

SOUTH DERBYSHIRE ACTION PLAN FOR NATURE



2021



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Produced by

Derbyshire
Wildlife Trust



On behalf of

**South
Derbyshire**
District Council



With support from

Summary

The Action Plan for Nature provides a strategic and spatial plan for nature's recovery in the South Derbyshire District. Habitat networks were analysed from existing datasets and the CEH Land Cover mapping was used to provide full coverage of broad habitats across the district. Data analysis and modelling was completed using QGIS and Condatis which determined strategically important areas within the district for habitat enhancement, restoration or creation, based on the three broad habitat types existing within the district; Grassland, Woodland and Wetland. Use of Condatis flow models suggested key areas for habitat protection and expansion based on species movement and connectivity bottlenecks, providing spatial priorities for connectivity enhancement. The key strategic areas identified in the modelling shows the suitability of sites for enhancement or creation and will be especially useful for determining biodiversity net gain schemes or planning decisions, in order to strengthen the nature recover network and contribute positively towards ecosystem services. This information should feed into the Local Recovery Plan and determine future planning policy.

A number of geographical areas were identified as being strategically significant for enhancement or creation of all three broad habitat types and should provide the basis for nature recovery efforts going forward. These are the Trent Valley, Dove Valley and the Calke Park/Staunton Harold/Foremark area. Two areas, Radbourne Park and Drakelow, were highlighted as being bottlenecks for species dispersal for more than one broad habitat type, which suggests they are of high importance for habitat protection, enhancement and surrounding habitat creation. The maps provided in the report provide a more detailed analysis of strategic areas.

Further spatial and feasibility data was provided through stakeholder consultation with major landowners to determine biodiversity opportunities, either through identification of land, funding or partnerships. This identified a number of current or future opportunities which can then be assessed against the strategic area mapping for their suitability and priority.

Introduction

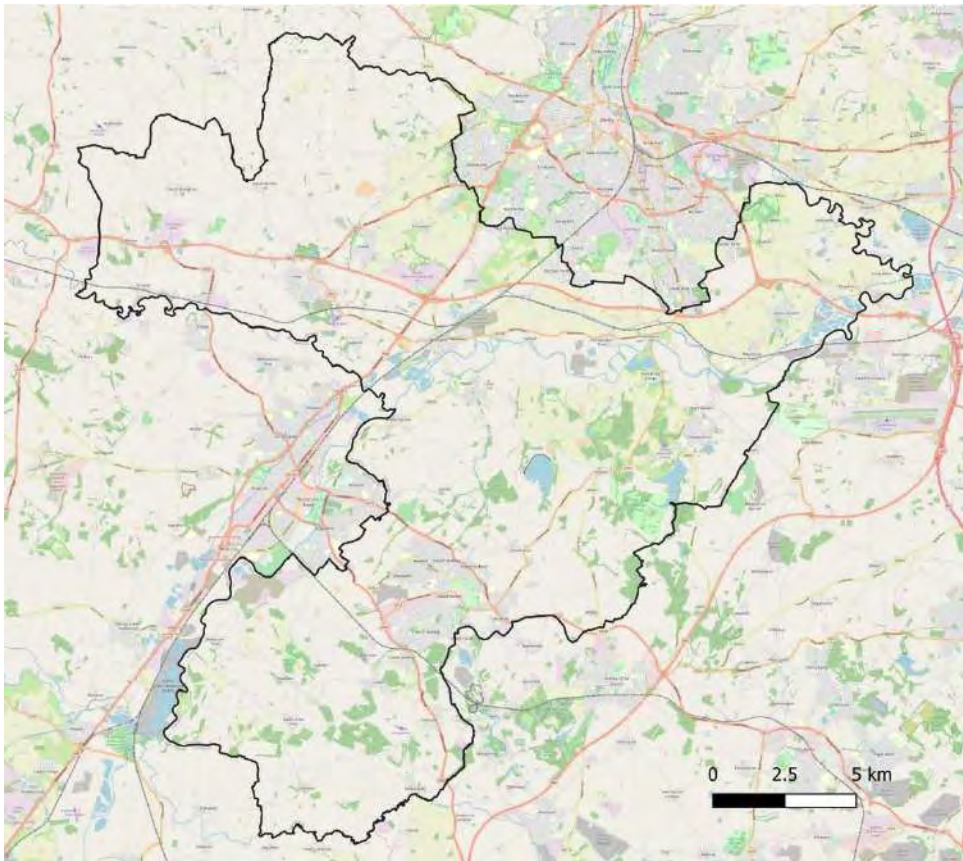
This report has been prepared by Molly Gorman at the Derbyshire Wildlife Trust, with support from FPCR and on behalf of South Derbyshire District Council. It provides a working document for the production of a Biodiversity Strategy and Action Plan for Nature for the South Derbyshire District. This will guide policy making and ensure an integrated approach to delivering biodiversity enhancements across the District. The strategy will be adopted and used by the council to identify key strategic opportunities for new habitat creation, particularly through improved ecological connectivity to be delivered through partnership working and development management. The report will:

- provide an assessment of baseline biodiversity within the district;
- highlight existing habitat networks and the districts key locations;
- identify strategic gaps in biodiversity provision;
- recognise opportunities for habitat enhancement and creation, both strategically and spatially through modelling and stakeholder consultations;
- identify spatial priorities for habitat and species recovery;
- outline funding, partnership and policy opportunities and highlight any potential challenges;

Context

South Derbyshire is 33,812 hectares in size and is the third largest local authority area in Derbyshire. It borders Staffordshire, North-West Leicestershire and Nottinghamshire and surrounds Derby City on the northern boundary. Major features of the District include the National Forest and Trent Valley, both of which form broad swathes through the district from West to East.

Figure 1: South Derbyshire District boundary



District Facts and features

Total population of 109,516.

Contains a third of the National Forest.

High levels of mineral extraction.

Grand country houses and parklands - Calke Park and Elvaston Castle.

Two major reservoirs – Foremark and Staunton Harold.

Major road barriers – A50, A38, A511 and A444.

The UK has suffered major declines in the health of nature over the last 50 years, with 44% of all species decreasing in abundance (State of Nature, 2019). Fragmentation, degradation and the loss of habitats has been widespread and linked to increased development pressure and intensification of agricultural practices (Jongman, 2004). In South Derbyshire, over 96% of semi-natural, non-statutory permanent grasslands were lost between 1983 and 1999. This represented a reduction in area from 875ha to just 40ha (Catchpole, 2006).

Nature is essential to the long-term provision of ecosystem goods and services (Catchpole, 2006). Loss of nature is directly linked to increased natural ecological disturbances, threats to crop pollination and climate change. Whilst there is a legal requirement to consider biodiversity in local planning, outlined below, the dependency of humans on nature as a whole for quality of life means this is a fundamental issue in all areas of planning.

The South Derbyshire Action Plan for Nature aims to provide a recovery for nature and biodiversity; allowing projects to be strategically planned to maximise the benefit to nature, targeting key areas of connectivity and identifying where development is best placed to limit negative impacts. However, if integrated into policies, procedures and partnerships, it has the potential to deliver huge combined benefits, delivering essential ecosystem services such as flood reduction, pollination, cleaner water, carbon storage and access to nature for health and wellbeing.

Policy


The requirement for Nature Recovery Network mapping stemmed from the Lawton review (2010) 'Making Space for Nature' which identified the need for 'better, bigger, more and connected' wildlife sites to reverse habitat fragmentation and create an ecological network in which habitats and species are protected and resilient. From this the Government set out targets of 'creating or restoring 500,000 hectares of wildlife-rich habitat' in the 25-Year Environment Plan and recently identified the need to put the conservation of biodiversity through a spatial planning system on a statutory footing in the proposed Environment Bill. Further emphasis on the protection and conservation of biodiversity through the National Planning Policy Framework (NPPF) guidance and the promotion of Biodiversity Net Gain schemes further drives the need for a Nature Recovery Network map to identify where habitat creation or enhancement would be best placed to improve connectivity and strategic networks.

Most recently, the government expressed support for the Wildlife Trust's 30 by 30 campaign to '*connect and protect at least 30% of our land and sea for natures recovery by 2030*' and signed the Leaders Pledge for Nature, committing to put nature and biodiversity on a road to recovery by 2030.

Biodiversity Net Gain


Biodiversity Net Gain (BNG) is likely to be a key opportunity in the District's Nature Recovery given the rate of settlement growth and as a result of policy (and potentially mandatory) drivers for improvement in biodiversity with every major development. The mitigation hierarchy, to firstly avoid, then mitigate or, as a last resort, compensate for biodiversity losses, still applies to projects and the use of a metric¹ allows this to be measurable. The metric assesses habitat loss, habitat condition and habitat distinctiveness to determine relative biodiversity loss or gain. Habitat distinctiveness aims to provide habitats with relative biodiversity value which can be used to identify priority areas for protection i.e very high distinctiveness ancient woodland, or easily recreated or enhanced habitats i.e. low distinctiveness modified grassland. Mapping districts using habitat distinctiveness allows the LPA to make quick assessments of areas that might be more suitable for development (low distinctiveness habitats) or areas that are best avoided or would require high levels of compensation (medium/high distinctiveness habitats). Equally, habitat distinctiveness models can identify opportunities to focus BNG compensation projects on most suitable areas, based on the mitigation hierarchy and the Lawton principles.

Table 1: Mitigation Hierarchy

Priority 	Mitigation Hierarchy	
	Avoid	Where possible avoid habitat loss or damage
	Minimise	Where possible minimise habitat loss or damage
	Remediate	Where possible restore any lost or damaged habitat
	Compensate	Damaged or lost habitats should be compensated for as a last resort

¹ The Defra Biodiversity 2.0 Metric was published in July 2019 and is designed to provide ecologists, developers, planners and other interested parties with a means of quantifying changes in biodiversity value (losses or gains) brought about by development or changes in land management. The Biodiversity 3.0 Metric to be published in 2021 will update this.

Table 2: Lawton Principles

Priority	Lawton principles		
	Better	Compensation should...	Protect high distinctiveness habitats. Where habitats are in decline, use BNG to ensure long term management
	Bigger		Target BNG habitat creation or enhancement to, ideally contiguous with, existing high distinctiveness habitats
	More		Increase the number of stepping stone sites by enhancing moderate or low distinctiveness habitats through BNG
	Connected		Enhance or create corridors between sites of high and moderate distinctiveness using BNG


Further development of an Eco-metric is intended for the future which will also include consideration of the impacts on the extent and condition of natural capital stocks and the ecosystem services that flow from them.

Methodology

Mapping

Baseline Habitat Maps

A review of existing data sets was carried out using QGIS to form an aggregated habitat inventory. This included a wide range of open source data from DEFRA agencies as well as habitat inventories from the Derbyshire Biological Records Centre. A full list of reviewed datasets can be found in Appendix A. Priority was given to the most accurate and specific input layers. Accuracy was determined through comparison with satellite imagery.

High Priority 	GCN Ponds from eDNA records
	Open Zoomstack water
	DWT reserves
	LWS sites
	Priority habitats inventory
	Potential LWS
	Open Mosaics (DBRC)
	Key grassland sites (DBRC)
	National Forest woodland inventory
Low Priority	CEH Land Cover map

Habitat mapping of South Derbyshire district to a UKHAB level 4 or equivalent is very limited, with data held mainly for the designated sites. In order to run the network model a full cover dataset was required and the Centre for Ecology and Hydrology Land Cover Map (LCM2019) data set was obtained to fill in any data gaps. This maps land parcel polygons greater than 0.5ha and linear features longer than 20m into habitat classes based on the UK Biodiversity Action Plan broad habitats. Habitats present within the mapping are shown in Appendix B. Where applicable, habitats were converted to UKHAB classifications for consistency, shown in Table 3.

Species records from DBRC were mapped and analysed for key species and population hotspots. The modelling, described below, considered dispersal distances of species known to populate the district, but ultimately based on a hypothetical species representing average dispersal characteristics.

Table 3: UKHAB categories

Layer	Original Category	UKHAB Category
LWS Sites	Unimproved neutral grassland	Grassland - Lowland meadows
LWS Sites	Wet Grassland	Grassland - Floodplain Wetland Mosaic
LWS Sites	Semi-improved - calcareous grassland	Grassland - Calcareous grassland
LWS Sites	Parkland	Woodland and forest - Wood-pasture and parkland
Priority Habitats Inventory	Good quality semi improved	Grassland - Other Neutral Grassland
National Forest Inventory	Coppice	Woodland and Forest - Other woodland - broadleaved
National Forest Inventory	Woodland ground prep	Woodland and Forest - Other woodland - Young trees planted
National Forest Inventory	Low density	Heathland and Scrub - Mixed scrub
National Forest Inventory	Shrub	Woodland and Forest - Other woodland - broadleaved
CEH	Inland Rock	Other Inland rock
CEH	Urban	Urban - Sealed Surface
CEH	Sub Urban	Urban - Suburban
CEH	Swamp	Wetland - Fens (upland and lowland)

Where polygons contained a mosaic of habitat types they were treated as the closest approximation for habitat type and distinctiveness but given a value for other broad habitat groups if appropriate. All habitats were rated for service provided to Wetland, Woodland and Grassland using a Boolean true/false value e.g. wet woodland would be assessed as providing a service as a wetland and a woodland. Heathland would be assessed as being both grassland and woodland. Broadleaved woodland would only provide a service to the woodland category.

Habitat Distinctiveness

Habitat distinctiveness was mapped using QGIS. The habitats included in the aggregated habitat inventory were assigned to distinctiveness bands based on an assessment of distinguishing features. This includes parameters such as species richness, diversity, rarity (at local, regional, national and international scales) and the degree to which a habitat supports species rarely found in other habitats (Treweek et al 2010). Whilst this mapping is based solely on habitats rather than species, the categories provide a representation of the overall biodiversity value of species communities.

Table 4: Habitat distinctiveness bands

Distinctiveness	Broad habitat type	Likely characteristics
High	Priority habitat (Section 41 NERC Act)	High species richness and diversity, potential for rare species, limited examples of this habitat.
Medium	Semi-natural habitat	Moderate species richness and diversity, unlikely to record rare species, numerous examples of this habitat.
Low	Modified habitats/ intensive agricultural land	Low species richness and diversity, common and widespread habitat and species.

Habitat Buffers

A simple but effective method of determining isolated areas is through the use of buffers. By assuming an average dispersal distance of 250m, areas of a particular habitat that are functionally isolated can be determined. Where two isolated areas were more than the average dispersal distance but less than double that distance a highlighted area was produced, indicating a location where additional habitat would create a bridge between these areas.

