls. A number of factors influenced the selection of these two options, particularly the fact that they were both related to the visual amenity of the River Irwell which was consistently highlighted by commercial businesses as the key service which they value or felt was important to their commercial interests. Options such as improving in-channel morphology and invasive species control were discounted from further exploration with commercial businesses. These omissions were based upon stage 1 feedback from businesses which highlighted the importance of local outputs to enhance ES as opposed to activity upstream (wider catchment) to deliver ES enhancements.

Partners recognised that the inclusion of litter as an option to explore was not a conventional PES scheme but linked to the clear lack of willingness to pay for ES enhancements amongst commercial businesses, it was vital to explore options which they felt were most important to their commercial interests.

**Stage 2** aimed to explore and answer issues pertaining to geographical scope, monitoring arrangements, timescales, PES configuration and mode of payment.

However, it was clear that enhancing ecosystem services was not on the agenda of the vast majority of the organisations along this part of the River Irwell and they were not willing to devote resources, in the form of attending a workshop to explore the issue further. A workshop for all businesses who expressed an interest/concern over these issues was planned. However, despite significant efforts, there was very little interest from businesses in attending a collaborative workshop to explore the two practical PES options in more detail.
Lessons learnt

Ownership is key

Ownership and how that relates to the immediate environment is of vital importance to building a momentum around a PES. It is the business owners who can make decisions about the external relation that the building has with its immediate environment. However, in city centre environments, the owners of the buildings are not the everyday users of the buildings. Most city centre buildings are filled with tenants, who have less interest in the building’s relationship to the immediate environment. Indeed even if the tenants do have an interest/concern, they still believe it is responsibility of the business owner, not them.

Who wants to act?

In the development of any PES, some form of collective identification with the issues and/or need for improvement is essential. This serves to galvanise collective action and create a momentum for ongoing change. However in city centre locations, large office buildings have many separate companies and activity, with little joint working/collaboration.

Linearity

The River is a linear and natural organic component of a city. As such rivers bend, flow and change along its course. This creates considerable complexity in terms of how individual businesses and owners relate to the river.

Dynamic development context

City Centres are dynamic areas of development and regeneration. Change is normal. In Manchester and Salford there has been significant change over a number of years. With significant property, public space and transport infrastructure development. This creates a context of change and lack of permanence. As such there is a strong perception that any pilot activity may get overridden by a development in the future.

The number of actors involved in city centre development and regeneration is high and subject to frequent change. Understanding the scope and relevance of these different actors to ES enhancements is challenging. An initiative (which our study had been largely unaware of at the beginning of the pilot) was also actively engaging commercial businesses around wider regeneration issues and there was some concerns and tension that our interviews would negatively impact their ongoing work. These concerns led to the proposed content of our interviews being focussed on in-channel ES as opposed to the wider public realm space alongside the River Irwell.

Flood management priorities can mask wider benefit

The Irwell has historically been, and remains, a major channel for mitigating flood risk to the city centre. This fundamental practical function overrides other benefits the river could potentially bring.

Key delivery aspects for a successful PES

For a PES scheme to work in practice it must represent a win for both the buyers and sellers of the service.

There are different options for PES schemes to be explored, designed and implemented – one of which is for a scheme to be principally driven by buyers who want to receive enhancements in ES which would be more expensive to achieve through other means. Contrasting this option would be for sellers (landowners, resource managers) to drive a PES scheme which benefits a particular buyer (s).

The other key option, which represents the approach taken during this pilot, is for the exploration, design and implementation of PES scheme between buyers and sellers to be led by an intermediary.

Importance of an intermediary

Whilst the organisations as part of this work, did serve to create a temporary/episodic agent, it was largely beyond the remit of this activity to perform that role in the long-term and it is clear that there was no single agency (intermediary), which could act as the glue in which collective views and ideas could be shared, discussed and acted upon. In the absence of this, businesses looked to or highlighted public bodies as being the responsible agent. Even if public bodies had the capacity and resources to act as the key intermediary,
there is a risk that there could be concern by some commercial businesses around financial investment through an intermediary which had statutory responsibilities for maintenance (identified during stage 1 interviews).

The Irwell Catchment Partnership (ICP) has the independence which would address such reservations by commercial businesses but the unincorporated status of the group precludes such a role and so one option would be for the intermediary role to be taken forward by an individual or collective group of organisations from the partnership. This is feasible and there is interest by NGOs in the partnership but the challenge would be linked to securing sufficient resources and having the credibility to influence commercial businesses.

A more commercially minded agency has the potential to have greater credibility and influence with commercial businesses than NGOs and public bodies. However, no such commercial organisation that had the capacity, resources and expertise was identified.

This study has been unable to identify the most suitable agent who can bring together commercial businesses, land owners and other advisors to collect, share and act upon concerns, views and ideas linked to the Irwell.

Structure for collective business involvement
The initial intention for the pilot was to use the opportunity of an existing BID structure as a potential commercial vehicle for PES. In the event, this was not found to be workable for a number of reasons, particularly that the BID budget and work programme until 2017 had already been fixed by the structure and that not all businesses in the BID structure would benefit from any enhancements to the Irwell linked to its wider geographical remit than the pilot. This remains an open question as to what overarching partnership body or vehicle, which is specific to this location, could be the basis for collective business involvement. However, there are examples such as Sheffield who have used a BID structure (see below) which suggests there may be workable business vehicles if the right conditions are put in place.

Process
There is, and has been, no long term process to consider the issues worked through in this report. Whilst this work has been a useful process, it was a temporary process and, as such, limited in terms of creating a much needed long term process which could develop a PES in the future.

Resources to catalyse action
The learning indicates that a long-term engagement programme with resources will be required to establish a new structure which could design and develop a PES scheme to enhance the provision of ES in this area. The successful development of a BID structure with commercial businesses to undertake channel management works on the River Don by Sheffield City Council and partners reinforces the need for significant resources, with estimates of £19m being spent to realise this development. Securing this level of resource will be challenging without a significant catalyst that brings together commercial businesses, landowners, statutory organisations and other partners (like the 2007 River Don flooding event). Although there is a collective negative perception amongst most commercial businesses to the River Irwell this appears unlikely to provide sufficient stimulus to secure sufficient resource to catalyse action.

Lessons for government
Government policy and action to create the right context for the acceleration of PES, in the context of areas like the Irwell is of vital importance. In this, consideration of resource to ‘oil the wheels’ of the process is important. Furthermore, ongoing devolution to local combined authorities, including the role of the environment agency, as a part of any deepening of devolved arrangements may serve to create stronger coalitions of public partners, which could catalyse the development of a PES.

Proof of concept
In the context of this pilot project, the proof of the PES concept within this urban context, with a splintered ownership and an ongoing mix of regeneration and development activities, is at best not proven. There were a number of challenges the pilot faced which led to difficulties in positioning the project in the right context including the overlap with other partnership initiatives and a restricted set of options to take to business. The potential of a PES for a business context is woven into a need to develop a culture of how businesses and owners relate to and feel a sense of ownership and responsibility to the environment. It is also about changing business perceptions about the Irwell from a current liability into a future potential asset of value.
Moving forward: the opportunities to link PES to development activities

This work has opened the door and placed seeds of ideas about PES and its potential. Moreover, it has captured some of the problems and pitfalls of attempts to introduce a PES

Transferable lessons

This particular pilot found significant issues about the potential for developing a PES within a city centre environment. However, there were a number of lessons learnt from this experience of importance - for example, ensuring that the work fits well within the wider strategy and initiatives for the area is critical.

The UK has many riparian environments within complex post-industrial urban locations. In this stretch of the Irwell, the mix of significant regeneration and development, coupled to a river which has not deeply penetrated the everyday cultural and social life of the city, means its stock is low. As such, greater consideration must be given to raising the profile of the river, and (as mentioned above), seek to place the river within wider considerations of place development.

Next steps

The pilot study, although not successful has helped to provide a number of key learnings including an initial assessment on potential investments in the river Irwell and the benefits that could be delivered. Our view is that implementation of a PES or PES-like scheme with commercial businesses needs to be designed and developed by an intermediary as there is currently no collective demand from businesses for an enhancement of services provided by the River Irwell. The key uncertainty at this stage is which organisation or structure is best placed and or able to act as the vehicle to support the long term development of PES schemes with commercial businesses.

Although there a number of NGOs and public / statutory bodies, some of which are working within existing structures linked to the River Irwell, which potentially have the ability, rationale and interest to deliver this role our study has not identified a specific organisation who will act as this intermediary. The key barrier which is inhibiting the potential of one of these organisations / partnerships is a lack of resources to support the necessary long-term process of engaging and motivating businesses to support the development of a practical PES scheme.

The findings of this study will be shared and discussed with key stakeholders and partnerships including Manchester City Council, Salford City Council, Irwell River Partnership, Local Nature Partnership and the Environment Agency with a view to assessing the feasibility of identifying a lead organisation / partnership who can advance the issues and modicum of motivation amongst businesses to support the development of a practical PES scheme.
1 INTRODUCTION

1.1 DEFRA PES research programme

The Natural Environment White Paper contained specific commitments linked to supporting the research and development of practical PES schemes. DEFRA has commissioned a series of PES pilot projects to test out the practical application and develop proof of concept to help move theory into practice.

Previous PES pilots have included investigating a range of ES, suppliers and beneficiaries, and examining potential payment mechanisms. Examples of studies undertaken include:

- A study of PES mechanisms which can support the Canal and Rivers Trust to provide enhanced ecosystem services on the Leeds – Liverpool Canal; particularly linked to drainage, visual amenity, recreation and habitat restoration.
- A targeted reverse auction funded by South West Water as part of its Upstream Thinking Programme, to invest in farm infrastructure to enhance the water quality of the Fowey river.
- A study by Birmingham City University to develop a code to facilitate private sponsorship of peatland restoration to reduce net GHG emissions and enhance water quality, biodiversity and recreation.

This study is part of the third round of PES pilot projects. One of the key differences between this project and previous pilots is the focus on engagement of commercial businesses as prospective buyers of ES associated with a main river within a highly urban city centre region. There are existing partnership structures for commercial businesses within the study area, specifically the HEART Business Improvement District, which will help facilitate engagement with potential buyers and provide a potential opportunity for collective buying of ES’s.

This PES pilot is building on existing ES research delivered at a GM level by partners to specifically focus on a local area of the River Irwell. The key driver for this PES pilot is to identify practical ways to deliver new and additional investment in the natural environment in GM, an area which is under significant pressures linked to the urban character of the region.

The Wildlife Trust for Lancashire, Manchester and North Merseyside (LWT), in partnership with the Environment Agency (EA), Centre for Local Economic Strategies (CLES), CityCo and the University of Salford; was commissioned by Defra to undertake this study. As a result of changes in staff positions at the Environment Agency their active involvement in the study was limited to the initial / early phases. Similarly, the active involvement of CityCo was focused around engagement of commercial businesses, with less involvement in analysis of data.

1.2 Ecosystem services

An ecosystem is a community of living organisms (animals, plants and micro-organisms) and the non-living components of their environment (air, water and mineral soil). Ecosystems are defined by the network of interactions amongst organisms, and between organisms and their environment; vary in size from local to global. River ecosystems, including the River Irwell, are complex and linked to continuous hydrodynamic change associated with flowing water. Physical modification, water abstraction and discharge of waste water are common in England’s river ecosystems, including the River Irwell, many of which can lead to declines in ecosystem function which can negatively impact on human well-being.

ES are services provided by the natural environment that benefit people (DEFRA, 2010) and are typically classified as provisioning, regulating, cultural or supporting services:

- **Provisioning** - include the supply of food, water and timber;
- **Regulatory** - include the regulation of air quality, climate, flood risk and water quality;
- **Cultural** - provide opportunities for recreation, tourism and education;
- **Supporting** - provide the essential underlying functions such as soil formation and nutrient cycling (DEFRA, 2013).
1.3 Payment for ecosystem services

PES is the term used to describe ‘schemes in which the beneficiaries, or users, of ecosystem services provide payment to the stewards, or providers, of ecosystem services’ (URS, 2013). Ultimately, it links actions to increase the delivery of services to payments by those who directly benefit from their provision.

In practice, PES often involves a series of payments; potentially from a number of buyers, to land or other natural resource managers in return for a guaranteed flow of ecosystem services (or, more commonly, for management actions likely to enhance their provision) over-and-above what would otherwise be provided in the absence of payment (URS, 2013). Payments are voluntary by beneficiaries, and so contrast to the polluter pays model of enhancements which is reliant upon forced payment through regulation but needs to deliver enhancements over and above the regulatory baseline.

Those who may be buying enhanced ecosystem service provision include the government, businesses, communities and individuals. Existing examples of PES in the UK include government agri-environment schemes such as Higher Level Stewardship through which landowners (particularly farmers) are paid to manage their land to enhance various ecosystem services and water companies paying tenant farmers to improve their land management practices to enhance water quality and flood protection.

