BUSINESS IN THE COMMUNITY

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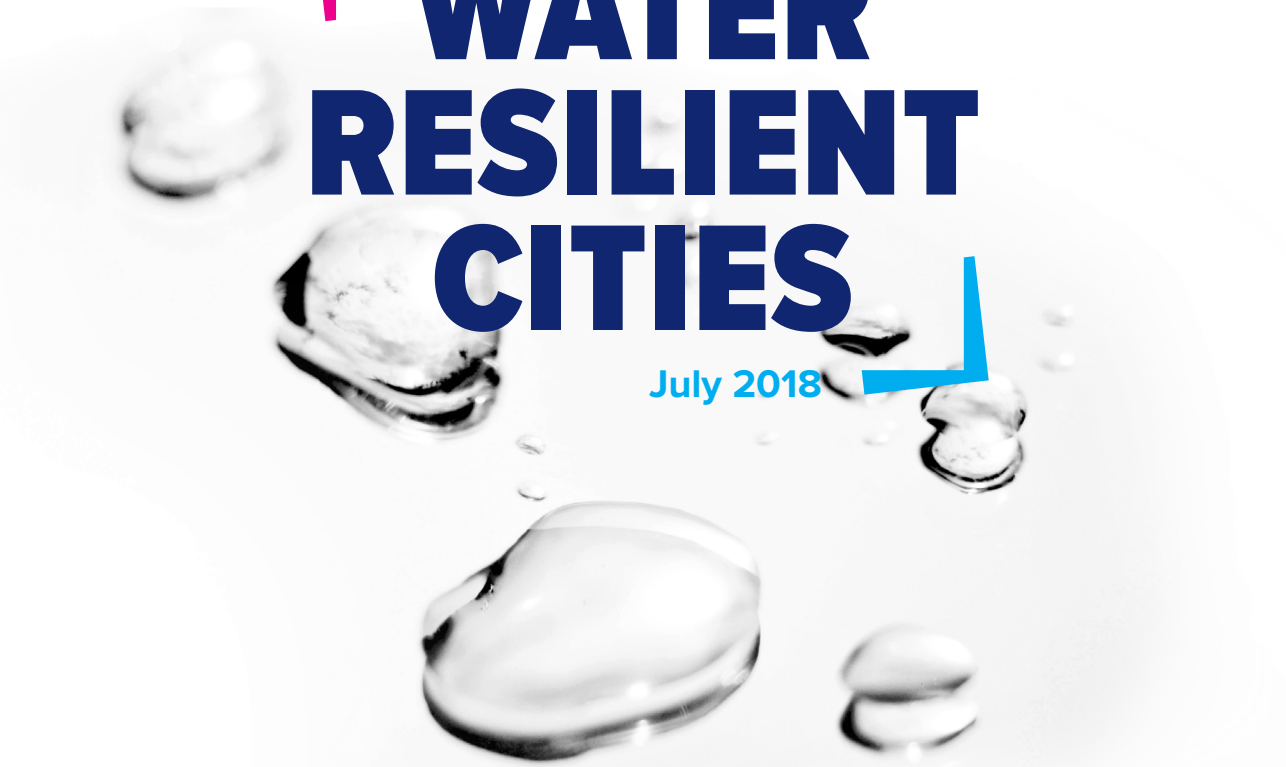
Report

WATER RESILIENT CITIES

July 2018



A business case for Greater Manchester

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BUSINESS IN THE COMMUNITY

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WATER RESILIENT CITIES

The business case for investing in resilience in Greater Manchester

Introduction

The natural environment is inherently resilient, managing water through the water cycle; moving and storing water from the sky to the ground and then out to the rivers and oceans. Cities disrupt this natural cycle through changes in land use, climate change and urbanisation. With 80% of the total population of the UK living in cities and towns[1] urban spaces exert significant influence on our natural environment As the UK strives to meet global agreements on climate change and keep global temperature rises to less than 2.0 degrees, we are still experiencing the effects of climate change in extremes of flooding and drought.

£340million

The estimated cost of floods to the UK per annum

A 2 degree rise will increase this to £428million and a 4 degree rise will cause flood damage up to a cost of £619million per annum[2]. Finding ways to build resilience to these extremes is essential to the long-term sustainability of our communities, the environment and the economy.

Sustainable drainage solutions (SuDS) are one way of better managing surface water; blue and green spaces such as gardens, parks, rain gardens, ponds and wetlands can build the water resilience of urban places whilst also providing benefits to air quality, carbon reduction, health and well-being, water quality and biodiversity.

250,000 properties

currently at risk of surface water flooding in Greater Manchester

In 2016 Business in the Community's Water Taskforce proposed that retrofitting SuDS could create green and blue spaces and save money. United Utilities charges business customers for surface water drainage on the basis of the surface area of their site that drains into the wastewater system. By using SuDs to disconnect areas of a site from the wastewater system it is possible for business customers to move down a charging band and make annual financial savings.