Strategic Significance

Strategic significance was mapped to determine the most strategic areas for habitat creation for each broad habitat type; Grassland, Woodland and Wetland. A 10km buffer was applied to the district to ensure that habitats adjacent to the district boundary were also considered and to create consistency with other LPA nature recovery strategies. The district was divided into 500m squares. Within each of these squares, a proportion of the different broad habitat types was calculated. This data was shown divided into different categories representing the levels of viability for habitat creation and therefore their significance for enhancing the habitat network:

- 0-5% Coverage – too little habitat within the square for viable habitat creation, **low strategic significance**
- 5-20% Coverage – ideal conditions for habitat creation to improve viability, **high strategic significance**
- >20% Coverage – already a high proportion of the broad habitat within this area. May benefit from some additional habitat but it is more likely to be already viable for associated species, **moderate strategic significance**

Ecological Network Modelling

Connectivity modelling was completed using Condatis. Condatis is an open source ecological network model designed to strategically prioritise habitat creation, restoration and even loss². Condatis is intended to:

- Highlight pathways that allow both dispersal and multiplication of species as they cross a landscape;
- Pinpoint bottlenecks in the habitat network; and
- Rank the feasible sites for habitat creation and restoration to enhance the existing habitat network efficiently.

The 500m square representation of different habitats was fed into Condatis. Condatis measures the amount of flow through each square and the distance travelled across its links to other habitat cells. This was based on a hypothetical species with low fecundity and low-moderate dispersal distances (1.5km) in both South to North and West to East directions. This gives a broad overview of species flow through the district. Again, a 10km buffer area was used to ensure consideration had been given to habitats and species flow beyond the district boundary. Habitats were assessed for bottlenecks where flow was most constricted. These are areas where there are restricted opportunities for colonisation and movement through the landscape and the areas of highest

² More information on Condatis can be found at <http://wordpress.condatis.org.uk/>

strain for species movement. They also indicate important areas for habitat creation as areas around these bottlenecks would disproportionately increase range-shifting connectivity.

Lastly these scenarios were run through Condatis' prioritisation function to create the Low – High opportunity ranks. A map of potential areas where habitats could be created was put together by removing unsuitable areas. This produced a map of the areas where Condatis estimates that habitat could most effectively be created, restored or protected to aid species flow through the district. The higher the rank the better the value for creation of habitats. The method shows how additional habitat cells can increase the speed of species' movement across a landscape of existing habitat and can also be used to highlight areas of an existing network that cannot afford to be lost due their contribution to connectivity. The North-South (N-S) and East-West (E-W) models have been overlaid in order to show the highest priority areas that would be of benefit to species movement in all directions (darkest green). The slightly less dark green areas would be good for either N-S or E-W with the light green squares indicating moderate value.

Stakeholder Consultation

Major stakeholders within the district were contacted in order to identify opportunities for enhancement or creation of habitats, or ascertain potential partnerships that could be developed off the back of the Action Plan for Nature. Organisations included National Forest, Woodland Trust, National Trust, Forestry England, Forestry Commission, Trent Rivers Trust, Environment Agency, Severn Trent, RSPB and colleagues within Derbyshire Wildlife Trust and South Derbyshire District Council. A full list of stakeholder contacts is provided in Appendix C.

Due to the Covid-19 pandemic, the intended stakeholder workshops were not feasible. Stakeholder input was completed by email and online meetings. Stakeholders were given maps showing aerial imagery and core sites (designated sites, priority habitats and woodland inventory) classified into broad habitat types. Stakeholders were asked to think about the following:

- Better – any known areas of existing but degraded habitat which require enhancement.
- Bigger – any known areas onto which existing habitat could be expanded.
- More - new distinct areas of habitat to increase the overall resource.
- Connected – opportunities to enhance existing or creating new connections between existing habitats usually through linear habitats – hedgerows, disused railways or road verges.
- Interested parties –
 - Any known landowner that might be open to habitat enhancement or creation.
 - Any opportunities to convert farmers on higher level stewardship into a Biodiversity Net Gain scheme.
 - Farmers in unproductive areas where there may be a financial incentive to enter a BNG scheme.
- Any existing or proposed projects within the organisation that are aimed at enhancing habitats, linking sites or creating more quality habitat outside those identified on the maps.
- Any plans for land acquisition within the organisations.
- Opportunities for partnership working or links with clubs/ community groups looking to improve biodiversity.

Limitations

There were a number of limitations to the overall productivity and output of the project, primarily related to the Covid-19 pandemic. This prevented stakeholder workshops which were intended to spark dialog between organisations. Input via email and online meetings was provided by the majority of stakeholders, however, a small number of stakeholders did not respond and opportunities to meet with groups such as farmers, communities or volunteers were restricted.

Although key species were considered throughout the project and species recommendations have been made, the main approach to the mapping was based on habitat distribution rather than the distribution of species, with hypothetical species used in the modelling. This is due to the availability and accuracy of species information. Mapping based on species can risk under or over representation due to sampling biases, whereas habitat data, particularly from aerial imagery, tends to be more accurate. It should, however, be noted that there are also a number of limitations to habitat data, described below.

- Aerial mapping at a large scale may cause errors in habitat type classification, or omissions in small areas of habitats or mosaics. No ground truthing was completed during this project due to the scale of the area. Datasets were cross-referenced with satellite imagery, however, there are still likely to be small errors in the data. Differentiating between certain habitat types from satellite imagery is extremely difficult e.g. differentiating between modified grassland and lowland neutral grassland.
- Features such as hedgerows are poorly recorded so connective corridors through agricultural landscapes are under-represented. Satellite imagery isn't good enough to pick up this level of detail.
- Out of date maps – habitats may have changed in the period between data collection and analysis;
- Cross over of datasets – some sites featured in a number of GIS layers with varying boundaries and habitat detail.
- Spatial quality - Condatis only uses a value for % cover in a 500m grid square. It values one large, completely isolated woodland the same as a series of smaller woodlands that could potentially join that grid square to other woodlands in the grids adjacent.
- Condatis doesn't allow for barriers to dispersal to be taken account of, such as major A roads.

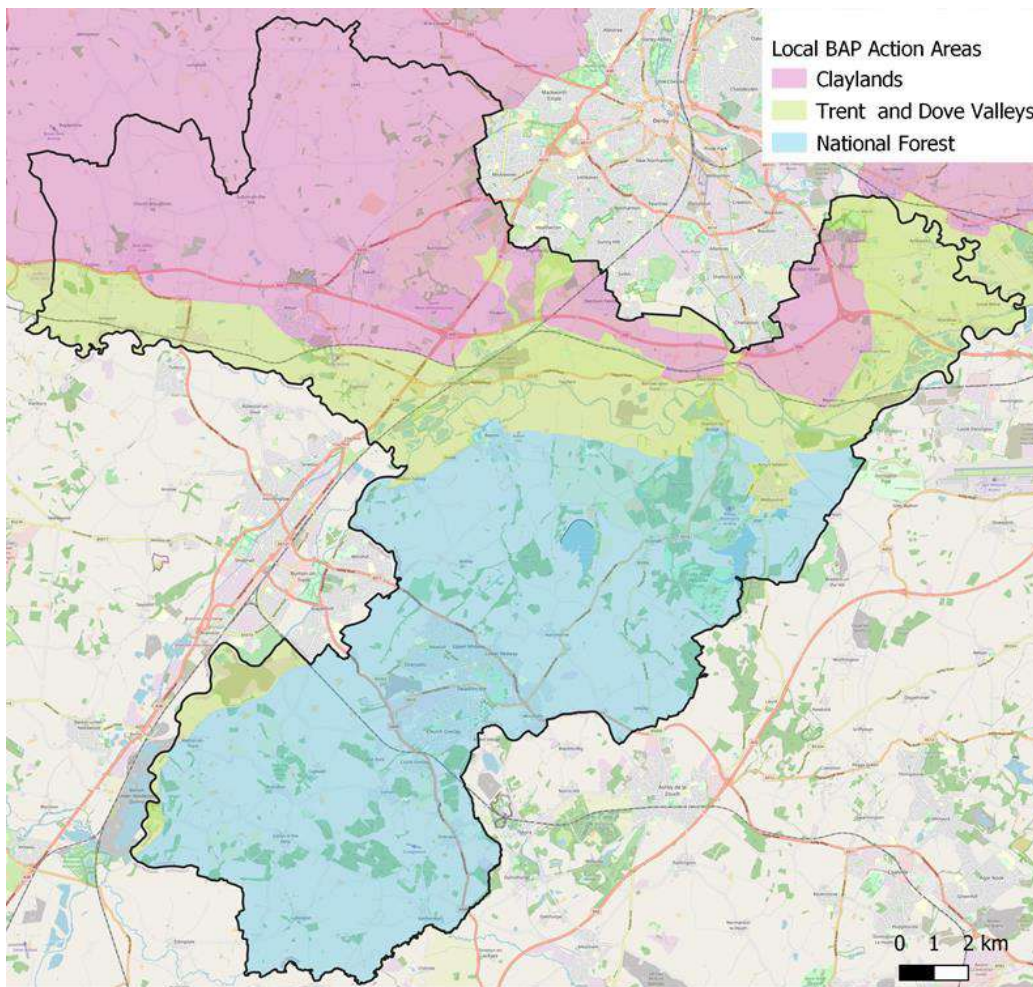
Given the size of the maps they have been inputted to this report as raster jpg or pdf. This will reduce the clarity of maps when zoomed in. However, all maps are available separately which will allow the reader to zoom in, as well as a separate GIS workspace available on request. Tables can also be provided in a separate excel workbook for ease of use.

Baseline Biodiversity Data

Lowland Derbyshire Local Biodiversity Action Plan

The current Local Biodiversity Action Plan (LBAP) 2011-2020 examines the state of nature throughout lowland Derbyshire and sets targets for maintenance, restoration and expansion of habitats and species. South Derbyshire is covered by three Action Plans split by the landscape character areas; National Forest, Trent and Dove Valley and The Claylands. The South Derbyshire Action Plan for Nature aims to build on the work of the LBAP, updating and combining the baseline data for the district and targeting the spatial opportunities.

Figure 2: LBAP Action Areas



National Character Areas

The LBAP areas are simplified from the National Character Areas. South Derbyshire is predominantly agricultural in land use with mixed arable and pasture farming. A band of woodland exists in the centre of the district and small urban settlements are scattered with the largest town, Swadlincote, towards the south of the district. At a more detailed level the district varies from floodplain corridors to parklands of grand country houses. The district comprises five National Character Areas (NCAs) which are split relatively equally between; the Claylands, Trent Valley Washlands, Melbourne Parklands, the Coalfields and Mease/ Sence Lowlands, shown in Figure 3. Each NCA has their own strategic environmental opportunities. These are summarised in Table 5 and in full in Appendix D.

Figure 3: South Derbyshire District National Character Areas

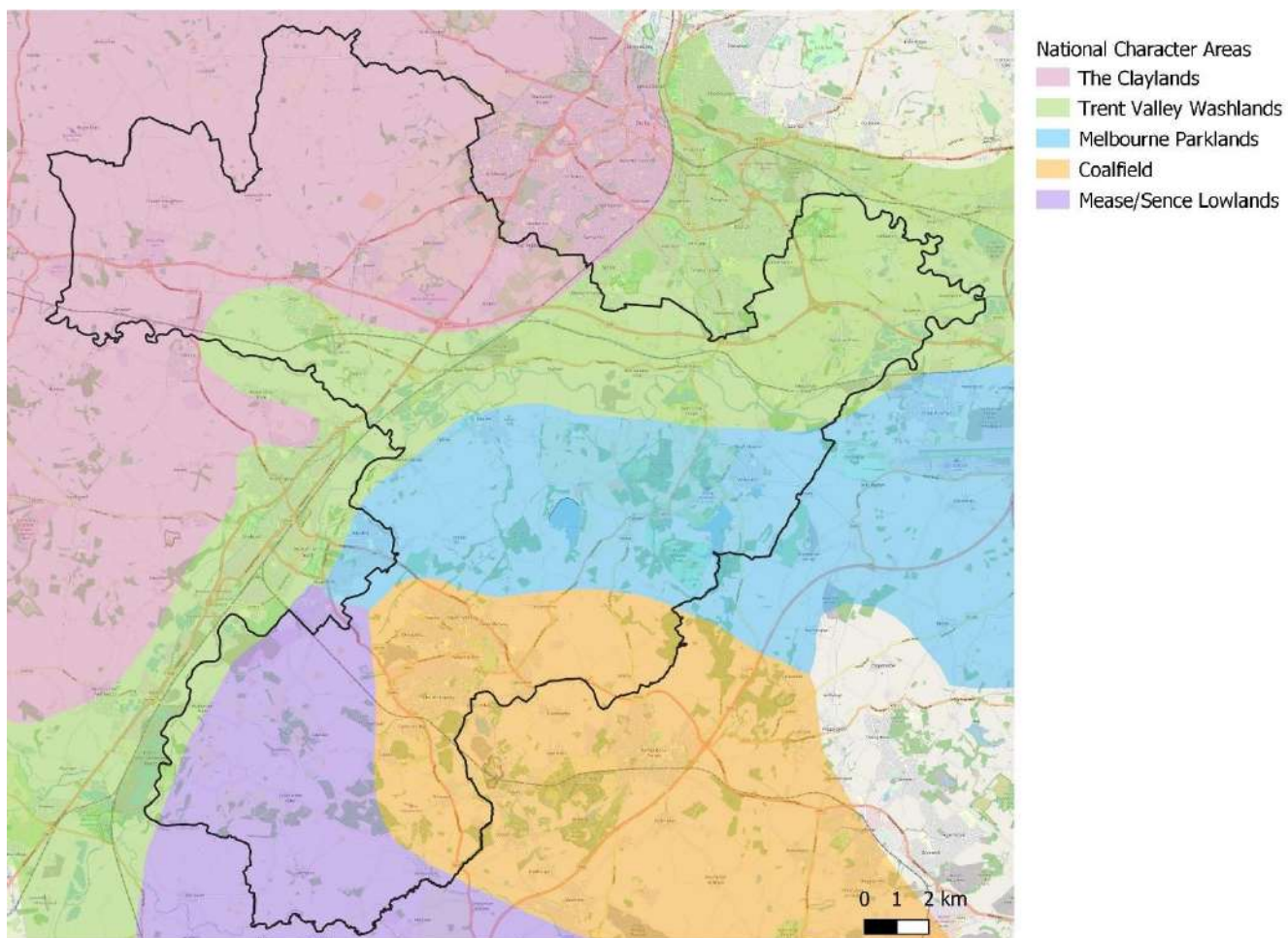


Table 5: Strategic Environmental Opportunities for National Character Areas

NCA Name	Environmental Opportunities
The Claylands	<ul style="list-style-type: none"> • Enhance hedgerow networks. • Safeguard woodlands, veteran trees, wood pasture and parklands. • Create new woodlands and wood pasture.
Trent Valley Washlands	<ul style="list-style-type: none"> • Strengthen ecosystem services through carefully planned development. • Enhance flood plain habitats to deliver biodiversity and ecosystem services. • Connect and expand pasture areas.
Melbourne Parklands	<ul style="list-style-type: none"> • National Forest planting. • Restore the historic parklands and woodlands. • Conserve and manage the hedgerows and hedgerow trees. • Promote sustainable agricultural practices. • Improve the water supply contribution to biodiversity and recreation.
Coalfields	<ul style="list-style-type: none"> • Protect and manage the flood plain habitats. • Conserve existing woodlands. • Create new woodlands. • Restore and reinstate hedgerows and hedgerow trees.
Mease/Sence Lowlands	<ul style="list-style-type: none"> • Protect and enhance rivers, streams, ponds, canals and other wetland habitats. • Conserve ancient woodlands, veteran trees and parklands. • Create new woodlands.

