



# Worcestershire Sub-Regional Green Infrastructure Framework

## Kidderminster and Stourport Urban and Waterfront Strategic Development Corridor, Green Infrastructure Concept Statement

Version 1.3

*"Green Infrastructure is the network of green spaces and natural elements that intersperse and connect our cities, towns and villages. It is the open spaces, waterways, gardens, woodlands, green corridors, wildlife habitats, street trees, natural heritage and open countryside. Green Infrastructure provides multiple benefits for the economy, the environment and people."*

West Midlands Green Infrastructure Prospectus (nd)

## The Worcestershire Green Infrastructure Partnership (WGIP)

The WGIP is a collaboration between statutory agencies including the Forestry Commission, Natural England, Worcestershire County and District Councils, and voluntary sector organisations such as Worcestershire Wildlife Trust. The Partnership's aims are to protect, create, restore and promote Green Infrastructure (GI) assets throughout the County of Worcestershire to provide multiple benefits for the environment, economy and communities.

The Worcestershire Green Infrastructure Partnership welcomes this opportunity to establish what we believe to be the key strategic issues and opportunities for development within the Kidderminster and Stourport Urban and Waterfront Strategic Development Corridor; this GI Concept Statement is made without prejudice to the allocation process and applicants should be reminded that further, more detailed advice may be provided by GI Partners at a later stage in the planning process. We hope therefore that in these early stages of planning this GI Concept Statement will help shape future developmental design parameters and assist in delivering the environmental acceptability of schemes in the Kidderminster and Stourport area.

### Summary of GI Concept Statement

We contend the following principles for development are of critical importance for the Kidderminster and Stourport Urban and Waterfront Strategic Development Corridor:

- ✓ Developments of all scales should **demonstrate how they realise innovative and exemplar practices for protection and creation of Green Infrastructure, wherever possible**. Selection from a suite of available GI measures should be made depending on each site's capabilities, including green roofs, living walls, 'wildlife-friendly' soft-landscaping, rain-water harvesting etc.
- ✓ Development should **respect the post-industrial heritage of Kidderminster and Stourport**, protecting this where possible and re-articulating this in new construction where appropriate to do so.
- ✓ Development should **contain and treat water at the surface utilising exemplar SUDs** approaches.
- ✓ Developments should **contribute to the broader connectivity for wildlife of the Strategic Development Corridor**. The nature of each contribution will depend on each development's capacity and location within the Strategic Development Corridor.
- ✓ Developments will be expected to **make a net-positive effect on the local Green Infrastructure network**. Where it can be demonstrated that there is inadequate space available within a given site, there is an expectation that the development will achieve functional compensation elsewhere within the Strategic Development Corridor.

**The purpose of sustainable development** is to construct infrastructure needed today without compromising our future ability to do so. However, adopting a sustainable approach to development delivers a diversity of benefits:

Using natural services in conjunction with engineered solutions reduces construction and capital costs; embedding a range of sustainable technologies will reduce future maintenance and running costs; protecting and enhancing the natural resources on site provides recreation and amenity opportunities which will promote land value and helps attract business to a more desirable location; greenspace can also provide opportunities for sustainable transport solutions, in turn these opportunities will promote healthier lifestyle choices as residents and visitors choose to walk and cycle in and through the settlement.

This document distils the development and planning advice and guidance offered by the Worcestershire Green Infrastructure Partnership. The advice here has been tailored for the urban and waterfront strategic development corridors of Kidderminster and Stourport and is intended to inform and expedite the design of a sustainable development welcomed by stakeholders; the aim is to help deliver a better built and natural environment.

The Kidderminster and Stourport Urban and Waterfront Green Infrastructure Concept Statement has been prepared by a working group of the Worcestershire Sub-Regional Green Infrastructure Steering Group including Worcestershire County Council, Wyre Forest District Council, North Worcestershire Water Management, Natural England, Worcestershire Wildlife Trust and The Forestry Commission.

While the Concept Statement has benefited from scrutiny and input from stakeholders, it is not a statutory document and holds the status of a guidance paper to provide a framework for the master planning of a comprehensive multifunctional green infrastructure.

Whilst this document sets out the Green Infrastructure Partnership's position and advice, individual members of the Partnership reserve the right to provide further representation through the normal planning process as schemes develop.

## 1.0 What is a Concept Statement?

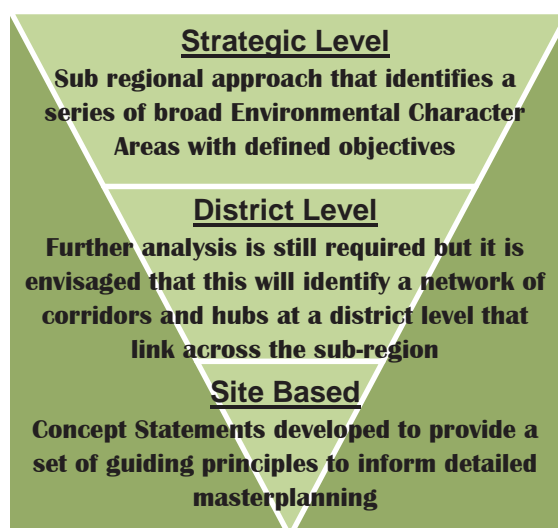
Green Infrastructure Concept Plans and Statements provide a framework for the development of master plans both for areas of strategic growth and individual schemes, as they emerge within these strategic growth areas.

This Concept Statement provides a statement of aims and objectives for green infrastructure that the partners to the Concept Statement expect to see addressed in the masterplanning of developments across the Kidderminster and Stourport Urban and Waterfront strategic development corridor.

The Concept Statement is based on primary baseline data and the multifunctional characteristics through the development corridor. It identifies the green infrastructure assets, and spatial patterns that give rise to opportunities for a connected and multifunctional green infrastructure network.

### 1.1 Purpose and Aim

The Concept Statement for the Urban and Waterfront strategic development corridor is intended to provide a high level framework, consistent with the Sub-Regional Green Infrastructure Framework. Detailed masterplanning of individual sites and schemes within the Strategic Development Corridor area should make reference to the development principles and recommendations set out within this Concept Statement. It is not intended that the Concept Statement provides a prescriptive treatment of every site to emerge within the corridor, establishing instead broad 'principles of development' which demonstrate how best practice for the creation and management of green and blue infrastructure can be applied 'on the ground' within this Strategic Development Corridor.



The guiding principles of the Concept Statement have, in part, been informed by the spatial objectives set out in the Wyre Forest District Council Local Development Plan Review (2016-2036) Policy 6A ('Development Needs 2016-2034', as summarised at Table 6.0.1), Policy 6C ('Kidderminster Town as the Strategic Centre of the District'), Policy 30 ('Kidderminster Site Allocations'), Policy 6E ('Role of Stourport-on-Severn and Bewdley as Market Towns') and Policy 32 ('Stourport-on-Severn Site Allocations'). The allocations are also framed by Policy 5A ('Sustainable Development'); Policy 5A articulates the requirement for the planning system to contribute to the achievement of sustainable development, in line with National Planning Policy Framework Paragraph 11.

Within this context the Worcestershire Green Infrastructure Partnership recognises that proposed allocations will be subject to further revisions prior to adoption of the final Local Development Plan, that 'windfall' sites will inevitably arise which could support delivery of Policy 6A if carefully designed in line with Policy 5A. These two processes, where they occur within the Strategic Development Corridor, should be informed by the principles of development and identified Green Infrastructure opportunities and sensitivities as outlined within this Green Infrastructure Concept Statement.