[1] https://www.statista.com/statistics/270369/urbanization-in-the-united-kingdom/

[2] https://www.theccc.org.uk/2016/01/15/infographic-future-flood-risk-in-the-uk/

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Good Town, Bad Town by Westcountry Rivers Trust shows how green and blue infrastructure can transform cityscapes to deliver resilience

What are SuDS?

Sustainable drainage systems (SuDS) are a way of managing surface water. In cities and towns, they are used to slow the flow of surface water, mimicking the way that nature manages water, helping to reduce flooding and pollution.

SuDS incorporate a range of tools and techniques to collect, treat, store and then release storm water slowly into the local environment. These include; swales, green roofs, basins, ponds and wetlands (known as green and blue infrastructure) as well as more engineered options such as below ground storage and permeable surfaces. Used in urban areas, SuDS can support water resilient cities as well as creating green spaces.

Using green and blue infrastructure for climate adaptation can transform our cities, providing economic, social and environmental benefits to businesses and communities. SuDS support resilience, can contribute to sustainable development and improve the places where we live, work and play. For the greatest impact they need to be implemented at a landscape scale across towns, cities or regions.

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Drivers for change

The Government's 25 Year Environment Plan set out a long-term commitment to building resilience, creating a thriving environment and increasing green space in the UK. The plan includes an ambition to increase sustainable drainage systems and to reduce the impact of waste water. SuDS can deliver on other aspects of the plan such as increasing green space and by creating valuable habitat in urban environments.

The Water Act 2014 added a new duty for water companies to further the resilience of water and wastewater. A resilient wastewater sector should have capacity in its sewer network to reduce sewer flooding and combined sewer overflows. SuDS help build resilience by getting surface water to soak into the ground rather than flow into drains, simultaneously recharging groundwater levels which are a vital natural resource.

Water companies are currently developing a framework for the long-term planning of drainage and wastewater services. It is hoped that proposed options for investment under these plans will support the inclusion of more natural based strategic solutions such as SuDS in business plans.

This is supported by Defra's strategic policy statement (SPS) to Ofwat which states that *"we expect companies to select options with a view to delivering the best value for money over the long term, considering the wider costs and benefits to the economy, society and the environment."* It also specifically highlights the use of SuDS as an example of this and to delivering multiple benefits where possible.

The financial case for SuDS in Manchester

In Greater Manchester it became possible to take a financial approach to retrofitting SuDS when United Utilities changed the charging structure, following OFWAT guidelines. United Utilities[3] implemented a banded structure that charges non-domestic customers for wastewater according to the area of hard surface on their site (Annex 1). By breaking down these charges there was a clearer cost for wastewater management, and therefore it is possible to attribute a value to mitigating these costs through SuDS. This enabled us to develop a model of how utilising SuDS could reduce long-term costs.

Customers that are close to the low end of the charging band have the potential to make significant savings by using SuDs to disconnect hard surface area from the main drains. The savings made by dropping down a charging band can offset the costs of constructing the SuDs and would lead to long term savings. Our model tested the potential impact of this approach at a city level, using school and NHS sites as an example.

Beyond direct financial savings, there are significant benefits from creating green infrastructure within SuDS schemes; including physical and mental health, education, air quality, uplift for housing prices and carbon reduction. It is possible to put a financial value to these benefits. These benefits are a useful way for a range of stakeholders to understand how a city-wide programme can provide value or reduce costs for their institution, helping to drive a shared investment approach.

[3] The surface water drainage charging structure has been maintained by Water Plus following the water sector market reforms to a wholesaler/retailer structure.

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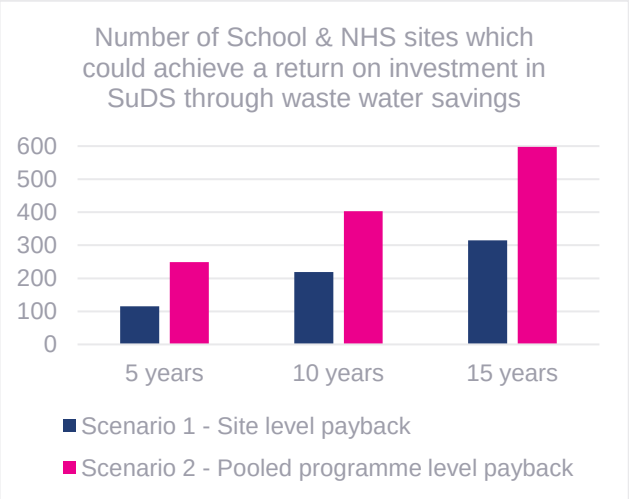
With detailed modelling we have identified two funding options looking at schools and NHS sites as an example of public estates. If this programme is adopted at a city scale, we would recommend modelling the approach across all public estates and highways to maximise the economies of scale of the programme.