Core Habitat Areas

200 hectares of land within South Derbyshire is currently designated at a statutory level, meaning the sites are of International or National importance. This is just **0.6%** of land within the district.

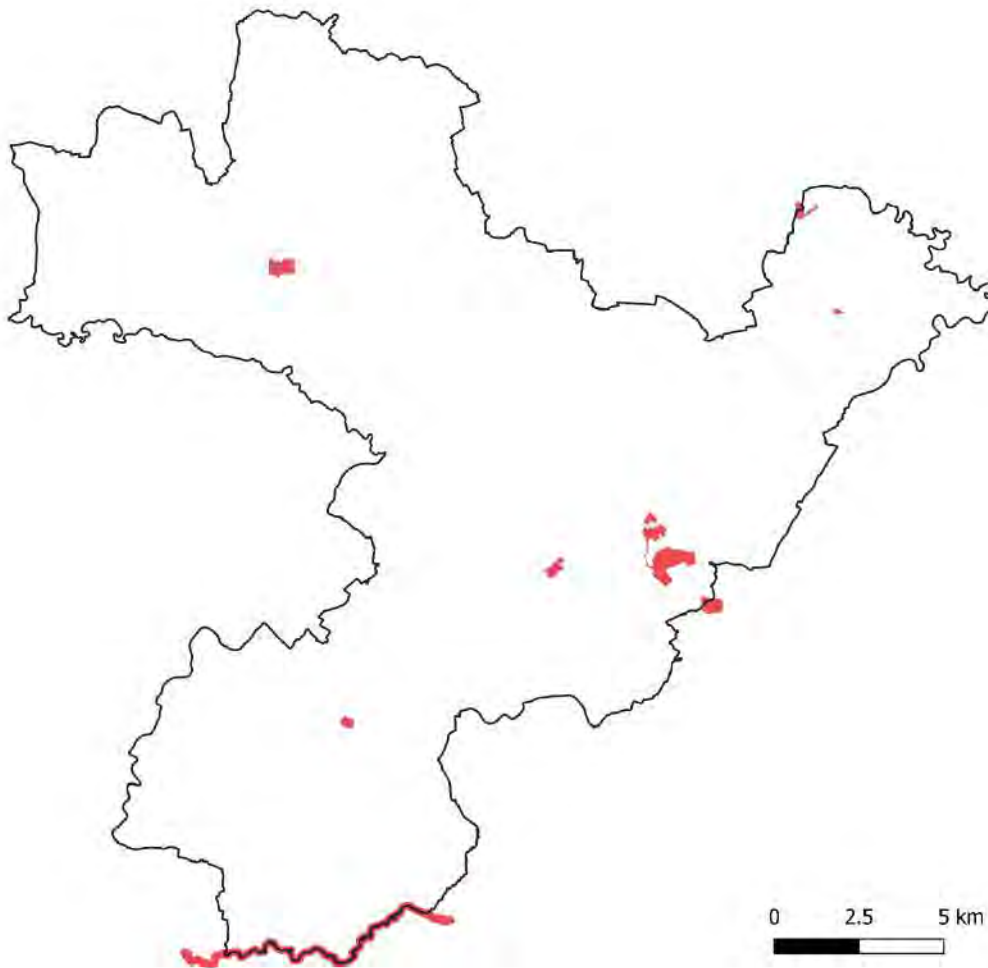
River Mease Special Area of Conservation (SAC) forms the southern boundary of the District. SACs are designated under the EC Habitats Directive and form part of the Natura 2000 Network of internationally important wildlife sites. It is in **unfavourable condition** owing to the high phosphate, sedimentation and heavy metal deposits.

Six Sites of Special Scientific Interest (SSSI) include Dimmingsdale, Carver's Rocks, Ticknall Quarries, Hilton Gravel Pits and Calke Park which is also a designated National Nature Reserve (NNR). Four of these are in **unfavourable recovering condition**.

Three Local Nature Reserves (LNR) exist within the district; Badgers Hollow, Aston Brickyard and Elvaston. Although their condition is not assessed as LNR's, they are also Local Wildlife Sites and were all favourable condition during their last assessment. However, these assessments were undertaken in 2018, 2016 and 2013 respectively so condition may have changed in this time. A fourth site, Swadlincote Woodlands, is currently under consideration for designation as a LNR.

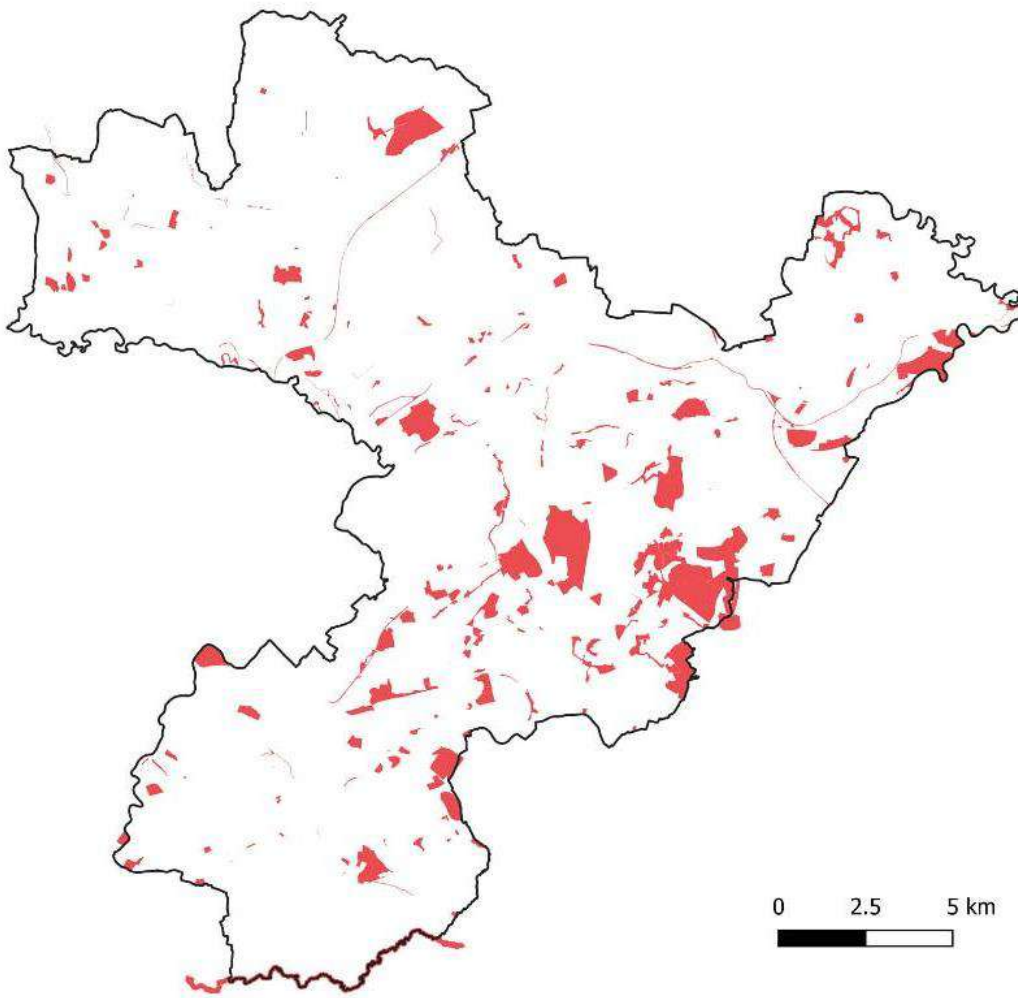
These core sites provide some of the highest nature conservation and biodiversity value, but do not form a network within South Derbyshire given their sparse and fragmented nature, as portrayed in Figure 4.

Figure 4: Statutory designated sites



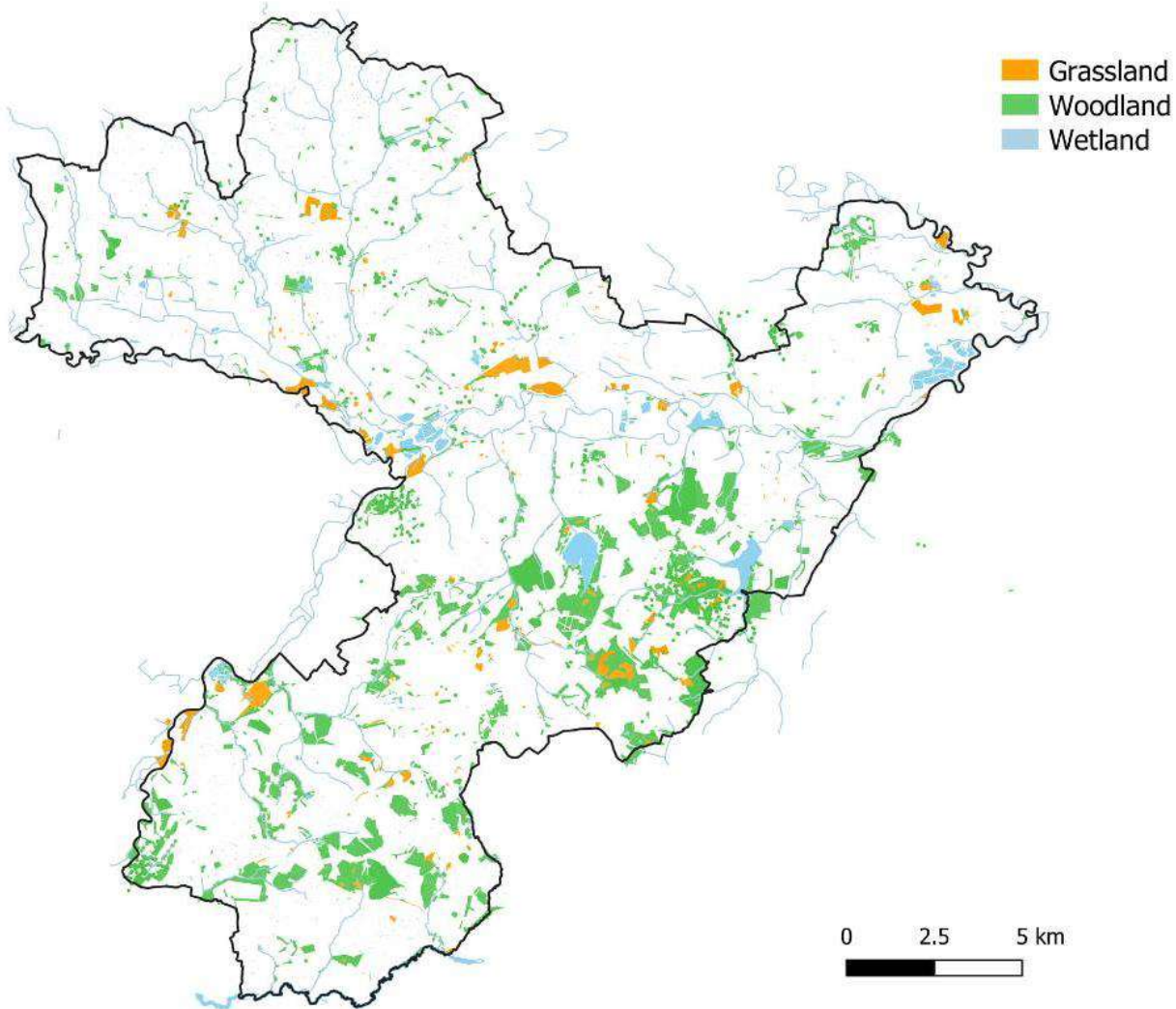
The network of core sites develops once Local Wildlife Sites (LWS) and potential Local Wildlife Sites (pLWS) are considered, as shown on Figure 5. LWS's are non-statutory designated sites of county importance. The sites are selected based on their habitat type and quality. They are often of high ecological value but are not afforded statutory protection in the planning system. Likewise, pLWS's are often of high ecological value and likely to meet the selection guidelines for LWS but have not undergone the formal selection process. LWS and pLWS make up approximately 2,352 hectares over 264 sites, making up approximately **7%** of the district. Of the LWS, 83 are in **unfavourable condition** and 35 have not been recently assessed. Full details of LWS and pLWS sites are provided in a separate document.

Figure 5: Statutory and non-statutory designated sites

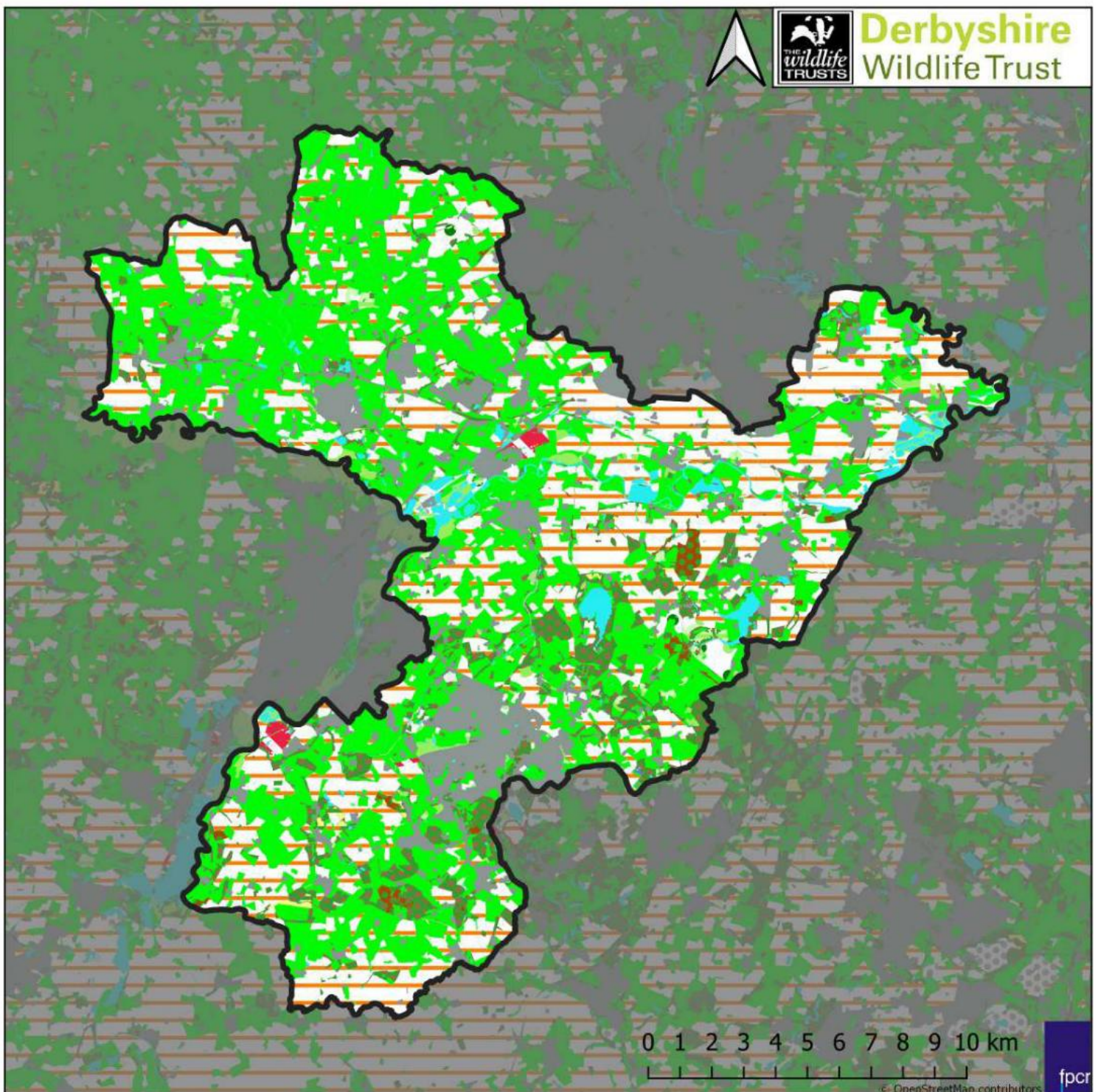


Beyond the designated sites are the other core areas of habitat that are more likely to be large enough to support viable species populations and small patches of habitat that act as corridors or discrete 'stepping stone' sites. These include woodlands on the National Forest inventory, Ancient Semi-Natural and Planted Ancient Woodlands (PAWs), UK BAP priority habitats, nature reserves, rivers and Local Green Spaces. When classified into their broad habitat type this starts to build up a picture of the existing ecological network, shown in Figure 6.

