URBAN GreenUP

D3.6: Report on implementation progress in Liverpool

WP3 T3.8

30 November 2019 (M30)

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URBAN GreenUP

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Versions

Version	Person	Partner	Date
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Table of Contents

1. Executive summary

Liverpool, together with Valladolid in Spain and Izmir in Turkey, is one of three front-runner cities in the EU Horizon 2020 project, URBAN GreenUP (www.urbangreenup.eu).

The URBAN GreenUP project in Liverpool has a number of objectives, which include:

- Developing a Renaturing Urban Plan;
- Delivering large-scale NBS demonstration projects;
- Monitoring and assessing the NBS interventions to identify what works well in Liverpool;
- Supporting work associated with the exploitation and market deployment of successful NBS implementation;
- Promoting and communicating the multi-functional benefits of NBS that will help to address the future impacts of climate change; and
- Seeking to both replicate and scale up successful NBS interventions.

Liverpool is planning to implement 42 NBS interventions across the city; 36 of these are technical demonstrations and 6 are non-technical interventions that involve engagement and community co-creation. The planned implementation works are grouped under 8 technical and thematic procurement categories (Trees, Works, Planting, Water, Green Walls, Green Roof, Bioapp, Art) and a non-technical category.

This report describes the development and progress in the implementation of the interventions and includes an update on the tendering procedures; describing both technical issues which have arisen or need to be considered, together with barriers which have impacted on original proposals so that the learning from the Liverpool work can be shared.

The delivery approach being taken ensures that the city works to address circumstances, problems and barriers and also seeks to take advantage of the different opportunities for co-creation and co-development to exploit the maximum potential of the process.

This report summarises progress to date for a range of intended NBS across the three sub demo areas and illustrates this according to a scale of percent delivery. This is the third and final report which builds on and supersedes the earlier implementation reports dated 31 May 2019 and 31 August 2019.

2. Introduction

2.1. Objectives of the URBAN Green UP programme for Liverpool:

2.1.1. Development of the methodology for supporting city re-naturing

The emerging methodology for the URBAN GreenUP project will provide a template approach for follower cities that allows them to integrate evidenced-based and intelligence-led NBS into their cities. Key aspects of this work include:

- The co-development of a Renaturing Urban Plan that will bring together learning from the demonstration sites and the implementation processes to integrate the technical approach with the multiple environmental, social and economic benefits associated with NBS. In turn this document will help to outline the options for a future approach and policy in the implementation of NBS across the city.
- Working with stakeholders in the co-implementation of NBS in specific areas will trial and test new ways of working together to reduce the future impacts of climate change. Establishing new co-working procedures and jointly delivering new initiatives will pave the way to engage further with existing or new stakeholder partners. Demonstrating the possibility and value of the initiatives with key city stakeholders will help to raise the profile of NBS and underpin the planned RUP for the city.

2.1.2. Delivery of a large-scale demonstration action as a front runner city

There are many benefits to being a front runner city and being able to implement large scale delivery of NBS across the city.

- The large-scale demonstration sites in Liverpool will allow the city to begin to deliver on some of its strategic development plans including the Liverpool Green Infrastructure Strategy and the Green Corridor commitments within the city's new 25-year Local Plan for development.
- Opportunities exist to trial, monitor and promote a range of different NBS infrastructure in a range of highly visible locations across the city centre. This will enable the city to engage directly with a range of local stakeholders such as local communities, schools, churches, businesses, etc and to raise awareness of the multiple benefits associated with the use of NBS.
- Delivering several of the planned interventions on land owned and maintained by the city council also promotes working across different departments such as planning, highways, drainage etc, providing an opportunity for colleagues to learn about the value and future opportunities to incorporate NBS in future development schemes and to learn new skills such as maintenance of new green infrastructure.

- Opportunities to work with external stakeholder organisations on issues of drainage, water quality, connectivity, heritage, leisure, health etc. help to showcase the diverse value of NBS, illustrate the future options that can be considered and consolidate new working partnerships in the area of NBS.
- Leading the way in the delivery and implementation of NBS in the city will promote NBS as a cross cutting solution to many issues and provide a range of measurable benefits to the city. As the project develops there have already been opportunities to influence the design of new development and strategic plans.
- Many of the lessons learnt to date would only have been learnt through delivering the project and identifying and overcoming the challenges thrown up by the individual schemes. The range of schemes being considered has meant that the lessons learnt have been wide ranging and valuable and ultimately will benefit the replication work planned by follower cities and the future delivery of similar city schemes in Liverpool.
- More recently the city has declared a climate emergency and is taking steps to achieve zero carbon status by 2030. The URBAN GreenUP project will be a key element in the development of the city's future work plan.

2.1.3. Deployment of a deep and robust monitoring strategy

Monitoring of the planned NBS is essential to identifying what works in Liverpool and what works well in Liverpool. The learning associated with monitoring will be a key element in establishing both the replicability of NBS and the in-situ cost-benefit associated with each NBS solution. Without rigorous monitoring the credibility of NBS would be open to interpretation and it would be difficult to make any future business case for its continued implementation.

- Liverpool has established a range of relevant KPIs and evaluation protocols that will allow us to measure and record key data on the impacts of NBS. Monitoring has now largely completed on collecting the baseline data so that there will be good comparative data available at each of the NBS location sites before the NBS implementation. Detailed analysis of baseline data is currently being undertaken.
- Baseline data is currently being interpreted to identify existing baseline trends and data patterns. Urban Green UP officers are engaging with university academics and national experts to add value and expertise to the baseline interpretation. Opportunities continue to be explored to encourage undergraduate and postgraduate student research projects to add value to niche areas and the wider project programme.
- Collected data will be shared on an open platform and two years post intervention monitoring is planned.
- More recently Liverpool has been engaging with other researchers and professionals to add value to the data we collect. This has been in the form of discussions with suppliers and academics to test air quality monitors alongside existing diffusion tubes and other equipment as well as discussions with key stakeholders who have provided information that has or will help to influence the design of some NBS. We are hoping that, in addition to testing five solar powered and mobile sensors for particulates and air quality gases,

we can also work with other researchers at the University of Liverpool who have secured 200 less sophisticated sensors to help map urban pollution flows across the city centre.

- Following a recent tree pit workshop in October 2019 that included UK and global experts, a number of factors were discussed relating to the use of soil moisture sensors in tree pit design. It is anticipated that as part of the Strand tree planting works for the sustainable urban drainage system we will work with a local company and seek to deploy a number of soil moisture sensors within the test tree pits to better gauge the need for future irrigation needs. This work will provide a valuable opportunity to test the tree pit SuDs in advance of them being connected to the main carriage way drainage and better inform future irrigation contracts. It is envisaged that by working with the local company this work could lead to development and refinement of an exploitable product that has been trialled within the project

2.1.4. Development of a strong replicability and upscaling action

Replicability and upscaling are important aspects of the project and as a front runner city Liverpool has a duty to ensure that it supports this aspect of the project.

- Through Work Package 6, Liverpool has been supporting the development and trial of toolkits to support this work and identify the most suitable NBS solutions that can be considered for a given set of criteria and priorities in follower cities.
- Liverpool has delivered a webinar session on barriers and lessons learnt to date which was targeted at follower cities. This presentation outlined some of the issues that might face a follower city and included a couple of case studies on how Liverpool had overcome or addressed some key obstacles to progress. Liverpool will continue to share its experiences with follower cities to assist them in NBS replicability. It is suggested that the lessons learnt aspect of our work is some of the most valuable and that the lessons learnt are different at each of the project stages. Although there has already been some sharing and publication of lessons learnt we believe that there is scope to update and expand on the earlier work to include additional information learnt through the practical delivery and ongoing monitoring
- Liverpool will also continue to engage in other learning opportunities that add value and understanding to the implementation of NBS in the city. In recent months some of the early learning from the project has been used to help influence the design and greening of some incidental spaces, and working with colleagues in Liverpool City Council Highways Service, we have been helping to develop a more intelligence-led approach to what is planted, where it is planted and why it is planted – ensuring that our green and blue spaces are working hard for us to deliver a range of multiple benefits to the city and its people.
- Additional work has also seen the early toolkits for WP1 and WP6 tested at the city regional scale.