## 1.2 Preparation of the statement and its status

Preparation of the Concept Statement has been led by the Strategic Planning & Environmental Policy team of the County Council and has been endorsed by the County Council in its role as Lead Local Flood Authority, Wyre Forest District Council, Natural England, Forestry Commission and Worcestershire Wildlife Trust.

**Note:** *Preparation of this paper does not however imply any organisational support to any planning application within the strategic development corridor.*

It should be noted that more detailed and technical advice (e.g. with regards European Protected Species Licensing and pre-submission planning advice) can be sought from both Natural England and the Environment Agency's chargeable services<sup>1</sup>.

## 1.3 Limitations

As noted previously the Concept Statement provides a strategic framework for the development of master plans and it is recognised that this strategic approach brings with it limitations. The Concept Statements does not take account of the location of other infrastructure i.e. risk of requirement for land remediation, piping for utilities and

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<sup>1</sup> Environment Agency: West Midlands (West) Sustainable Places (Planning) team can be reached via [shwgplanning@environment-agency.gov.uk](mailto:shwgplanning@environment-agency.gov.uk). Natural England's Pre-submission screening advice service can be reached via [www.gov.uk/guidance/pre-submission-screening-service-advice-on-planning-proposals-affecting-protected-species](http://www.gov.uk/guidance/pre-submission-screening-service-advice-on-planning-proposals-affecting-protected-species) and Discretionary Advice Service can be reached via: [www.gov.uk/guidance/developers-get-environmental-advice-on-your-planning-proposals](http://www.gov.uk/guidance/developers-get-environmental-advice-on-your-planning-proposals)

# Blue Infrastructure case-study: Bristol Business Park

Bristol Business Park, which is also constructed on Mercia mudstone, used a SuDs system to address discharge issues into an off-site watercourse.



A mixture of impermeable and permeable paving carry run-off from areas such as carparks together with rainwater via a network of vegetated swales to a detention basin which slows the flow and cleans the water before discharging it offsite.



An advantage to this approach is minimal loss of land to large detention ponds while also increasing storm water storage capacity over existing 'greenfield' resources and discharge rates. Embedded into the business park's landscaping, the SuD system is now an amenity and biodiversity resource. After recent prolonged storms only "*negligible flows have been observed discharging into the swales, demonstrating the attenuating attribute of the paving system*". Care must be taken to ensure that components of a SuDs train are resistant to high pluvial/exceedance events and are outside the reach of any watercourse flooding events. If divided into smaller development 'plots' care must be taken to ensure a cohesive SuDs system starts the attenuation and filtration process 'on plot' prior to discharge into the watercourse.

so forth, further surveying may be required to enable the development of realistic possibilities for scheme implementation.

The Concept Statement identifies the need for further investigation and analysis. As such a caveat to the information provided is included where appropriate.

As the Urban and Waterfront Strategic Development Corridor encompasses a number of relatively small and apparently isolated sites, there is added benefit in adopting a Green Infrastructure approach. By articulating bespoke 'Principles of Development' within the Strategic Development Corridor, a cohesive treatment for apparently small measures can, in their totality, be capable of bringing benefit at a landscape-scale. By implementing the recommended GI measures, and by proxy of each site's strategic location within the wider Strategic Development Corridor, Urban and Waterfront sites can meaningfully contribute to the Green Infrastructure environmental objectives at both a local and sub-regional scale.

Representations<sup>2</sup> to the emerging Wyre Forest Local Plan have been submitted by the Worcestershire Green Infrastructure Partnership. These establish a preliminary understanding of the key GI Constraints and Opportunities on a site-by-site basis for each of the draft allocations. While this report draws on some of the key 'site-by-site' recommendations articulated within the Constraints and Opportunities representation provided to WFDC by WGIP, **it is recommended that this GI Concept Statement is read in conjunction with the wider 'Constraints and Opportunities' report.**

<sup>2</sup> "Local Plan (2016-2034) Preferred Options, Constraints and Opportunities Analysis February 2018 update", Worcestershire Green Infrastructure Partnership, February 2018.



Figure 1 - The spatial extents of the Strategic Development Corridor and the distribution of proposed allocations. Figure 1 therefore also indicates, if only by dint of location and scale, the opportunity for each proposed allocation to contribute some measure towards the connectivity and integrity of the local Green Infrastructure network.

# Basic Principles: Water Sensitive Urban Design

Solutions to address issues of water and drainage were evaluated against the key criteria of effectiveness, reliability, low-carbon performance, scalability and deliverability for each of the game-changer sites. Solutions considered included water efficiency measures, rainwater harvesting, sustainable drainage systems, greywater reuse, wastewater reuse and stormwater harvesting.



Combined rain garden and tree pit designed to receive run-off from the street. Photo credit: Dusty Gedge

Implementing a variety of these solutions will contribute to countering the increasing pressure on potable resources and sewerage as well as reduce the risk of flooding events. These measures will help control flow rates of cleaner water and reduce incidences of exceedance through the provision of additional water storage capacity.



Hopwood Motorway Service Station; the environment here is designed to be attractive while also managing and cleaning (through the bioretention pond shown above) the waste and surface water run-off, prior to its discharge into local watercourses.

A GI informed development which is blue-infrastructure led will require less water resources and discharge a lower volume of cleaner waste water into the local infrastructure. This approach should create an iconic sense-of-place befitting the site through innovative design to embed this technology into the heart of the built environment.

## Policy Context

The requirement to protect and enhance the District's Green Infrastructure network is set out within the Wyre Forest District Council Core Strategy (2006-2026), adopted December 2010. Further reference is also made within this document to Wyre Forest District Council's Green Infrastructure Strategy (October 2012) and the Site Allocations and Policies Local Plan (adopted July 2013):

### **SAL.UP3 Providing a Green Infrastructure Network**

The existing green infrastructure network, as set out within the Green Infrastructure Strategy, and the open spaces identified within the Wyre Forest District Open Space, Sport and Recreation Assessment, will be safeguarded from development. Proposals should create new, or enhance and retain existing, open space or green/blue infrastructure. New development should incorporate open space in accordance with the quantity, quality and accessibility standards set out within the most up-to-date open space, sport and recreation assessment.

#### **1. Green Infrastructure Corridors**

The Green Infrastructure Strategy identifies the following key green infrastructure corridors to which new development will be required to contribute :

- River Severn and River Stour Corridors  
- development along these corridors will be required to improve the attractiveness of the riverside environment, remove culverts where appropriate, enhance the biodiversity value and water quality of the river corridor, and ensure that the functional floodplain is maintained and restored. Development should recognise and enhance the multi-functional nature of these corridors and seize opportunities to link them with the wider green infrastructure network.
- Staffordshire and Worcestershire Canal  
- development along the canal corridor must not have a detrimental impact on the existing sustainable transport route or the character of the Conservation Area. Development should seek to enhance the biodiversity and water quality of the canal corridor whilst recognising the multi-functional nature of the corridor.



## Basic Principles: Better Built Environments



Urban biodiversity enhancements. adapted from Bat Conservation Trust – Landscape and urban design for bats and biodiversity

A range of measures which contribute in addressing drainage, summer cooling and winter insulation, amenity and recreation opportunities as well as combating the cumulative impacts of lighting and which provide new opportunities for biodiversity are succinctly shown in the illustration above, further information can be found in the Bat Conservation Trust's *Landscape and Urban Design for Biodiversity* (2012).