Figure 6: Sites by broad habitat type



When the core habitats data is combined with a full land cover map (CEH), cross-referenced with satellite imagery and prioritised based on accuracy, the aggregated habitat inventory is formed to level 4 of the UKHAB classification system, shown on the map below.



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fpcr

Habitats

Legend



South Derbyshire Boundary

Habitats



Artificial hard structures



Cereal crops



Floodplain Wetland Mosaic (CFGM)



Lowland calcareous grassland



Lowland dry acid grassland



Lowland Heathland



Lowland meadows



Mixed scrub



Modified grassland



Open Mosaic Habitats on Previously Developed Land



Other coniferous woodland



Other inland rock and scree



Other lowland acid grassland



Other neutral grassland



Other woodland; broadleaved



Other woodland; mixed



Ponds (Non- Priority Habitat)



Reedbeds



Traditional orchards



Wet woodland



Wood-pasture and parkland

Percentage Habitat Cover

The following three maps provide a break-down of the aggregated habitat inventory based on the three main broad habitat types that exist within the district; grassland, woodland and wetland. These maps show the percentage cover of each 25ha square and provide an indication of where the existing important areas and where creation of the broad habitat could improve connections between these grids.

Grassland

The grassland map excludes modified grasslands, given their intensively managed nature. When modified grassland is removed and only priority habitat grassland remains in the dataset, the map shows the sparse and fragmented nature of grasslands in the district. The main grassland areas exist around Calke Park, Drakelow, Willington and Radbourne Park. There are also a number of small, scattered grasslands of interest, however, there is little to no connectivity between them and therefore unlikely to support viable species populations.

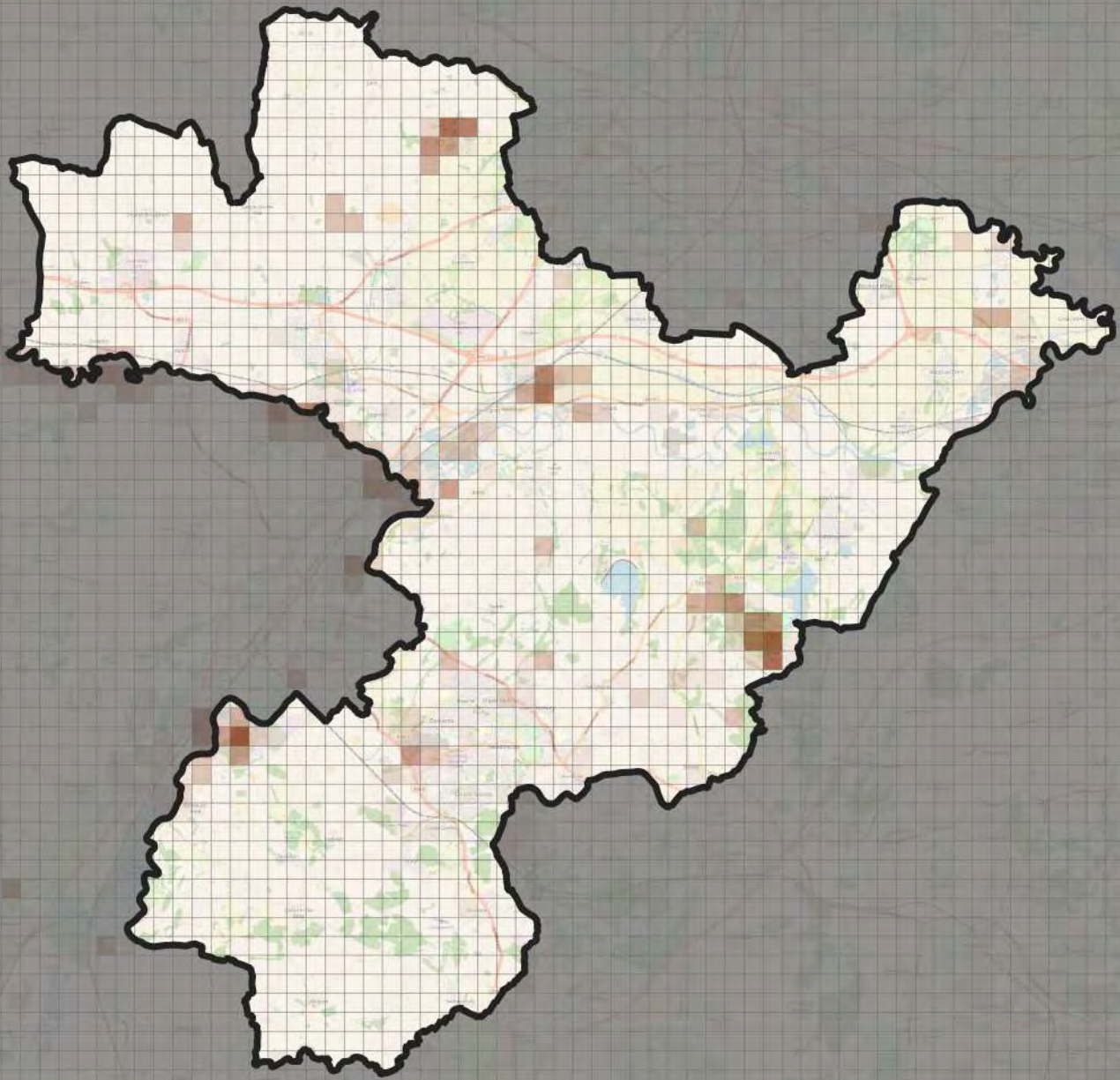
Woodland

The woodland cover map shows a higher density of woodland habitat within the district, owing to the National Forest which covers the middle band of the district, and a few larger standalone woodlands. The main areas of woodland habitat exist at Drakelow, Repton Wood, Robin Wood, Radbourne Park, Grangewood, Elvaston, Hayes Park, Kings Newton 4x4 site and the former Willington Power Station. It should be noted that for the woodland mapping, both conifer and broadleaf woodland habitats were considered and it is accepted that the biodiversity value will differ hugely between these woodland types. Future restoration plans, to convert many of the conifer woodlands to broadleaf woodlands (such as at Robin and Repton), should address this and it is accepted that these sites can still perform an important function in maintaining species distribution and abundance.

Wetland

Wetland habitats are focused along the main three river valleys in the district including the Dove, the Derwent and the Trent. Major wetland areas on the Trent are highlighted at Willington wetlands, Swarkestone Quarry and Witch's Oak water. Other high densities of wetland habitats exist at Drakelow, Foremark reservoir, Staunton Harold reservoir and Swadlincote golf course. This map was overlaid with the rivers and streams to show how these areas are connected, but without these the map portrays a fragmented wetland habitat system that is

enclosed by agricultural areas, rather than natural riparian habitats. In many cases the rivers, which are not well connected with their floodplains, may act as a barrier to connectivity rather than a continuity of habitat.




0 1 2 3 4 5 6 7 8 9 10 km

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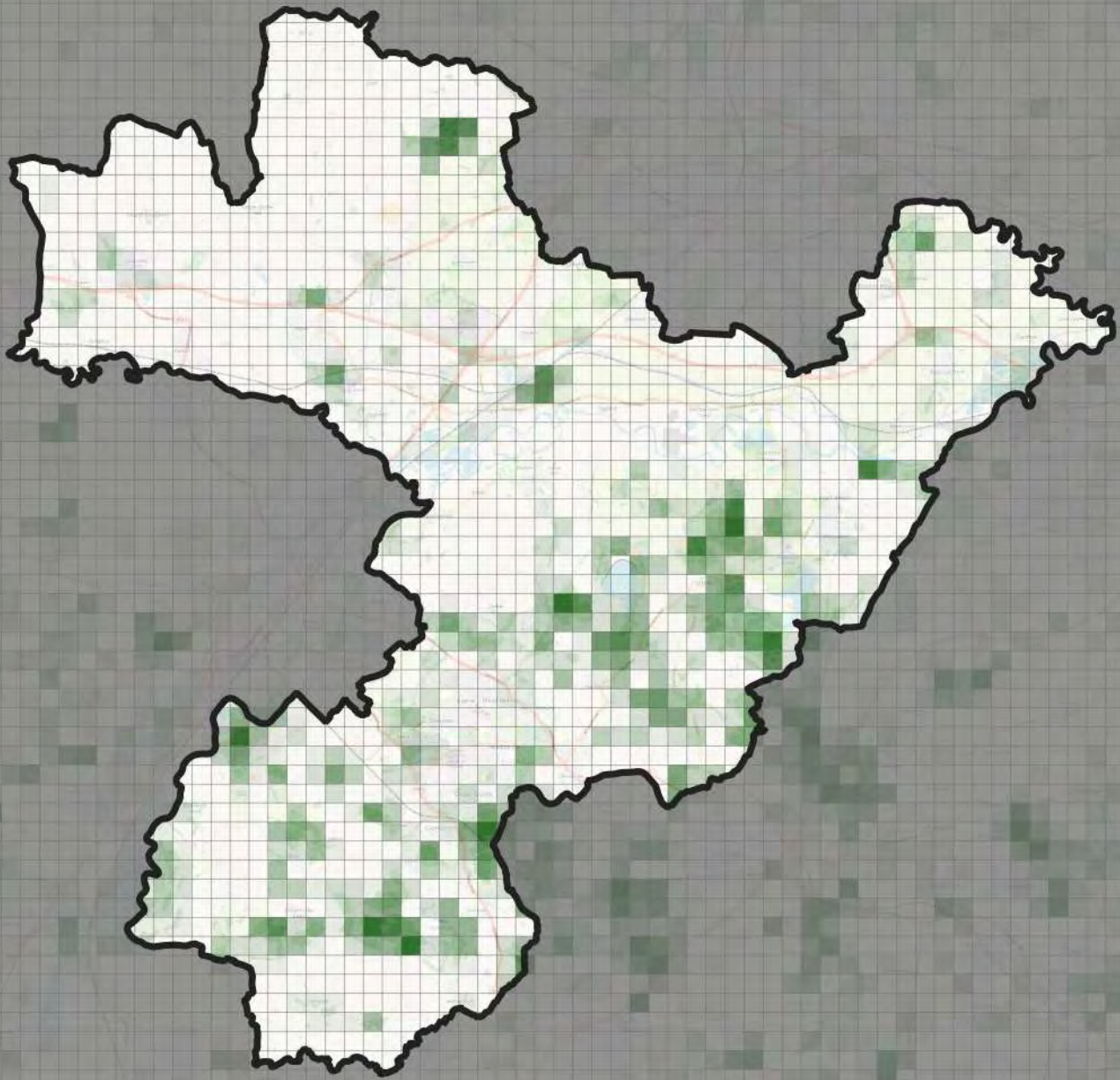
Grassland - Percentage Cover

Legend

 South Derbyshire Boundary

Percentage Cover

 0 - 10	 50 - 60
 10 - 20	 60 - 70
 20 - 30	 70 - 80
 30 - 40	 80 - 90
 40 - 50	 90 - 100



0 1 2 3 4 5 6 7 8 9 10 km

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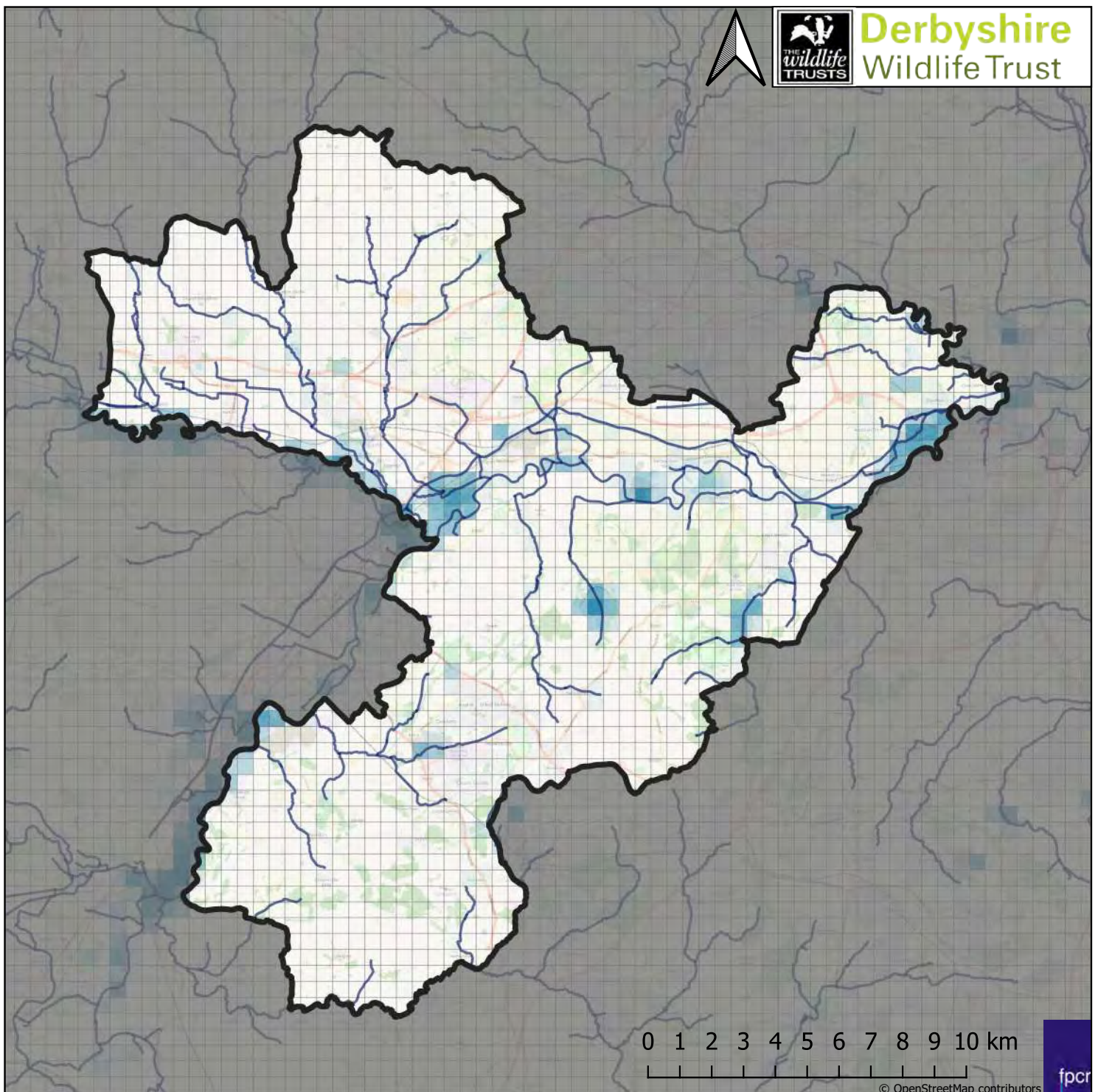
Woodland - Percentage Cover