Strategy one looks at rolling out a programme in sites where a direct saving could be made by each site. Strategy two looks at pooling the savings at a programme level to offset high return sites against low return sites, increasing the number of sites which can achieve a return and leveraging wider multiple benefits for the city. Both strategies would see a return on investment in construction and maintenance of SuDS within 5 years. The number of sites which could see returns increases significantly if we increase the payback period to 10 or 15 years. Adopting Strategy 2 and pooling savings at a city level would enable investment in nearly twice as many sites and would double the value of multiple benefits.

At a programme level, 249 schools and NHS sites could make combined savings of over £300,000 per year, seeing a return on investment in SuDS within 5 years. By extending the return period to 15 years, 598 sites could invest in SuDS, saving over £800,000 per year, creating over 300,000m^2 of green and blue space and delivering over £83million worth of social and environmental benefits.



Economic model over a 15 year return period*

	Number of Sites	Total Capex	Total Capex + Opex	Total Savings**	Total Additional Benefits
Schools	576	£9,100,000	£9,700,000	£11,676,000	
NHS Sites	22	£266,000	£284,000	£235,000	
Total Sites	598	£9,390,000	£10,000,000	£11,910,000	£83,000,000

*figures rounded
**from dropping a charging band

SCENARIO TWO: POOLING SAVINGS ACROSS ALL SITES AT A PROGRAMME LEVEL TO LEVERAGE MAXIMUM FINANCIAL RETURNS AND WIDER BENEFITS

Full Model summary in Annexe 2

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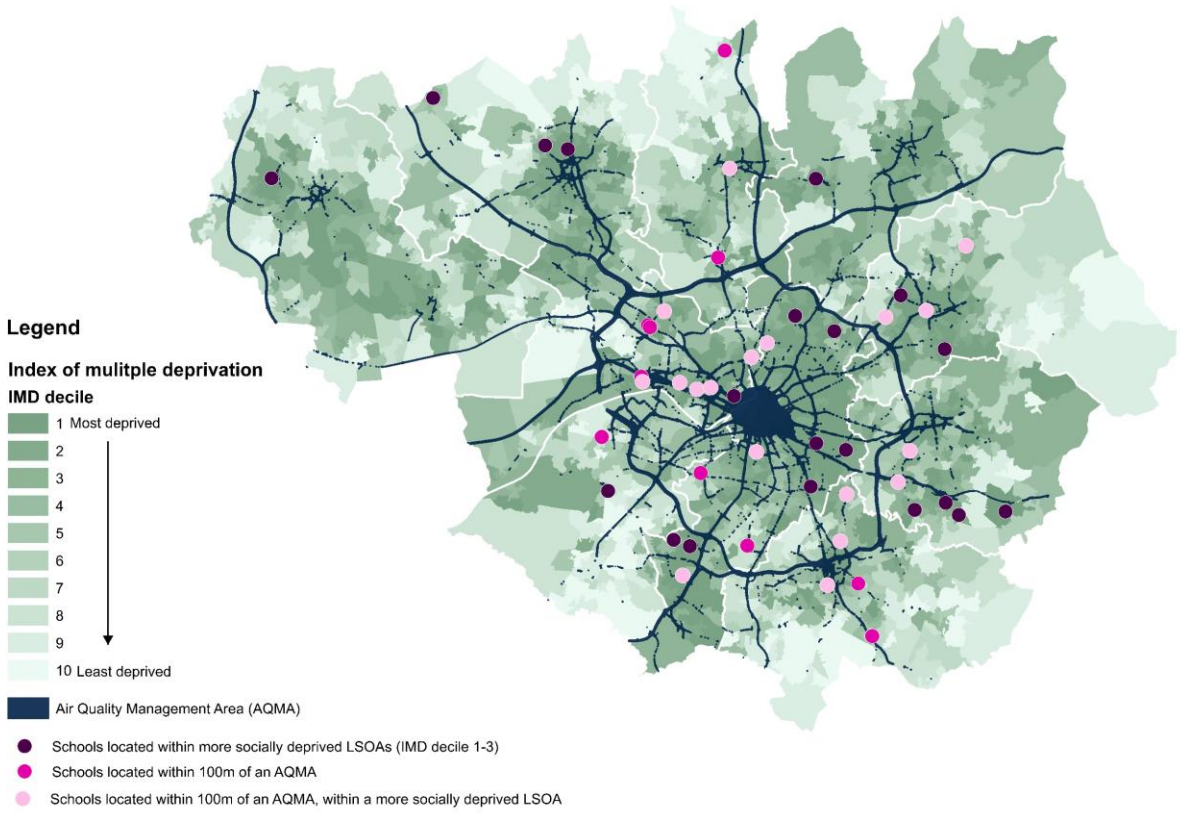
The wider value of SuDS in Manchester

In our towns and cities, green spaces strengthen communities, improve health and wellbeing, build relationships and reverse the trend of isolation. People living in deprived areas often have less access to natural spaces and have to endure poorer environments, including high levels of congestion, poor air quality and noise pollution[4]. Where the communities are ethnically diverse the contrast is starker. Living close to green spaces can reduce mortality rates and help to cut health inequalities.