1.4 Research objectives and approach

1.4.1 Research objectives

The overall aim of the study is to explore the feasibility of establishing a new PES scheme funded by private sector businesses in Manchester and Salford City Centre adjacent to the River Irwell, Greater Manchester (GM).

The objectives of the pilot study were:

- Identify saleable ecosystem services (ES) and prospective buyers, intermediaries and sellers;
- Establish PES scheme principles and resolve technical issues;
- Negotiate and implement PES agreements;
- Monitor, evaluate and review implementation.

1.4.2 Research approach

The research approach comprised five stages:

1) Identification of saleable ecosystem services through desk based review, site visits and engagement with key stakeholders;
2) Identification of prospective buyers and sellers;
3) Interviews with commercial property owners/businesses to explore perceptions of PES;
4) Analysis of interview data and identification of options to take forward PES models;
5) Further dialogue with commercial property owners/businesses to investigate opportunities, challenges and conditions which need to be met.

1.5 Report layout

Following this introduction section the report is structured as follows:

- Background (section 2);
- Methodology (section 3);
- Findings (section 4);
- Conclusions and recommendations (section 5).
2 BACKGROUND

2.1 Irwell catchment and study area

2.1.1 The Irwell Catchment

The Irwell Catchment covers 777 km² stretching from the moors above Rawtenstall in the north to the Manchester Ship Canal in the south, and from Littleborough in the east to Bolton in the west. The main rivers are the Irwell, Roch, Croal, Medlock and Irk, all flowing, via the Irwell, into Salford Quays and, from there, the Manchester Ship Canal. These rivers and their tributaries have a cumulative length of nearly 400km. The Catchment also takes in 5 canal systems. These canals, once important for trade are now mainly used for recreation, with the exception of the Manchester Ship Canal which links the port of Liverpool with Salford Quays. There are a large number of reservoirs, lakes and mill lodges predominantly located in upland areas at the head of the major river systems. Many of the reservoirs, like Wayoh and Clay Lane, contribute drinking water to the circa 1.25 million people who live and work in, or visit, the Catchment. The towns and cities with the highest populations are Manchester, Bolton, Oldham, Salford and Rochdale (Figure 1).

Figure 1: The Irwell Catchment

Source: Environment Agency
2.2 Study section of our pilot on the River Irwell

The study section for this project is a 2km length of the River Irwell in Manchester city centre and adjacent areas of the City of Salford Figure 2.

Figure 2: Study section of the River Irwell (between the two stars)
This section of the River Irwell has a canal-like character with heavily modified walls which provide the river with a high capacity to convey flows and reduce flood risk to adjacent properties, see Figure 3.

Figure 3: The River Irwell flowing through the city centre of Manchester (left bank) and Salford (right bank) at the mid-point of our study section.

Towards the upper extent of this study stretch the River Irk joins the main river, being culverted underneath Manchester Victoria Station. Similarly the River Medlock joins the River Irwell in the lower section of this study stretch, shortly after which the River Irwell becomes the Manchester Ship Canal. This section of the River Irwell also includes the link with Manchester, Bolton and Bury Canal although only a 500m stretch of this canal is navigable.

The Manchester Ship Canal provides a key role managing flood risk as sluice structures are used to regulate flow in the catchment.

Being the regional centre of the River Irwell catchment this section is highly urbanised; wide diversity of commercial and residential properties overlook and back on to the River Irwell. There are very few areas of riparian land which is undeveloped or managed as greenspace.

2.3 **Understanding the issues on the Irwell Catchment**

The environmental condition of the River Irwell has improved steadily during the second half of the 20th Century. Gradual improvements in water quality of the River Irwell are linked to changes in industrial use throughout the catchment and to various legislative actions. These improvements have led to a greater appreciation and value of the river as a place for residential and commercial development as well as a recreation resource and a wildlife habitat. However, there are still significant issues which impact on the quality and function of the River Irwell.
**Water quality**

Water quality within the River Irwell has improved significantly in the last 30 years and some fish populations have recovered. However, of the 74 surface water bodies in the River Irwell catchment only 17 (13%) reach the required standard of Good Status/Potential as set out by the Water Framework Directive and so water quality is still a major issue. Most water bodies on the River Irwell (86%) are classified as moderate with 7.5% poor and 4.5% bad.

As much of the River Irwell catchment is urban, diffuse pollution sources are a concern especially in highly populated areas where traffic densities and road networks are concentrated. The River Irwell catchment also has a significant number of industrial legacy sites such as mines and old landfills which are an additional source of diffuse pollution.

Other key sources of pollution are similar to those characteristic to other urban rivers in the UK such as point source wastewater discharge from treatment works and Combined Sewage Overflows (CSOs) (either licensed discharges or misconnections).

Poor water quality continues to have a negative impact upon the ecology of the River Irwell and many of its tributaries. Many species of aquatic invertebrates, plants and animals which are indicative of good health are absent or only present in low populations across large areas of the River Irwell catchment.

**Flood risk**

In 2009 the Environment Agency published the Irwell Catchment Flood Management Plan. The plan estimated that 7,500 properties in the Catchment have a 1% chance of fluvial (river) flooding each year (Figure 4), 1000 of which are based in Salford and Manchester City Centre. It is estimated that the number of properties at risk of fluvial flooding within the Irwell Catchment will increase to 10,000 by 2100, an 8% increase based on current flood risk.

**Figure 4: Properties at risk of a 1 in 100 year flooding event (undefended)**

![Properties at risk of a 1 in 100 year flooding event](source: Environment Agency)
Flooding in the upper catchment is ‘flashy’ with short times for water to peak in the narrow valleys as a result of heavy rainfall events. The lower catchment, Manchester and Salford, is where the topography is lowest and the catchment is most extensively urbanised. Flooding in these areas is associated with widespread heavy rain and or prolonged periods of wet weather through the catchment. After flowing through the city centre, water levels are regulated by the Manchester Ship Canal which can alter levels accordingly through sluice gates.

Flood risk within the urban areas, particularly Salford and Manchester, has been managed over many years primarily through modified banks – most notably walls within the city centre. The Environment Agency state that: ‘in the centre of Manchester, the Irwell was previously navigable, and has a canal-like character, with raised walls creating a channel with a very large capacity to convey flows. Here the Rivers Irwell and Irk meet to form the Manchester Ship Canal that takes the flow downstream where the Medlock joins. Although the canal is used for navigation, it also plays a role in reducing flood risk in Manchester and other areas. The sluice structures that regulate the Ship Canal were designed to keep canal water levels relatively constant, and raised embankments and walls create a channel with a very large capacity to convey flows.’ (Environment Agency, 2009)

Due to the high degree of flood risk and extent of the floodplain in Salford the area contains a considerable amount of flood defences. The most significant flood defence scheme is the Littleton Road Flood Storage Basin which is an offline flood storage basin which can store 650,000m3. It was designed and implemented in 2005 by the Environment Agency in partnership with Salford City Council. This flood defence scheme protects the areas of Lower Kersal, Lower Broughton and Charleston against a 1 in 75 year standard flood event.

Other key flood defences include flood embankments and flood walls, particularly in the downstream area of Salford and Manchester – including the study section of this work. Recent works by the Environment Agency has seen significant investment to extend the lifetime of current piling through installation of rocks in the River Irwell between Castle Irwell and Lower Broughton, just upstream of our study section.

In March 2015 a second flood storage basin was commenced at Castle Irwell in Salford to help reduce flood risk. This £12 million project, funded by Salford City Council, the Environment Agency and central government growth funding; will increase the standard of flood protection to a 1 in 100 event for 1,900 residential and commercial properties, including those located within the study section. This scheme will be complete by September / October 2015.

**River modification and function**

Linked to the key role that the River Irwell played during the industrial revolution the river has a legacy of heavy modifications including weirs, walling, deepening, re-alignment, culverting, widening and dredging throughout the catchment. Over two thirds of the rivers in the Irwell catchment have been modified (Irwell Catchment Plan) with over 1000 weirs once present within the 39 mile length of the River Irwell.

These modifications impact upon the resilience of the river to respond to climate change, particularly the ability of the River Irwell to hold water in both floods and droughts through decreased connectivity with the floodplain throughout the catchment. Physical modifications also impact upon the quality of in-channel and riparian habitats which has restricted some of the positive improvements made against issues such as water quality. Another key impact of physical modification is the negative impact upon the aesthetic value of the river through walling and lack of in-channel and or riparian habitat which is particularly evident within the study section of this project.

Legislation such as the Water Framework Directive has been a major driver for work to restore and deliver mitigation measures associated with heavily modified sections of the River Irwell and its key tributaries. A number of key projects have and continue to be delivered along the River Irwell and its key tributaries to restore and/or mitigate against modifications such as:

- removal of 21 in channel barriers by the Environment Agency and Irwell Rivers Trust in 2011 and 2012 to reconnect 17.5 miles of river;
restoration of a heavily modified 1km section of the River Medlock by the Environment Agency, Manchester City Council and Groundwork Manchester, Salford, Trafford and Tameside in 2014 to reconnect the river with the local environment and improve its value for wildlife and people. Works have included widening the river, restoring natural features and removing manmade elements with a negative impact;

re-opening sections of the existing culverted River Roch through Rochdale Town Centre to help restore the natural habitat of the river in 2015 by the Environment Agency and Rochdale Borough Council.

Whilst projects such as those highlighted have made progress to restore and/or mitigate against modifications on the River Irwell and its key tributaries there remains significant modifications throughout the catchment. As well as impacting upon the quality of in-channel habitats and wildlife populations within the River Irwell many of these modifications and residential / commercial developments have impacted upon the extent, quality and connectivity of the landscape through which the River Irwell flows.

**Invasive species**
The River Irwell has a number of invasive non-native species (INNS), several of which are prevalent throughout a significant majority of the catchment. In terms of key plant INNS along the riparian corridor of the River Irwell and its key tributaries the three main species are Giant Hogweed, Japanese Knotweed and Himalayan Balsam.

The negative impact of these species is cross cutting and the financial costs to resolve and address impacts can be subjected to a wide range of stakeholders including individuals and communities, land and property owners (and their tenants), statutory bodies and utility / infrastructure operators. Some of the evidenced negative impacts of these species include bank erosion, risk to human health, degradation of structural foundations and loss of native biodiversity value.

**Poor visual amenity and litter**
Litter is a major issue on the River Irwell, particularly in the study section of our project linked to accumulation of litter from upstream sources from major urban areas including Bolton, Rochdale and Bury. As with most urban rivers there are a range of sources of litter within the River Irwell. Whilst no robust surveys have been undertaken to identify the sources of litter and their severity on the River Irwell the key form of litter ingress into the main channel is through individual items being blown / dropped into the river or its riparian channel from the significant number of residential, commercial, highway and other key transport infrastructure which are located adjacent to the River Irwell and its key tributaries. Fly tipping also remains a key issue on many of the riparian banks of the River Irwell and its tributaries.

Sewage litter is another key issue on the River Irwell which is sourced from CSOs through the catchment. Whilst screening has been installed on most CSOs there are still instances of failing screens which can lead to sewage litter being released into the River Irwell and its key tributaries during periods of peak capacity in the sewerage system.

Litter has a significant negative impact upon the River Irwell – particularly from a visual and odour perspective which reduce the value of the river as a recreation asset and as a place to live or work alongside. Litter can also impact upon the water quality of the river as well as increasing the risk of localised flooding linked to drain and culvert blockages.

**Recreation use**
In addition to impacting upon the ecology of the River Irwell, poor water quality has a similar negative impact upon the recreation value of the river.

Poor water quality has a negative impact upon fish stocks which reduces the value of the river as an angling destination for local people and visitors to the region. Even where fish stocks are recovering the perceived poor water quality of the River Irwell as a whole has a negative impact upon the fishing value of the river amongst the angling community. Other factors including litter also have negative impacts upon the recreation value of the River Irwell.

The River Irwell has the potential to be a key destination for other recreation activities including canoeing, bird watching and walking. All of these recreation activities are negatively impacted by the poor water quality, litter and poor visual appearance of the River Irwell.

Recreation and tourism boat use on the River Irwell is limited, linked to insufficient draught for most boats, sparse distribution of landing stages and poor access.
2.4 Addressing issues on the Irwell Catchment

There are a number of initiatives which are working to protect and improve the River Irwell catchment, including efforts to address the issues described above. The key motivation for this study was to identify practical ways to deliver new and additional investment to help address some of the issues described above as well as others which commercial businesses identify as having a negative impact on their business, landholdings or work environment.

2.5 Actors involved in the River Irwell

**Irwell Catchment Partnership**

One of the key partnerships working to protect and improve the River Irwell and the wider water environment within the Catchment is the Irwell Catchment Partnership (ICP). The vision of the ICP is ‘Making a healthy water environment a positive part of people’s daily life’.