2.1.5. Foster the creation of a global market and EU co-operation

To foster the creation of a global market the project will need to be well evidenced and flexible in the business and financial models it considers.

- In Liverpool there will be an Ecosystems Services Approach (ESA) evaluation to the demo sites. Using recorded data, survey data and toolkits such as GiVAL the various NBS will be assessed and quantified for a range of environmental, social and economic benefits.

2.1.6. Deploy a wide exploitation and Market deployment procedure

Liverpool will support the exploitation and market deployment work, but it is too soon to be able to add anything more significant at this time. The Liverpool team has identified a few possible products to be considered for replication and exploitation and these continue to be explored and tested.

2.1.7. Deploy an impact-based communication and dissemination strategy

Communication and raising awareness and understanding of the work on NBS is crucial to the success and outcomes of the project.

- Liverpool partners have many local groups, stakeholders and contacts with whom they share project updates and during May 2018, Liverpool consulted widely on the proposed NBS to be implemented. The city also celebrated EU Green Week in 2018 with a Pop-Up Forest in the city centre, using the opportunity to engage citizens and gain media coverage. A follow on mobile 'PopUP' forest event was subsequently delivered to promote the URBAN GreenUP project in June 2019

Image of the Pop-up Forest in Williamson Square

May 2018

Mobile Forest launch event in Williamson Square

June 2019

- The Liverpool partners have arranged and attended several events, conferences, talks and workshops to help promote the project and have extended this into recurring events for some groups.

Image of the Liverpool City Council Cabinet Member supporting URBAN Green Up on Clean Air Day 2018

- In recent months the Liverpool partners have continued to promote the URBAN GreenUP project with presentations to city developers, the Regional Flood and Coastal Committee for the Northwest, at Select Committee, at Public Health workshops and at planning workshops where we have been influencing strategic and spatial regeneration framework documents which will govern how green infrastructure is incorporated and promoted across parts of the city going forward. The city has recently commissioned experts to produce a public realm spatial strategy and Urban Green UP officers will be involved in ensuring that this important document recognises and promotes the value that can be achieved through the introduction of Nature Based Solutions. The public realm strategy will be an important cornerstone of the planned RUP.

Image of URBAN GreenUP officers at the Baltic Spatial Regeneration Framework *Planning workshop July 2019*

- All the Liverpool URBAN GreenUP project partners were all present at the city's Year of the Environment Summit which held on 8th November 2019. The key note speaker at this event was the Regional City Mayor, Steve Rotherham and the URBAN GreenUP project was referenced during several of the presentations and formed the basis of a workshop on natural capital accounting that attracted an audience of over 40 people in the afternoon.

- The city plans to use some identified project underspend to create a range of suitable signage that communicates the benefits of each intervention to the general public. There is likely to be a range of signs including some small EU and URBAN GreenUP logo signs for individual trees; small plaques or stand-alone signs for key interventions and some larger lectern type signage/interpretation at the start/end of green routes. The signage and the interpretation will help to identify the different schemes as part of the same initiative and raise awareness of the multiple benefits associated with the different types of NBS in place.

- As the programme progresses Liverpool will also seek to share and disseminate the data associated with the ongoing monitoring of the various NBS.

2.2. Main conclusions during the period

- Liverpool's main conclusions during the two and half years to date: work is on track and has been well received and supported in the city.
- Flexibility in approach has been required to adapt to changing situations and proposed locations of NBS. Having alternative options for many of the proposed schemes has been helpful. Going forward into the final months of delivery the need for flexibility will be essential to ensure that we can move money between initiatives and sub demo areas to ensure that we deliver the interventionson time to the best of our ability and for the greatest impact and benefit.

- Opportunities have arisen to combine the URBAN GreenUP NBS with emerging city development schemes and capital projects which will help to raise the profile and integrate NBS in large city schemes. Grosvenor are a good addition to the local partnership.

The project is well timed for delivery in the wake of the climate emergencies being declared by the city council and other key stakeholders. It will provide visible improvements across the city and will demosntrate what can be done locally. It will also provide an exciting opportunity to showcase and engage other stakeholders. As such the URBAN GreenUP project will provide a platform for discussion and signpost a way forward for the city.

3. Implementation

3.1. Liverpool Overview

The Liverpool demonstrations are located across three separate demonstration areas.

- **Demo Site A** is the Baltic Corridor demo and lies at the edge of the city centre. The proposed green corridor and NBS will link a main shopping area in town with the waterfront retail and event facilities. This route passes through several different communities including retail, light industrial areas, an established creative community, areas of social housing, new residential development, a college, a church and the waterfront of the city. NBS to be tested along this route include a green wall, rain garden, hard drainage area, tree planting, opportunities for biodiversity and a floating island.

- **Demo Site B** lies at the very heart of the city and covers the Business Improvement District for retail and commercial uses. The key stakeholders in this area are the city council and the business operators. The area is heavily urbanised, and the types of intervention planned include green wall, green roof, tree sustainable urban drainage systems, tree planting and moving gardens. Since the baseline diagnosis, the Liverpool Team has been approached by the owners of land to the south of the Demo Site who wish to become involved in the project and will fund their participation.

- **Demo site C** lies at the edge of the city centre and stretches out away from the city centre into several parks and open spaces. It is characterised by three large parks with poor connectivity and a water corridor. Planned NBS aims to link the three parks and address water quality issues in the sites. NBS to be introduced and tested include green barriers, green wall, a floating reed bed island, water sustainable urban drainage systems and pollinator planting. Since the baseline diagnosis, colleagues in Highways have expressed a desire to extend the green corridor a further kilometre corridor along Princes Avenue and introduce a new segregated cycle and pedestrian route.