£2.1billion

The amount the UK government estimated could be saved in healthcare costs if every household in England were provided with good access to quality green space

Schools in areas of social deprivation and air quality management areas



[4] UCL Institute of Health Equity, 2013

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Our model shows that more than twenty schools, in socially deprived areas of Greater Manchester, which suffer from air quality issues could recoup the costs of implementing SuDS within ten years through savings on their water bills. SuDS in these schools and other businesses and public buildings could improve air quality and access to greenspace within socially deprived areas as well as saving money on surface water drainage charges.

It could be possible to nearly double the green space in some Manchester boroughs through SuDS and provide a range of benefits in areas of high deprivation such as Salford and Manchester.

35%

Of children under 16 in Manchester are living in poverty (one of the highest rates in the country

Social value

The Institute for Fiscal Studies has also predicted that the number of children living in poverty will rise sharply by 2020.

If SuDS are strategically located they can reduce local air quality issues which are a significant issue for children. Access to green space for children can increase levels of concentration and productivity.

In Augustenborg, Sweden, retrofit SuDS were strategically rolled out resulting in a 50% reduction in turnover of tenancies and unemployment fell from 30% to 6%.

Research suggests living in environments with vegetation and greenspace can reduce incivilities, aggression and violence, vandalism and criminal mischief. Positive benefits to prisoners and hospital patients have been indicated from being able the see trees and green landscapes. In the work context, employees with views of nature reported fewer ailments, and higher job satisfaction.[5]

Flood resilience and climate change

Over 14% of Greater Manchester is susceptible to surface water flooding with Wigan, Bury and Rochdale at greatest risk of surface water flooding.

- 80% of electricity substations are in areas where flooding may exceed 0.1m in depth.
- Waste management sites and water storage and treatment plans are disproportionately distributed within areas at risk of surface water flooding exceeding 1m in depth.
- Much of the road infrastructure and metrolink network is in areas of flood risk.[6]

Climate change forecasting predicts that winter precipitation could increase by around 30% across Manchester. The urban heat island effect[7] in Manchester[8] is believed to be between 3 and 6 degrees and likely to increase by 1.5 degrees by 2050. SuDS and blue spaces are thought to decrease this effect by around 1 degree.

5 https://www.sciencedirect.com/science/article/pii/S1877343512000966

6 TEP (2010) GREATER MANCHESTER'S GREEN INFRASTRUCTURE: Next Steps towards a Green Infrastructure Framework, Report to AGMA & Natural England

7 https://www.sciencedirect.com/science/article/pii/S0360132312001722

8 ,Where an urban area is significantly warmer than the surrounding area due to human activities,

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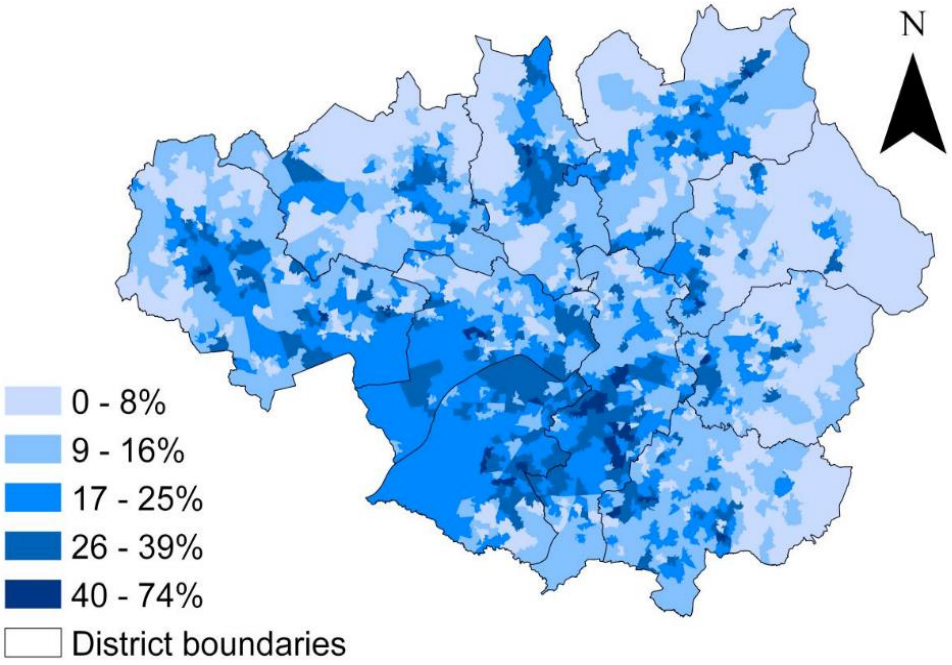
The proportion of local areas threatened by surface water flooding that exceeds 0.1m depth.