This partnership was initiated partly in response to the Government’s recognition that water environments are significantly impacted by the activities that are carried out on the land that surrounds them and so need a co-ordinated management approach at a catchment scale to bring about environmental, economic and social benefits; a ‘catchment based approach’.

In 2011, as part of the Government’s aim to increase more locally focussed decision making and action of the future direction of improvements to the water environment and a series of pilot catchments were developed, one of which was the River Irwell.

Much of the pilot phase of the ICP was associated with:

- stakeholder engagement to bring together organisations working within the River Irwell Catchment;
- gathering evidence to understand and identify issues at a catchment scale;
- identifying outcomes that the partnership want to achieve to address issues and improve the River Irwell catchment;
- development of Terms of Reference for the partnership.

Post-pilot, the ICP is now co-ordinated by Groundwork MSSTT. Presently, over 30 organisations are members of the ICP which include representation from various sectors such as local authorities, statutory agencies, academia, non-governmental organisations, businesses and community groups.

The ICP steering group meets on a bi-monthly basis to bring together partners to co-ordinate and strengthen action to protect and improve the River Irwell through information sharing and reviewing challenges associated with the catchment.

In addition to the main steering group, a separate ‘project group’ was established in 2014 and meets on a bi-monthly basis to identify, plan and deliver collaborative work in the catchment.

**IRCAMP**

One of the delivery initiatives which has developed in 2015 as a result of the ICP project group is the formation of The Irwell Catchment Asset Management Partnership (IRCAMP). IRCAMP is a collaborative enterprise involving well-established third sector organisations and commissioners operating within the footprint of the Irwell River Catchment. The partnership, which is a result of two years of pilot activity funded by the Environment Agency, provides organisations based within the River Irwell Catchment with the opportunity to commission affordable care for their riverine assets, which conforms to professional standards and specifications, whilst achieving additional social and environmental outcomes.

This partnership is in the infancy of its development but has the potential to be a mechanism to deliver ecosystem enhancements as part of a PES scheme(s). IRCAMP also has the potential to explore mechanisms to secure finance from different organisations, funders and other sources to stimulate improvements around the River Irwell environment which may include PES schemes.
Environment Agency

Whilst the Environment Agency is heavily represented and involved in the ICP there are a wide range of activities which the organisation undertakes which are managed outside of the ICP. One of the key roles which the Environment Agency leads on in the River Irwell is establishing and delivering flood risk management policies. In 2009 the Environment Agency developed a new Irwell Catchment Flood Management Plan in consultation with a wide range of partners including Association of Greater Manchester Authorities, Peel Ports, DEFRA, United Utilities, Natural England and English Heritage (Environment Agency, 2009). This plan has influenced some of the key flood defence work delivered within the Irwell Catchment over the last 5 years, particularly those activities based in Salford (see section 2.3)

2.6 Wider policy and regeneration context within Greater Manchester and its links with the natural environment

Greater Manchester (GM) is one of the UK’s most successful cities. The Vision of the 2013 – 2020 Greater Manchester Strategy is for GM to become one of the world’s most successful cities. To achieve this goal the GM Strategy identifies a wide range of priorities associated with two key objectives, Growth and Reform.

The value of GM’s natural environment and the role it plays in delivering this vision is well recognised in the GM Strategy:

’a more connected, talented and greener city region where all our residents are able to contribute to and benefit from sustained prosperity and enjoy a good quality of life’ (Greater Manchester Combined Authority, 2013)

The River Irwell Catchment is one of the most important elements of GM’s natural environment and will play a key role in underpinning the delivery of the GM strategy, particularly as a result of the River Irwell and its key tributaries flowing through the heart of the major economic centres within GM.

There are a wide range of partnerships and organisations that are working to deliver these objectives. Much of the work associated with the natural environment and its role in contributing towards the GM Strategy is managed by sub-groups within the Low Carbon Hub, particularly the Natural Capital Group. The key objectives of the Natural Capital Group are:

- Identify key natural capital assets for GM to be protected and enhanced;
- Progress our ecosystem services work;
- Develop an investment framework to target resources at key assets.

One of the key work programmes commissioned by the Natural Capital Group which is linked with the River Irwell and influenced our study is the GM Ecosystem Services Pinch Points Study (GMESS). The NCG commissioned this study to better understand how and where the delivery of sustainable jobs, growth and supporting infrastructure benefit from and contribute to the quality of GM’s natural environment and the ecosystem services this provided. This study aimed to:

- Identify GM’s ‘priority’ ESS;
- Start to understand, and map the location of these ‘priority ESS’;
- Begin to identify the specific Ecosystem Services pinch points associated with these within GM;
- Start to map out the key interventions that are required to overcome pinches.

The Natural Capital Group is also supporting the delivery of natural environment initiatives by promoting and supporting a range of partnerships in GM including the GM Local Nature Partnership, GM Wetlands NIA and Irwell Catchment Partnership; as well as engaging with key stakeholders including GM Public Health to showcase key initiatives and raise the profile of projects to enhance the natural environment.

Recognition of the role and importance of the natural environment in the future success of GM is equally strong amongst individual local authorities within GM. In March 2015, Manchester City Council (MCC) launched a new 10 year Green and Blue Infrastructure (GI) Strategy. The development of this strategy highlights that MCC regards GI as important as other types of
infrastructure including transport and energy for the success of the city – from a perspective of economic growth, quality of place, improving health and well-being and increasing tourism.

The GI Strategy specifically recognises the value of the River Irwell:

‘The Irwell is an important part of the city centre’s character, providing the setting for schemes that can animate the waterway and encourage links out to Media City in the west and the Irwell Valley to the north.’

The GI Strategy recognises that whilst there has been some initial work to understand the benefits that the city's GI provides in relation to its social and economic objectives, more research is required. A principle driver of further research is to support investigation of new investment mechanisms that will support the delivery of their GI strategy. The findings from our study will provide MCC and other GM local authorities; along with other actors involved in the Irwell catchment, some very preliminary findings on the feasibility of establishing PES schemes with commercial businesses as an option to secure new investment to enhance GI.

2.6.1 Regeneration within and alongside the River Irwell in the study section

The early history of Manchester, Salford and Trafford is defined by rivers, with the River Irwell being the major river of the area. Manchester was already the commercial powerhouse of the North West long before the rise of the Industrial Revolution in the late 18th century.

With the decline in the industrial use of the River Irwell and Manchester Ship Canal during second half of the twentieth century; combined with the poor environmental quality caused by industry, the River Irwell was effectively abandoned, with buildings literally turning their backs to the river, contributing to further deterioration. Continued urbanisation and commercial development, particularly in Salford and Manchester have reduced natural features of the river channel, particularly through impoundment walls to reduce the risk of flooding.

Over the past three decades there has been a resurgence of waterfront development within the city centre of Salford and Manchester, including within our study area; with a period of accelerated regeneration over the past 5 years. This resurgence has seen waterside buildings converted into new homes, new businesses locating to the riverside and world class hotels sitting along the Irwell’s banks. Two recent developments based within the footprint of our study area have included:

- A £1.5 million public realm project to improve access within the city alongside the River Irwell by Bruntwood and Salford City Council.
- The £1.5 billion Allied London Spinningfields development, which includes a wide range of commercial, residential and retail space, borders the River Irwell with a new riverside walkway and a significant number of residential properties and restaurants overlooking the Irwell.

This change in regeneration focus within the city centre of Manchester and Salford was one of the principle reasons for the selection of this area for our study. Whilst there are commercial businesses located adjacent to or within the vicinity of the River Irwell and its key tributaries throughout the catchment this study section is one of the most densely developed and successful areas of commerce. Whilst many developments are now incorporating riverside walkways or frontage there are still key issues with the River Irwell as highlighted in section 2.3 which have the potential to negatively impact the successfulness of existing and new businesses in the city centre. It is important that these are addressed and through this study we want to explore the feasibility of developing a PES scheme (s) with existing commercial businesses to enhance key ES to improve the value of the River Irwell.
3 METHODOLOGY

3.1 Stages of the study

The methodology for the study had progressive sections of work which included:

- **Stage 1- 5 steps:**
  i) Identification of saleable ecosystem services;
  ii) Identification of prospective buyers and sellers;
  iii) Interviewed businesses;
  iv) Analysis;
  v) Options appraisal.

- **Stage 2- 3 steps:**
  i) Selection and testing of the preferred option;
  ii) Defining the proposed PES;
  iii) Reporting and dissemination.

As these different stages were progressive the approach taken has been iterative.

Whilst the methodology has been influenced by the DEFRA *Payments for Ecosystem Services: A best practice guide* the process has not been driven by the progressive steps in the PES guide. Stage 1 of the methodology reflects phase 1 in the best practice guidance. In particular, one of the key questions which Stage 1 aimed to answer was the awareness and understanding of the value of the River Irwell and the ecosystem services it provides amongst commercial businesses, what their priorities are linked to enhancements identified by our study and their attitude around payment for such services. This information would identify if there was a clear demand for enhancements to an ecosystem service amongst commercial businesses in the study section which is one of the key elements for the development of a PES scheme.

Stage 2 of the methodology was more aligned with the commencement of phase 2 of PES establishment as guided by the DEFRA *Payments for Ecosystem Services: A best practice guide*. Key questions which Stage 2 aimed to explore and answer included geographical scope, monitoring arrangements, timescales, PES configuration (many-to-one, many-to-many) and mode of payment.

3.2 Delivery partnership and decision making

Each of the steps in the methodology had a lead organisation, supported by all or specific partners in the project steering group. These leads and the organisational representatives supporting them were identified prior to commencement of the project. As a result of staff changes within steering group organisations there was a change in representatives involved and the level of engagement of one steering group partner.

As a progressive approach was taken for the methodology, the steps were largely undertaken sequentially which meant that key representatives from lead organisations met to review and agree next steps upon completion of the former.

An iterative approach was adopted for certain steps, for example, the identification of commercial businesses and securing their engagement for interviews. During this phase of work steering group partners met on a regular basis to identify ways in which to address challenges presented such as lack of contact data for particular businesses and or low level of responses to invite requests.

Regular updates on the progress and challenges associated with the study were provided to key Greater Manchester partnerships including the Natural Capital Group (Local Nature Partnership) and Irwell Catchment Partnership, both written and verbally. These updates provided the project with the opportunity to seek advice and support where necessary. The most obvious example of this was linked to identifying saleable ecosystem services within the study area and reviewing commercial business feedback from stage 1 interviews. Where these partnerships were unable to address particular issues, such as gathering intelligence on commercial business contacts, they were able to identify relevant contacts within relevant organisations; particularly local authorities, to help support the project.
4 FINDINGS

4.1 Identification of ecosystem services

4.1.1 Desk based review

A desk based review of relevant literature including UK National Ecosystem Assessment (2011) and Millennium Ecosystem Assessment (2005) (specifically, Freshwater Ecosystem Services) has been undertaken to provide an overarching review of the type of ES associated with rivers and their associated environment.

**Table 1: Ecosystem services provided by river habitats (Adapted from UK NEA, 2011)**

<table>
<thead>
<tr>
<th>Provisioning</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td>Commercially significant fisheries can be based on suitable rivers.</td>
</tr>
<tr>
<td>Biomass (reeds / willow)</td>
<td>Reedbeds and willow can grow in slow flowing and saturated soil areas; providing fodder in summer and materials for crafts and construction.</td>
</tr>
<tr>
<td>Water</td>
<td>Rivers can supply water source for public supply, irrigated crops, power station cooling and industrial processes.</td>
</tr>
<tr>
<td>Navigation</td>
<td>Sufficient water depth and low velocity flows are required.</td>
</tr>
<tr>
<td>Health products</td>
<td>Mineral spas, medicinal plants, medicinal leeches.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regulating</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood regulation</td>
<td>Reliant upon available storage areas, particularly floodplains. Rivers can augment floods where no storage available.</td>
</tr>
<tr>
<td>Flow regulation</td>
<td>Regulation associated with water storage characteristics and connection with other water bodies.</td>
</tr>
<tr>
<td>Water quality regulation</td>
<td>Rivers can dilute, store and detoxify waste products and pollutants to a certain threshold.</td>
</tr>
<tr>
<td>Local climate regulation</td>
<td>Temperature and humidity can be influenced by river habitats.</td>
</tr>
<tr>
<td>Fire regulation</td>
<td>Rivers can act as fire breaks, dependent upon their size.</td>
</tr>
<tr>
<td>Human health regulation</td>
<td>Rivers can increase well-being and quality of life if visually attractive and supportive of physical recreation. Rivers can be sources of water-borne diseases if mismanaged.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cultural</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Science and education</td>
<td>Rivers are important resources for education and scientific investigation.</td>
</tr>
<tr>
<td>Religion</td>
<td>Rivers can be important sites for religious festivals.</td>
</tr>
<tr>
<td>Tourism and recreation</td>
<td>Fisheries and biodiversity can positively influence tourism, as can visual appeal. Good water quality and visual appearance required for natural swimming and boating.</td>
</tr>
<tr>
<td>Sense of place</td>
<td>Rivers can define landscape character and feature in art and local culture.</td>
</tr>
<tr>
<td>History</td>
<td>Rivers have played key roles in human history and settlement.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supporting services</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodiversity</td>
<td>Rivers are an important habitat for a wide range of species. Their role as a migration route will continue to increase linked to climate change.</td>
</tr>
</tbody>
</table>

More locally focused reports including Greater Manchester Ecosystem Services (GMESS) Pinch Points Study (2014) and Natural Character Area profile: Manchester Conurbation (2013) have also been reviewed to help identify specific ES which may have been identified on the River Irwell and or associated riparian corridors.