Legend

 South Derbyshire Boundary

Percentage Cover

 0 - 10	 50 - 60
 10 - 20	 60 - 70
 20 - 30	 70 - 80
 30 - 40	 80 - 90
 40 - 50	 90 - 100



Wetland - Percentage Cover

Legend



South Derbyshire Boundary



Rivers and Streams

Percentage Cover



0 - 10



10 - 20



20 - 30



30 - 40



40 - 50



50 - 60



60 - 70



70 - 80



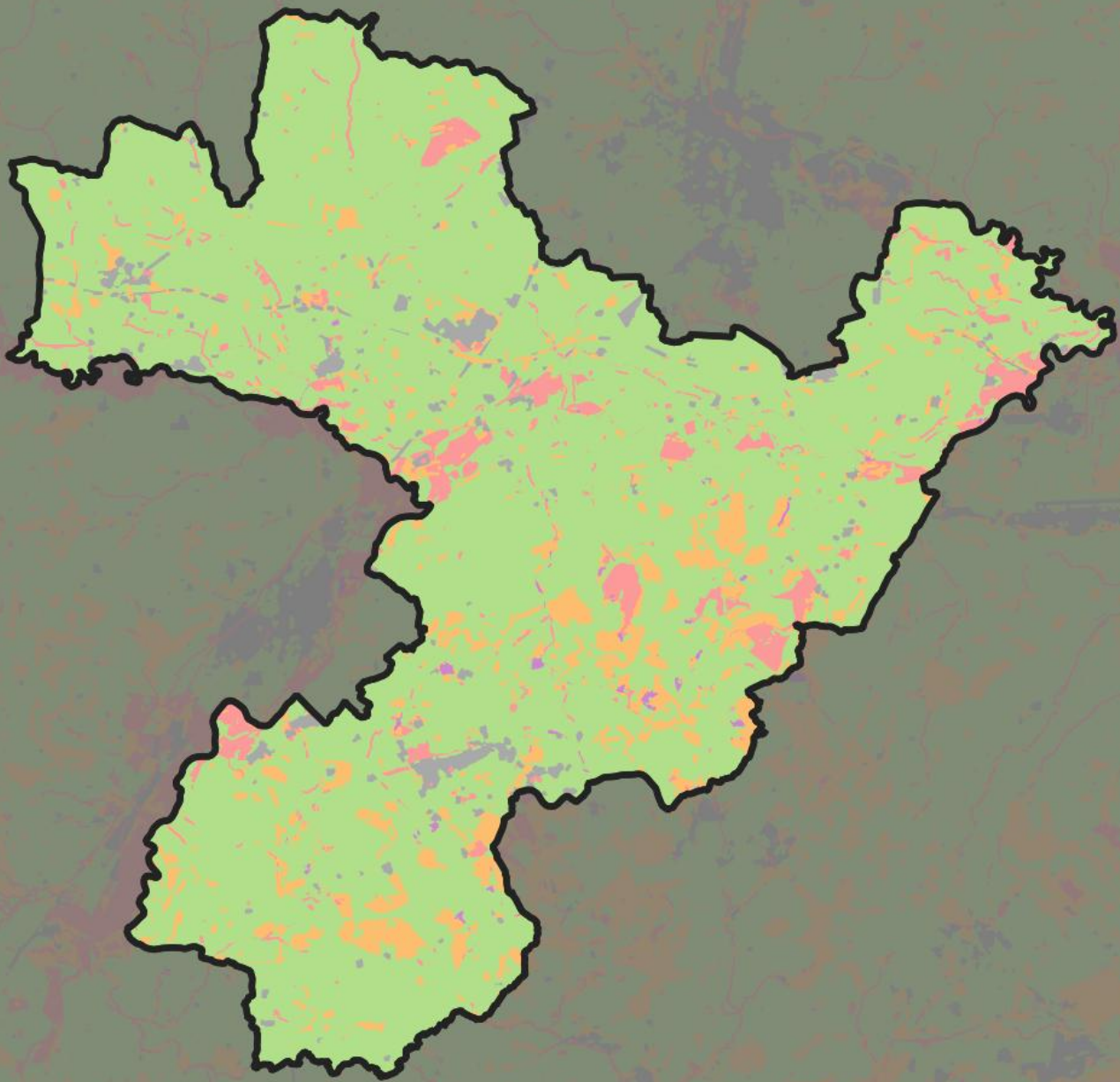
80 - 90



90 - 100

Habitat Distinctiveness Mapping

The following map provides an assessment of the inventory's habitat distinctiveness. This gives an overview of the areas most suitable for habitat creation or enhancement, particularly through the Biodiversity Net Gain (BNG) system. As the map clearly shows, the majority of the district is of low distinctiveness, owing to the abundance of agricultural land, and therefore offers plenty of scope for habitat creation. Areas shown as orange (Moderate distinctiveness), are of ecological value but with good potential to enhance existing habitats. Depending on the units required and available funding, this will not always be suitable for the BNG system but does highlight areas where enhancements through partnership projects e.g. grassland enhancement, or habitat restoration e.g. PAWS conversion, should be prioritised. Areas shown in red on the map are of high distinctiveness and would not be suitable for use in the BNG system.



0 1 2 3 4 5 6 7 8 9 10 km

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Habitat Distinctiveness

Legend

 South Derbyshire Boundary

Distinctiveness

 V.High

 High

 Medium

 Low

 V.Low

Habitat Network Modelling

Grassland Network

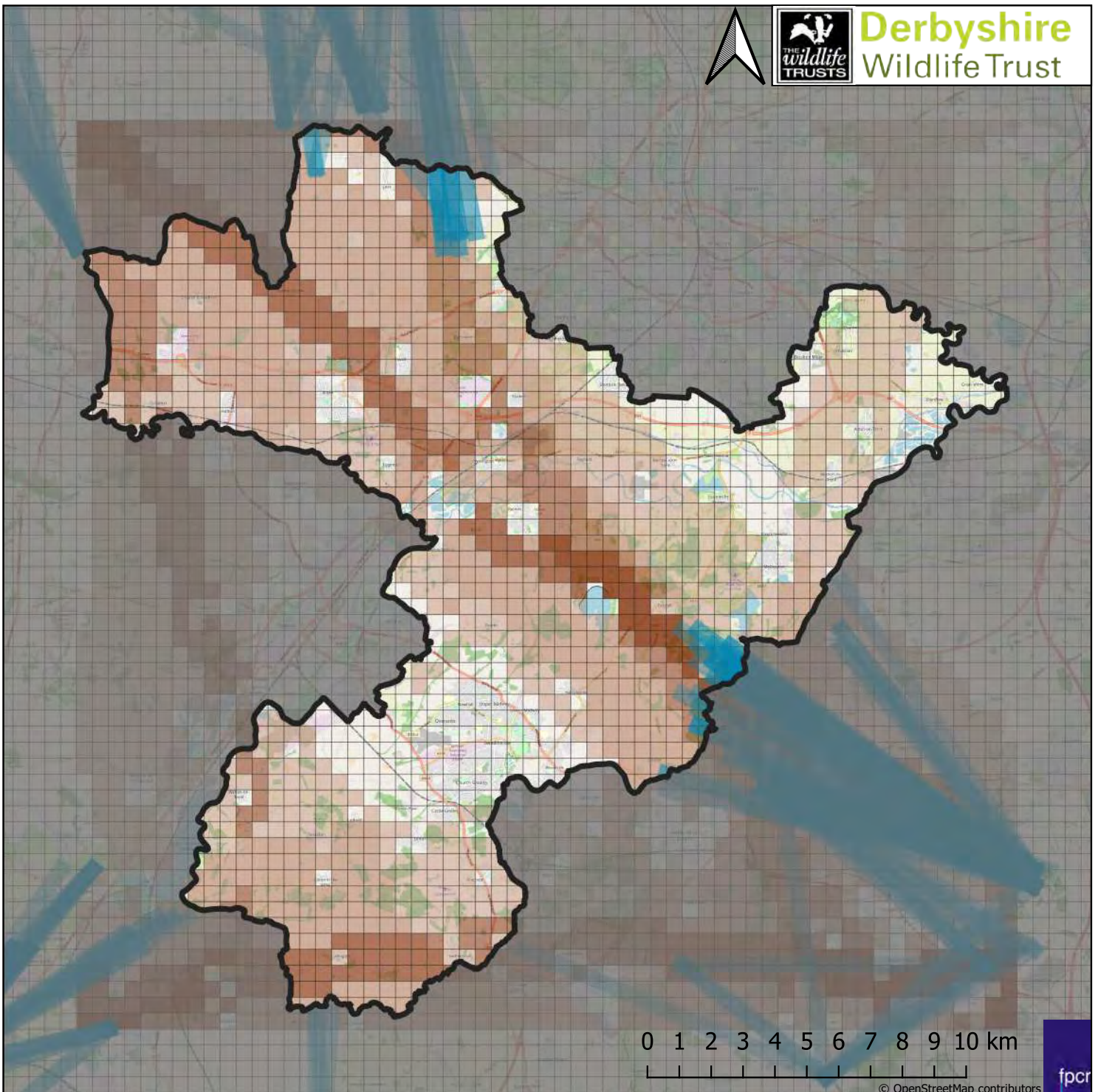
Habitat Connectivity and Bottlenecks

The Condatis modelling for grassland habitat is of lower accuracy than the woodland or wetland networks given the grassland data; the CEH Land Cover mapping cannot differentiate between modified grassland and neutral/acid/calcareous grassland with ecological interest. The modelling was based solely on priority habitat grasslands from Derbyshire Biological Records Centre and therefore a number of unidentified grasslands that still provide habitat connectivity and species dispersal will have been omitted. Including modified grasslands within the modelling, given the abundance of agricultural land, provides an inaccurate map so this data was removed. Without more widespread habitat survey data for the district this is the most meaningful output, however, its limitations should be kept in mind.

The model indicates that to increase the flow of grassland species through the landscape in both North-South and East-West directions, the areas around Calke and Foremark offer the greatest habitat creation opportunity. The River Mease catchment area ranks high for opportunities to increase East-West dispersal, while the North-South dispersal would benefit from increased grassland resource around the Burnaston and Radbourne areas and linking to Kedleston Park beyond the district boundary. There are two main bottleneck areas for grassland species dispersal; Calke Park and Radbourne Park. These grasslands are of greater importance because they offer a core grassland habitat within an area of limited grassland supply. This makes them very vulnerable and any loss or degradation would severely impact species population health and dispersal. Grassland creation or enhancement is of high strategic importance around these existing grassland areas to increase stability and resilience of the habitats and species populations.


Strategic Significance

Using habitat cover, connectivity and buffers, the mapping highlights the most strategically beneficial habitat creation or enhancement areas would be around Calke Park and Staunton Harold reservoir, the outskirts of Swadlincote, along the Trent Valley, particularly around Willington and Witch's Oak water and around Radbourne Park and Drakelow. There are smaller, more fragmented strategic areas, however, those that increase the grassland resource of existing larger habitat areas would be a priority as they offer greater value to the overall habitat network.



Grassland - Bottlenecks and Opportunities

Legend

 South Derbyshire Boundary

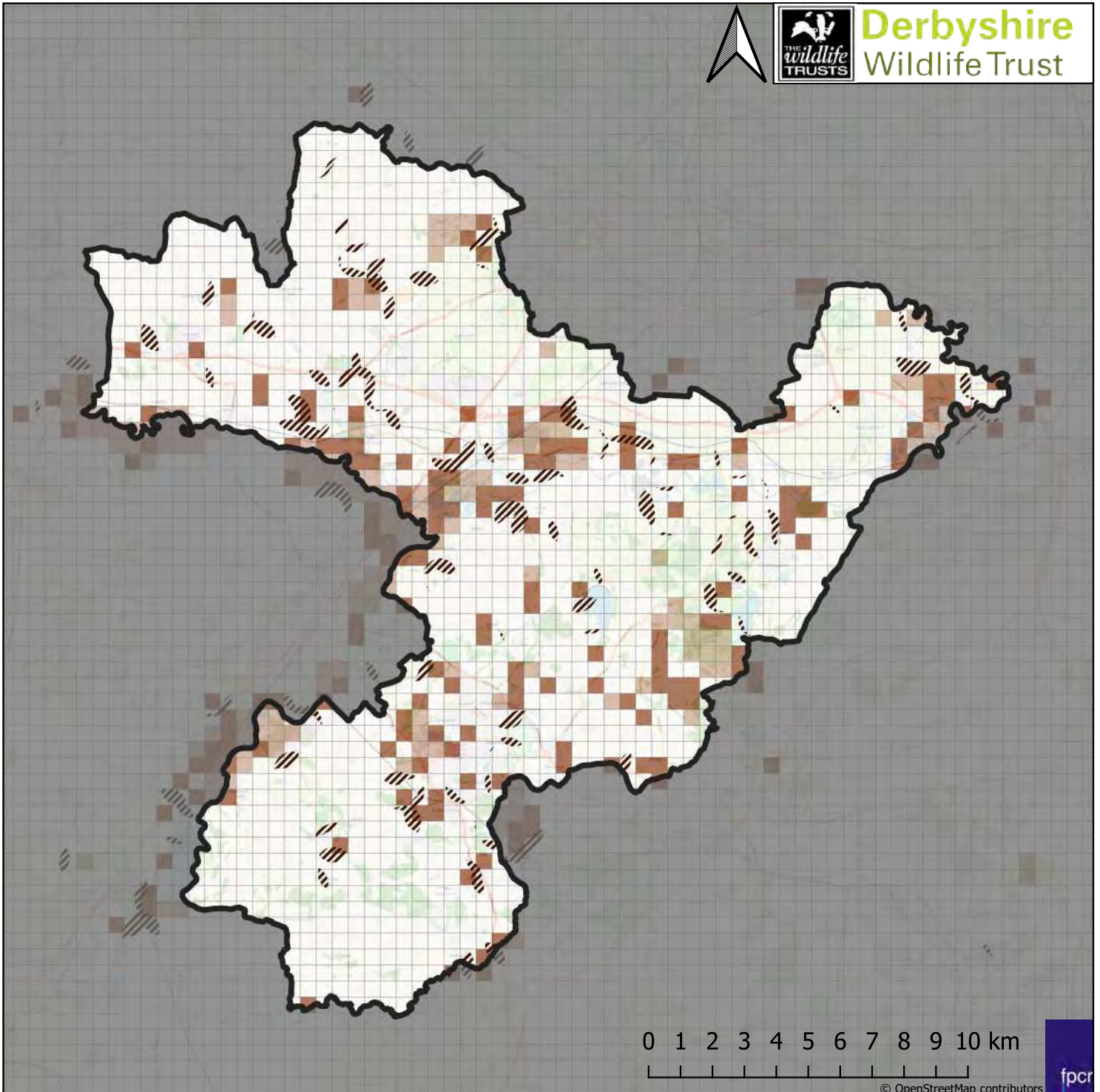
 Condatis Bottlenecks

Opportunity Rank

 Low

 Moderate

 High



Grassland - Strategic Significance

Legend



South Derbyshire Boundary

250m Connectivity Opportunity Areas



Areas Lying Between 250m and 500m from Grassland (Excluding Modified Grassland)