Demo Site Locations

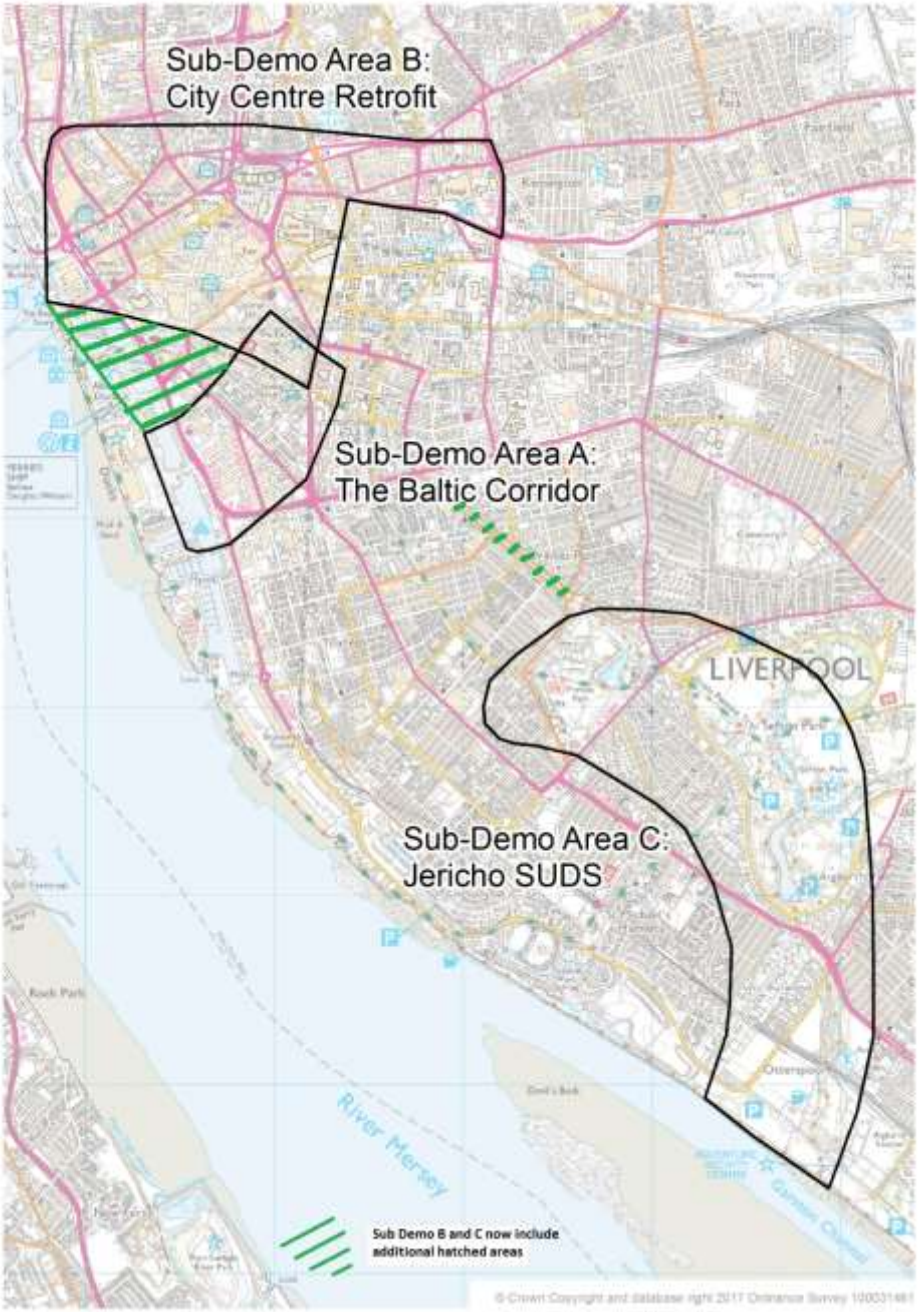
An updated map of the Sub Demo Areas is provided below. Since the start of the project, Sub Demo B has been extended – as shown by the green lines - to take in a triangle of land between Sub Demo B and A. This has had the advantage of closing a gap in the neighbouring demo sites, as well as engaging a significant city centre landowner in the project and providing further opportunities to implement and replicate Nature Based Solutions.

Extending the original boundary in this way also allowed for inclusion of a linking green corridor of a tree sustainable urban drainage system between demo sites A and B along a major city

centre connectivity route. Grosvenor Estates own a large area in the additional area. They have now been included as a local partner in the project, fully funding their involvement. In addition, there is now an opportunity to work with the council's Highways Service to extend the green corridor in sub demo C closer towards the edge of the city. This 1 km extension will provide a planted and segregated cycle and pedestrian route along Princes Avenue and is shown as a green hatched area extending from Princes Park.

A halo of schools around the demonstration area have also been included to enable the demonstration of larger scale woodland creation in the city and to increase opportunities for Forest School and environmental education as an element of Urban GreenUP in Liverpool.

Figure 1. Map of the Liverpool Demonstration Site Locations



Note that Sub Demo B and C now include the relevant additional green hatched areas.

In assessing the progress with each of the planned interventions a template has been used and the scoring has been based on the following criteria.

Table 1: Scoring Criteria used for assessment

Percentage Delivery	**Level of Progress of Works**	**Non-Technical Interventions**
10%	NBS locations under review	Non-technical Interventions described
20%	NBS location identified and in principle agreements in place	Locations/approach proposed
30%	Preliminary site visits/assessments made	Preliminary site visits/assessments made
40%	As part of the procurement process, works have been soft market tested based on technical specification for each intervention	Engagement with stakeholders, partners, wider community commenced
50%	Detailed design and specifications are underway following the soft market test	Interventions mapped in detail/ Regular engagement with stakeholders
60%	Procurement of proposed works is underway	Procurement aspects underway/ Stakeholder partnership established
70%	Tenders have been let	Tenders have been let/ Interventions about to commence
80%	Works have started on site	Intervention has commenced/ Stakeholders actively involved
90%	Good progress with on-site delivery	Good progress with delivering the Intervention/Stakeholders benefitting
100%	Works fully completed	Intervention completed

The following assessment tables are arranged according to the list of planned Nature Based Solution interventions as set out in Annex 1 of the application. Each will be addressed separately for each of the demonstration site locations and any deviations from the original listings in Annex 1 of the application will be highlighted.

3.2. Assessment of NBS Interventions

3.2.1. Technical Interventions

LAC1 – New Green Cycle Route – Now 'New pedestrian and cycleway green route'

LAc1	New pedestrian and cycleway green route (Sub- Demo A)	LIV	STATUS	According to plan

Proposal

The length of the informal pedestrian and cycle route being created has been calculated as 1.25 km long in each direction and will be used by residents and students to connect Bold Street area to the city waterfront. This route will also connect with cycle access thereby extending the cycle route access across the city through this informal linkage.

A technical specification for the accessible route will involve the provision and installation of a zebra crossing facility at Duke Street, giving priority crossing to pedestrians and cyclists.

Progress

The zebra crossing works were planned for Spring/Summer 2019, but are being delivered by a stakeholder and have been delayed. The revised installation date is currently not known but is now thought to be early in 2021 and this intervention is not under the control of the city council. However, once installed the zebra crossing will complement plans to also provide dropped kerbs, corduroy tiles and/or tactile tiles at key locations along the proposed route to allow for easier pedestrian and cycle movement. The route has been identified and will additionally be way-marked – which will be determined through the procurement process. City Council Highways staff are aware of the proposed works and are currently assessing and pricing the works which are scheduled to be completed before March 2020. Liverpool City Council Highways staff will additionally assess lighting and guard rails, etc. along the route to ensure we take a holistic approach to the planned works to improve and promote the green route.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc1	New pedestrian and cycleway green route (Sub- Demo C)	LIV	STATUS	According to plan

Proposal

The planned pedestrian and cycle routes link a few existing parks in Sub Demo C and has been calculated as c4.8 km in one direction and will improve local connectivity for pedestrian and cyclists. The key technical specifications for the pedestrian and cycle way have been agreed and will involve clear way marking. The details of the way-marking are still under discussion and will be determined through the tender process.

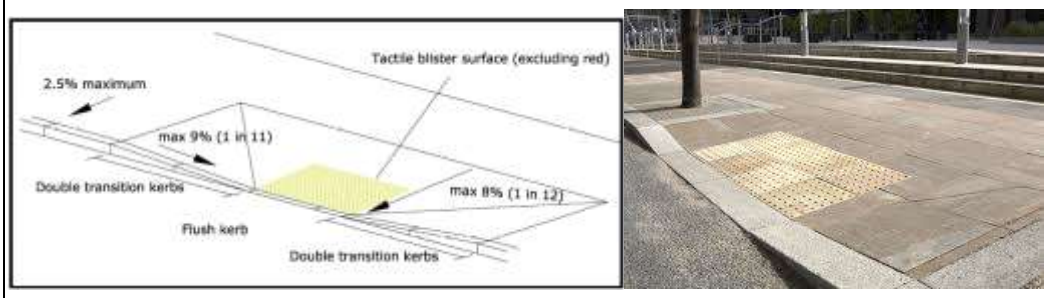
Progress

There are also plans to provide dropped kerbs, corduroy tiles and/or tactile tiles as well as H crossing markers at key locations along the proposed route to allow for easier pedestrian and cycle movement. These will be complemented by targeted Highway surface improvements at key crossing points to promote connectivity between sites. City Council Highways staff are aware of the proposed works and are currently assessing and pricing the works which are scheduled to be completed before March 2020. City Council

Highways staff will additionally assess lighting and guard rails, etc. along the route to ensure we take a holistic approach to the planned works to improve and promote the green route.