The GMESS report identified eight priority ES for GM. The study utilised various datasets to produce maps for these eight ESS priorities to visualise the extent and spatial location of priority ES within...
GM. Through mapping priority ES the study started to identify key ‘pinches’; issues, which would need to be addressed for the services that each ES provides to GM to be maximised.

Within, or just upstream of our study section of the River Irwell and its associated riparian corridors the ES priorities identified through the mapping work were:

- Cooling of Urban Heat Island – High priority;
- Surface water and fluvial flood management – High priority;
- Visual/aesthetic – Medium priority;
- Public recreation and venue for green travel routes – Medium priority;
- Water quality management – Medium priority;
- Habitat and wildlife corridor provision - Low priority.

The study indicated key options to address ES pinch points within GM. Those associated with the high priority ES in the GMESS report included:

- Cooling of Urban Heat Island:
  - Retrofitting a mixture of GI measures including trees over hard surfaces is crucial for lowering the UHI effect, particularly in GM’s town centres;
  - Open up waterways to maximise their cooling effect;
  - GI surrounding our urban areas needs to be protected and enhanced so it provides sources of cooled air which can be drawn into the centres.

- Surface water and fluvial flood management:
  - Maximise the flood management function of all greenspaces, but especially in flood zone 3;
  - Increase retrofitting of green infrastructure and / or amending landform to provide water storage / infiltration (especially in areas of surface water risk or vulnerable populations / businesses);

Previous PES pilot study reports and DEFRA Payment for Ecosystem Services Pilot Projects: Review of key findings of Rounds 1 and 2, 2011 – 2013 (2014) were also reviewed.

### 4.1.2 Site visits

A series of site visits were undertaken by Lancashire Wildlife Trust between the period of August and October 2014, some of which were accompanied by staff from Irwell Rivers Trust and the Environment Agency, along the length of the River Irwell in the study area. Site visits provided an opportunity to review the feasibility of ES associated with rivers (Table 1) within the specific section of the River Irwell for this PES study.

Site visits also provided an opportunity to identify the specific geographic locations within the study section where potential enhancements can be delivered (and how). Opportunities for enhancements were guided by the feasibility of key options to address ES pinch points as identified by GMESS as well as options to address / enhance key issues already known on the River Irwell such as water quality, river modification and function, invasives and poor visual amenity and litter (see section 2.3 for background on these issues).

Following site visits, further desk based reviews were undertaken to identify the feasibility, practical examples and or risk factors associated with the identified opportunities to enhance ES within areas similar to the River Irwell in city centre Manchester and Salford. Reports reviewed include:

- Urban rivers: novel ecosystems, new challenges (Francis, 2014);
- Urban Aquatic Ecosystems: the good, the bad and the ugly (Moggridge; Hill and Wood, 2014);
- Urban transformation of river landscapes in a global context (Chin, 2006);
- Perspectives on the potential for reconciliation ecology in urban riverscapes (Francis, 2009).

Further reference was also made to the UK National Ecosystem Assessment: Technical Report (Urban and Freshwater chapters).
4.2 Identification of potential enhancements relevant to commercial businesses

Based upon the desk based review and site visits a series of potential opportunities for ES enhancements were identified along with an initial assessment of the impact of these enhancements, benefits to commercial businesses and risk factors associated with their implementation, see table 2.

Decision making around inclusion of opportunities by partners was influenced by a combination of factors including:

- What was practically feasible within this study stretch of the River Irwell;
- Links to the priority ES identified for this geographical area by the GMESS report;
- Links with key issues identified on the River Irwell through previous studies and intelligence gathering;
- Discussion between project partners and external stakeholders involved in other partnerships/organisations linked to the River Irwell;
- Links with existing / proposed strategies and work on the River Irwell and its adjacent riparian corridor.
### Table 2: Ecosystem service enhancement opportunities on the River Irwell

<table>
<thead>
<tr>
<th>Opportunity (s) for enhancing ecosystem services</th>
<th>Key ecosystem service(s) enhanced by opportunity</th>
<th>Potential impact of enhancement on ecosystem services</th>
<th>Level of impact</th>
<th>Potential benefits to businesses</th>
<th>Risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential to install stone groynes at Littleton Road and Frederick Bridge to improve morphological diversity</td>
<td>Water quality regulation</td>
<td>Increased morphological diversity in the river which improves in-channel regulation of water quality through processes including sedimentation of contaminated suspended sediments during low flows and provision of habitat for aquatic macrophytes which increase dissolved oxygen and help absorb contaminants.</td>
<td>Localised and fairly minor in terms of water quality.</td>
<td>1a Visitor spending</td>
<td>Increased flood risk and or bank erosion if sited / designed incorrectly.</td>
</tr>
<tr>
<td></td>
<td>Cooling of urban heat island</td>
<td></td>
<td></td>
<td></td>
<td>This area within floodzone 3 so careful consideration by the Environment Agency would be required.</td>
</tr>
<tr>
<td></td>
<td>Recreation and Tourism</td>
<td></td>
<td></td>
<td></td>
<td>Suspended sediments washed out in high flows and thus become a source of contamination.</td>
</tr>
<tr>
<td></td>
<td>Aesthetic values</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health benefits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Species diversity</td>
<td>Increase in macrophyte growth will improve the ability of the River Irwell to cool the urban heat island effect which has been identified as a priority ES in this area.</td>
<td>Localised, impact dependent upon scale of installation and subsequent macrophyte growth.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increasing natural flow of the river with riffles, pools and rapids creates a more visually appealing and valuable recreation river for people.</td>
<td>Localised but high level of impact</td>
<td></td>
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<td></td>
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<td></td>
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</tbody>
</table>

**1a Visitor spending**

Enhanced visual quality and biodiversity value of the River Irwell will attract people to the area, both local residents and visitors.

Increased visitor numbers will contribute directly and indirectly to local businesses. The study section along the River Irwell has a number of cafes, restaurants and shops which are likely to be used by visitors. Visitors may also make use of other services in this and the wider area including hotels, taxis and car parking.

With increased visitor numbers there is potential for new operators to develop services to take advantage of the increased market which will create new jobs.

**Urban heat island effect**

The benefits of decreased urban heat island effect are more societal than specifically for commercial businesses. However, there are a number of areas where commercial businesses could benefit such as:

- greater investment in development as a result of reduced spending to address urban heat island affect
- increased spending by local residents based upon savings they have made in their property
- increased quality of environment attracts more visitors to the area
<p>|   | <strong>Health benefits (residents)</strong> | Increased biodiversity value of the river will have a positive impact on the well-being and satisfaction of tenants living within accommodation overlooking the River Irwell which will increase desirability, value and rental rates of existing and planned accommodation (pertinent linked to the new Adelphi Wharf residential complex being developed which will include riverside walkways) |
|   | <strong>Improved recreation (fishing)</strong> | Increased biodiversity value of the river will have a positive impact on fish stocks and subsequently the value of the river for fishing. Increased fishing will increase expenditure in the local economy and may contribute to increased visitor spending (see 1a) |</p>
<table>
<thead>
<tr>
<th>Opportunity (s) for enhancing ecosystem services</th>
<th>Key ecosystem service (s) enhanced by opportunity</th>
<th>Potential impact of enhancement on ecosystem services</th>
<th>Level of impact</th>
<th>Potential benefits to businesses</th>
<th>Risk factors</th>
</tr>
</thead>
</table>
| **Potential to de-culvert Singleton Brook to create a backwater off the main river** | Recreation and Tourism  
Aesthetic values  
Species diversity  
Cooling of urban heat island | Creation of a backwater will provide increased morphological diversity for the River Irwell which will be beneficial for biodiversity. The key focus of the backwater would be to provide a refuge for juvenile fish during times of flood to prevent them being washed downstream. | Localised, fairly minor. | **2a** Improved recreation (fishing)  
Increased biodiversity value of the river, combined with fish refuge points, will have a positive impact on fish stocks and subsequently the value of the river for fishing. See 1e for benefits to businesses of increased fish stocks. | Backwater becomes a trap for litter and invasives. |

<table>
<thead>
<tr>
<th>Opportunity (s) for enhancing ecosystem services</th>
<th>Key ecosystem service (s) enhanced by opportunity</th>
<th>Potential impact of enhancement on ecosystem services</th>
<th>Level of impact</th>
<th>Potential benefits to businesses</th>
<th>Risk factors</th>
</tr>
</thead>
</table>
| **Potential to enhance the value of two backwater areas within the City Centre linked to the Manchester, Bolton and Bury Canal and old course of the Manchester and Salford Junction Canal.** | Recreation and Tourism  
Cooling of urban heat island  
Aesthetic values  
Species diversity | Enhanced value of the backwater habitat through construction of macrophyte growing structures and shelter areas will increase the biodiversity value of the River Irwell and enhance the area as a refuge for juvenile fish during flood.  
Increased macrophyte growth within these backwater areas will improve the ability of the River Irwell to cool the urban heat island effect which has been identified as a priority ES in this area.  
Growth of plants within these backwater areas will improve the visual aesthetics of these areas and help to give these important heritage features some identity and value for residents and visitors. | Localised, potentially high impact. | **3a** Improved recreation (fishing)  
Increased biodiversity value of the river, combined with fish refuge points, will have a positive impact on fish stocks and subsequently the value of the river for fishing. See 1e for benefits to businesses of increased fish stocks. | Backwater becomes a trap for litter and invasives.  
**3b** Urban heat island effect  
See 1b.  
**3c** Visitor spending  
Increased visual aesthetics and biodiversity value of these heritage features will improve the value of the area to visitors and residents. Increased visitor numbers will directly and indirectly increase spending within the area which will benefit businesses. See 1a. |
<table>
<thead>
<tr>
<th>Opportunity(s) for enhancing ecosystem services</th>
<th>Key ecosystem service(s) enhanced by opportunity</th>
<th>Potential impact of enhancement on ecosystem services</th>
<th>Level of impact</th>
<th>Potential benefits to businesses</th>
<th>Risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential to explore options for “greening” the impoundment walls of the River Irwell through the main regional centre stretch</td>
<td>Water and air quality regulatory</td>
<td>Increased macrophyte growth in the heavily impounded regional centre stretch of the River Irwell would improve the biodiversity value.</td>
<td>Uncertain linked to limited studies on existing biodiversity value of River Irwell in this stretch.</td>
<td>See 1a – 1e for benefits to businesses linked to increased biodiversity.</td>
<td>No clear understanding of impact on integrity of walls and so “greening” options may be restricted to marginal zone.</td>
</tr>
<tr>
<td></td>
<td>Species diversity</td>
<td>Depending on the scale of macrophyte growth this could potentially help to improve water quality through dissolved oxygen and absorption of contaminants. Water quality management was identified as a medium priority ES issue by the GMESS study and is well recognised as an issue within the River Irwell by the Irwell Catchment Partnership.</td>
<td>Localised, depends on scale of delivery.</td>
<td></td>
<td>Uncertainty around who owns impounding walls.</td>
</tr>
<tr>
<td></td>
<td>Recreation and Tourism</td>
<td>Growth of plants along the impoundment walls would improve the visual aesthetics of the heavily impounded River Irwell. Visual aesthetics was identified as a medium priority ES issue by the GMESS study and is well recognised as an issue within the River Irwell by the Irwell Catchment Partnership.</td>
<td>Localised but high impact</td>
<td></td>
<td>Uncertainty about structural integrity of walls and so may be unfeasible to attach structures to the wall.</td>
</tr>
<tr>
<td></td>
<td>Aesthetic values</td>
<td>Dependent upon the scale of plant growth this could help contribute towards reducing the urban heat island effect which has been identified as a priority ES in this area.</td>
<td>Uncertain</td>
<td></td>
<td>Uncertainty around the quantity and type of wall structures required to make significant changes to the biodiversity and visual appearance of the River Irwell.</td>
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<tr>
<td></td>
<td>Health benefits</td>
<td></td>
<td></td>
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<td>Uncertainty about the cost associated with the work linked to few examples of previous work.</td>
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<tr>
<td></td>
<td>Cooling urban heat island effect</td>
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<td></td>
<td>Sense of place</td>
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<td></td>
<td>Employment</td>
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</table>
### Opportunity (s) for enhancing ecosystem services