If all potential SuDS options were retrofitted in schools and NHS properties in Greater Manchester, they could take 130,000m3 of rainwater at any one time out of the system in current surface water flood risk areas. This could save around £2million in flood management costs.

130,000m³

The amount of rainwater that SuDS in schools and NHS sites across Greater Manchester could take out of the system at any time in current surface water flood risk area. The equivalent of 350 swimming pools

If considering climate change adaptation as a priority, these SuDS could be designed with increased capacity to capture surface water. This could also reduce the number of combined sewer overflows (when sewers are allowed to flow untreated into rivers and water bodies).

Our model shows that 4,000 tonnes of carbon could be sequestered each year if SuDS were rolled out in all schools and NHS sites in Greater Manchester. Whilst the figures modelled are based purely on the number of trees planted, there is growing evidence of the carbon sequestration potential of green roofs, ponds and wetlands. The proposed options in the SuDS Suite model suggest potential for over 10,000m2 of green roof and over 300m2 of ponds possibly more than doubling the carbon sequestration figures proposed here.

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If all potential SuDS options were retrofitted in schools and NHS sites in Greater Manchester

98,000

Shrubs and trees would be planted.

85,000

Young people would benefit from access to green space

4,000

Tonnes of carbon pa, equivalent to 1500 cars, could be sequestered

54

Tonnes of air contaminates would be removed within 40 years

20,000

M^2 of new green space would be created.

350

Swimming pools of water could be held by SuDS at any one time

SuDS for people, wildlife and urban landscapes

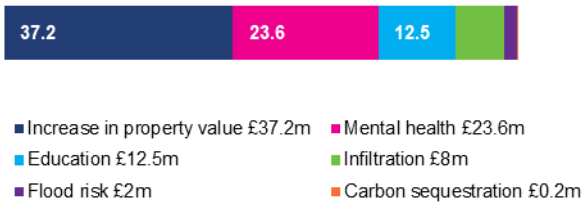
Our model looked at the benefits achievable by rolling out SuDS retrofit across schools and NHS sites. Many other buildings and public spaces could be utilised, including prisons, businesses, shopping centres and supermarkets.

Biodiversity

If designed and managed appropriately SuDS can create a range of habitats such as ponds and wetlands encouraging species such as newts and frogs, dragonflies and other insects. They can offer great habitats for pollinators. Rolling out SuDS across schools and NHS Sites in Greater Manchester[9] could create over 20,000m^2 – approximately four football pitches of new green space. Biodiversity is very difficult to place a monetary value on but is the cornerstone to the health of our ecosystems.

CIRIA[10] Benefits of SuDS Tool (BeST) was used to estimate health, education and flood risk monetary benefits over 15 years of rolling out SuDS into all schools and NHS sites across Greater Manchester.

Value of multiple benefits
Amounts in £million over 15 years



[9] United Utilities assessed the school sites where infiltration was considered appropriate to enable SuDS to take water out of the drainage system. They then assessed appropriate SuDS options for the site. It is these sites and SuDS options which were analysed with respect to multiple benefits.

[10] www.ciria.org

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Impact Story

Moorlands Junior School

Moorlands Junior School, in Sale is part of the borough of Trafford. It has 239 pupils aged 7 to 11. Moorlands expressed an interest in being part a demonstration site for the project and was chosen due to the suitability of the site.

The site includes 3,496m^2 of hard standing and sits within United Utilities surface water drainage charging band 6. The charge for band 6 is £5364 per annum but United Utilities currently offer a 50% discount to schools, so Moorlands pay £2,682. To drop a band required the disconnection of 497m^2 of hard standing from the waste water sewers.

Desk and ground studies were carried out to accurately assess the suitability of the soil to infiltrate surface water. Project partners Arup and Stantec drew up designs for 5 small rain gardens, a pathway and an area of permeable paving in the carpark. The school Eco Council were involved in the project from the start. They had a session to learn about the water cycle and SuDS, they then worked with their teachers to feed into the design. They asked that the rain gardens be planted up in their their house colours and that as many natural materials were used as possible.