1. Biodiverse green roof
2. Integrated bat and bird boxes (the majority located on sunny orientations)
3. Habitat walls with opportunities for invertebrates and small mammals (located on a sunny orientation)
4. Green or living walls (easier to establish on shady orientations)
5. SuDs features which combine hard and soft landscaping to create rain gardens, rills and swales, filter strips, detention and retention ponds.
6. Climbing plants and creepers
7. Large native trees
8. Planters



'Ecological Networks' adapted from Bat Conservation Trust – Landscape and urban design for bats and biodiversity

The sum total of these measures will contribute towards the GI Concept Plan objectives of protecting and enhancing the existing green infrastructure assets by designing a framework of green corridors, networks and open spaces which will connect settlements within the strategic development corridor to urban Kidderminster and the surrounding landscape.

- Public Rights of Way Network - where appropriate.

### *Kidderminster and Stourport Urban and Waterfront Strategic Development Corridor - Context*

The Strategic Development Corridor focuses on:

- The two principle watercourses: the River Stour and the Staffordshire and Worcestershire Canal, with their associated aquatic, marginal and built-environment curtilages.
- The natural and historic environment within the settlements of Stourport and Kidderminster themselves, including residential, commercial, former industrial and public infrastructure buildings with their associated landscaping including highways, street trees, gardens, footpaths, drainage infrastructure and views.

In combination, these assets provide a suite of key natural capital and ecosystem services which promote human health and wellbeing through provision of Green Infrastructure opportunities including access and recreation, air purification, flood alleviation, community 'sense-of-place' as well as opportunities for wildlife to seek refuge, forage and commute across otherwise urban landscapes.

The emerging allocations within the Strategic Development Corridor are primarily located within the Kidderminster and Stourport Environmental Character Areas (refer to Green Infrastructure Framework document 2). These ECA's are primarily urban in nature and have not yet been given detailed GI survey and analysis, however, reference is made throughout Worcestershire's Green Infrastructure Framework documents to the vital roles which Green Infrastructure plays within such urban environments, and also to the existing assets and likely priorities found within these ECAs. These apply particularly to urban drainage and enmeshed flooding issues, water quality, riverine ecology and the historic environment from and through which the settlements of Kidderminster and Stourport continue to develop.

## Basic Principles: Benefits of Green Roofs

Green roofs can:

- Help maintain pre-development/Greenfield run-off volumes and rates from development sites
- Improve biodiversity on all new development sites
- Help ensure that developments are designed to adapt to climate change
- Help improve the quality of water/run-off.

There are also wider benefits for the developer and their development team:

- Civil and Mechanical Engineers will be able to use the green roof in run-off calculations and reduce the need for air conditioning
- Landscape and Ecology Consultants can mitigate impacts and improve the development for ecology
- The cost of the green roof can be balanced with savings in other areas, such as ground-level storm-water and energy demand.



Accessible green roofs provide biodiversity and amenity value at a new office development, Ropemaker, Islington.

Integrating green roofs can contribute towards a development's energy and cost savings:

- Green roofs have considerable thermal mass which provides moderate insulation – meaning air conditioning costs can be significantly reduced. An example is Paradise Park in Islington: due to the thermal mass of the green roof, no air conditioning has been installed leading to a reduction of 3,800kW/hrs and a saving of 1.6CO<sub>2</sub> tonnes.
- Evidence from Germany suggests that green roofs can significantly reduce winter fuel consumption, depending on how wet the roofs are as this reduces their insulation value.
- Green roofs work well with solar panels, as they increase the efficiency of solar panels by regulating temperature.
- Green roofs can reduce noise levels by up to 18 decibels and reduce reflective noise by 3 decibels.
- Green roofs can help filter dust and air pollutants.
- Green roofs can reduce peak water flow and total volume of water discharged, and can intercept at least 5mm of rainfall.
- Green roofs can improve water quality; reducing nitrogen and phosphorous in run-off.

Adapted from: <http://www.environment-agency.gov.uk/business/sectors/91970.aspx>

For more information refer to:  
<https://livingroofs.org/>

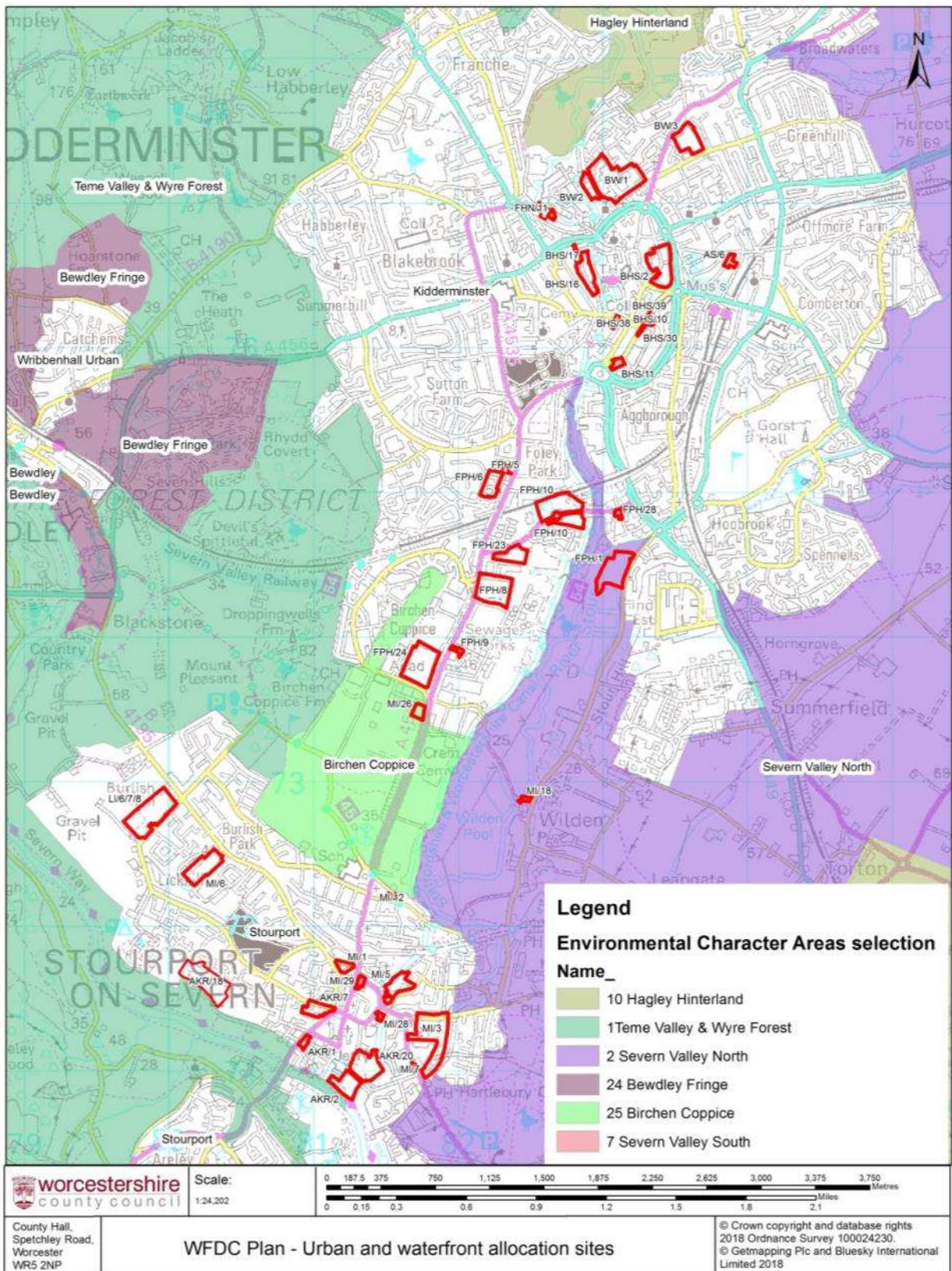
Also of particular note are the existing ecological corridors found within the Strategic Development Corridor. While the linear nature of the two watercourses are prominent (and appropriately referenced in Policy SAL.UP3), the ecological functionality of these two Local Wildlife Sites is, in part, compromised by the effects of industrialisation and urbanisation. This is particularly notable where the watercourses thread through the denser areas of urban Kidderminster and Stourport. Such effects include: canalisation, water and airborne pollutants, disturbance from noise and litter and also indirect effects such as fragmentation of small but nevertheless important 'stepping stone' sites such as wetlands, woodland and scrub habitats.