This intervention will be undertaken with LAc3 (Road Improvements) below.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%



Example of dropped kerbs and corduroy tiles

LAc2 Green Travel Route

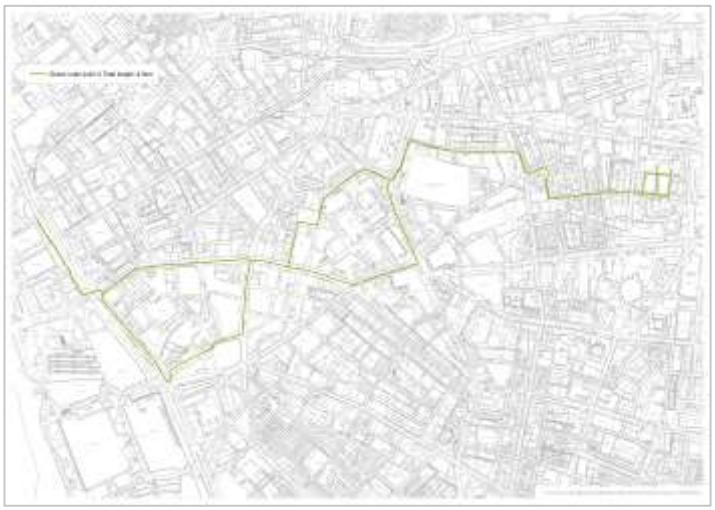
LAc2	Green travel route (Sub- Demo B)	LIV	STATUS	According to plan

Proposal

The Green Travel Route will link the areas of new development in an area known as “Fabric District” to the BID area, with its shopping and leisure facilities. The route will make use of both existing green infrastructure and the Urban GreenUP interventions to establish a route that is as green as possible in the city centre.

Progress

The 4.3km route has been identified, mapped and promotion of the green travel route will be through social media and leaflets, as well as added to the Mersey Forest website over the next two years. Greening of Fabric District is being funded through another funding stream. Works around Lime Street Station will also include greening, and funded by transport budgets. This will also add green infrastructure to the green travel route that has been identified. In addition, we are working with the university to assess opportunities for promotion of green routes to existing and new students.



Green Travel Route

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAC3 Road Junction Pedestrian Improvements

LAc3	road junction improvements (Sub- Demo A)	LIV	STATUS	According to plan

Proposal

A technical specification for the accessible route will involve the provision and installation of a zebra crossing facility at Duke Street through a partner project, giving priority crossing to pedestrians and cyclists. The location of the zebra crossing will allow pedestrians to access a section of the green route that is away from roads and traffic.

Progress

This work was scheduled to be undertaken in Spring 2019 but has now been delayed and is being delivered by a stakeholder partner, most likely in early 2021. Once installed this will complement the dropped kerbs, corduroy tiles and/or tactile tiles at key locations along the proposed route to allow for easier and safer pedestrian and cycle movement.

This intervention will be undertaken with LAc1 (New pedestrian and cycleway green route) above. The city council have no control over the timescale of this intervention which was an addition to the original plans but will continue to work with MerseyTravel to promote this scheme and link up the route across Duke Street

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc3	road junction improvements (Sub- Demo C)	LIV	STATUS	According to plan

Proposal

The planned pedestrian and cycle routes link a few existing parks in Sub Demo C, and the route has been calculated as c4.8 km in each direction and will improve local connectivity for pedestrian and cyclists.

Progress

The key technical specifications for the pedestrian and cycle way have been agreed and will involve clear way marking. The details of the way-marking are still under discussion and will be determined through the tender process. A number of resurfacing works are planned at key junctions to provide safer and improved pedestrian accessibility. Liverpool City Council Highways staff are aware of the proposed works and are currently assessing and pricing the works which are scheduled to be completed before March 2020. Additional road traffic junction improvements are planned at this site in the next two years and are currently under discussion. The final works agreed should complement the improvements proposed under this scheme.

This intervention will be undertaken with LAc1 (New pedestrian and cycleway green route) above.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc4 Urban Catchment Forestry

LAc4	Urban Catchment forestry (Sub- Demo A)	LIV	STATUS	According to plan

Proposal

The Urban Catchment Forestry planting is anticipated to positively contribute to carbon sequestration and where possible to also reducing flood risk and improving water quality. The location of the Urban Catchment Forestry intervention has been identified, and in the Baltic corridor there are plans (subject to budget, permissions and site suitability) to retrofit up to 32 trees under this element of the project.

Progress

Suitable tree species have been identified and will be selected from species that are known to be successful and tolerant to local conditions.

Where possible trees will be planted directly into the hard landscaping using an improved tree pit design. However, the most likely option is that many of these trees will be planted into large containers. The details of the containers are not yet known, and their design will form part of the tender process over the coming months. At present detailed site survey work is underway to identify the underground position of cables, communications, utilities, etc. as well as overhead cables and traffic safety sight lines to determine the locations where there is sufficient space to retrofit trees into the tight urban area. Where trees cannot be incorporated, alternative green options will be considered.

Survey and design work is underway and the physical works will be delivered before the end of March 2020.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc4	Urban Catchment forestry (Sub- Demo B)	LIV	STATUS	According to plan

Proposal

The Urban Catchment Forestry planting is anticipated to positively contribute to reducing flood risk and improving water quality. The location of the Urban Catchment Forestry intervention has been identified as along the Strand, one of the main routes through Liverpool, on the southern boundary of the BID area.

Progress

Suitable tree species have been identified and will be selected from species that are known to be successful and tolerant to local conditions.

A localised Urban Catchment Hydrograph is being developed to show the impact of the interventions on the peak water flow and the total volume of water released to the sewer system from the Urban Catchment Forestry intervention. The urban catchments have been mapped.

As tree pit design is the most important element of this intervention considerable time has been spent on design incorporates elements to increase water interception and storage and, for this intervention, structures to enable water sampling and flow rate monitoring to take place. Procurement of the intervention is now well underway with preferred delivery on site agreed as between September and December 2019; the latest being March 2020. This is now specified as a key milestone to be added within the delivery contract.

It is planned to start on the physical works in late summer 2019, with trees in place by January 2020.

10%	20%	30%	40%	50%	60%	**70%**	80%	90%	100%

LAc5 Shade Trees - Species to spread canopies

LAc5	Shade trees. Species to spread canopies (Sub- Demo A)	LIV	STATUS	According to plan

Proposal

In total it is proposed that, subject to budget, permissions and site suitability, up to 24 shade trees will be planted as part of the environmental improvements. These are currently planned to be planted in soft ground in five separate locations along the Baltic Green Corridor.

Progress

The tree pits have been designed, the appropriate species identified, and long-term management requirements agreed. These trees will be planted to provide shade in open and exposed areas.

At present detailed site survey work is underway to identify the underground position of cables, communications, utilities, etc. as well as overhead cables and traffic safety sight lines to determine the locations where there is sufficient space to retrofit trees into the tight urban area. It is considered that the planting of trees into existing soft ground should not generally be an issue of concern.

Trees are scheduled to be planted and in place by March 2020 and consideration will be required where the proposed tree planting will be on areas identified as pollinator spaces

10%	20%	30%	40%	**50%**	60%	70%	80%	90%	100%

LAc5	Shade trees. Species to spread canopies (Sub- Demo B)	LIV	STATUS	According to plan

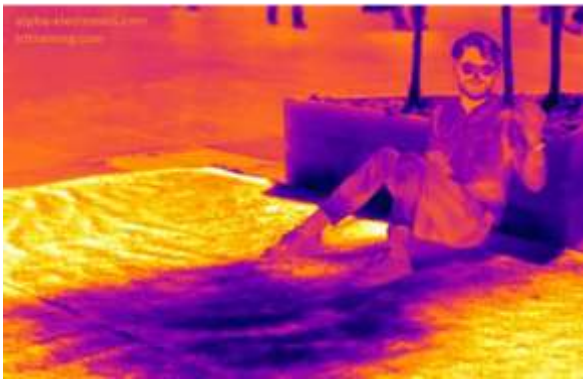
Proposal

Shade trees will be planted as part of the environmental improvements along the Strand in Liverpool on the western edge of the BID area.