The space was used as a waiting area for parents collecting children and this was considered within the designs; incorporating a path that joins the school entrances to the waiting area, stepping stones for the children, and channels to show-case the different mechanisms for moving water. The SuDS scheme allowed water that fell on the roof of the classrooms, that previously was taken via drainpipes into the waste water sewers, to be diverted into the rain gardens. The plants within the rain garden can survive well in wet conditions and help to hold onto water releasing it back into the natural water cycle slowly.

With so many young children having access to the rain gardens, health and safety was considered as a primary factor in the design of the rain garden, ensuring that even in extreme rain conditions the space did not pose a risk. This factor was discussed throughout the process with the Head Teacher. The area was also designed to maximise the potential for learning for the children, with plants that attract wildlife, enhance the biodiversity of the school grounds, and space for outdoor lessons.

Moorlands have now moved down to charging band 5 and make an annual saving of £1475. As the 50% discount only applies to schools, all other non-domestic customers would save £2950 by moving down from band 6 to band 5.

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Alison Kelly

Head Teacher

Being a part of the SuDS project has provided opportunities for our children to be part of something that will benefit their future, developing world. As a school, we have looked more closely at our environment, how we use it and how we can preserve it for the future. As a school, we gain financially, in our emotional well-being and it is a huge boost to the local ecosystem.

£65,000

The amount Trafford schools could save together over a year and get pay back in 10 years.

Imagining a resilient Manchester

What could SuDS look like in Greater Manchester?

NHS sites

A second demonstration site is being developed on an NHS site. Within Greater Manchester there are 28 freehold clinics and health centres owned by NHS Property Services. There is a commitment that development to these sites will improve the health and wellbeing of patients and staff who visit them. Evidence shows that a green view can reduce stress in 3 to 5 minutes and blood pressure decreases in a more natural environment.[11]

If all 28 NHS Freehold properties in Greater Manchester had SuDS retrofitted, they could make combined savings of £22,400 per annum, and would see a return on investment in 22 years. Hospital patients with green views recover quicker and with fewer drugs. Using the BeST tool to assess the potential benefits to patients in all hospitals in Greater Manchester, the health benefits are estimated to be worth £21million over 15 years.

Schools by council

In Trafford, where the demonstration site is situated, there are 116 schools. 48 of these could achieve a direct payback through wastewater savings in ten years if SuDS were retrofitted.

In Rochdale, one of the most deprived areas in the UK and an air quality management area, 38 of the 94 schools could achieve a payback within 10 years saving £50,000 a year together. The additional education, health and air quality improvements would benefit the whole borough.

[11] https://www.groundwork.org.uk/benefits-of-green-space-uk

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Prisons

In 2016 the National Audit Office reported 120 self-inflicted deaths in UK prisons, and an increase in self-harm incidents of 73% from 2012 to 40,161. This is a huge challenge, that needs addressing with a holistic approach. With a growing body of evidence that green space can improve mental health, retrofitting green and blue SuDS in prisons in Greater Manchester could both provide annual savings that could be reinvested in the prison and mental health benefits. Taking a conservative estimate that 20% of inmates in GM prisons could benefit and using the BeST tool, prisons in Manchester could gain around £60,000 in mental health benefits over 15 years.

£60,000

The mental health benefits that could be gained by prisoners over 15 years if SuDS were retrofitted in prisons in Manchester.

Developing green infrastructure within prisons would also provide the opportunity for skills development for inmates, and potentially improve employment opportunities on release.

Lessons Learned

Having proved the concept of an economic model for retrofitting SuDS in Greater Manchester in initial phases of this project, creating demonstration sites was considering key to understanding the barriers to retrofitting SuDS and to showcase the opportunities and reality of SuDS first hand. This phase of the project has enabled us to identify a range of challenges and barriers that impact the retrofitting of SuDS both within individual sites and when investigating the potential to roll out at scale.

Awareness and perceived complexity

Many of the schools who were approached to participate in the project showed reticence, due to lack of understanding of what the process would involve and concern about impact on school life. These concerns were also seen within the councils, where understanding of the impact on infrastructure, health and safety and costs were raised. Many non-domestic customers are also unaware of the potential to move a charging band. The demonstration site at Moorlands will provide a showcase to help challenge these concerns and more can be done to educate schools, and councils on the benefits of the scheme.

Co-ordinated planning

Within councils we identified challenges in joining the dots between planning policy, individual planning officers and education departments. Although it is recognised within planning regulations that SuDS be considered on all developments, there is a lack of clear understanding of this within individual departments and planners. More work can be done to ensure that achieving planning permission, meeting building regulations and demonstrating the benefits to both individual sites and the councils.