While the network of ecological corridors are clearly defined by the canal and rivers (and the interconnected River Severn Local Wildlife Site, Wilden Marsh and Meadows Site of Special Scientific Interest and, on the northern fringe of Kidderminster, Puxton Marshes Site of Special Scientific Interest), there is also a second and more fragmented east-west ecological corridor, articulated by sites including Burlish Top, Vicarage Farm and Captain and Stanklyn Pools and Spennels Valley Local Wildlife Sites. These ecological corridors can be identified within the appended Worcestershire Habitat Inventory plans, depicting both designated sites and networks of semi-natural ('stepping stone') sites of value to wildlife.

Recognising the value of the existing biodiversity assets, and expressing the Local Nature Partnership's shared aspirations for biodiversity enhancement priorities within the Worcestershire, the Wyre Forest Acid Grasslands and Heaths Biodiversity Delivery Area<sup>3</sup> ('BDA') also partly overlays the Strategic Development Corridor. The spatial extents of the BDA can be found appended to this report.

3. [www.worcestershire.gov.uk/downloads/download/1087/biodiversity\\_delivery\\_area](http://www.worcestershire.gov.uk/downloads/download/1087/biodiversity_delivery_area)

**Environmental Character Area Context<sup>4</sup> of the Allocated Site**



4. [www.worcestershire.gov.uk/downloads/file/3775/worcestershire\\_green\\_infrastructure\\_framework\\_2](http://www.worcestershire.gov.uk/downloads/file/3775/worcestershire_green_infrastructure_framework_2)

# ***Green Infrastructure Guiding Principles for Development***

## **Principle One – Demonstrate use of innovative and exemplar Green Infrastructure approaches**

While small and terrestrially isolated development sites may initially appear to offer no opportunity to incorporate consideration for Green infrastructure, it should be noted that many GI measures do not require significant loss of developable space.

In line with the mitigation hierarchy, greater weight should be given to the protection and enhancement of existing GI assets, where these are found to occur within an allocation. Examples of existing GI assets might include vegetated buffers along watercourses, public footpaths, mature trees and heritage facades.

Green roofs offer benefits both to residents and the wider community: water run-off is slowed; water quality improved; a well-designed green roof poses an overall cost-saving in comparison to maintenance of a traditional roof over their operational lifetimes; green roofs counter urban-heat-island effects from surrounding reflective surfaces and also confer greater insulation over winter months; green roofs can help address air quality issues (noting that the high levels of NO<sub>2</sub> required designation of part of Kidderminster's Ring Road as an Air Quality Monitoring Area ('AQMA') by DEFRA in 2009). Similar benefits can be gained from inclusion of a 'living wall' which will help address heat and airborne pollution at street-level as well as benefitting the views, 'sense-of-place' and end-value of developments.

However, roof space can also be purposed more innovatively: opening up roof gardens as a prestigious Public Open Space or creating allotment space for tenants provides tangible benefits for otherwise underused space within its urban setting. These benefits also contribute to enhancing the wider settlement's skyline. Greater emphasis should therefore be placed on the requirement for green roofs and living walls where developments have a notable visual impact on Kidderminster's urban viewsheds.

Other measures towards the local GI network could be inclusion of Sustainable Drainage<sup>5</sup> to reduce the speed and volume of water which is discharged from development sites. The aim should be to detain and treat as much water on-site as possible through approaches such as permeable paving, surface-level swales and well-designed multi-functional attenuation basins, rain gardens, tree pits and rain-water harvesting. It may be appropriate for some sites to offer charging points for electric vehicles.

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<sup>5</sup> For good practice guidance on 'wildlife-friendly' drainage systems refer to [www.rspb.org.uk/Images/SuDS\\_report\\_final\\_tcm9-338064.pdf](http://www.rspb.org.uk/Images/SuDS_report_final_tcm9-338064.pdf)

# Basic Principles: GI Features in the Built Environment



A living wall – image courtesy of CIRIA's Big Biodiversity Challenge.

Functional Green Infrastructure should knit together the wider countryside to the built developments, such as in Chobham Manor at the Queen Elizabeth Olympic Park, Stratford. At Chobham, planting including street trees and fruit trees in public spaces extends into the more densely built areas through the use of trellises and green roofs; this landscaping approach has been recognised as providing shading, pollution absorption, flood and wind mitigation and biodiversity benefits. Chobham Manor also uses rain gardens to direct surface run off to help irrigate planting beds.

Water demand is anticipated to become an increasing resource requirement as the UK's climate changes and sensible use of water resources is to be promoted. For example, at Greenwich Millennium Village rainwater harvesting is designed to capture rainfall for use on external landscaping and at Leybourne Grange in Kent and Great Western Park in Didcot greywater systems use recycled bath water to flush toilets. Developments such as Cambourne in Cambridgeshire provide water butts as standard for some residents.

Fertile top soils should be re-used within new garden space where possible however where opportunities allow for creation of low maintenance habitats, such as acid grassland on road verges and margins of POS, subsoils will readily support transferred seeds from Local Wildlife Sites.

Opportunities for biodiversity mitigation and enhancement should be realised within the built environment throughout the development corridor and we recommend inclusion of artificial nesting and roosting opportunities in line with the EcoTowns guidance (refer to Appended table).



Bat tubes installed on new builds at Maybury Hill. Image courtesy of Taylor Wimpey and Ecosulis.

For more information, refer to [www.ciria.com/buildinggreener/](http://www.ciria.com/buildinggreener/)

Sensitively designed soft-landscaping schemes can offer multiple GI benefits. Tree planting behind highways can help demarcate parking bays and property edges; if appropriate species are selected street trees can help counter airborne pollutants, contribute towards sound attenuation, reduce windspeed, help reduce risk of flooding and offer shade as well as opportunities for wildlife seeking shelter and opportunities to forage and pass through otherwise 'hostile' urban environments. The settlement of Kidderminster is thought to currently possess around 20% canopy cover<sup>6</sup> and future developments must seek to ensure no-net-loss and preferably net-gain of canopy cover. Well-designed tree cover and landscape design can increase property values, typically between 5-18%, can encourage walking and cycling, improve physical and mental wellbeing and increase consumer activity in retail areas and employee satisfaction in industrial areas.

Opportunities for biodiversity within the built environment and soft-landscaping curtilage can be of various scales, a number of such measures are discussed further under Principle Three, below.

## Principle Two – Respect the Strategic Development Corridor's post-industrial heritage

Development should respect the post-industrial heritage of Kidderminster and Stourport by acknowledging the Historic Environment setting of allocations and by sensitive re-use of features including facades where possible to do so. The local built-environment vernacular and historic urban morphology should be appropriately referenced within architecture of new builds, where appropriate.

## Principle Three – Enhance opportunities and permeability for wildlife through the Strategic Development Corridor

<sup>6</sup> <http://www.urbantreecover.org/location/kidderminster/>

## Biodiversity 'micro-islands'

The concept of a biodiversity 'micro-island' is simple: to create a stepping-stone opportunity for wildlife to find shelter and disperse through an otherwise more hostile built environment. In practice an array of small and inexpensive features can achieve this aim, depending on both the target species and the opportunities presented by the development site.