Strategic Significance



High Strategic Significance (5-20% Cover)



Moderate Strategic Significance (>20% Cover)



Not Strategically Significant (<5% Cover)

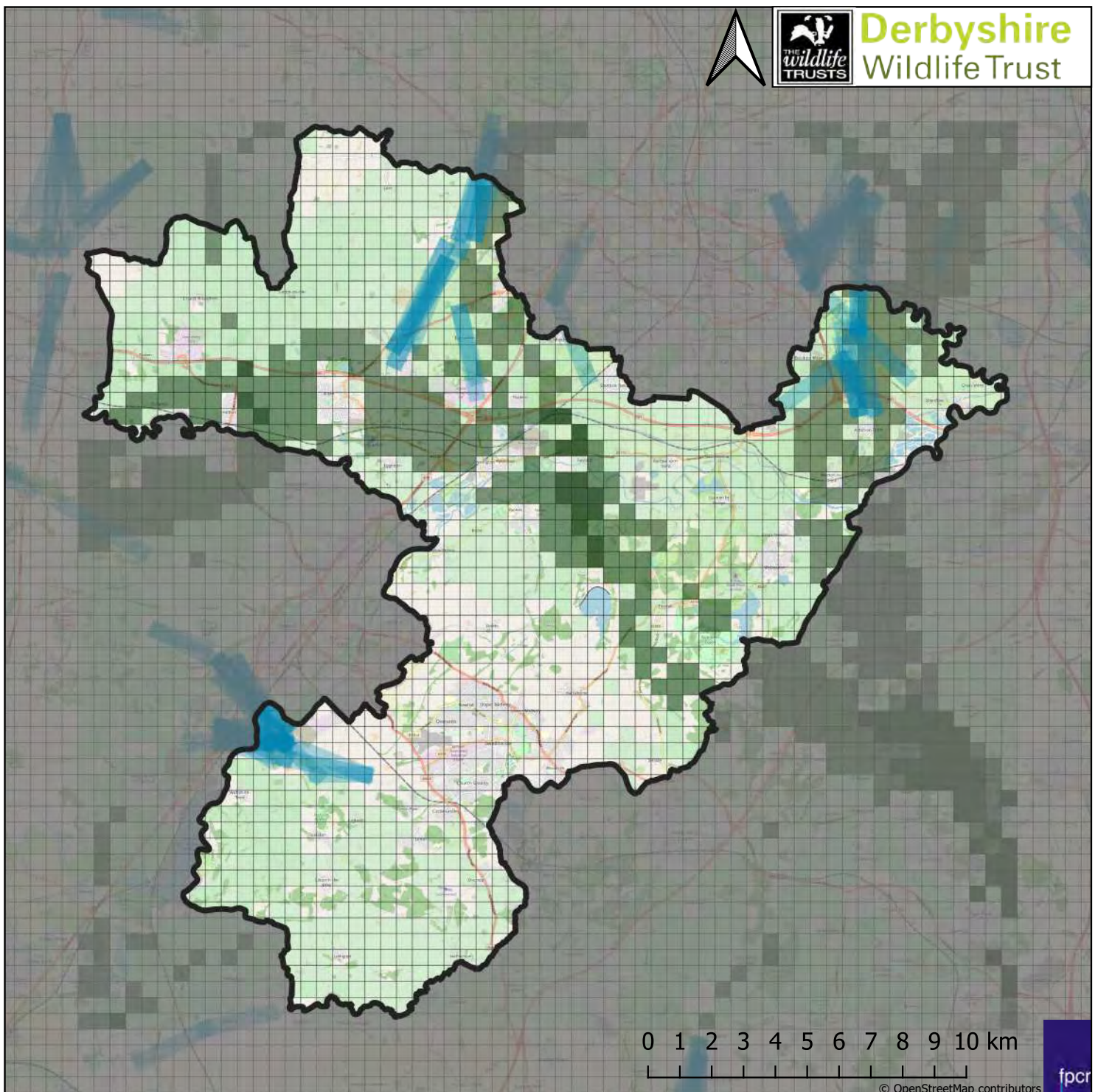
Woodland Network

Habitat Connectivity and Bottlenecks

The model indicates that to increase the flow of woodland species through the landscape in both North-South and East-West directions, the areas around Swarkestone Quarry extension, Foremark, Milton and Twyford offer the greatest habitat creation opportunities. Broadly speaking, East-West connectivity is prioritised along the Dove Valley and through the National Forest, while North-South flow focuses on connecting the National Forest either side of Derby city to Locko Park and Kedleston Park beyond the district boundary. A long-term aim of connecting the National Forest with woodlands along the Derwent Valley and eventually to the Northern Forest would create landscape scale connectivity and ensure viable habitats for species such as Pine Martin. There are three main bottleneck areas for woodland species dispersal; Drakelow, Elvaston and Radbourne Park. These woodlands are of greater importance because, as woodland is a relatively restricted resource in these areas, the loss or degradation through chance environmental events, inappropriate management or land use changes, may seriously hinder or prevent the flow of woodland species through the wider landscape. It is therefore, especially important to augment the existing resource around these areas to increase stability and resilience of the habitats and species populations.


Strategic Significance

There are many areas identified as being strategically significant for woodland creation, which shows the abundance of woodland in the district. However, the modelling highlights that many of these sites are fragmented and habitat creation is required to fill the gaps and improve connectivity. The main larger blocks of strategic habitat creation opportunities exist around Toyota, Willington, Swarkestone Bridge, Walton Woods and Witch's Oak water. Much of the moderate strategic woodland creation opportunities revolve around the National Forest and linking the smaller woodlands. This is one of the main objectives of the National Forest Company, however, significant landowners are likely to be key players in any landscape scale habitat creation including Severn Trent, National Trust, Woodland Trust and Forestry England.



Woodland - Bottlenecks and Opportunities


Legend

 South Derbyshire Boundary

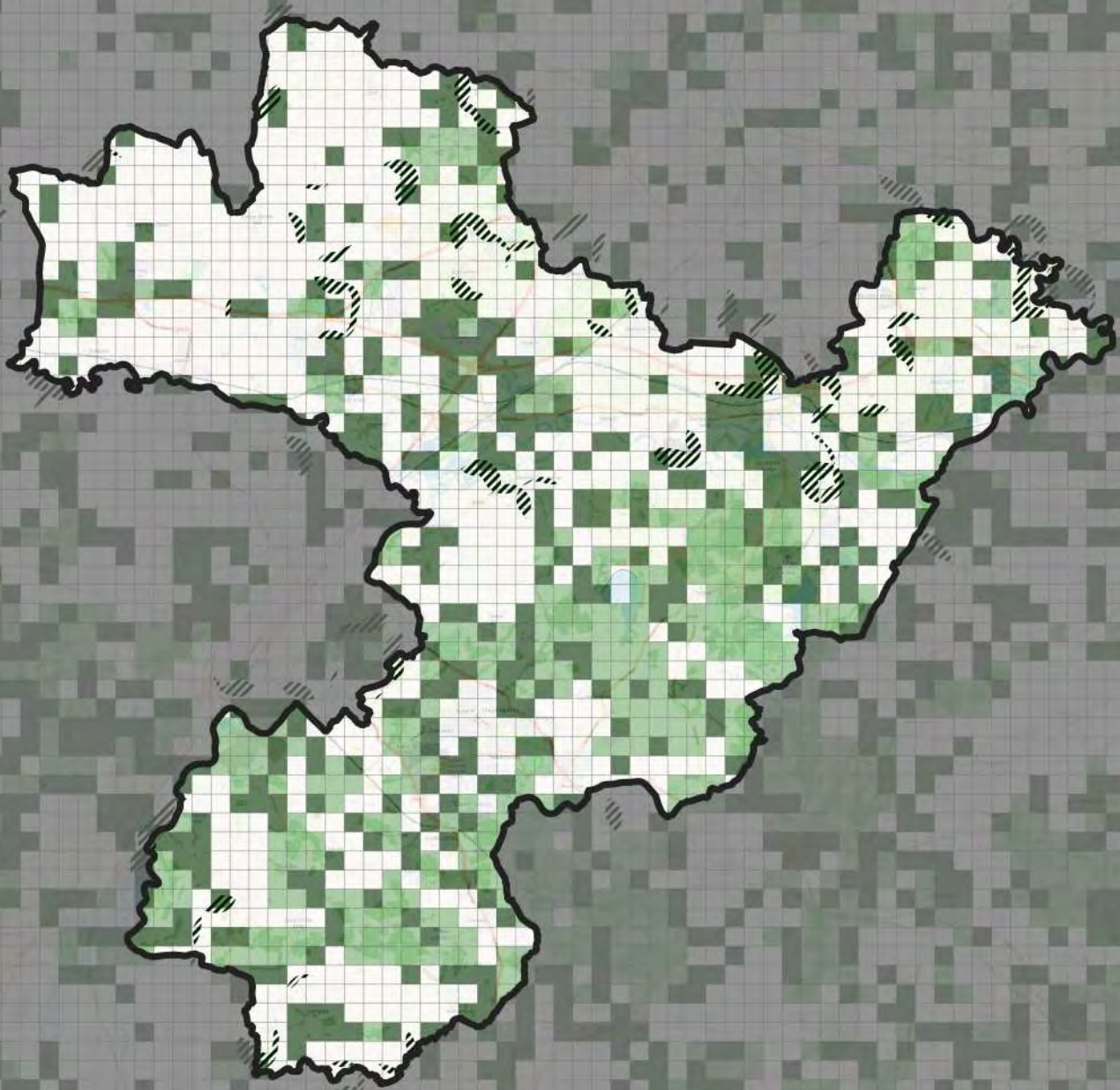
 Condatis Bottlenecks

Opportunity Rank

 Low

 Moderate

 High



0 1 2 3 4 5 6 7 8 9 10 km

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Woodland - Strategic Significance

Legend



South Derbyshire Boundary

250m Connectivity Opportunity Areas



Areas Lying Between 250m and 500m from Woodland

Strategic Significance



High Strategic Significance (5-20% Cover)



Moderate Strategic Significance (>20% Cover)



Not Strategically Significant (<5% Cover)

Wetland Network

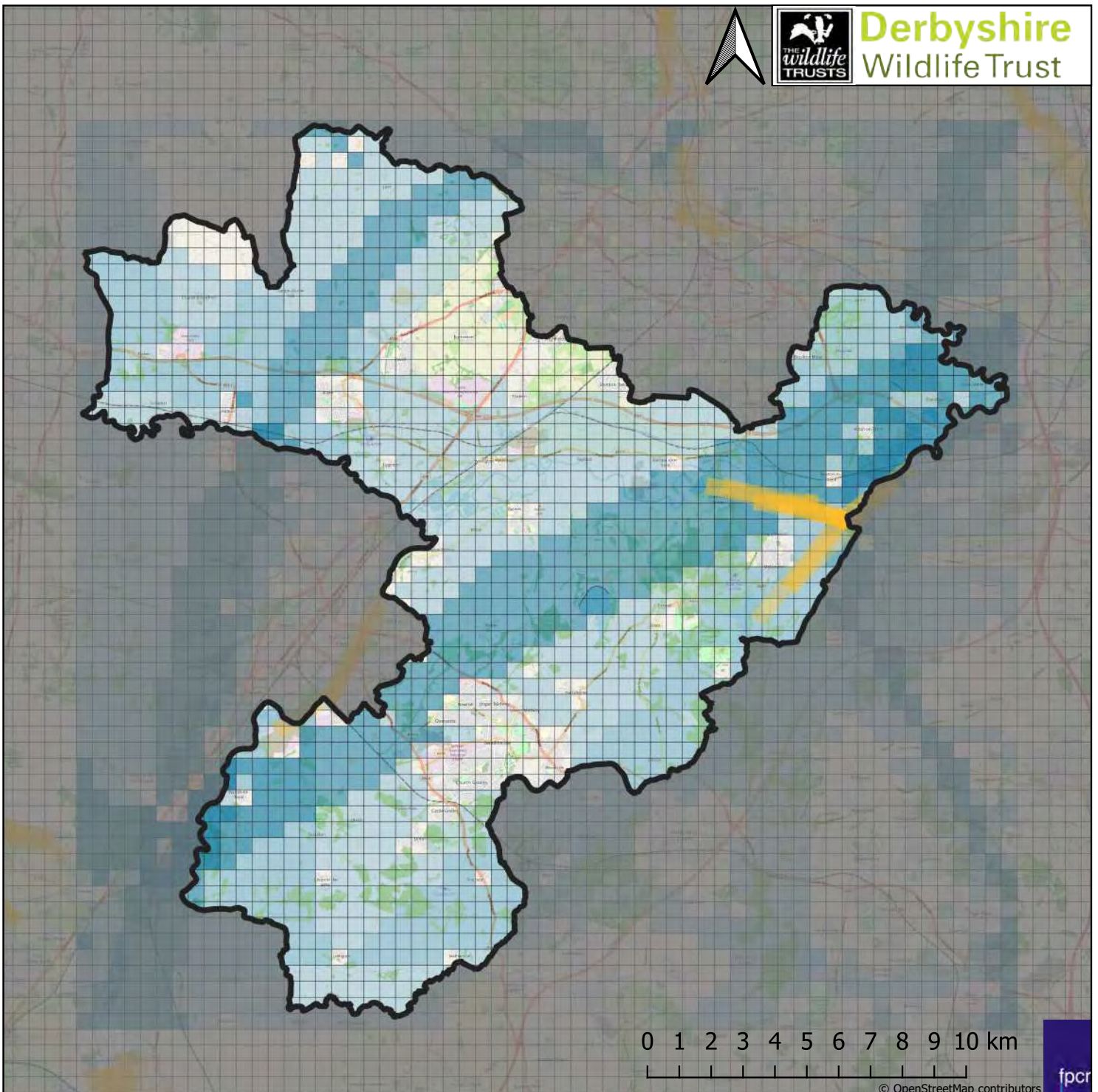
Habitat Connectivity and Bottlenecks

The model indicates that to increase the flow of wetland species through the landscape in both North-South and East-West directions, the areas around the River Trent at Barton-under-Needwood Quarry, Witch's Oak water and Elvaston Quarry offer the greatest habitat creation opportunity. There is one main bottleneck on the River Trent where it exits the district east in to North-West Leicestershire and a smaller bottleneck on the Staffordshire boundary on the River Trent near Drakelow. These wetland areas are of greater importance because any degradation may prevent the flow of wetland species through the wider landscape. It is therefore, especially important to enhance riparian habitats along these sections of rivers to increase stability and resilience of the habitats and species populations.