<table>
<thead>
<tr>
<th>Key ecosystem service (s) enhanced by opportunity</th>
<th>Potential impact of enhancement on ecosystem services</th>
<th>Level of impact</th>
<th>Potential benefits to businesses</th>
<th>Risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water quality regulation</td>
<td>Presently the River Irwell is providing a disservice linked to its spread of invasive species, particularly Giant Hogweed, Japanese Knotweed and Himalayan Balsam. All three species are currently present throughout the River Irwell but presence in the regional centre is limited. An effective and ongoing control strategy for invasives implemented now will help prevent invasives from becoming endemic on the River Irwell in the regional centre.</td>
<td>Dependent upon scale of control mechanism. Potential to be extremely high.</td>
<td>Reduced costs and liability risks</td>
<td>Without a catchment wide invasive species control strategy, which would cost significant amounts of money over a 10 year + period not all potential benefits realised. A local control programme would deliver some benefits (5a, 5d, 5e, 5f) but would be required on a continuous basis due to seeds and rhizomes being transported downstream by the river.</td>
</tr>
<tr>
<td>Flood regulation</td>
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<tr>
<td>Recreation and Tourism</td>
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<td></td>
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<tr>
<td>Aesthetic values</td>
<td></td>
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<tr>
<td>Sense of place</td>
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<tr>
<td>Species diversity</td>
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<tr>
<td>Health benefits</td>
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<td></td>
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<tr>
<td>Erosion control</td>
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</tbody>
</table>

#### Visitor spending

See 1a

#### Urban heat island effect

See 1d.
5c **Reduction in flood risk**  
Invasive species can lead to an increase in flood risk through increased sedimentation in the channel which reduces capacity.

Flood risk on the River Irwell in the lower section of the catchment is managed through two flood storage basins in Salford and modified banks which have increased capacity of the channel.

The positive impact on reduced flood risk associated with eradication and control of invasive species in the study section will be fairly minor. For significant benefits to be realised a catchment wide eradication programme would be required.

5d **Biodiversity value**  
Enhanced species diversity along river banks will improve visual aesthetics and biodiversity value of the River Irwell. See 1a – 1e for benefits to businesses associated with improved aesthetics.

5e **Health benefits (employees and visitors)**  
Eradication of Giant Hogweed will reduce the health risk posed to visitors and staff associated with the plant sap. There is a high risk of injury to individuals if Giant Hogweed is allowed to grow unchecked linked to the high number of people working, living and commuting alongside the River Irwell in this city centre environment.

A direct benefit to landowners / businesses of eradication of Giant Hogweed is the reduction in potential insurance claims made against them as landowners for anyone who has been injured as a result of contact with the plant.
### Land and property values

Japanese Knotweed is now routinely assessed by mortgage lenders when valuing residential properties. Significant infestations can reduce the value of properties and mortgage lenders will now require evidence of treatment to eradicate problems prior to valuation.

Eradication by businesses prior to infestations become severe will reduce future control programme costs and impact upon valuation.

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<table>
<thead>
<tr>
<th>Mechanism to control and remove litter which is washed downstream by the River Irwell and or makes its way into the River Irwell in the regional centre</th>
<th>Key ecosystem service(s) enhanced by opportunity</th>
<th>Potential impact of enhancement on ecosystem services</th>
<th>Level of impact</th>
<th>Potential benefits to businesses</th>
<th>Risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreation and Tourism</td>
<td>Deposition and transportation of litter within the River Irwell and or along its banks in the regional centre has a negative impact on the value that the river provides to businesses, particularly associated with visual aesthetics. Visual aesthetics was identified as a medium priority ES issue by the GMESS study and is well recognised as an issue within the River Irwell by the Irwell Catchment Partnership.</td>
<td>Dependent upon scale of control mechanism. Potential to be extremely high.</td>
<td>Increased property values, increased property development and visitor spending</td>
<td>A reduction in the quantity of litter in the River Irwell will increase the visual attractiveness of the river environment which will increase property values, property development and visitor spending (see 4b, 4c and 1a).</td>
<td>Without catchment wide litter control strategy, a local control programme will be required on a continuous basis due to continuous transportation of litter from upstream sources.</td>
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<tr>
<td>Aesthetic values</td>
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<td>Sense of place</td>
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<tr>
<td>Health benefits</td>
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</table>

An effective and ongoing control strategy for ingress and collection of litter will help reduce the negative impact that litter has on ecosystem services provided by the River Irwell.

Enhanced environmental quality through reduction in litter levels will have a positive impact upon the health and well-being of tenants living in the area, staff employed by businesses and tourists visiting the area. See 1a and 1b for the potential benefits for businesses associated with these outcomes.
Key ecosystem service benefits would include increased species diversity and improvements in the ability of the area to mitigate and adapt to climate change; particularly flood alleviation, water management and amelioration of heat island effect – all of which were identified as medium or high priority ES for this area of Greater Manchester by the GMESS.

6c  **Crime**
Various studies have shown that enhanced environmental quality and improvements in green infrastructure reduces the incidence of crime (Effect, 2013).

- Reductions in crime will directly benefit businesses through decreased costs associated with security and insurance premiums.
- Reductions in crime will indirectly benefit businesses in the area through increased visitor numbers (see 1a)

### Opportunity (s) for enhancing ecosystem services

<table>
<thead>
<tr>
<th>Potential to improve the quality of greenspaces alongside the River Irwell (Castle Irwell, Peel Park, The Meadows, Kersal Vale) upstream of the regional centre where businesses are based.</th>
<th>Key ecosystem service (s) enhanced by opportunity</th>
<th>Potential impact of enhancement on ecosystem services</th>
<th>Level of impact</th>
<th>Potential benefits to businesses</th>
<th>Risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health benefits</td>
<td>Improvements in the management and or creation of new habitats within greenspaces would have a positive impact on a range of ecosystem services.</td>
<td>High. Difficult to evidence impact on certain ecosystem services delivered.</td>
<td><strong>7a</strong>  <strong>Increased property values</strong>  High quality greenspace within walking distances of existing and planned residential accommodation within the study area will help to increase desirability, property prices and letting rates. See 4b.</td>
<td>Evidencing the impact of high quality greenspace on property value, desirability, tourist numbers and other benefits is complex as linked to other factors which may deter potential buyers / funding.</td>
<td></td>
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<tr>
<td>Flood regulation</td>
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<td>Cooling of urban heat island</td>
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<td>Sense of place</td>
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</tr>
<tr>
<td>Recreation and Tourism</td>
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<tr>
<td>Aesthetic values</td>
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<td>Species diversity</td>
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</table>
The level of detail provided for ES enhancement opportunities highlighted in Table 2 reflects this study being at phase 1 of the PES Best Practice Guidance – are there specific land or resource management actions that have the potential to secure an increase in supply of the service? More detailed information about these potential ES enhancements including actual outputs and how benefits to commercial businesses would be measured, timescales required to deliver benefits for commercial businesses and who would deliver benefits were to be explored during stage 2 interviews/workshops based upon the specific ES which were demanded by commercial businesses.

The potential enhancements identified within Table 2 are not exhaustive with some opportunities linked to the public realm spaces and or walkways alongside the River Irwell being excluded due to concerns amongst key partners about potential conflicts around work they were delivering with commercial businesses and other developers. See section 4.5.10 for further information.

4.3 Identification of prospective buyers

The prospective buyers for identified ES were commercial businesses; tenants and landlords, based adjacent to the River Irwell in city centre Manchester and Salford (see Figure 2).

CityCo were able to identify 91 commercial businesses/landowners within the study section based upon their existing contacts through the HEART of Manchester Business Improvement District and via desk based analysis. The HEART BID had been one partnership structure which partners had identified during development as a potential collective buying mechanism for ES. However, communication between CityCo and HEART BID identified that involvement of commercial businesses would be as individuals as the BID had already set their budget and work programme for the immediate future and expressed that the geographical focus of their BID was much greater than that covered by the study so would not benefit all businesses in the structure.

Two additional commercial businesses who had interest in this area of land and ES, but whom did not have an office/commercial space in the area were also identified. A wide range of commercial business types were represented within the identified list including hotels, restaurants, retail, law firms, serviced apartments, car parks and others; with a similar range on size of commercial businesses from small companies to nationals.

CityCo made initial contact with over 86% of those commercial businesses identified, either directly or indirectly, to assess their interest in participating in an interview as part of the study. CityCo were not able to contact the remaining 14% as a result of unavailable/invalid contact details. Contact details for the 21 commercial businesses/landowners (26%) who responded positively to the request by CityCo were forwarded to CLES for interviews. The method upon which partners prioritised those commercial businesses to be interviewed was linked to obtaining a representative sample of commercial business type, size and geographical location within the study area. Arranging interviews with the relevant individual within a number of the businesses, who responded positively to being involved, was not possible despite numerous attempts by CLES. All 21 businesses who indicated that they would participate in the study were contacted by CLES via email and telephone resulting in 12 stage 1 interviews being arranged.

Table 3 provides an overview of the number businesses identified, contacted, responded positively and involved in interviews / discussion.

Table 3: Statistics of commercial businesses (tenants and landlords) identified and engaged during the study

<table>
<thead>
<tr>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of businesses identified</td>
<td>93</td>
</tr>
<tr>
<td>Number of businesses contacted</td>
<td>80</td>
</tr>
<tr>
<td>Number of businesses who responded positively to involvement</td>
<td>21</td>
</tr>
<tr>
<td>Number of businesses interviewed at stage 1</td>
<td>12</td>
</tr>
<tr>
<td>Number of businesses who emailed comments ideas at stage 2</td>
<td>3</td>
</tr>
</tbody>
</table>
4.4 Interviews with prospective buyers

An interview overview document was developed by CLES, supported by partners (see Appendix 1) this River Irwell Business and Commercial Property Owner Consultation overview sheet was sent to the prioritised prospective ES buyers. CLES then followed up the overview document via email and telephone to set up a date for the Stage 1 interviews.

Stage 1 interviews followed a semi-structured format based around a series of questions which encouraged interviewees to provide answers around their awareness and understanding of the value of the River Irwell and the ecosystem services it provides, what their priorities are linked to enhancements identified by our desk and walk over study and their attitude around payment for such services.

Appendix 1 provides an overview of the stage 1 interview format including the questions which formed the basis of the semi structured interview.

4.5 Interview findings

Our original target had been to engage at least 15 commercial businesses in stage 1 interviews but despite having 21 businesses responding positively to being involved, only 12 commercial businesses were interviewed. This reason given by business for this drop off in participation was partly due to time to participate in face to face or telephone interviews. However, there appeared to be significant lack of enthusiasm, as significant efforts were made by CLES staff to arrange interviews, providing alternate dates etc.

CLES analysed the data from the stage 1 interviews. The key findings from stage 1 interviews with commercial businesses regarding the River Irwell and its ES are summarised in the following section.

4.5.1 Commercial value of the River Irwell for businesses

The River provides a number of important environmental services, which can be broadly categorized as flood mitigation, in-channel and riparian habitat and walking routes. However when surrounding businesses were asked whether or not the Irwell added value directly to their business the majority of businesses felt that they experienced no added value from the Rivers’ close proximity. The majority of businesses feel that they have no direct commercial connection to the River itself and their close location to the Irwell was not a factor in their decision to rent office accommodation, or the prices they charge for their services.

The only commercial value that businesses placed on the Irwell was the view of the River which was used by two of the businesses for marketing purposes. However, only one of these companies felt that this added value to their rental income. Others felt that although the riverside views increased their developments attractiveness there was no real amenity to the use of the Irwell in its marketing.

It is evident that those who operated in the leisure, tourism or catering/hospitality industry (where the greatest direct commercial impact of a riverside location would most likely be felt) were more likely to readily appreciate the value of the Irwell for their businesses.

4.5.2 Negative impacts of the River a common theme

Opposed to businesses perceiving the value, just under half of all businesses consulted strongly felt that the Irwell had a negative impact directly on their company or on the surrounding area. The most common direct impacts were small scale flooding which affected business insurance rates, along with litter and anti-social behaviour. Flood risk and litter are widely recognised as key issues on the River Irwell (see section 2.3) but anti-social behaviour is something which has not previously been attributed to the River Irwell. Keep Britain Tidy (2013) have evidenced that high levels of litter and poor quality environments can lead to a higher prevalence of anti-social behaviour; although other factors may be causing this issue within the study area.