Artificial otter holt – internal construction (L) and external view during installation (R). Note: how the holt can be installed above or underground and integrated into soft-landscaping if adequately protected from disturbance.

In the case of waterfront developments within the Strategic Development Corridor, there is a unique opportunity available to enhance permeability through the urban environment for riverine species such as otters, water vole and bats to shelter during the daytime and disperse to and from nearby nature reserves and wider countryside. Simply put, without these features urban development and the built environment would pose a substantial barrier between populations for much of our rare wildlife. With careful design, each waterfront development can contribute in a small but meaningful way to the overall strategic aim of increasing permeability for wildlife of the urban environment, drawing the countryside in to towns for all to enjoy.

There is therefore an expectation that all waterfront developments within the Strategic Development Corridor will contribute towards enhancements for riverine species such as otter. Similarly there is an expectation that all urban developments within the Strategic Development Corridor will be capable of delivering at least modest opportunities for shelter and foraging wildlife, such as bird and bat boxes and wildlife-friendly landscaping schemes.



Wildflower verges at Hoo Brook Link Road. Nearby kingfisher nest chambers have been integrated into the watercourse margins and provide one of a number of 'stepping-stone' features for flora and fauna.

To be functional, places of rest or shelter should be appropriately specified, this means more than the right size and shape and includes controlling indirect disturbance such as lighting, noise, pollution events and designing-out risk of vandalism. Appropriate soft-landscaping and aftercare management are critical components in the success of these biodiversity features and require careful consideration and embedding into designs from the outset. The nature of each 'island' is therefore to be agreed with the Local Planning Authority at the outset.

### **Existing assets should be protected and enhanced and new opportunities realised which offer opportunity of greater permeability for wildlife throughout urban Kidderminster and Stourport.**

Efforts should focus on the north-south ecological corridor which forms a functional link from the River Severn to Puxton Marsh and the wider countryside beyond the northern fringes of Kidderminster. Developmental proposals in proximity to designated nature reserves should be mindful of the indirect and cumulative impacts posed to both the local sites and associated ecological corridor including, but not limited to increased visitor pressure, impacts of cats on breeding birds and so forth.

Key opportunities also exist around the confluence of the Stour and Severn and as the watercourses traverse urban Stourport and Kidderminster.

Opportunities for betterment of permeability for biodiversity will, by nature, be framed by both the location and scale of each development within the Strategic Development Corridor. However, it should be noted that even small measures which promote permeability for wildlife inside the Strategic Development Corridor will, cumulatively, provide dividends for wildlife.

### **There is a presumption that at least one 'biodiversity micro-island' will be integrated within each riverside development in order to create a series of 'stepping stones' for wildlife to move safely through Stourport and Kidderminster from and to the wider countryside.**

A biodiversity micro-island is simply a point of focus for biodiversity enhancement which addresses connectivity for species whilst also buffering the effects of surrounding development, for instance providing sheltered temporary refuges for otter to move through the river corridor.

Micro-islands do not necessarily require significant land-take from a development in order to be effective, for example, in circumstances where provision for otter is demonstrated as being inappropriate, opportunities such as bat roost and

## Basic Principles: Green Walls

Living walls go beyond any other siding or wall treatment option when it comes to the multitude of benefits they provide to those who own, work and live among them. Green walls are beautiful, create habitat, promote health and well-being, attract customers and can even provide sustenance.



New Street Station, Birmingham:  
[www.ansgroupglobal.com/living-wall/case-studies/new-street-station](http://www.ansgroupglobal.com/living-wall/case-studies/new-street-station)

Research shows green walls can help address air quality issues by increasing oxygen levels while removing traces of toxic chemicals including carbon monoxide and formaldehyde, green walls also restore and help maintain humidity and reduce polluting air particulates.

As well as providing a powerful marketing tool to help communicate with residents, customers and employees about their community health, ecosystems and well-being, they are an incredibly powerful and inexpensive place-shaping tool. Strategically placed, living walls can be used to improve views in leased space, attract customers and generate greater sales.



Waitrose, Bracknell:  
[www.staffs.ac.uk/assets/Case%20Study8%20Waitrose%20Bracknell\\_tcm44-81514.pdf](http://www.staffs.ac.uk/assets/Case%20Study8%20Waitrose%20Bracknell_tcm44-81514.pdf)

Vertical gardens can also help save building energy, reducing operating costs in hot weather, protecting buildings from fluctuating temperatures, high winds and UV radiation. As well as helping shield or define a townscape's skyline, green walls can also be used to shield unsightly equipment, reduce noise and improve odours.

For further information refer to [www.staffs.ac.uk/research/greenwall/](http://www.staffs.ac.uk/research/greenwall/) and [www.staffs.ac.uk/research/greenwall/case-studies/](http://www.staffs.ac.uk/research/greenwall/case-studies/)

bird nest bricks could be incorporated into the built environment within a development.

All such measures must benefit from well-designed sensitive landscaping schemes (including consideration of lighting strategies) in order to ensure they are adequately buffered from light/noise/anthropogenic disturbance. Specification for each biodiversity micro-island will therefore vary from development to development. Considerations to bear in mind when designing the biodiversity micro-island could include:

- ✓ Sufficient space to buffer light, noise and other urban effects
- ✓ Opportunities for pollinators, reptiles, bats and birds, particularly where these are incorporated within the built environment, are strongly encouraged.
- ✓ Preference is given to inclusion of roosting/nesting opportunities within the built-environment, such as bird nest bricks rather than tree-mounted boxes. Unused roof space can be (partially) set aside for discrete bat and/or bird boxes. Similarly, discrete spaces can be created using 'raised' ridge tiles which will not offer opportunities for wildlife to access or make use of other storage or residential space. Guidance on appropriate numbers per development of such small scale biodiversity measures are set out in Appendix Three.
- ✓ Opportunities which protect and enhance permeability for otter are strongly supported. Within waterfront developments, each development scheme should demonstrate consideration of opportunities for otter, with secured measures implemented and maintained for a reasonable period of aftercare. Such measures might include provision/retrofitting of mammal ledges within culverts, under buildings or bridges, or the creation of an otter holt or resting place at appropriate locations along the River.
- ✓ Soft landscaping should aim to maximise value for wildlife (including screening to reduce disturbance) whilst also minimising future maintenance cost. Linear planting along watercourses works best when uninterrupted; risks of future vandalism should be carefully designed out.
- ✓ Within residential schemes opportunities for hedgehogs to pass through gardens should be included as standard, ensure that boundary fences

## Case Study: Stourport Sports Club, naturally regenerating acid grassland.

Now managed by very low-cost, low intervention Conservation Grazing (as provided by Wyre Forest District Council), this Biodiversity Action Plan (BAP) habitat was initially recreated by simply removing topsoil at this local site. Sub-surface soils, lack of nutrients and existing seed banks have very quickly created this ecologically valuable and beautiful habitat.

A similar approach, on features such as road verges, Public Open Space edges and site margins will quickly and very inexpensively contribute towards a local and county BAP objective.

Contributions towards BAP objectives can help demonstrate how biodiversity net-gain is being achieved. Contact WFDC for further information.

have a 13X13cm gap at the bottom for hedgehogs to pass through. Pre-formed gravel boards are available commercially.

✓ Use of dropped curbs, inset gully pots and amphibian ladders should be used in proximity to standing water to reduce risk of reptile and amphibian mortalities on roads.

### Principle Four – Use Green Infrastructure measures which contribute in promoting healthy communities

It is increasingly recognised that the places and spaces where we live/work have an impact on health and wellbeing and that an individual's actions to improve their lifestyle or health status are likely to be influenced by the environmental and socio-economic context within which they take place. The design of the built environment can have a significant impact on physical and mental health and how people perceive their environments. The location, density and mix of land uses can have wide-reaching implications on how individuals live their lives; it can affect user experience of access to and provision of key community facilities such as public services, employment opportunities, healthy food choices and parks and green spaces.