Progress

The tree pits have been designed, the appropriate species identified, and long-term management requirements agreed. The scheme forms part of a larger city council capital highways connectivity scheme and is well advanced. The value of shade trees was shown in the "Pop Up" forest trial in Williamson Square as part of EU Green Week 2018. Using the thermal imaging camera, we were able to show the large variation in temperature in the shade of a tree on a very hot day. The cooling impact was also shown (see LAc6 & 7)

Work has started with the trees due in place by March 2020.



Thermal imaging Camera showing shading power of trees

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc6 Cooling Trees - Species to maximise cooling effect

LAc6	Cooling trees. Species to maximise cooling effect (Sub-Demo A)	LIV	STATUS	According to plan

Proposal

Subject to budget provision, suitable locations and permissions, up to 19 cooling trees will be planted in a number of locations on the Baltic Corridor, including Colquitt Street.

Progress

Investigations to date have shown that in some locations it is not possible to plant cooling trees directly into the pavement due to underground utilities and obstructions, and as such the cooling trees will be planted directly into large pots. Where possible these will be located so that they provide cooler places in places where people might linger. The technical specifications of the intervention have been agreed and work is underway to collate the information for tender.

The trees are scheduled to be in situ by March 2020.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Examples of trees in large containers- including alternative IBC containers which could be lit

LAc6	Cooling trees. Species to maximise cooling effect (Sub-Demo B)	LIV	STATUS	According to plan

Proposal

Two cooling trees will be selected to achieve higher rates of transpiration during warm weather. They will be planted as part of the environmental improvements along the Strand in Liverpool on the western edge of the BID area. Where possible these will be located so that they provide shade in places where people might linger, or to shade adjacent structures.

Progress

The tree pits have been designed, the appropriate species identified, and long-term management requirements agreed.

Work is planned to start on the physical works in late summer 2019, with trees in place by March 2020.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc additional – Green Resting Areas

LAc new	Green Resting Areas (Sub-Demo A)	LIV	STATUS	According to plan

Proposal

This is a new intervention of five resting areas or 'parklets' which are proposed for the Baltic Corridor and these are currently proposed to be retrofitted into a range of existing street scene landscapes. Seating and resting areas will be designed to fit with the landscape and are located at key junctions of the Baltic corridor route. The resting areas are to provide tranquil spaces to sit and increase the dwell time of residents in the green spaces.

Progress

This aspect of the project will be funded from project underspend and will involve community consultation. At present early design work and consultation is underway. This work will be progressed once some of the more complicated tenders have been prioritised and let.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Example Green Resting Areas

LAc7 Urban Carbon Sink

LAc7	Urban carbon sink (Sub-Demo C)	LIV	STATUS	According to plan

Proposal

An Urban Carbon Sink will be created through planting trees and vegetation. Aquatic vegetation planting in the SUDS schemes and orchard planting at Otterspool will also contribute to this intervention.

Progress

Woodland

Several locations for the interventions have already been agreed along the length of the green route corridor. The technical specifications have been defined. A halo of planning around the Demo Sites was also identified in the baseline diagnosis for new woodland planting as part of work to engage communities and to connect children to nature and increase understanding of Nature Based Solutions.

This work has now largely been completed and a social return on investment and teacher/pupil questionnaires have been carried out. This has shown positive social impact. Work on calculating carbon capture and the final SROI of this intervention will take place over the summer 2019. It is likely that we will extend this activity into the next planting season. There is a lot of demand locally for this action.

Aquatic Planting

The aquatic planting will form part of the SuDs scheme which has been out for tender and is now awarded. Works are due to be delivered on site by March 2020. In advance of this work there have been ecological, arboricultural and newt surveys which have helped to inform the final works.

Orchard Planting

A slightly revised location for planting has been agreed within the park so that the trees are open to the public and that there is good surveillance and visibility from the road and pathway. The revised location within the park also allows for some additional understory foraging planting as well. This work will be completed by March 2020.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc8 Rain garden SUDs

LAc8	Rain garden SUDS (Sub-Demo A)	LIV	STATUS	According to plan

Proposal

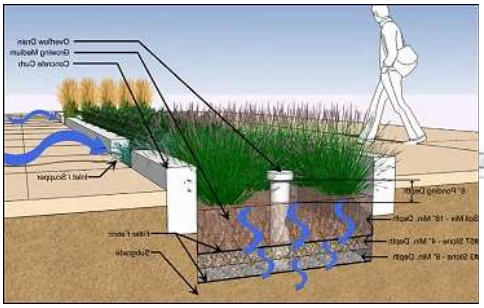
The location of a rain garden SUD has been identified as being between Tradewind and Madison Squares. Aquatic species for reducing pollination, improving water purification, biodiversity and where possible carbon storage have been identified.

Progress

This nature-based solution lies on accessible but privately-owned land and future work over the coming months will include consultation with the landowner around the final design and the longer-term maintenance.

Early designs for one part of the site are being reconsidered as it has now been discovered that part of the site lies above a void space (underground car park) which may limit the planting depth that can be considered for the scheme. The current scheme is being reworked prior to going out to tender. It is still expected that the scheme can be delivered by March 2020.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%



Example rain gardens

LAc8	SUDS (Sub-Demo C)	LIV	STATUS	According to plan

Proposal

Two locations for SUDs have been identified in the sub –demo area. The first intervention lies at the top entrance to Otterspool path and comprises of a small open water area to increase daylighting and retain surface water flooding. Whilst visible, the site is not easily accessible.

The second larger open water site lies at the other end of Otterspool Park in an open space with some scrub planting.

Progress

The tender for this work has recently been let and the scheme has been prioritised to ensure that all necessary ground works are completed in advance of the bird breeding season. In addition the proposed scheme has also incorporated an additional wet scrape within the existing woodland which should provide additional habitat and biodiversity as well as enhanced localised flood control. Bird and bat boxes will also be included in the improvement works. A number of arboricultural, ecological and newt surveys were carried out on site over the summer months to inform the planned work.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Examples of small and larger open water SuDs planned

LAc new - Floating Reed beds

LAc new	Floating Reed Beds (Sub-Demo C)	LIV	STATUS	According to plan

Proposal

This is an additional intervention. A floating reed bed will be introduced to Sefton Park Lake at the point at which both the Jordan and Greenbank tributaries enter the lake system. This floating reed bed will both take up nutrients from the park lake and block out sunlight stimulating planktonic algal growth. It is hoped that this intervention can reduce the likelihood and impact of a future blue green algae bloom at this location.

Progress

The tender for this work is currently on the procurement portal. This intervention will be co-tendered with the main floating island for cost efficiencies and the scope for the island here has been influenced by stakeholder discussions. It is now envisaged that the floating island will be a mix of aquatic species rather than just a reed bed. This has a number of advantages including enhanced nutrient removal from the water and improved biodiversity. Opportunities are also currently being explored to add a 'leaky dam' to one of the inflow rivers using any project underspend and potentially being able to test the benefits of a larger landscape installation within an urban park setting. Works should be completed by

March 2020 and the local 'Friends of Parks' group have expressed a wish to be involved in the installation, ongoing monitoring and general care of floating island.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Example floating island showing mixed planting specification

LAc10 Hard Drainage Pavements

LAc10	Hard drainage pavements (Sub-Demo A)	LIV	STATUS	According to plan

Proposal

Hard drainage pavements, also known as porous pavements, are nature-based infrastructure which could provide opportunities for increased percolation of rain and surface water through a paved surface at the junction of Upper Pitt Street and Nelson Street. An area of c 300m^2 has been identified in an area that is prone to localised surface water flooding.