Strategic Significance


The strategically significant areas for wetland habitat restoration or creation are, unsurprisingly, along the River Dove, River Trent and River Derwent. Strategic mineral extraction and subsequent restoration along the Trent Valley provides a key opportunity for this. Furthermore, extension of habitats around major waterbodies including Foremark reservoir, Staunton Harold reservoir and Swadlincote golf course offer high strategically significant areas for wetland habitat creation. Creation of ponds around these sites would act as stepping stones to smaller waterbodies in the wider landscape.

The assessment of strategic significance using the buffer method shows a number of areas that would be suitable for habitat creation. Many of these are in areas where the wetland habitat is not large enough to be picked up in the percentage cover (less than 10% cover) therefore likely to represent ponds. Focusing pond creation in these hatched areas would provide vital stepping stone ponds for species such as Great Crested Newts and could be looked at for use in the district level licencing.



Wetland - Bottlenecks and Opportunities

Legend

 South Derbyshire Boundary

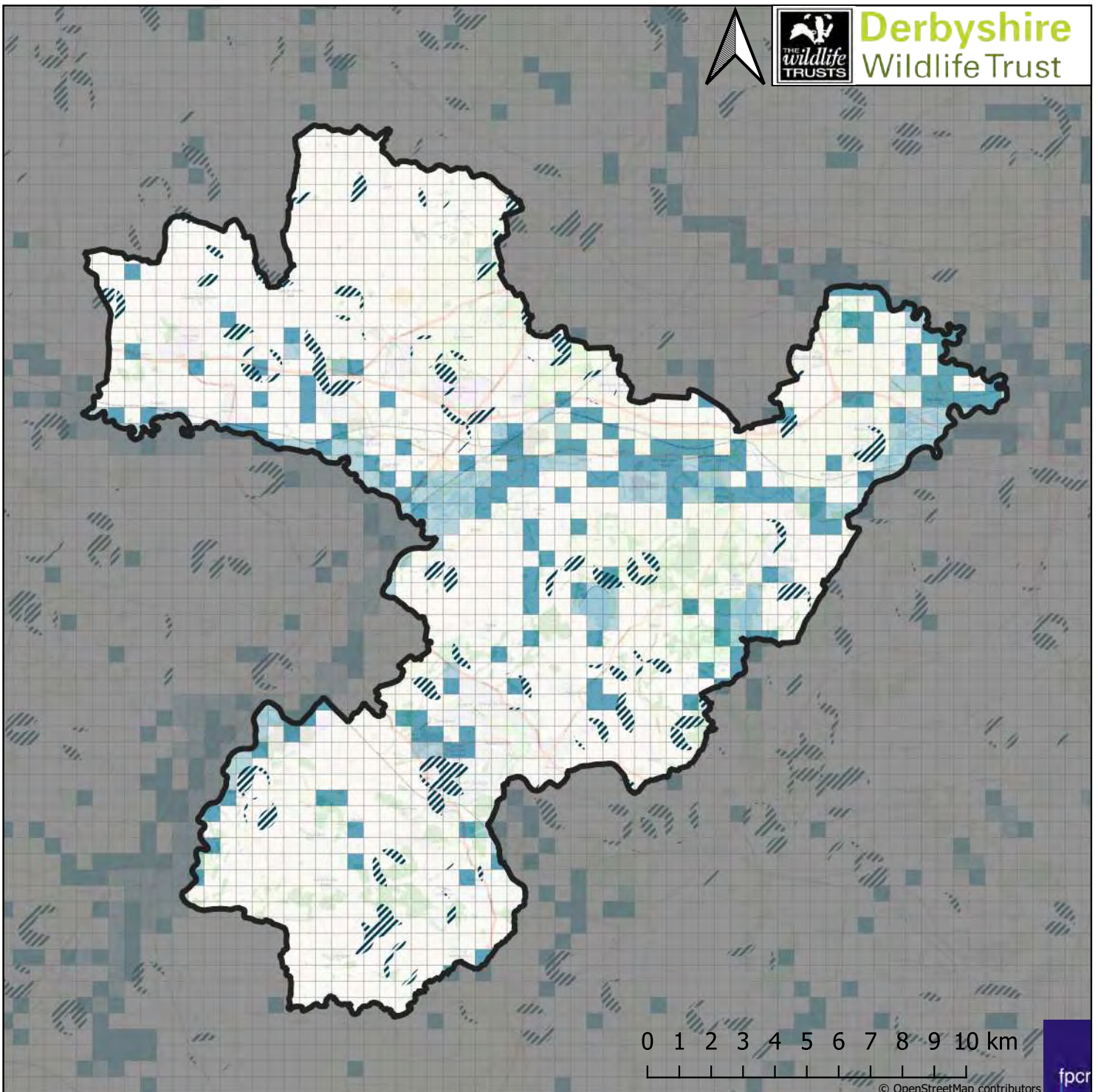
 Condatis Bottlenecks

Opportunity rank

 Low

 Moderate

 High



Wetland - Strategic Significance

Legend



South Derbyshire Boundary

250m Connectivity Opportunity Areas



Areas Lying Between 250m and 500m from Wetland

Strategic Significance



High Strategic Significance (5-20% Cover)



Moderate Strategic Significance (>20% Cover)



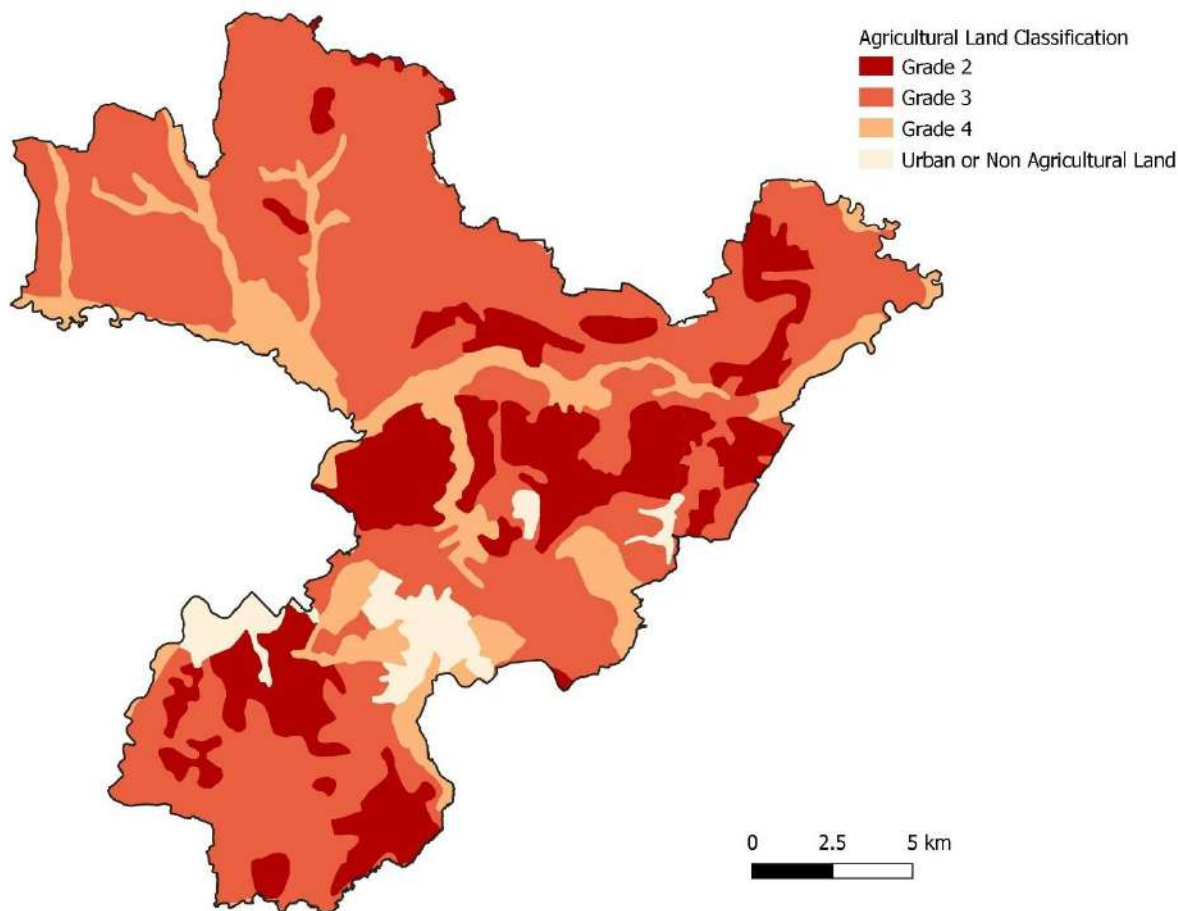
Not Strategically Significant (<5% Cover)

Agricultural Land Classification

The quality of land for agriculture is a determining factor when considering strategic spatial opportunities and the likelihood of sites to be released for Biodiversity Net Gain enhancements. The Agricultural Land Classification system classifies land into five grades according to the extent to which physical or chemical characteristics impose long term limitations on a site for food production. Factors include climate (temperature, rainfall, aspect, exposure, frost risk), site (gradient, micro-relief, flood risk) and soil (depth, structure, texture, chemicals, stoniness).

- Grade 2: Very good quality agricultural land
- Grade 3: Good to moderate quality agricultural land
 - Subgrade 3a: Good quality agricultural land
 - Subgrade 3b: Moderate quality agricultural land
- Grade 4: Poor quality agricultural land

Figure 7: Agricultural Land Classification



Grades 1 to 3a are classified as Best and Most-versatile land and the National Planning Policy Framework guidance prioritises keeping these areas for agricultural production. The classification identifies the areas of poor agricultural land (Grade 4) predominantly in the flood zones of the major watercourses and their tributaries including the Trent Valley, Dove Valley and Derwent Valley, with Foston Brook, Bent Brook, Sutton Brook, Etwall Brook, Hilton Brook and Repton Brook. Where agricultural land is less productive there is a higher likelihood of uptake of the BNG system by farmers. This would provide a number of vital ecosystem services such as reduced flood risk, reduced erosion and sedimentation and cleaner water, as well as enhanced habitats and biodiversity along a strategic connective corridor.

Network Opportunities

The habitat mapping and modelling clearly displays the locations within the district that would be strategically significant for habitat creation or enhancement. The summary table below provides an analysis of the baseline data and habitat modelling to show the strategic opportunities that should be prioritised going forward.



Table 6: Network Opportunity Summary

	Broad Habitat		
	Grassland	Woodland	Wetland
Key Habitats	Lowland meadows, road verges, field margins, gardens, woodland rides, habitat mosaics on brownfield sites	Woodland, scrub, hedgerows, veteran trees, urban tree planting	Rivers, streams, ponds, wet grassland, wet woodland, riparian zones, reedbed
Key Species	Dingy skipper Grizzled skipper	Oak polypore Dormouse (R) Pine martin (R)	Great crested newts White clawed crayfish (WCC) Otter Water vole Beaver (R)
Threats	Agricultural intensification, development, poor/ lack of management	Non-native invasive species, pest and diseases, intensive hedgerow management or removal of hedgerows for development or agriculture,	Mineral extraction, development, agricultural run-off, non-native invasive species, increased flood events, poaching, soil erosion and sediment run-off.
Opportunities	<ul style="list-style-type: none"> Continue to identify LWS's and encourage landowners to carry out conservation management. Ensure up-to-date management plans are written and regularly reviewed. Talk to farmers about increasing field margin size. Assess grassland parcels for their potential for restoration, or the creation of wildflower 	<ul style="list-style-type: none"> Encourage the creation of woodland for parcels that form the network, either through BNG scheme or tree planting under the Woodland Creation grant. Talk to farmers about appropriate hedgerow management (including timing) and allowing a margin of unmanaged land for scrub growth. 	<ul style="list-style-type: none"> Mineral site restoration. Increase the use of SUDS through planning system. Use BNG or developer contribution from the River Mease SAC to acquire or change management of a 20m buffer from the SAC and tributaries. Encourage farmers to fence rivers and streams to prevent

South Derbyshire District Action Plan for Nature

	<p>meadows on agricultural land under the BNG scheme.</p> <ul style="list-style-type: none"> • Review management policies of road verges and amenity areas. • Encourage developers to use green roofs and green infrastructure in new developments using BNG and changes to council policy. • Encourage residents to change lawn management to allow wildflowers to flower and set seed, using the 'Team Wilder' project as a spring board for engagement. 	<ul style="list-style-type: none"> • Encourage PAWS restoration as soon as financially viable. 	<p>erosion and run-off from grazing animals.</p> <ul style="list-style-type: none"> • Work with partners to eradicate signal crayfish and increase WCC ark sites.
Key partnerships/ stakeholders	<p>Derbyshire Wildlife Trust Farmers Parish Councils</p>	<p>National Forest Company Forestry England Woodland Trust National Trust Farmers</p>	<p>Trent Rivers Trust Environment Agency Severn Trent Derbyshire Wildlife Trust</p>
Key ecosystem services	<p>Crop pollination, carbon storage, health and wellbeing</p>	<p>Flood reduction, carbon storage, health and wellbeing</p>	<p>Flood reduction, water quality, health and wellbeing</p>
Key areas for strategic creation or enhancement	<ul style="list-style-type: none"> • Outskirts of Swadlincote town • Trent Valley particularly around Willington • Radbourne Park area • Drakelow area 	<ul style="list-style-type: none"> • National Forest • Trent Valley – particularly Toyota, Willington and Swarkestone Bridge 	<ul style="list-style-type: none"> • Trent Valley, Dove Valley and Derwent Valley • Extension of habitats around major waterbodies including Foremark reservoir, Staunton Harold reservoir and Swadlincote golf course

South Derbyshire District Action Plan for Nature

Bottleneck areas	Radbourne Park Calke Park	Drakelow Elvaston Radbourne Park	River Trent - Swarkestone Bridge and Donnington. Drakelow
Key areas for increasing species dispersal (relieving bottlenecks)	Calke Park Foremark	Swarkestone Quarry extension Foremark Milton Twyford	Witch's Oak water Elvaston Quarry Dove Valley (key areas in Staffs.)