Green infrastructure can help in mitigating some of the above mentioned health/socio-economic challenges facing the existing communities and support the health and wellbeing of the future residents of the development sites by providing opportunities for active lifestyles and creating an attractive and health promoting environment. The specific approach to health and wellbeing supportive green infrastructure solutions should be informed by the analysis of the current health and socio-economic profile of the population living in proximity to the prospective development sites. The following principles, however, are generally encouraged:

- Formal and informal recreation areas accessible for the future residents of the area but also for the existing communities, in particular for those living within the high deprivation and poor health areas



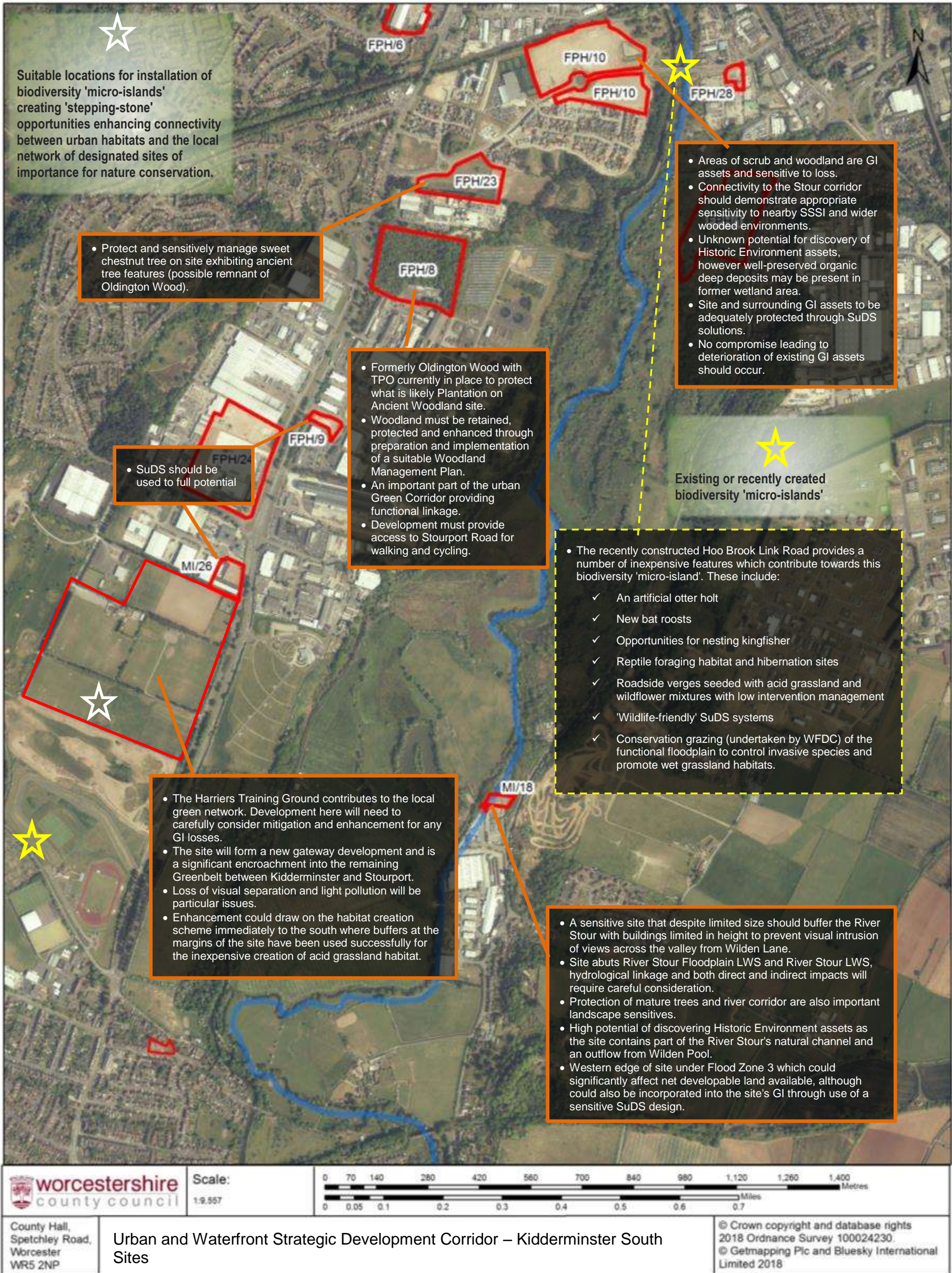
- Green spaces which are well-maintained and accessible for the residents of the site including those more vulnerable such as disabled and elderly
- Walking and cycling links within the site and connecting the new communities within the site to main facilities outside of the site including schools, shops, GPs etc.
- Recreational routes along the waterfront
- Opportunities for healthy food provision through allotments, community orchards, fruit-bearing street trees
- Green spaces and walking routes which include benches placed in strategic places to encourage community/intergenerational integration
- Ensure that any seating/resting places along the walkaways are placed under trees to provide shade
- Consider possibility of circular recreational routes to cater for the need of people living with dementia
- Segregated and well-lit cycling and walking routes would be preferred to serve well all groups of the population
- Use activities such nature/history trails to encourage physical activity and mental stimulation by learning about and contact with nature/history
- Visually attractive environment which gives people strong sense of place

## **Principle Five – Achieve net-gain for Green Infrastructure across the Strategic Development Corridor**

Where it has been demonstrated it is not possible to mitigate for impacts to a GI asset on site, there is an expectation that appropriate compensation will be delivered within (or immediately adjacent to) the Urban and Waterfront Strategic Development Corridor in a manner which fully compensates for the impact caused and also contributes towards the overall GI status of the respective ECA (where ECA GI priorities have been articulated).