Progress

Early indications are that the works can be accommodated in the desired locations. It is intended to co procure this with other rain garden work for efficiency and cost effectiveness. The other rain garden works require a redesign so this part of the work is currently on hold awaiting the completion of this work.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Example hard drainage semi permeable pavements with rain garden feature

LAc11 Enhanced Nutrient Managing and Releasing Soil

LAc11	Enhanced Nutrient Managing and Releasing Soil (Sub-Demo C)	LIV	STATUS	According to plan

Proposal

The use of Biochar is expected to improve soil physicochemical and biological properties and increase soil water holding capacity and high cation exchange capacity. The intervention will be delivered across the other technical interventions, with a selection of the tree and plants having Biochar incorporated at a rate of 5-10% and incorporated into the soil. The trees/plants without this intervention will act as a control for the intervention.

Progress

Work is underway to identify the locations to trial Biochar.

Biochar has been specified for the Urban Catchment Forestry intervention in Demo B, with three different mixes being used across the planting to provide a comparison and enable any impacts to be identified.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc12 Pollinator Verges and Spaces

LAc12	Pollinator verges and spaces (Sub-Demo A)	LIV	STATUS	According to plan

Proposal

Pollinator verges play an important role in biodiversity and can also reduce the need and costs associated with traditional maintenance. In the Baltic corridor, several pollinator verges and spaces have been identified. In total there will be 5,820 m^2 of planting across four key sites within the Sub Demo A.

Progress

The pollinator spaces will have a planting theme/colour and be used to help define the green route. Work is underway to progress this aspect of the scheme. Locations and area sizes are known and the work will be delivered through existing city council procurement processes. Options are currently being explored to additionally include and test smart pillars which are wrap-around vertical pollinator walls for street lighting columns. The tender will specify opportunities for local community involvement and sowing. The work will be delivered by March 2020.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Examples of Pollinator verges and spaces

LAc12	Pollinator verges and spaces (Sub-Demo C)	LIV	STATUS	According to plan

Proposal

Pollinator verges play an important role in biodiversity and can also reduce the need and costs associated with traditional maintenance. In Sub-Demo C several pollinator verges and spaces have been identified.

Progress

The pollinator spaces will have a theme/colour and be used to help define the green route. Work is underway to progress this aspect of the scheme. Locations and area sizes are known and the work will be delivered through existing city council procurement processes. The tender will specify opportunities for local community involvement and sowing. The work will be delivered by March 2020.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc13 Pollinator Walls

LAc13	Pollinator walls/vertical (Sub- Demo A)	LIV	STATUS	According to plan

Proposal

The pollinator wall in the Baltic Corridor will be designed to raise awareness and attract curiosity, in addition to making a large visual improvement to the local street scene. Vegetation on the wall will store carbon and protect the building from direct sun; thereby contributing to lower ambient temperatures.

It has been agreed that the pollinator wall in the Baltic demo area will be installed along the façade of an ordinary brick building that is currently used as a car park on Parr Street. The pollinator wall will cover an area of approximately 130m^2

Progress

Preliminary technical specifications have been undertaken and are most likely to take the form of a green panel wall consisting of a modular structure containing organic media in which plants are rooted. Final designs of the modular walls and irrigation system formed part of a design and build tender specification in conjunction with the building owner, who will take on the longer-term ongoing maintenance. The tender for this work has now been awarded and the successful contractor will be required to ensure the wall is in place by March 2020. Planning permission is expected on 12th November 2019 and a legal agreement has now been agreed between the city council and the building owner. Plants are being grown at the green wall nursery and final planting designs are under consideration with the city council and building owner.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Photomontage of Pollinator Wall

LAc13	Pollinator walls/vertical (Sub- Demo B)	LIV	STATUS	According to plan

Proposal

The pollinator wall in the BID demo area will be installed along the façade of one the major shopping areas in the city centre.

Progress

Discussions have been held with property owners of St Johns Centre. A successful contractor has been appointed, planning permission has been secured and works on site have commenced. The pollinator plants have been chosen in consultation with Bumblebee Conservation Trust. This is expected to be completed by March 2020.

Photomontage of Green Wall

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc13	Pollinator walls/vertical (Sub- Demo C)	LIV	STATUS	According to plan

Proposal

The need for a pollinator wall in Sub-Demo C has been identified as close to the Otterspool underpass that will help to make this safe crossing point more attractive to users and provide greenery for local air quality improvements at a busy traffic junction. This will be delivered with LAc12 and LAc14. Vegetation on the wall will cover an area of approximately 30m^2 and store carbon.

Progress

Preliminary technical specifications have been undertaken and are most likely to take the form of a trellis green wall providing a framework for green climbing vegetation. Final designs of the trellis system will form part of a design and build tender specification. Discussions are ongoing with highways engineers about the introduction of a green wall on a highways structure but a compromise has now been reached

so that the wall will 'sit off' the highways structure to permit safety examinations and inspections. This simpler green wall will be progressed once the other green wall contracts are fully let. The simpler design of a pollinator wall at this site will be tendered with the green fences for efficiencies and work is currently underway to prepare this.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Example Green Trellis Walls

LAc new Green Screens

LAc new	Green Screens (Sub- Demo A)	LIV	STATUS	According to plan

Proposal

A new intervention of green screens or 'mobile/temporary' fences will provide vertical green surfaces that can reduce the negative effect of particulate vehicle pollution on adjacent locations as well as helping to define the route of the green corridor.

Progress

Several locations have been identified for green screens and in some they will form part of the new Green Resting Areas Interventions. As an addition to the original plans this intervention will be progressed after the Christmas break and there have been ongoing discussions as to the form and function of the proposed green fences and their possible final locations. The tender for green fences will also include that for the simpler green trellis wall at Otterspool.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Example Green Screens

LAc new	Green Screens (Sub- Demo C)	LIV	STATUS	According to plan

Proposal

A new intervention of green screens or 'mobile/temporary' fences will provide vertical green surfaces that can reduce the negative effect of particulate vehicle pollution on adjacent locations as well as helping to define the route of the green corridor. This green screen should act as a barrier to particulate matter from vehicles and re-disperse this pollutant so that the amount of fine particulate pollutant from the vehicles that reaches the pedestrians using this route is reduced.

Progress

In Sub Demo C a green screen will be placed between the pedestrian route and main carriageway to guide users of the green route away from the main road to the underpass. As an addition to the original plans this intervention will be progressed after the Christmas period. The tender for green fences will also include that for the simpler green trellis wall at Otterspool.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc14 Pollinator Roofs

LAc14	Pollinator roofs (Sub- Demo B)	LIV	STATUS	According to plan

Proposal

Discussions have been held with a small number of suitable owners of flat roofs in the BID and a main location agreed with two other options. The favoured location is the roof area at the Royal Court Theatre. This is a well-used space and will provide an opportunity to design a roof that can both provide for the pollinators and engage people, providing information about Nature Based Solutions and actions that individuals can take at home or work to use or promote Nature Based Solutions.

Progress

This is now largely completed – with an attractive outside area for both people and pollinator species to enjoy. The staff and volunteers at Royal Court Theatre were involved in developing the roof garden and are now watering and maintaining the planters.

Work has progressed with the creation of e some hibernacula at the Royal Court using materials from stage sets from previous theatrical productions to make containers for the pollinators. A bug hotel has been installed within the roof garden. This has been filmed as part of a day time programme, and will be shown on major UK TV channel in the next year. We have requested that URBAN GreenUP will included with the narrative.

Pollinator Garden

New

Bumble bee using pollinator roof garden

Upcycled Hibernacula – Royal Court Theatre

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc15 Mobile Gardens

LAc15	Mobile gardens (Sub- Demo B)	LIV	STATUS	According to plan

Proposal

The mobile trees will consist of containerised trees that will form part of the day-to-day landscape of the square but which, for specific activities and events can be moved to create more open space.

Progress

A pop up and mobile forest has provided an exciting opportunity to showcase the benefits of NBS in a variety of locations in the city. Over the next two years we will also investigate whether we could adapt the processes and technology that are common in warehouses and other industrial locations around the use of robots to move the containers.

The PopUP Forest in Williamson Square was very popular in June, and 'popped up' again in September with a number of requests for the coming months, and plans to roll it out with Liverpool John Moores University.