Businesses also reported that high levels of litter and river pollution meant that the positive potential of a riverside location remains largely unfulfilled as visitors, guests and staff are often reluctant to walk or run alongside the River. One business even reported that:

‘In the summer the smell from the River makes runners feel ill from the smell of the rubbish.’
Levels of pollution appear to be a particular concern for business with one hotel viewing the Irwell as a ‘highly polluted river’ which presents their guests with an unattractive and ‘ugly’ view leading to negative feedback for the hotel. It was reported that both the hotel’s management and guests regularly raise concerns about the level of pollution in the River and its environmental impacts, as the hotel on the opposite side of the bank is perceived as discharging ‘maroon coloured water’ directly into the Irwell.

This hotel told us that:

‘guests calling us and asking us whether it is poisonous. Things like this in the 21st century should not happen…it does not present Manchester and the location as in a good light, it seems we are not in touch with environmental principles.’

Responses related to ‘pollution’ from businesses are associated more with visual quality and odour concerns as opposed to the impact of such pollution on water quality and biodiversity. Equally, commercial businesses did not highlight that pollution was impacting negatively upon the potential in-channel recreation value that is presented by the River Irwell. This could possibly be due to businesses not being familiar with the possible services which relate to this. Visual quality is clearly the key service which businesses feel should be provided by the River Irwell and the service which they feel will have the most benefit for their business.

Commercial businesses did not feel that invasives had a negative impact upon their business. This most likely reflects the fact that the density of key invasives (Giant Hogweed, Japanese Knotweed, Himalayan Balsam) within the study stretch is presently low.

### 4.5.3 Opportunities for environmental improvements with possible commercial value

Over half of the businesses consulted recognised the indirect or latent value of the River to their business or the City as a whole. This appears to be a positive development upon which any proposed PES or maintenance scheme could capitalize on in the future.

A number of businesses felt that the views of the Irwell ‘could be beautiful’ and a positive asset for the area in the future with the potential to bring ‘a real value to the restaurants that are downstream and for the whole City.’

Key opportunities for environmental enhancements highlighted by commercial businesses, guided by the ES enhancement opportunities identified by our study (Table 2) included:

- Enhancing the visual appearance of the impoundment walls and river banks to improve the character, visual quality and biodiversity value of the area which would help benefit businesses through increased tourism and visitor numbers;
- Addressing the litter which collects within the channel and banks to improve the visual quality and unpleasant odours which would benefit businesses through increased tourism and visitor numbers;
- Enhancing the biodiversity value of undeveloped rivers banks to improve the cultural value of the River Irwell which would benefit businesses through increased tourism and visitor numbers.

A small number of commercial businesses also highlighted a number of services and or improvements which could be developed to promote future commercial value to businesses including:

- Improved walkways, some of which could have heritage and or biodiversity trails to improve tourism value;
- Water taxis operating along the River Irwell to and from Salford Quays and the city centre of Manchester and Salford;
- Improved water quality;
- Water sports / recreation on the River Irwell, particularly fishing.
4.5.4 Any perceived benefits are localised and specific

Half of the businesses felt that the specific section of the River near their business was relatively well maintained and user friendly, and reported that their staff and tenants accessed the footpaths for leisure activities and exercise. These businesses also felt that issues regarding environmental impacts such as litter etc. either had no effect on their businesses or were so negligible as to have very little impact on either themselves or the surrounding environment. This would suggest that the perception of the Irwell’s direct and indirect commercial impact upon businesses is dependent upon the specific part of the River alongside which businesses are located.

4.5.5 An appreciation of the River as a latent asset

Earlier, we indicated that the river did not (at present) have significant commercial value to the businesses, and did not play a role in their location decisions. Nevertheless, although the majority of businesses reported either existing negative impacts or no impacts at all from the River. When pressed, the businesses did acknowledge that, with improvements, it may provide some form of positive direct or indirect commercial value.

Over half of the businesses consulted recognised the indirect or latent value of the River to their business or the City as a whole. This appears to be a positive development upon which any proposed PES or maintenance scheme could capitalise on. However, we must put this positivity in context. This position in half of the businesses, emerged through discussion with businesses which explored what the Irwell could be and the value it could theoretically unlock. The number of ideas for potential improvements to bring tangible, long-term commercial value, expressed by the majority of businesses, were either relatively small-scale or would require levels of resources and investment, which have at best indistinct return, with little evidence as to their future viability. The difficulty in this, is that any likely return to the business by an enhanced river environment would need to be considered alongside the possible time and resource required. It is the financial risk in relation to inchoate reward which is key. Business can imagine a potential future in which the river could be an asset to the business and accrue value to it. But, with businesses we spoke to, there was little appetite in present business operating context, for business to take a risk and push in that direction.

Nevertheless, we must acknowledge that there is some innate potential to this a riverside location, albeit difficult to realise within present operating context.

A number of both long and short-term barriers were identified which restrict the potential for the development of opportunities for enhancements to the River Irwell.

These hindrances pose difficulties in the acceleration of any additional commercial value to businesses. These included:

- The lack of clear guidance and information along the Irwell’s network of footpaths;
- Potential leisure activities such as fishing are restricted by lack of access;
- Public safety;
- The structural integrity of its walls;
- General infrastructure and the high level of flood risk at specific points along the River’s course.

Overarching these barriers is the negative perception of the River Irwell by both businesses and the public with many perceiving it as an area with high levels of anti-social behaviour.

4.5.6 Lack of willingness amongst local business to pay

In light of the fact that the majority of businesses report no direct commercial value from their close location to the Irwell, businesses are reluctant to incur costs in order to clean up and maintain the River with the long term goal of transforming their riverside location into a commercial asset. At present, the will to invest in the River or contribute financially to a PES scheme, or improvements works in any form, is almost completely absent within the local businesses consulted, with the majority stating that they did not wish to contribute financially to any improvements.
There are a number of factors which may explain this response (excluding the lack of direct commercial benefits). For example a number of companies consulted did not own the properties themselves and as a result did not feel that it was their responsibility to be charged for any improvement scheme. Ownership is quite diffuse and the lack of an immediate relationship between property ownership and identification with the Irwell, is a barrier to progressing a PES.

At least two of the businesses consulted also stated that due to their size they were not able to contribute to an area-wide scheme. However the most common reason given by riverside businesses was that they felt no moral or financial obligation for the maintenance of the Irwell and the surrounding area.

4.5.7 Better link between existing business tax and improvements.

Whilst this general reluctance was evident in all businesses, when explored and discussed further the response from a number of businesses would suggest that they are not ‘closing the door completely’ Although businesses did not consider the maintenance of the Irwell to be their responsibility, just under half of businesses responded that they would potentially contribute financially in some minor way if a very clear project existed with readily demonstrable commercial benefits.

Two businesses in particular encapsulate this position. Whilst one business didn’t think that they ‘should be charged toward the maintenance of the River,’ as ‘we are already paying via taxes, business rates, etc.’ They ‘might consider paying toward a specific team that we could see making daily maintenance and improvements.’ They also felt ‘there would need to be transparency though.’ Interestingly this particular business stated that they would ‘feel much better if it were a dedicated trust for the River rather than the Council.’ Another felt that their own company or other businesses would only ‘get on board with this, if someone develops specific demonstrable projects which show what will be done, how it will add value to us and what is already provided, and the economic and social pay-offs.’

This preference is maybe due to the desire to ensure that any potential financial contribution goes directly to projects on the Irwell that will provide distinct benefits and services to both the River and businesses, which are not covered via existing spend of taxes or business rates. This position is summed up by one business who commented that there were other ‘cash rich’ businesses along the River but they would ‘only become involved through understanding specifics and what the outcomes are.’ However, this reference to ‘cash rich’ businesses, indicates an assumption of it being someone else’s responsibility. In interviewing businesses, some of whom may have been more ‘cash rich’, the desire to get involved in ‘specifics’, requires at the very least a recognition and a willingness to create an initial motivation.

4.5.8 Actors involved in the River Irwell

Section 2.4 highlights the range of actors involved in initiatives to improve and protect the River Irwell and the wider water environment within the catchment. Whilst this study was prompted through one of the key partnerships which has good representation across a range of sectors, during delivery of the work some new actors were engaged who were already delivering initiatives within the study area.

One of the initiatives which we had been largely unaware of was already engaging with commercial businesses and following engagement with them there was some concerns about the potential duplication of our interviews with commercial businesses. Linked to the challenge of developing strong working relationships with commercial businesses there was some tension between this existing initiative and our study around the proposed content of our interviews. This tension led to our focus being on in-channel ES as opposed to the wider public realm space alongside the River Irwell.

The most significant finding of this is that despite the range of partners within this study having good knowledge and networks across a range of partnerships there were some initiatives which we overlooked which would have been beneficial to consult during the development phase of this work. This oversight reflects the complexity of the River Irwell catchment, particularly the section through the city centre Manchester and Salford where our study focused as a result of the dynamic regeneration context, complex ownership and diverse stakeholder involvement.
4.6 Options appraisal

Following stage 1 tranche of interviews a number of possible areas for improvement were identified by commercial businesses. These included:

- Water taxis;
- Increased biodiversity;
- Litter;
- Visual appearance of channel walls;
- Improved walk ways;
- Heritage and nature walks/new tourists trails;
- Water sports;
- Improved water quality.

As a result of the challenges encountered by CLES to arrange interviews with commercial businesses during stage 1, steering group partners were meeting on a regular basis to review progress and initial findings. On completion of the stage 1 interviews steering group partners met to review the data analysis undertaken by CLES and explore which potential options to take forward into stage 2. Steering group partners decided to select two options to take forward for further exploration to assess the feasibility of developing a PES scheme with commercial businesses which were:

- Litter;
- Visual appearance of channel walls.

A number of factors influenced the selection of these two options which included:

- The two options selected are both related to the visual quality of the River Irwell and its surrounding environment which was consistently highlighted by commercial businesses as the key service which they value or felt was important to their commercial interests. Therefore steering group partners felt that in light of the lack of willingness to pay it was important to explore options which businesses have consistently highlighted as of being most important;

- Based upon the lack of willingness to pay amongst the vast majority of businesses interviewed, cost implications of the possible areas of improvement was a key determining factor. Partners felt that one of the key strengths of the two options selected was that they have the ability to be delivered at different scales thus having a flexible cost. For example, work to enhance the visual improvements of channel walls could be piloted at a very local scale for a relatively small financial cost. Other options, such as new walk routes and water taxis are subject to a higher fixed cost;

- Feedback from businesses interviewed indicated that the direct and indirect commercial impact of the River Irwell was dependent upon the specific location of the business, as opposed to benefiting from ES delivered from the river from geographical areas upstream/downstream of their location. As a result of this, partners decided to explore options which could be delivered locally for businesses with clear outputs.

Litter and poor visual amenity are both well recognised issues on the River Irwell by a range of organisations and partnerships, including the Irwell River Partnership. Steering group partners did recognise that selection of litter as an option to explore was not a conventional PES scheme. Whilst removal of litter from the River Irwell would have indirect benefits on water quality and biodiversity the key driver of this option from commercial business perspective is not related to enhancement of these services but simply to improve the cleanliness and visual amenity of the area around their business. Partners felt that, based upon feedback from stage 1 interviews, if a PES-like scheme could be established to help improve the cleanliness of the River Irwell it would increase the commercial value of the river for businesses which, may support more long-term PES schemes with businesses to enhance further services which are of a conventional PES nature.

Enhancing the visual appearance of channel walls has the potential to positively contribute to other ecosystem services which have been identified as a priority or key issue for the River Irwell – see table 2 in section 4.2. For example, installation of vegetation rolls alongside channel walls would help to reduce the urban heat island effect, enhance biodiversity, enhance water quality and enhance the value of the area for recreation. These additional benefits were key factors in the inclusion of this option in stage 2.
4.6.1 Enhancing the visual quality of impoundment walls

Lancashire Wildlife Trust contacted Thames 21 to discuss a number of the projects which they have delivered on the River Lea and River Thames to enhance the visual and biodiversity value of impoundment walls. Thames 21 have utilised a number of different designs to ‘green’ impoundment walls but all have utilised bioengineering products supplied by Salix RW, particularly coir rolls. Following discussion with Thames 21, further contact was made with operations staff at Salix RW to discuss product specifications and feasibility of use within the study section of the River Irwell. Unfortunately, due to timescales, a site visit was not able to be arranged and so Salix RW was unable to provide full costs, specifications and suitability for a pilot bioengineering solution within the study section to enhance the visual and biodiversity value of the River Irwell.