Assessment of surface water drainage areas

Surface water drainage bands are set by United Utilities and administered by water retailers. The areas used to set bands have been assessed using aerial imaging and there is a margin of error. This means that on any site it is important to accurately measure the chargeable area and agree the area to be disconnected with water retailers to ensure that savings can be achieved.

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Working collaboratively
There are many beneficiaries to the benefits provided by SuDS including local Government, communities, businesses, infrastructure providers and water companies. However, as the benefits do not accrue to any sector in particular but rather are dispersed across many, funding strategic roll out will require collaboration. There are currently no existing governance structures that could administer shared value projects across stakeholders. To harness the opportunity of collaboration, work will need to be done to develop mechanisms, process or institutions to support this

Up-front costs
Although existing data can identify areas where SuDS are potentially viable, ground investigations are necessary to assess this accurately at a site level. There are costs associated with these investigations which can provide a hurdle for non-domestic customers. Identifying ways mitigate the risk of investing in ground investigations will be important to incentivise investment in SuDS.

Enabling roll out of SuDS in Greater Manchester

In light of these learnings, the project team recommend that collaborative working and utilising funding opportunities across beneficiaries is paramount to being able to roll out a programme of SuDS across Greater Manchester.

Regardless of real financial returns where they are available, strategic roll out of SuDS makes sense from a resilient cities perspective; reducing social inequality and helping to manage the impacts of climate change. This report presents some of the potential scenarios and benefits that may act as drivers for investment to a range of stakeholders.

As such we propose a roll out would need to be managed and co-ordinated at an appropriate local government scale (for example Greater Manchester, or underlying districts) but bringing in a range of beneficiaries and funding options including flood and coastal erosion risk management (FCERM) funding, community infrastructure levy, green or social infrastructure bonds (potentially managed by Government into which local businesses can invest), climate change funding and public health funding.

Strategic co-ordination is necessary to facilitate scale up and support the bringing together of various funding pots to manage delivery. There is also a wider requirement for expertise to over-see delivery of high quality green spaces that deliver these multiple benefits, where such expertise is highly variable across local authorities. Buy-in and commitment from water companies and retailers will also be essential in increasing understanding and awareness of non-domestic customers.

Next Steps

- Identify investment opportunities to test the economic model
- Work with Manchester stakeholders including GMCA, local councils and businesses to identify a programme that works at scale
- Understand where a cost-effective, holistic, environmental approach can be taken to retrofitting public sites combining SuDS, energy, water usage, sustainable food etc.
- Identify opportunities across the North West where this model could be replicated
- Engage water retailers to understand the wider benefits of incentivising SuDS
- Identify opportunities to scale up a programme of SuDS at a national level based on multiple benefits
- Develop a support model for individual business

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Thanks

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Arup
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Environment Agency
Greater Manchester Combined Authority
Groundworks
Marshalls
Moorlands Junior School
NHS Property Services
Stantec
United Utilities
Wildfowl & Wetlands Trust (WWT)

Contact Details

For more information on this project please email environment@bitc.org.uk or go to our website http://environment.bitc.org.uk/smart-water

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Annex 1

Water Plus Charging Bands 2017/18

Site area charging band	Chargeable area (m2)	Surface water drainage charge	Highway drainage charge	Surface water and highway drainage charge
Band 1	Up to124	£92.09	£43.85	£135.95
Band 2	125-299	£228.76	£108.92	£337.67
Band 3	300-649	£509.82	£242.75	£752.56
Band 4	650-1,499	£1,153.48	£549.24	£1,702.72
Band 5	1,500-2,999	£2,412.70	£1,148.80	£3,561.50
Band 6	3,000-6,999	£5,364.19	£2,554.15	£7,918.34
Band 7	7,000-11,999	£10,191.35	£4,852.57	£15,043.92
Band 8	12,000-17,999	£15,632.34	£7,176.33	£22,808.68
Band 9	18,000-24,999	£22,406.58	£10,286.19	£32,692.77
Band 10	25,000-49,999	£39,081.64	£17,941.21	£57,022.84
Band 11	50,000-74,999	£65,136.41	£29,902.17	£95,038.58
Band 12	75,000-99,999	£91,191.18	£41,863.14	£133,054.32
Band 13	100,000-124,999	£117,245.94	£53,824.10	£171,070.04
Band 14	125,000-149,999	£143,300.73	£65,785.06	£209,085.79
Band 15	150,000 & above	£169,356.01	£77,746.26	£247,102.27