Pop UP Forest June 2019, Williamson Square

Pop UP Forest September 2019, Royal Court Theatre as part of Liverpool Comedy Festival Wellbeing weekend

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc16 Floating Gardens

LAc16	Floating Gardens (Sub- Demo A)	LIV	STATUS	According to plan

Proposal

Floating gardens are self-contained ecological units, which can provide habitats for various aquatic and terrestrial species. The number and location have been agreed as between one and three for a corner of Wapping Dock.

Progress

Initial technical specifications have been undertaken which have helped to inform the design parameters of the current tender. The floating island tender is currently on the procurement portal along with that for the smaller vegetated fresh water island in Sefton Park lake and the tender period will end in mid-November. The island at Wapping Dock will provide a green focal point, some height (through the inclusion of trees and shrubs) and be suited to its salt water environment. It is hoped it will also provide refuse and habitat for juvenile fish and other aquatic species as well as raising awareness around NBS and the city's green routes.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Example floating islands

3.2.2. Non-technical interventions

LAc 17 Green Filter Area

LAc17	Green Filter Area (Sub- Demo B)	LIV	STATUS	According to plan

Proposal

The Green Filter will consist mainly of urban tree planting and where possible targeted hedge planting to reduce particulate levels in the city and so help to improve air quality.

Progress

The locations have been identified as Fabric District, Lime Street and the wider area of the Strand. These are due to be installed during 2020.

10%	20%	30%	40%	50%	60%	70%	80%	90%	50%

LAc 18 Wood Allotments

LAc18	Wood Allotments (Sub- Demo C)	LIV	STATUS	According to plan

Proposal

The programme of community managing woodland for firewood will be rolled out in the Jericho Lane demonstration area. This will be governed by a legal agreement that will safeguard the landowner and the individual wood allotment.

Progress

Work is continuing to develop a group around the Otterspool area. Site visits and discussions with the landowner have been held in order to support the creation of a woodland management plan and the establishment of a wood allotment group. We have received feedback about the possible impacts of wood fuel burning on local air quality. The advice from Defra and Forestry Commission is to that provided the Wood Allotment guidance is followed and only seasoned timber in burnt in a DEFRA certificated stove, the pollution impacts will be minimal.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc19 GI for Education

LAc19	GI For Education (city wide)	LIV	STATUS	According to plan

Proposal

GI for Education (both school and community groups) is aimed at increasing awareness amongst the wider community about the value of GI in urban areas.

Progress

This intervention is already underway and will continue over the next two years engaging with schools and colleges both close to the demo site areas and further afield through our Trees for Learning programme. A local college of technology has been using aspects of the programme as design challenges for its students. Photography students from Hugh Baird College have used Urban GreenUP as the focus for one of their modules and in doing so have started to understand the benefits that NBS provide to our health and wellbeing and how we adapt to climate change. There was a photographic exhibition in January 2019 at the Open Eye Gallery, Liverpool. Based on the success of the previous work, there will be a further tranche of photography students engaging in Urban GreenUP from January 2020.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc20 Forest Schools

LAc20	Forest School (city wide)	LIV	STATUS	According to plan

Proposal

Forest School links NBS into the day to day work of schools. Forest School is an innovative, self-led learning approach adaptable for all age groups in a woodland setting, supported by a trained Forest School Leader

Progress

This is in the early stages, but St. Vincent's and Pleasant Street Primary schools have already been identified as potential schools, as well as supporting the development of new Forest School grounds and training new Forest School Leaders with new funding secured from Defra.

10%	20%	30%	40%	50%	60%	70%	80%	90%	50%

Mersey Forest - Forest School

LAc21 Engagement Portal for Citizens

LAc21	Engagement Portal for citizens (city wide)	LIV	STATUS	According to plan

Proposal

This non-technical intervention will deliver an engagement portal for citizens engaging the community with the Urban GreenUP programme by providing online, real time information about the Urban Green UP interventions in Liverpool. This will be aligned with non-technical intervention LaC29 – Online tool.

Progress

Discussions on the portal have commenced and it is currently anticipated that this can be hosted through the existing Mersey Forest web site. As part of this we will use imagery to inform citizens about the how the interventions will look in real life situations using a software package called Vis2D. This allows photos to be taken of the city and NBS easily added to sub demo areas.

10%	20%	30%	40%	50%	**60%**	70%	80%	90%	100%

LAc22 Green Art

LAc22	Green Art (Sub-Demo A)	LIV	STATUS	According to plan

Proposal

This is an initiative to bring together all the different stakeholders in the Baltic Corridor in a community arts project that helps to create ownership of the new green corridor and to celebrate the green interventions and improvements.

Progress

Discussions are underway with a Liverpool art collective and the city council urban design and arts officer. The successful project will include local communities, an element of co-creation, celebrate the NBS story and be innovative and locally delivered.

It is envisaged that the final contract will be let by March 2020 but that the art project will commence after the installation of the NBS so that the new green and blue spaces can help to add to the conversation and inform the final work. Local artists will be employed to lead and direct the work which is currently being scoped out by the city council's art officer, the Open Eye gallery and URBAN GreenUP officers.

10%	20%	30%	40%	**50%**	60%	70%	80%	90%	100%

Examples of Green Art

LAc23 Forest Church

LAc23	Forest Church (city wide)	LIV	STATUS	According to plan

Proposal

For LAc23- Forest Church, the Forest School concept will be extended in a unique trial to work across age groups with the community engaged within the local church.

Progress

This is now in progress, The Mersey Forest is working with local charity, Faiths4Change and the church leaders at St. Michaels in the City, to develop a healthy and sustainable neighbourhood, for people and urban wildlife. A community garden is being established within the church grounds, with residents and supportive partners working together to realise the opportunities for the local neighbourhood.

Forest Church at St. Michael's in the City - July 2019

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc 24 Bioapp

LAc24	Bioapp (city wide)	LIV	STATUS	According to plan

Proposal

This non-technical intervention will bring together local stakeholders to design and develop a locally based bio app that can assist with monitoring the increased local biodiversity and engage a new community.

Progress

The idea of the Bio app has been revisited and following the successful use of i-naturalist app in a recent European biodiversity recording competition which saw Liverpool come second it has been proposed that rather than seek to reinvent something we instead use i naturalist (there is also a junior version for children) to record the biodiversity in our city. We would like to work with Lancashire Wildlife Trust and the Liverpool Biobank staff to promote the use of the app to a range of community and other groups (including hard to reach groups) and undertake some bio blitz's on the corridor routes so that we generate a lot of biodiversity recordings associated with the new NBS and raise awareness of the value of the NBS at the same time. We have recently received initial confirmation that this approach can become a

documented change and potentially extended to include the other cities. Early discussions have taken place with the Lancashire Wildlife Trust and following further discussion with CARTIF an exemption will be sought to progress this work.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc25 – GI for Physical Health

LAc25	GI for Physical Health (city wide)	LIV	STATUS	According to plan

Proposal

This non-technical intervention uses strategic green infrastructure to encourage more physical activity, creating places where "Health is a Natural Choice".

Progress

We have already delivered a programme of expert led walking activities tailored to individual needs and designed to help meet target exercise and physical activity levels and will continue to deliver using match funding over the coming two years.

This intervention will also link to the Mersey Forest promotion of "Walk in the Woods" month each May and also the online promotion of community woodland sites through "Discover the Mersey Forest". In May 2019, the Urban GreenUP walk in Liverpool was featured as one of four walks that month.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc26 – GI for Mental Health

LAc26	GI for mental health (city wide)	LIV	STATUS	According to plan

Proposal

This intervention is designed to provide a setting which promotes improved mental health and/or provides a setting for nature-based activity to maintain good mental health and develop new coping strategies for mental health issues for people living and working in an urban location. This intervention is focused on a combination of mindfulness and NBS.