However, Salix RW was able to provide a general cost of pre-vegetated coir rolls for a 100m section of the River Irwell which was £2,828. Undertaking the work for the entire study section (approximately 2km) would not necessarily be of benefit to commercial businesses as not all of the section is visible to adjacent landowners. Equally, it is unlikely to be feasible from an engineering perspective to install pre-vegetated coir rolls for the entire stretch. However, hypothetically, a material cost for this stretch would be around £100,000. This cost does not include installation which would vary significantly based upon the specific geographical area of work within the study section linked to the potential need for boat use, lifting platforms and other specialist services. Where access has permitted on the River Lea, Thames 21 have been successful in installing pre-vegetated coir rolls with community and corporate volunteers which has enhanced visual quality and biodiversity value at a low cost and increased ownership amongst the wider community. Although most areas of the River Irwell within the study section are difficult to access there are some locations where this opportunity may be viable which would provide buyers with a low cost option.

The benefits to local businesses associated with enhanced visual quality of the impoundment walls is highlighted in Table 2 based upon a review of previous theoretical and practical studies. Providing a confident assessment of the actual benefit to business of the proposed option, in terms of financial return, was not achieved by this study. However, based upon existing evidence the key benefits to existing businesses linked to this option are most likely to be:

- **Increased property values** - Previous studies have indicated a range of 1% - 19% rise in property value based upon enhanced green infrastructure quality. As the scale of frontage to the River Irwell in Salford and Manchester is limited there is a strong possibility that property price rises could be in the upper parameters of this estimation. Whilst the £2,828 estimate to enhance green walls across a 100m distance does not include installation or ongoing maintenance cost, this amount is likely to be significantly lower than potential property value increases across this area, when reflecting upon the development costs of some recent areas in this section. Allied London spent £1.5 billion on Spinningfields and The Lowry Hotel cost around £30 million to build.

- **Increased visitor spending** - Previous studies have highlighted increased spend by visitors (including local residents) both directly and indirectly to commercial businesses in areas where there is an enhancement to the visual and wildlife value of green assets. Estimated increases for commercial businesses in this area are not known and any increases would be reliant on strong publicity and interpretation to raise awareness of the enhancements amongst potential visitors. Direct visitor spend increases are more logical for restaurants and hotels.

4.6.2 Addressing the litter problems in the River Irwell

Due to access issues along the River Irwell within the centre of Manchester and Salford the feasible practical option to remove litter from the channel is by boat. APEM Ltd presently operates a ‘litter boat’ downstream of the study section on a monthly basis to enhance the visual quality of Salford Quays on behalf of Salford City Council.

Lancashire Wildlife Trust contacted APEM Ltd to discuss feasibility of extending the reach and frequency of their litter collection service to include the study stretch of the River Irwell. APEM Ltd have previously collected litter from the channel in the city centre stretch of the River Irwell, when
financial resources have been available, and so is an ideal option to address litter issues within this stretch and enhance quality of the river.

The cost of APEM Ltd to undertake a full day of litter collection within the city centre area was £1000. However, this cost was negotiable based upon the number of bookings and so with a frequent service operating the cost could be reduced. APEM Ltd are also able to offer additional benefits to potential buyers at no extra cost including marketing opportunities on the boat (12m² of advertising space) and team building days for staff.

The potential benefits associated with litter collection in the River Irwell are similar to those for greening of impoundment walls. In particular, improved visual attractiveness through removal of litter (and subsequent odour control) has the potential to increase property values and visitor spending. As highlighted above (4.6.1) estimates for property price increases linked to enhanced greenspace range across 1% to 19%. The frequency of litter boat service required to reach a critical point of enhanced visual quality on the River Irwell is difficult to estimate without practical application but if a weekly service was required the cost would be around £50,000 which is significantly lower than potential property price increases realised amongst buildings adjacent to the river.

4.7 Addressing the two chosen issues

For stage 2, a workshop for all businesses who expressed an interest/concern over these issues was planned. The purpose of the workshop was to explore in detail the specifics associated with the two identified options including:

- what benefits businesses would obtain/expect from these enhancements/services?
- how much they would be willing to invest to realise such benefits?
- was it important for all businesses attending/benefiting from the enhancements to invest in the scheme or were businesses willing to pay for schemes individually?
- how and who would take forward the development of a PES scheme (s) with interested businesses?

Two separate workshop dates were given, and the 21 businesses/landowners originally identified by CityCo as being positive about participating in the study were contacted. However, despite significant efforts there was very little interest from businesses in attending a collaborative workshop to explore the two practical PES options in more detail. This is a significant finding from this study. It was clear that exploring options to enhance and pay for ES was not on the agenda of the vast majority of the organisations along this part of the River Irwell and they were not willing to devote resources, in the form of attending a workshop to explore the issue further.

All businesses were contacted by email to seek responses to the more detailed review of the two practical options; only three businesses responded. All three businesses felt they were decent ideas and would be willing to assist further, though all expressed a view that the utility to their business was minimal.
5 CONCLUSIONS AND RECOMMENDATIONS

This work was designed to gauge awareness and identify if there was a clear demand for enhancements to ecosystem services provided by the River Irwell amongst commercial businesses which border the river in city centre Manchester and Salford. It sought to identify, communicate and explore the potential benefits to commercial businesses from possible ES enhancements and to identify the feasibility of establishing practical ways to secure new and additional investment in the natural environment associated with the River Irwell.

This section contains some general conclusions and recommendations emerging from this work.

5.1 Lesson learnt

5.1.1 Ownership of business as trigger for involvement in a PES

Ownership and a meaningful identification with a buildings value and how that relates to the immediate environment is of vital importance in creating a momentum to get involved in an activity such as PES. It is the business owners who can make decisions about the external relation that the building has with its immediate environment. However, in city centre environments, the owners of the buildings are often not the everyday users of the buildings. Most city centre buildings are filled with tenants, who have less interest in the building’s relationship to the immediate environment. Indeed even if the tenants do have an interest/concern, they still believe it is responsibility of the business owner, not them. Thus there are practical problems of getting owners who may have no connection with the everyday issues surrounding the immediate environment, interested.

An additional issue is a practical one. Ownership is often either difficult to discern, with ownership part of a relatively opaque array of holding companies, pension funds etc. or ownership of a building or land is detached from the day to day business operations. The acceleration of any scheme such as PES, must have a close relationships between ownerships and everyday business operations and trading. In this work this relationship is diffuse. We surmise that this is common in city centre environments.

5.1.2 Shared/collective identification by business of issues

The River is a linear and natural organic component of a city. As such rivers bend, flow and change along its course. This creates considerable complexity in terms of how individual businesses and owners relate to the river. For instance some businesses located adjacent to faster flowing sections will have a very different relationship to those on slower stretches or some stretches may have more natural habitat than others. This heterogeneity means there are different perspectives, views and attitudes to the river which are localised and specific. This works against a sense of a riparian business community with shared opinions and attitudes.

In the development of any PES, some form of collective identification with the issues and/or need for enhancement to ES is essential. This serves to galvanise collective action and create a momentum for ongoing change. However in city centre locations, large office buildings have many separate companies and activity, with little joint working/collaboration. Furthermore, stretches of the river environment will have different types of business activity. In this context, retail may sit alongside financial services alongside restaurants and hotels. As such, whilst there may be some collective identification with the river, there is little shared concern which affects all businesses. For instance the stretch of the Irwell studied has insignificant clusters of business types, i.e. restaurants.

5.1.3 Dynamic and complex development is difficult context for PES

City Centres are dynamic areas of development and regeneration where change is normal. In Manchester and Salford there has been significant change over a number of years, with significant property, public space and transport infrastructure development. This creates a context of change and lack of permanency. As such there is a possibility and strong perception, amongst businesses, that the context to any pilot would change in the future, thus rendering the lessons of the pilot activity redundant. This includes work on the river environment, particularly the riparian corridor, which may get overridden by a development in the future.
Whilst partners were aware of some regeneration initiatives within the footprint of our study area upon commencement of our work, the scale of development was much greater than previously known. Over the next two years the regeneration projects which are planned to be completed or commenced will deliver a real step change in the level of residential, commercial and public realm spaces on both sides of the River Irwell in this study area. This has the potential to be a driver of change for the quality of the River Irwell.

One of the most significant projects is the re-development of the former Granada Studios site, a 15 acre site which will be developed by Allied London to include three new hotels, a theatre and other performance venues and up to 2,500 apartments within towers, which will front the River Irwell.

5.1.4 Flood management priorities can mask wider benefit

The Irwell has historically been and remains to be a major channel for mitigating flood risk to the city centre. In this, this fundamental practical function, overrides other benefits the river could potentially bring. Furthermore, the channel is primarily maintained with this practical utilitarian purpose in mind, and this in part is a key reason for the unattractive visual appearance of the Irwell and barrier to other ecosystem services identified by commercial businesses such as recreational use.

5.1.5 Catalysing action

The responses from businesses would also suggest that developing small scale, visible and transparent pilot projects with tangible benefits (prior to a full scale pilot PES scheme) may increase the likelihood that business will be willing to buy services in the future. However, this alone is not enough to stimulate persistent and long term action toward a PES.

It is evident that we need defined and clear agents (organisational intermediaries), process (working arrangements) and structures (governance of intermediaries) to support the development of PES schemes or other PES-like investment models where commercial businesses are the key ‘buyers’. This work on the Irwell has highlighted a range of issues and a degree of concern. In thinking through the reasons, it is worth considering the need for these three key elements in accelerating a PES: Agency (intermediary), Structure and Process.

Agency

In this work, there was no single agency (intermediary), who could act as the glue in which collective views and ideas could be shared, discussed and acted upon. In the absence of this, businesses looked to or highlighted public bodies as being the responsible agent. Whilst the organisations as part of this work, did serve to create a temporary/episodic agent, it was largely beyond the remit of this activity to perform that role in the long-term. This would require deeper, longer term and resource intensive activity to catalyse and secure a collective agency for a PES.

Structure

Likewise, there was no overarching partnership body or vehicle, which is specific to this location, in which collective business involvement could take place. There are a number of potential structures including the Irwell River Partnership, HEART of Manchester BID, Local Economic Partnership, Local Nature Partnership and Irwell River Park. However, these existing partnerships and structures have a much wider geographical remit and purpose than supporting businesses to establish a PES within the specific study area, which may impede their potential to be the supporting structure.

As discussed in section 2.3, this study was stimulated by discussions between partners within the Irwell River Partnership which highlights the ambition of this partnership to support the development of PES schemes with commercial businesses in the catchment, including within the city centres of Manchester and Salford. The feasibility of the IRP to be the key structure around which PES schemes are taken forward will be directly related to the capacity of the organisations actively involved as the IRP is an unincorporated group and so projects and activities would be taken forward by individual or collective organisations. In this regard, at present, the ability of the IRP to co-ordinate and take forward this agenda with commercial businesses is challenged by the limited financial resources for structures such as IRP. Furthermore, partnerships such as this have a remit beyond PES. Lessons from elsewhere suggest a structure needs to be dedicated to the development of a PES over the long term. (i.e. establishment of a new BID linked to the River Don in Sheffield took 4 years).
Process
Developing a PES takes time and, within a complex urban environment of this pilot context, it would require much more substantive work in the future to develop properly. Whilst this work has been a useful process, it was a temporary process, and as such limited in terms of creating relationships, needed as the basis to a scheme of this type.

If businesses along this stretch of the River Irwell are to be induced to contribute to any future PES scheme, we would require a much deeper, longer and staggered approach. This would involve a long term process of stakeholder engagement which would provide businesses with evidence as to the commercial, socio-economic and environmental benefits of similar schemes.

5.1.6 Resources to catalyse action

One river catchment with similar characteristics to the River Irwell which has been able to successfully engage commercial businesses in a PES scheme is the River Don in Sheffield. Sheffield City Council has led the development of this work which has resulted in the establishment of a new BID structure whose levy (£1.4m) will fund capital investment works and a 5 year (2015 – 2019) ongoing channel management regime over an 8km stretch of the river through the Lower Don Valley.

The key driver of the capital and ongoing channel works is to protect businesses within the BID area up to a 1 in 100 flood event. Other benefits identified through the scheme include enhancements to the natural amenity value of the River Don through litter removal, invasive species control and increased biodiversity. The principle catalyst behind the work was the flooding event of 2007 which caused considerable damage to Sheffield and its businesses; and also led to the loss of two lives.

Whilst flooding was recognised as an issue by some commercial businesses engaged in our study this was mainly associated with those that had basement areas which are at the level or below impoundment walls of the River Irwell. No major flooding event has occurred in the city centre area and with the development of the 2nd flood basin in Salford (see section 2.3), there is unlikely to be a flooding event which catalyses action similar to what has happened in Sheffield.

Despite the significant catalyst of devastating flooding in Sheffield, the City Council has spent around £19m to resource a 4 year stakeholder engagement programme to realise the BID structure. The learning from our interviews indicates that a similar long-term engagement programme will be required to establish a new structure which could design and develop a PES scheme to enhance the provision of ES in this area. Securing this level of resource will be challenging.