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Annex 2

An economic model for SuDS Roll Out in Greater Manchester

		Model (CAPEX)	Model (OPEX pa)	Extrapolated (OPEX pa)
1. The cost for rolling out SuDS across all Schools and NHS sites in Greater Manchester	Schools	£60,816,506	£270,442	£465,160
	NHS Sites	£488,981	£2,174	£2,174
	Total	£61,305,487	£272.616	£467,334
		Model (Savings pa)	Return/CAPEX/Years	
2. The associated direct savings and subsequently the return period.	Schools	£1,856,064	32.77	
	NHS Sites	£22,401	21.83	
	Total	£1,878,464	32.64	
		Model (Benefits pa)		
3. Any updated Multiple benefits for this programme wide roll out.	Schools	£20,160,480		
	NHS Sites	£162,257		
	Total	£20,322,737		
Notes:				
Cost per m2 of SUDS CAPEX taken from Atkins Model = £14.92, with an optimism bias of 100% applied = £29.83				
Cost per m2 of SUDS OPEX taken from Atkins Model = £0.07 pa, with an optimism bias of 100% applied = £0.13 pa,				
Benefits taken from Atkins model (£ per m2 SUDS) = £2.28. Does not include Flood Risk which is a primary benefit.				
Extrapolation based upon 737 sites modelled of 1,271 in total = 1.72. Schools only.				
This is a basic economic model - it does not take into account wider financial costs (depreciation, interest, etc) or wider economic benefits.				

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Potential Strategies	5 years					
Based on sites where savings > costs only	**Number of Sites**	**Total Capex**	**Total Capex + Opex**	**Total Savings**	**Total Additional Benefits**	**Total Benefits**
Schools	111	£537,66	£549,618	£927,263.50	*£892,059.68*	*£1,819,323.18*
NHS Sites	4	£13,065	£13,356.25	£22,106.60	*£21,677.88*	*£43,784.48*
Total Sites	115	£550,730	£562,975.14	£949,370.10	*£913,737.56*	*£1,863,107.66*
Based on sites pooling savings to deliver more	**Number of Sites**	**Total Capex**	**Total Capex + Opex**	**Total Savings**	**Total Additional Benefits**	**Total Benefits**
Schools	242	£1,550,349.02	£1,584,819.86	£1,554,195.88	*£2,572,244.00*	*£4,126,439.87*
NHS Sites	7	£21,060.31	£21,528.57	£27,413.55	*£34,941.97*	*£62,355.52*
Total Sites	249	£1,571,409.33	£1,606,348.43	£1,581,609.43	*£2,607,185.97*	*£4,188,795.40*

	10 years					
Based on sites where savings > costs only	**Number of Sites**	**Total Capex**	**Total Capex + Opex**	**Total Savings**	**Total Additional Benefits**	**Total Benefits**
Schools	213	£1,793,914.78	£1,873,687.46	£3,558,303.00	*£5,952,706.74*	*£9,511,009.74*
NHS Sites	6	£18,494.89	£19,317.33	£53,460.40	*£61,371.17*	*£114,831.57*
Total Sites	219	£1,812,409.67	£1,893,004.79	£3,611,763.40	*£6,014,077.91*	*£9,625,841.31*
Based on sites pooling savings to deliver more	**Number of Sites**	**Total Capex**	**Total Capex + Opex**	**Total Savings**	**Total Additional Benefits**	**Total Benefits**
Schools	390	£4,386,689.45	£4,581,758.92	£5,518,389.15	*£14,556,252.18*	*£20,074,641.33*
NHS Sites	13	£88,506.99	£90,474.88	£92,350.30	*£293,690.75*	*£386,041.05*
Total Sites	403	£4,475,196.45	£4,672,233.80	£5,610,739.45	*£14,849,942.93*	*£20,460,682.38*
	15 years					
Based on sites where savings > costs only	**Number of Sites**	**Total Capex**	**Total Capex + Opex**	**Total Savings**	**Total Additional Benefits**	**Total Benefits**
Schools	309	£3,868,027.13	£4,126,035.14	£8,002,983.60	*£19,252,780.11*	*£27,255,763.71*
NHS Sites	6	£18,494.89	£19,728.55	£80,190.60	*£92,056.76*	*£172,247.36*
Total Sites	315	£3,886,522.02	£4,145,763.68	£8,083,174.20	*£19,344,836.87*	*£27,428,011.07*
Based on sites pooling savings to deliver more	**Number of Sites**	**Total Capex**	**Total Capex + Opex**	**Total Savings**	**Total Additional Benefits**	**Total Benefits**
Schools	576	£9,123,737.74	£9,732,316.04	£11,675,557.50	*£45,412,638.18*	*£57,088,195.68*
NHS Sites	22	£266,028.10	£283,772.91	£234,652.95	*£1,324,132.53*	*£1,558,785.48*
Total Sites	598	£9,389,765.84	£10,016,088.95	£11,910,210.45	*£46,736,770.71*	*£58,646,981.16*

BUSINESS IN THE COMMUNITY

The Prince's Responsible Business Network

HRH THE PRINCE OF WALES ROYAL FOUNDING PATRON

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