Appendix One – (draft) allocation specific Green Infrastructure comments



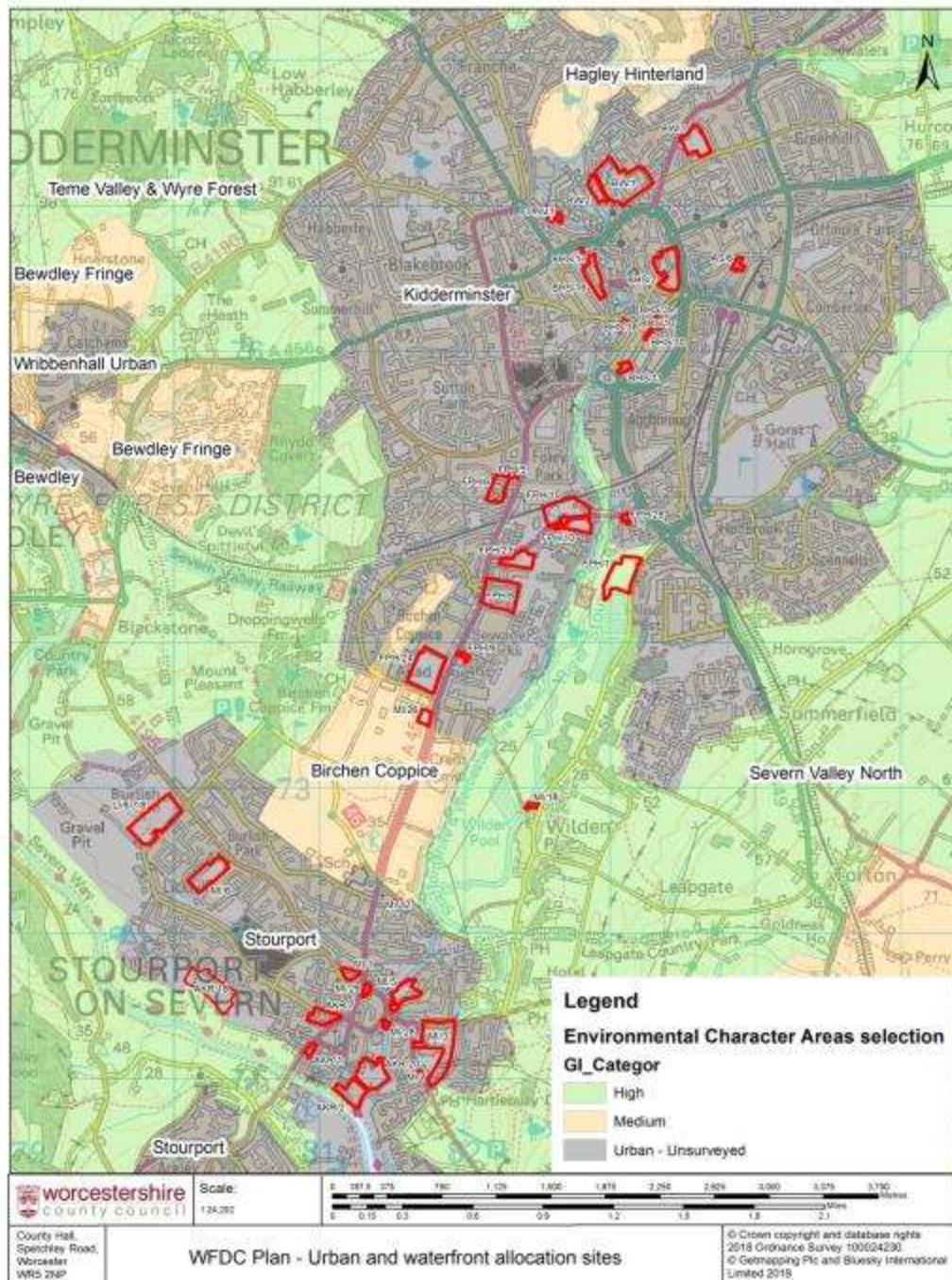




<p>worcestershire county council</p>	<p>Scale: 1:9,557</p>	<p>0 70 140 280 420 560 700 840 980 1,120 1,260 1,400 Metres 0 0.05 0.1 0.2 0.3 0.4 0.5 0.6 0.7 Miles</p>	
<p>County Hall, Spetchley Road, Worcester WR5 2NP</p>	<p>Urban and Waterfront Strategic Development Corridor – Stourport Urban and Waterfront Sites</p>		<p>© Crown copyright and database rights 2018 Ordnance Survey 100024230. © Getmapping Plc and Bluesky International Limited 2018</p>

## Appendix Two – Strategic Development Corridor Mapping

### 1.1 ECA status



## 1.2 Designated Sites of Nature Conservation Importance

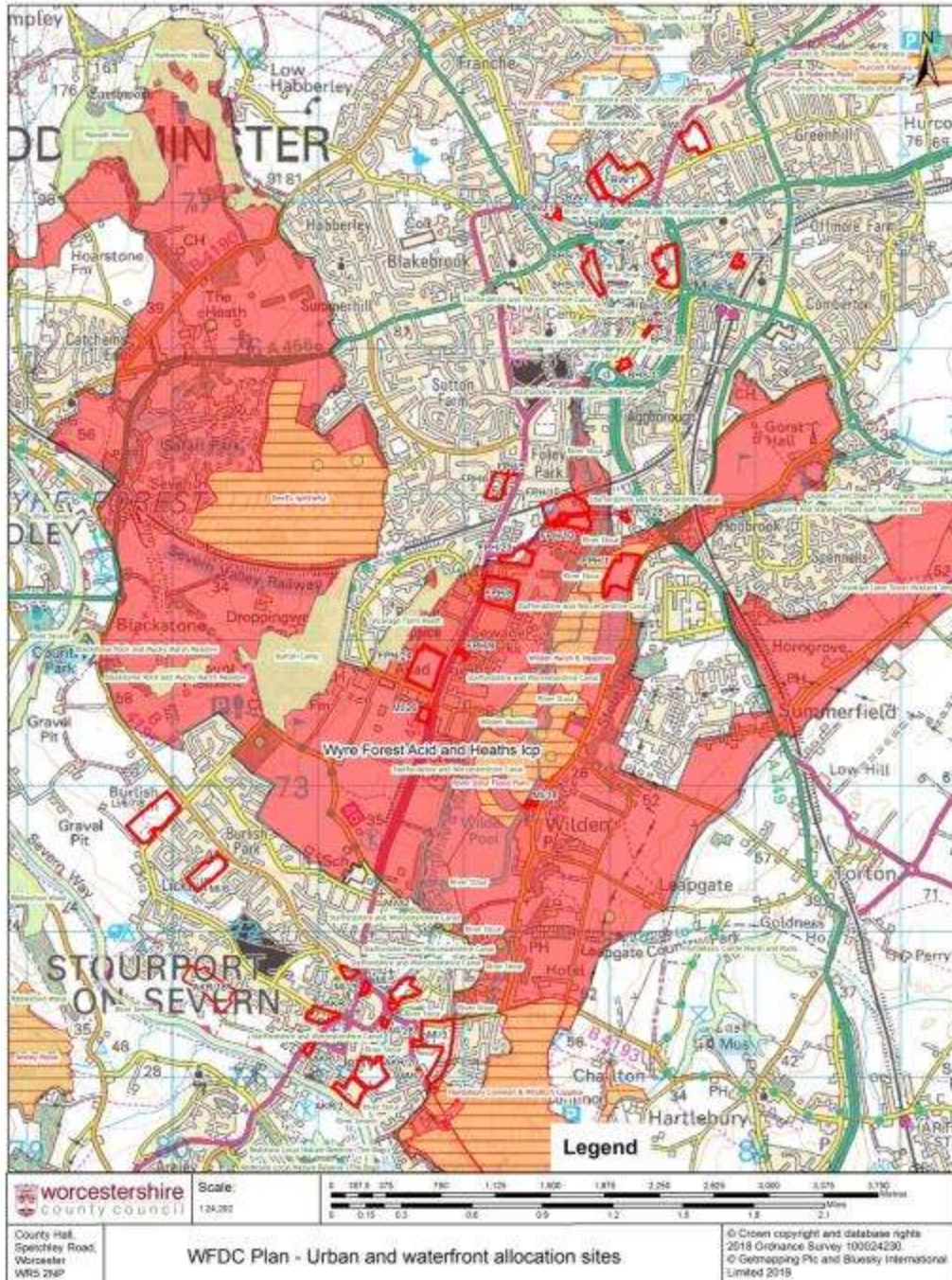


Figure 1.2 shows the network of statutory and non-statutory designated sites including the District's Biodiversity Delivery Area. A pronounced linear ecological corridor and key Green Infrastructure asset can clearly be seen in association with the River Stour and Staffordshire and Worcestershire Canal.