Progress

Activities have already taken place within Liverpool and more will be developed over the coming year, particularly looking to focus on developing a 'Mindful Contact with Nature Programme' aimed at those who would benefit most. A local major retailer is interested in involving staff in this intervention.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc27 Promotion of Ecological Reasoning

LAc27	Promotion of ecological reasoning (city wide)	LIV	STATUS	According to plan

Proposal

This non-technical intervention is around the promotion of ecological reasoning and intelligence (to improve knowledge and understanding of NBS) by the development of awareness activities.

Progress

This is already underway through a programme of outreach and specific public events that have been identified for 2019 – such as a Pop-Up Forest, National Tree Week and the Green Infrastructure Forum. This is linked and will provide support to the Year of the Environment 2019 – see accompanying website, e.g. EU Green Week: http://yoe2019lcr.org.uk/index.php/event/eu-green-week-partner-event/.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc28 - Single window/desk for RUP deployment

LAc28	Single window/desk for RUP deployment (Sub-Demo B)	LIV	STATUS	According to plan

Proposal

The Liverpool team from the three partner organisations will work collaboratively to provide information to planners, engineers and others who may be able to design, propose or in other way support the use of NBS in the city.

Progress

The project team are already providing a point of contact for the promotion of NBS, supporting a range of colleagues and other organisations to develop NBS – and this role will continue to develop as the NBS are installed over the coming year, followed by disseminating the evidence from the monitoring programme.

The learning from the project is already being used within the city – especially by colleagues in Highways and Drainage Service and there is opportunity to promote this more widely as the RUP is tested and formalised.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Urban GreenUP officers at the Baltic Spatial Regeneration Framework Planning workshop, July 2019

LAc29 – Online tool

LAc29	Online tool to gather NBS project ideas from communities (city wide)	LIV	STATUS	According to plan

Proposal

It is proposed that ideas for future NBS projects be collated from the community and assessed for potential future delivery. We will gather ideas from citizens about what NBC they like, where they would like to see new NBS and how existing ones could be improved and how it could be aligned to develop this online tool. https://www.merseyforest.org.uk/about/plan/. This will be disseminated to citizens through social media and at events through our "Promotion of Ecological Reasoning" LAc 27.

Progress

At present discussions are ongoing as to how best to host and deliver this tool but it is anticipated that this may be best delivered through the Mersey Forest web site.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

LAc30 City Mentoring Strategy

LAc30	City mentoring strategy (city wide)	LIV	STATUS	According to plan

Proposal

Liverpool City partners will provide mentor support for partners within the Urban GreenUP project and in turn will welcome mentoring from colleagues in other organisations in order to exchange and build good practice for NBS.

Progress

Liverpool has supported follower cities with sharing of information and delivery of webinars. It is expected that this work will continue and evolve. Liverpool has also taken active steps to link to other EU NBS projects and in March 2019 the Liverpool URBAN GreenUP lead officer attended the two day Grow Green event in Manchester where the officer was an invited panel member to discuss the URBAN GreenUP project.

10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

3.3. Liverpool Baseline Monitoring Update

Baseline monitoring of Demo areas has largely completed and data is currently being interpreted and analysed to establish underlying data trends and patterns that characterise the baseline demo areas for a range of parameters. Urban GreenUP officers are also working with a number of academic and stakeholder organisations to add value and understanding to the emerging data. Opportunities continue to be explored to engage undergraduate and postgraduate students in additional related research as well as working alongside established Friends of parks Groups to assist with ongoing biodiversity monitoring.

Comprehensive data now exists for a range of environmental factors such as air quality, water quality, biodiversity, thermal imaging, temperature etc. This is complemented by the socio-economic monitoring, which includes desktop analysis of secondary socio-economic data (e.g. crime, real estate values), as well as primary data collection and analysis for most socio-economic KPIs. The questionnaires for each survey have been developed and piloted, and all surveys will be distributed in the upcoming months.

It is envisaged that subject to the final agreements on WP5 regarding data sharing for the wider project that Liverpool will be able to upload and share the baseline data shortly. Thereafter, the city envisages that post intervention data monitoring and results can be uploaded to the shared platform to meet the agreed frequencies required by the project.

Our current assessment of monitoring is provided in the table below.

CHALLENGES	KPI	PROGRESS
CHALLENGE 1: Climate mitigation & adaptation	Total amount of carbon (tonnes) stored in vegetation	Model
	Economic value of carbon sequestration by vegetation as a result of NBS over 25 years	Model
	Heatwave risks UK metric 3 days >25oC day and 18oC night	Model
	Use of Star tools to calculate projected maximum surface temperature reduction	Model
	Increased opportunity for species movement in response to climate change as a result of NBS	Model
CHALLENGE 2: Water Management	Run-off coefficient in relation to precipitation quantities (mm/%)	Model
	Nutrient abatement, abatement of pollutants (%, nutrient load, heavy metals) (Chemical Oxygen Demand (COD) (mg/l); Biochemical Oxygen Demand (BOD) (mg/l); Total Solids (SST) (mg/l))	Direct monitoring
	Economic benefit of reduction of stormwater to be treated in public sewerage system	Model

CHALLENGES	KPI	PROGRESS
	Volume of water removed from water treatment system	Model and measured for Demo B
	volume of water slowed down entering sewer system	Model and measured for Demo B
CHALLENGE 4: Green Space Management	Accessibility (measured as distance or time) of urban green spaces for population.	Model and surveys ongoing
	Recreational (number of visitors, number of recreational activities) or cultural (number of cultural events, people involved, children in educational activities) value.	Direct monitoring
	Increase in density and seasonal spread of floral resources for pollinators	Direct monitoring and surveys
	Increase in plant species richness and functional diversity as a result of NBS	Direct monitoring and surveys
	Increase in Insectivore (e.g. bat) abundance and use of corridors for movement as a result of NBS	Direct monitoring and surveys
	Increased connectivity to existing GI	Model
	Pollinator species increase (number)	Direct monitoring and surveys
CHALLENGE 5: Air Quality	Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted) concentration recorded ug/m3	Monitoring commenced in early 2019
	Trends in emissions (levels) NOX, SOX	Monitoring commenced in early 2019
	Monetary values: value of air pollution reduction; total monetary value of urban forests including air quality, run-off mitigation, energy savings, and increase in property values. use of GI Val to calculate the value of air quality improvements	Model and calculations
	Number of deaths from air, water and soil pollution and contamination	Model
CHALLENGE 6: Urban Regeneration	Accessibility: distribution, distance, spatial configuration to NBS and green spaces. Diversity of NBS (land use and functionality).	Model
	Assessment of typology, functionality and benefits provided pre and post interventions	Model and survey
	Savings in energy use due to improved GI	Model
CHALLENGE 7: Participatory Planning and Governance	Social learning concerning urban ecosystems and their functions/services	Questionnaire, workshops, interviews
	Perceptions of citizens on urban nature- green spaces quality	Questionnaire
	Engagement with NBS (sites/projects)	Questionnaire

CHALLENGES	KPI	PROGRESS
CHALLENGE 8: Social Justice and Social Cohesion	Crime reduction through police reports and local authority data	Data collected and analysis almost complete
	Knowledge of NBS (personal, communal, organisational)	Questionnaire
CHALLENGE 9: Public Health and Well-being	Perceptions of health and quality of life	Questionnaire
	Increase in walking and cycling in and around areas of interventions	Footfall monitors not yet installed but now imminent (legal challenges)
CHALLENGE 10: Potential of economic opportunities and green jobs	Number of jobs created; gross value added.	Model and survey ongoing – analysis early 2020
	Changes in mean house prices/rental markets	Data collected and analysis complete
	Increased returns of business rates with NBS	Model and survey ongoing – analysis early 2020
	Job creation, increased footfall and spend in the areas of interventions if appropriate	Survey of Bold St complete, more surveys in late 2019/early 2020. Footfall monitors not yet installed.

KEY

Model/data collection in progress
Measurement ongoing
Not commenced