5.1.7 Lessons for government

Context is key
In this work, there is a distance between a business recognition that there is a need to enhance the ES provided by the in-channel and riparian environment and a willingness to get involved in a PES scheme. In the above sections we suggest the wider policy context is of vital importance, as is the appropriate agencies, structure and process.

Risk and reward
Government policy and action to create the right context for the acceleration of PES, in the context of areas like the Irwell is of vital importance. In this, consideration of resource to ‘oil the wheels’ of the process is important. This means undertaking activity, which respects the possibility that this is a very long process, and needs government to be in this for the very ‘long haul’. This is less about government ‘triggering’ or instigating but being an active co-producer in the PES. In this there is a need for a much more entrepreneurial and risk taking approach, with a stronger recognition that greater rewards may be achieved in areas where there is a higher probability of failure. In this regard, one could surmise that places such as this stretch of the river Irwell, within a dynamic development context, could possibly realise a successful PES. However, the developmental uncertainty would suggest that this would be fraught with risks.
Promise of devolution
Ongoing devolution to local combined authorities, as a part of any deepening of devolved arrangements, may serve to create stronger coalitions of public partners, which could catalyse the development of a PES. This includes advancing existing devolution deals to include a greater environmental dimension including deals which consider DEFRA activities and agencies such as Environment Agency. In this, the local ability to pool resource and flex and bend activities around existing transport infrastructure, employment and skills, housing and general spatial planning elements could be a potential fillip to advancing a PES and addressing the issues of progressing such a scheme as explored here.

Of course with Greater Manchester devolution being comparatively mature in devolution terms, compared to other parts of the country, this represents a potential fertile territory in this regard.

5.2 Review of the PES approach to River Irwell

5.2.1 Potential

Although most of the responses are very far from enthusiastic as regards a PES scheme at this stage, it would be wrong to completely rule out the development of a PES scheme in the future. As previously stated some businesses are more than aware of the Irwell's potential to add commercial value to their business, the wider area and city as a whole. A large proportion of businesses are dissatisfied with the River's current state and in many cases consider the River to have a negative impact on their business. This negative is at least driving the need for some change. Whilst this work only developed the business case so far, there is context for future work.

Businesses do feel some sense of low level responsibility for the Irwell and the surrounding public realm as a key stakeholder, although they are clear that the main responsibility does not lie with them, but with public bodies. PES is seeking to go even further than low level responsibility, as such this is a poor base condition for accelerating a scheme of this nature. It is evident that unless there is a significant policy game changer, the Irwell is not currently a site where the rapid development of a PES scheme is achievable.

This is an issue in terms of potential governance and partnership structures. In particular existing activity is mostly centred on wider catchment terms of reference, with less focus on localised improvements or smaller scale enhancements. However, it would be wrong to assume, that this would make the introduction of a PES any easier. A wider frame of reference comes with even more complexity, ownership issues etc.

5.2.2 Proof of concept

Within the context of this pilot, the proof of the PES concept within this urban context, with a splintered ownership and an ongoing mix of regeneration and development activities is, at best, not proven. However, the pilot work was very preliminary and there were a number of unforeseen issues that have meant the actual pilot has not developed in the way set out in the original proposed project. In addition, in the context of a complex urban environment such as Manchester, the resources required to develop a strong business case for action can be significant; this pilot project therefore should be seen as presenting very preliminary findings in this respect. Of course there is an acknowledgement that the Irwell has environmental issues. Furthermore, businesses understand the potential of the Irwell and there is an acknowledgement that more could be done to enhance the quality of the river environment. However, the above complexity means that businesses are more readily concerned with what is immediately related to them, not wider catchment issues.
5.2.3 Weave ideas of PES into ongoing development and regeneration activity

The potential of a PES to be developed in this context is woven into a need to develop a culture of how businesses and owners relate to and feel a sense of ownership and responsibility for the environment. This work has served to reveal ideas as to how such a culture could be developed, as regards agency (intermediary), structure and process. However, underpinning those elements is a need to weave any consideration of a PES, into ongoing development activities. The area around this stretch of the Irwell (as discussed in 2.6), is subject to a complex set of change and ongoing developments. However, in this development context, whilst the river may be considered as a natural resource, a general commercial asset and as an important component of a flood management plan. It is under-considered as a major commercial asset.

Questions of the Irwell being a commercial resource are marginal to the need to create a bridge over it or contain it. As such, any consideration of a PES is likely to fail unless a PES is planned in earlier in the process and placed higher up on the agenda of general stewardship and development of place, by local authority planning leads. PES would need to be demonstrably explored as a means to aid development and add to the ongoing sustainability of land and property value or appreciation.

5.2.4 Moving forward: the opportunities to link PES to development activities

This work has opened the door and placed seeds of ideas about PES and its potential. Moreover, it has captured some of the problems and pitfalls of attempts to introduce a PES. Nevertheless, with ongoing change as outlined above, there remains a potential for a PES to be reconsidered as part of these developments. The development community, alongside the local state and agencies tasked with looking after the environment, need to use any development context as an opportunity to consider investment models for the natural environment, particularly PES schemes and in so doing seek to work with more established and older businesses within the area.

5.2.5 Transferable lessons

This work has revealed significant issues about the potential for developing a PES within a city centre environment. In particular, whilst some of the issues as regards ownership and complexity were foreseen, the depth by which businesses did not engage with the river, or are interested in the river, is of importance to the acceleration of a PES scheme in this type of location.

Businesses with most to gain or lose, and thus more likely to get involved, are closer to the river. Proximity to the river is important. It would therefore perhaps be prudent to target these businesses and areas first with pilot projects as part of a long-term relationship building process to evidence the business case for investment in the natural environment, as a mechanism to increase the likelihood of a financial contribution to a particular scheme in the future from a wider collective of commercial businesses.

The consultation and lessons from similar PES pilot schemes would strongly suggest that by taking this long term approach with businesses, a positive foundation will be laid on which to introduce a PES scheme based on additional financial contributions from local businesses.

The UK has many riparian environments within complex post-industrial urban locations. However, whilst many have been neglected, with development and properties having turned its back to them, this stretch of the Irwell, is perhaps unique. The mix of significant regeneration and development, coupled to a river which has not deeply penetrated the everyday cultural and social life of the city, means its stock and value is low. As such in this context, much greater consideration must be given to raising the profile of the river, and (as mentioned above), to place the river within wider considerations of place development.
5.3 Next steps

The key uncertainty at this stage is which organisation or structure is best placed and able to act as the vehicle to develop possible investment opportunities, develop any business case and support the long term development of PES schemes with commercial businesses. This work needs a driver. The findings of this study will be shared and discussed with key stakeholders and partnerships including Manchester City Council, Salford City Council, Irwell River Partnership, Natural Capital Group and the Environment Agency with a view to assessing the feasibility of identifying a lead organisation/partnership who can advance the issues and motivate businesses to support the development of a practical PES scheme.

5.3.1 Limitations of our study

Interview stage and sample size

It must be recognised that our conclusions and recommendations are based upon 12 interviews which is a small sample size. The original target for the study was to involve 15 businesses in the interview process but this was not achieved. Lower than planned engagement by the 93 businesses identified in our study area was linked to lack of interest and lack of time amongst businesses to commit to interviews. This lack of interest and ability to commit time to the study reinforces some of our general conclusions found through interviews about the willingness of businesses to get involved in a PES scheme.

Another limitation of our study findings is that businesses only engaged in stage 1 interviews which meant it was not possible to explore key details associated with taking forward the two selected options such as:

- realistic payment levels;
- whether businesses would enter into schemes individually or needed collective engagement;
- spatial scales of potential schemes;
- potential timeframes and whether pilot schemes were necessary before full commitments;
- how businesses would want to monitor and evaluate enhancements/delivery.

Not having this information has limited our ability to make informed recommendations and conclusions about specific steps needed to take forward the development of potential PES schemes with commercial businesses in this study area and other similar city centre environments.

Interview methodology

On reflection our stage 1 interview format may have been too open ended and did not provide sufficient background information on the ecosystem services which currently are or could be provided by the River Irwell. The interview overview document which we provided to businesses prior to interviews was kept succinct based upon advice and expertise amongst the partners which indicated the business contacts would have limited time to read such information. One possible option would have been to provide additional documents and or links from the overview document for those individuals who were keen to explore ecosystem services in more detail prior to the interview.

The stage 1 semi-structured interview format was utilised to try and develop a two way dialogue and evolving conversation with interviewees so that their specific relationship, understanding and value of the River Irwell could be identified in greater detail. Whilst the interviewer gave an overview of the study and ES at the start of the interview. As a result of short interview time slots, there is a possibility that this was not detailed enough to demonstrate to individuals the importance of ES enhancements for their business.

Based upon learning from work undertaken on the River Don in Sheffield it is clear that establishing PES schemes (and PES like schemes) with commercial businesses is a long-term process. The work in Sheffield also had a very strong stimulus – local and significant flooding. Whilst there are a number of issues on the River Irwell our study did not highlight a single one issue/collection of linked issues to create a strong stimulus for ES enhancements. Future work within the cities of Manchester and Salford (and other cities) may be more effective if partners created momentum behind a single issue.
APPENDIX 1

Interview structure
Appendix 1: Interview structure

INTERVIEW STRUCTURE

Overview

Interviews were semi-structured around a series of questions, but interviewees were afforded the opportunity to provide open ended answers, which afforded the interviewer opportunities to ask additional supplementary questions. These interviews were iterative and engaging sessions, which in our experience is an approach that has been a very productive research methodology.

Interviews were not be recorded verbatim, but rather a note was written by the interviewer during the interview itself. Interviews were undertaken under Chatham House Rules, which were clearly explained to interviewees at the beginning of the interview.

We sought to undertake about 15 interviews with key business and commercial property owners with interests alongside the section of the River Irwell that flows between Trinity Way and Mancunian Way. Interviews were conducted with those business and property owners identified by CityCo, as well as a small group of additional stakeholders.

The first stage interviews were about raising awareness of the river and its services. They sought to identify what the interviewees understand about the services the river currently provides, what their priorities would be regarding enhancements to the in channel environment (within the confines of the project) to improve on these, and their attitudes toward payment for ecosystem services.

Second stage interviews were planned to consult on the range of ecosystem services that had been identified during the stage one interviews and other in channel project development work as key priorities. They were also planned to elicit views on evolving models and approaches. The questions for the stage two interviews were to be developed at a later stage, following completion and analysis of stage one interviews and other project development work.

Stage One Interview Questions

In opening the interviews the interviewer provided a short overview of the project (along the lines of the previously provided information sheet), explained the semi-structured and Chatham House Rules nature of the interview, and asked some initial opening questions about the interviewee and their business and/or property interests.

Are you a business, property owner or both?
What is the nature of your business?
What property do you own?
If your business is tenanted, what service charges to you currently pay?

The interviewer then asked some questions about how much the interviewee understands the services currently provided by the river, and how much these services add value to their business (commercial interest), and how much they value these services (philanthropic interest).

What services do you believe the river currently provides that adds value to your business (obtain specific details – i.e. increased customer numbers, appealing location, staff well-being, increased investment in the area which leads to benefits such as place to be based or rental income)?

What services does the river currently provide that you value for its wider contribution to Manchester and Salford?

The interviewer then asked some questions about whether there are services currently being provided by the river that could be provided better, or not currently being provided that they would like to be provided. It will be explained again that these are services within the context of the project, and not larger capital regeneration projects. As with the rest of the interview, the interviewer did not lead the questions, but explained by way of some examples (i.e. increased flood prevention, recreation on the river, litter management, control of invasive species, visual enhancements, impounding walls).

From either a business interest, or from the wider Manchester and Salford interest, do you feel that improvements could be made to the services currently being provided by the river (obtain specific details – i.e. increased customer numbers, appealing location, staff well-being, increased investment in the area which leads to benefits such as place to be based or rental income)?
Appendix 1: Interview structure

Again from either a business interest, or from the wider Manchester and Salford interest, do you feel that there are services not currently provided by the river that you feel should be (services limited to in channel environment, rather than the public space surrounding the river)?

The interviewer then asked some questions about attitudes toward funding the service improvements or additional services via a payment for ecosystem services model. Do you currently or have you at any stage made any financial contributions toward the maintenance of the river or its banks? If service improvements or additional services were provided by the river, would you be prepared to make an ongoing financial contribution toward the provision of these services? If so, which services would you be prepared to make a financial contribution toward? Do you have any ideas as to how you might prefer to make these ongoing contributions, should you be willing to do so?

The interviewer then thanked that interviewee for their responses and asked if there is anything not covered that they might like to add. They explained that their responses would be considered as part of the project development along with those of other businesses, and that these would influence the proposals that emerge. They were also be assured that there would be an opportunity to comment on these proposals at the second interview early in 2015.