**1.3 Merged Biodiversity Action Plan habitat network coherence map (drawn from Worcestershire Habitat Inventory)**

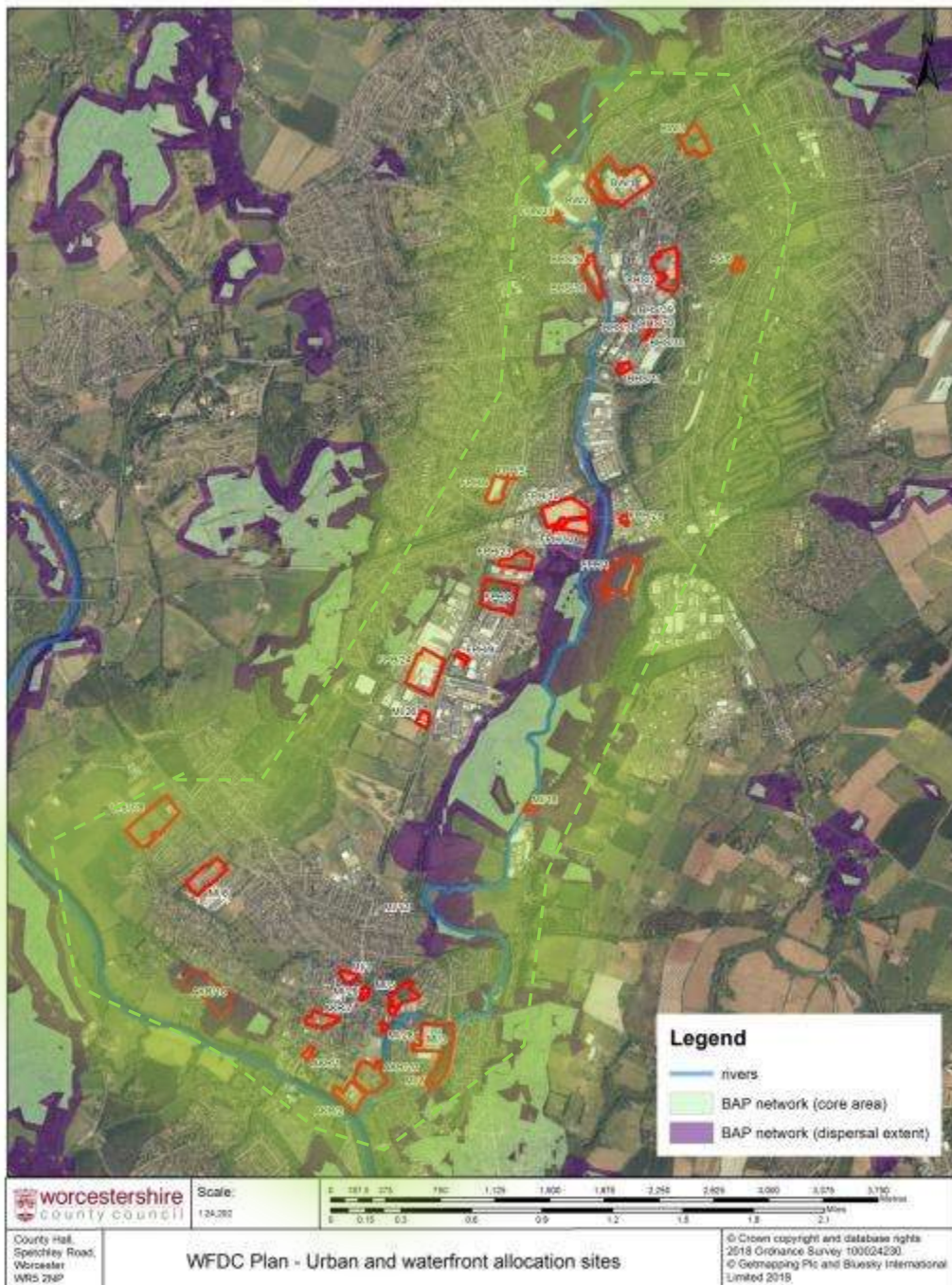


Figure 1.3 shows the network of Biodiversity Action Plan habitats overlaid by the proposed allocations within the Strategic Development Corridor. Also highlighted (in green) are the boundaries of the Urban and Waterfront Strategic Development Corridor. This illustrates why, by dint of location, creation of 'biodiversity micro-islands' will most likely provide greatest benefit for permeability of wildlife.

**Appendix Three: Recommended provisions for biodiversity 'enhancements' within the built environment**

Opportunities for the inclusion of green roofs, living walls and other biodiversity / sustainability enhancements should be explored to provide multiple benefits including biodiversity, thermal Insulation and reducing the visual impact of development.

Gardens can form a part of the green infrastructure of the site and should be used to deliver connectivity.

We encourage consideration of Table 1 (Roost and nest site provision in new development) as proposed within joint TCPA, CLG and Natural England eco-towns biodiversity worksheet (2009)<sup>7</sup>.



Bat roost brick – courtesy of Habitat

Potentially appropriate species (depending on location)	Recommended number of roosts/nest sites
Crevice dwelling bats	1 in 20 structures
Bats requiring flight space	1 in 5 public buildings (non-residential)
Horseshoe bats	1 in 5 public buildings (non-residential)
Swifts	1 in 20 buildings
House martins	1 in 50 buildings
House sparrows	1 in 40 buildings
Starlings	1 in 100 buildings
Swallows	1 in 50 buildings
Barn owls	2 per medium-size development 3 per large development
Peregrine	1 per medium-size development 2 per large development

After: Table 1 'Roost and nest site provision in new development' as prepared by BCT, within EcoTowns Biodiversity Worksheet, TCPA/Natural England/CLG, 2010.

<sup>7</sup> [www.thenbs.com/PublicationIndex/documents/details?Pub=TCPA&DocId=294168](http://www.thenbs.com/PublicationIndex/documents/details?Pub=TCPA&DocId=294168)



In addition to the measures outlined above, we recommend that:

- New housing development should ensure garden boundaries include at least a 125mm<sup>2</sup> (5 inch<sup>2</sup>) hole in garden fences and walls to allow access for wildlife, such as hedgehogs, frogs and toads.
- The use of hedgehog shelters and bug hotels (e.g. installed on buildings and fence posts), to provide food and nesting opportunities is encouraged.
- Garden landscaping should make use of native and 'wildlife-friendly' species, re-use the fertile agricultural soil currently on site and avoid use of peat and chemical fertilisers or insecticides.
- In proximity to watercourses and ponds (including SuDS waterbodies) and particularly where presence of herpetofauna is considered reasonably likely, gutters should be inset from the kerb and highway gulleys should include rescue ladders similar in design to Enkamat<sup>8</sup>

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<sup>8</sup> [www.taysidebiodiversity.co.uk/wp-content/uploads/2015/10/2014\\_Angus-Amphibian-Ladders-Trial.pdf](http://www.taysidebiodiversity.co.uk/wp-content/uploads/2015/10/2014_Angus-Amphibian-Ladders-Trial.pdf)

## *Appendix Four: Delivery, management and funding*

The long term success of the GI assets delivered will be dependent upon the establishment of an appropriate management body with sustainable funding and governance mechanisms.

Options for management organisations include:

- Local authority(ies)/partnerships;
- Parish Council(s);
- Existing voluntary organisations;
- Private management companies; or
- Community Development Trusts.

Potential sources of management funding include:

- Parish, District or County Council contributions;
- Developer contributions;
- Endowment from private sector; and/or
- Revenue from endowed assets, such as hire or parking charges.

The option of creating a Community Development Trust (CDT) is being considered. CDTs are independent, not for profit organisations which aim to respond to local needs and are intended to bring about lasting social, economic and environmental benefits to the local community. The overall aims of a CDT include the ownership, maintenance and effective management of GI and other facilities, encouraging healthy lifestyles and the use of sustainable transport by residents and businesses and encouragement of community cohesion.

The funding for CDTs can derive from a range of sources, including:

- Pump-priming (through Section 106 agreements and in-kind);
- A levy raised on residential and commercial property;
- Hire or lease income from ownership of community facilities and other assets;
- Project management through service delivery;
- User charges for facilities such as car parks and community halls; and/or
- Potential commercial activity.