Biodiversity Gaps and Opportunities

Gaps in biodiversity can be separated into three areas; spatial gaps in habitats and species, gaps in the provision of overall habitats and gaps in the condition of existing habitats.

Habitats and Species

There are major gaps in the provision of important habitats that have been reduced, lost or fragmented due to development or intensification of agriculture. A number of habitats have been identified as being priority for expansion within the district. Likewise, key species that are threatened by habitat loss and/or degradation and declining within the district are highlighted as a priority for action. The tables below show these priority habitats and species for the district which have been reviewed and summarised from each of the Local BAP action areas.

Table 7: Priority Habitat expansion targets

Habitat Creation	South Derbyshire Areas			District Wide Total
	Trent and Dove	National Forest	The Claylands	
Deciduous woodland	—	150 ha	20 ha	170 ha
Lowland meadow	14 ha	20 ha	15 ha	49 ha
Ponds	25 ponds	25 ponds	—	50 ponds
Orchard	1 site	10 sites	10 sites	21 sites
Wet woodland	8 ha	8 ha	—	16 ha
Reedbed	15 ha	—	—	15 ha
Hedgerows	—	7 ha	7 ha	14 ha
Floodplain grazing marsh	—	10 ha	—	10 ha
Dry acid grassland	—	5 ha	5 ha	10 ha
Rush pasture	5 ha	—	—	5 ha
Heathland	—	0.5 ha	—	0.5 ha
Wood pasture and parkland	—	1 site	—	1 site

Table 8: Priority Species range expansion

Species	South Derbyshire Areas			Range expansion method
	Trent and Dove	National Forest	Claylands	
Great crested newt	Y	Y	Y	Pond creation
Otter	Y	Y	Y	Habitat enhancement
Water vole	Y	Y	Y	Mink control
Dingy skipper	—	Y	Y	Habitat enhancement
Grizzled skipper	—	Y	—	Habitat enhancement
Dormouse	—	Y	—	Reintroduction programme
White-clawed crayfish	—	Y	Y	Creation of ark sites
Oak polypore	—	Y	Y	Veteran tree protection and management
Beaver	Y	—	—	Reintroduction programme
Pine Martin	—	Y	—	Potential future reintroduction programme

These tables provide a useful assessment of the types of habitats that should be being considered for enhancement and creation within any future projects. This, combined with the habitat modelling, gives a broad but strategic overview of what and where conservation work should focus.

However, one factor not picked up by the modelling is the existing condition of core sites. The Lawton principle strives to ensure that the existing valuable habitats are in **better** condition before considering making habitats **bigger, more and joined up**. This is a failing of new schemes such as BNG and there is often a lack of funding and resources for appropriate management of these sites resulting in degraded habitats.

Recreational Facilities

A number of SDDC managed land parcels have community and recreational value and significant changes to their management for nature conservation purposes is not feasible. However, changes to council procedures to reduce mowing regimes, where viable, should be made a priority. Management recommendations that can be implemented on small areas of land surrounding playgrounds, playing fields or sport pitches would add up to make a huge overall biodiversity improvement. Recommendations for these areas are shown in Table 9.

Table 9: General management recommendations for SDDC recreation sites

Management recommendation	Biodiversity enhancement	Ecosystem service
Reduce mowing regime wherever feasible to a two-cut management approach (March and September to allow wild flowers to seed).	Wild flower and insect species diversity.	Improved crop pollination, improved carbon storage and water holding capacity (due to increase surface roughness).
Native tree planting. Consider fruit trees or Miyawaki woodlands for small and/or urban areas.	Species diversity, mainly insects and birds.	Carbon storage, improved crop pollination, soil health, water holding capacity.
'Rewilding' – small corners of sites left unmanaged to increase scrub cover and to create ecotones between different habitats.	Diversification of habitats and species.	Carbon storage, improved crop pollination.
Dig small scrapes to create ephemeral shallow pools.	Species diversity, mainly insects and amphibians.	Water storage – flood reduction.
Create habitat piles – small compact piles of logs, twigs, moss, leaves or the by-products from habitat management activities.	Creation of microhabitats suitable for moss/fungi growth and hibernacula or shelter for reptiles, small mammals and insects.	Improved crop pollination, carbon storage.

Road Verges

With the exception of motorways and A roads, road verges are managed by the district or parish councils through agreements with Derbyshire County Council. They provide important habitat for grassland species, with 45% of plant species supported by this habitat. With thousands of miles of rural roads in the district, verges provide a great opportunity to increase valuable habitats for wildlife, pollination, flood reduction, pollution reduction and mental wellbeing.

Two smaller road verges have been formally recognised as being of biodiversity interest in South Derbyshire district and non-statutorily designated as road-side nature reserves. These are at Rosliston (RV32) SK3242172 and Staunton Lane (RV33) SK350350, detailed in Appendix F.

Although only two verges have been formally recognised, there are likely to be many more that are of current biodiversity value and have not been identified, or that have the potential to provide high biodiversity value through small changes in management. General conservation management principles can be applied to all council managed road verges where there is good road visibility. Where verges require additional cutting for visibility purposes, cutting frequency and area should be minimised. The following general management principles should be adopted within the Councils policy.

Road Verge Management Principles

- Undertake a full cut in late-Feb/ March prior to the nesting bird season. Increasing the height of cutter bar slightly will also lower the risk to small mammals and amphibians.
- Allow wildflowers to set seed prior to the second annual cut in September/ October.
- Ensure all arisings are collected and removed, either off-site or to a sacrificial area of the verge to create a compost or habitat pile. This prevents nutrient enrichment and increases botanical diversity.
- Where additional cuts are required for safety purposes, cuts should avoid the main flowering period (July-Aug) where possible.
- All verges should be monitored for litter and litter picks undertaken where necessary to reduce the risks to wildlife and increase the aesthetical value of the verges. Where it is safe to do so, it might be possible to engage local residents in volunteer litter picks.

Opportunities for Habitat Creation and Enhancement

Mineral Extraction

Within the NPPF the continued extraction of mineral resources is of national importance; the Local Aggregate Assessment has identified the need for 19.62 million tonnes of sand and gravel from Derbyshire between 2019 and 2036. There are already permitted reserves of 8.85 million tonnes and additional provision will have to be made for around 10.77 million tonnes. All of the proposed sites are located within South Derbyshire, along the Trent valley floodplain. Whilst the extraction of minerals is likely to cause loss of habitats and potential operational impacts on wildlife, these will need to be appropriately mitigated and compensated as part of any planning application.

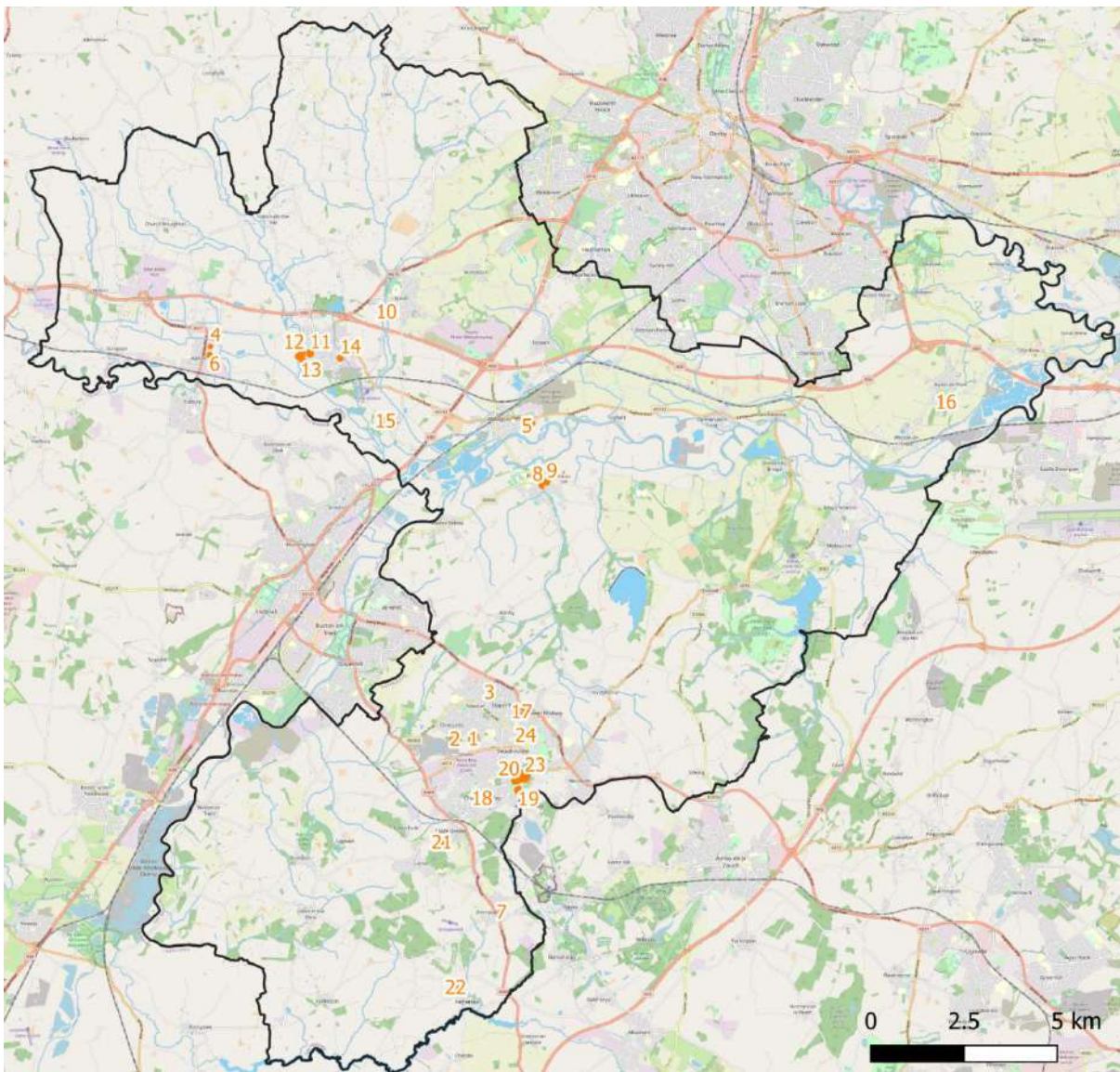
Through the incorporation of minerals sites with their long-term mineral restoration plans, into the Nature Recovery Network, this should be seen as a major opportunity to restore the riparian habitats along the river that, in most cases, would have otherwise remained as low productivity pasture with no betterment for river ecology. The sites will also be subject to the planning requirement for Biodiversity Net Gain. It is likely that the metric used to quantify net gains and losses will incorporate a strategic significance multiplier, whereby the units gained receive an uplift where they occur in opportunity areas or those that are otherwise of benefit, therefore restoration to wetlands, as identified in the wetland strategic mapping, would deliver higher BNG units. There is great opportunity for partnership working on these sites, particularly where they sit adjacent to existing nature reserves and can expand and connect the network of well-managed sites. Site specific opportunities have been identified on Figure 9 in the Stakeholder Consultation section.

Local Green Spaces and Council Managed Land

The majority of Local Green Spaces are owned and managed through the parish or district councils and therefore there is a high degree of control over their protection and potential enhancement. These sites are seen to provide a high priority opportunity for the registration for Biodiversity Net Gain. Through the council policy LGS2: Enhancement of Local Green Space, *“the Council will work positively with stakeholders to ensure the appropriate management of local green spaces. Opportunities will be sought to enhance local green spaces that could include: Improvements to the long-term management of spaces through changes to site management regimes and the development of site management plans; ...registration of local green spaces as ‘receptor sites’ with the Environment Bank (or other provider) to allow financial contributions to be used to compensate for impacts on development sites elsewhere through habitat creation or management.”*

A number of sites have been identified as having potential to be suitable Biodiversity Net Gain receptor sites given the lack of recreational facilities, designations for nature conservation or proposed planning applications. The majority of these sites are either owned or managed by SDDC or currently adopted/ proposed to be adopted on the Local Green Space plan. Given the nature of these sites, being small (under 4ha) and located within urban settlements, they provide a good opportunity to enhance the stepping stones sites that wildlife relies on. A number of these have undergone a baseline assessment to ascertain their enhancement suitability. An overview of sites is provided in Figure 8 and Appendix F. Sites providing some enhancement potential have been assessed with the results provided in Appendix G. Those with little to no potential for enhancement have not been included but full survey results are available on request.

Figure 8: SDDC land with BNG potential



Brownfield Sites

Brownfield sites are often high priority for re-development as they offer available and accessible land in urban areas, with existing facilities such as roads and shops. There is often pressure to 'tidy' these sites to prevent fly-tipping or anti-social behaviour and are favoured, in national and local planning policy, over greenfield sites to prevent urban sprawl. However, where brownfield sites have been disused for a number of years they are often of high biodiversity value, particularly for species requiring a mosaic of habitats. The lack of fertilisers and thin soils make them a haven for diverse plant communities, with the abundance of invertebrates, amphibians, reptiles, bird and mammals that is associated with these diverse habitats. Conversely, many greenfield sites are intensively managed agricultural land of little biodiversity value.

Many brownfield sites are allocated in the Local Plan. However, a shift in opinion and policy surrounding these sites would be beneficial to protect the habitats and their contribution to the wider biodiversity network. It is recommended that, where brownfield sites have existing biodiversity interest, such as those that qualify habitats of principle importance as *open mosaics on previously developed land*, there redevelopment should be carefully considered, if not avoided, although this should be informed by up-to-date baseline survey work. If left to nature these sites can offer the important 'stepping stone' habitats for wildlife, as well as reducing flood risk and improving pollination. They also provide a great opportunity to increase the number and accessibility of open green spaces, contributing to improved mental health and well-being.



Funding Opportunities

Biodiversity Net Gain

Biodiversity Net Gain provides access to funding from developers to create or enhance habitats and put them into long-term management. When choosing sites to include in BNG schemes priority should be given to those that are strategically positioned within the habitat network, to increase the core site connectivity. The types of sites listed in Table 11 are likely to be the most feasible and/or achieve the largest biodiversity gain.

Table 11: Potential Net Gain sites

Sites	Justification	Practical application
SDDC owned sites	Sites are already in ownership and can be put into long-term management. (BETTER)	Ensure the cost of land is taken into account in BNG project costs to ensure continued acquisition of land for BNG.
LWS's / pLWS's	Ensures LWS's / pLWS's are in appropriate long term management. (BETTER)	Increase capacity for LWS survey to ensure continued and regular monitoring of sites. Carry out BNG assessment alongside LWS survey to create a bank of suitable projects.
Private farm land	The largest gains can be made from agricultural land as it has low baseline units. Farmers will often receive more financial incentive than Countryside Stewardship schemes, although this may change with the move to new agri-environment schemes. (MORE)	Put an 'expression of interest' call out to farmers. DWT and other landowner stakeholders to talk to adjoining farmers about the potential to acquire land or encourage BNG. (BIGGER)
	Poor agricultural land offers potential to be adopted as it has low food production value.	
	Land where multiple benefits can be achieved such as flood reduction.	Prioritise farmland along the Trent Valley for wetland restoration.
Stakeholder sites	Existing core sites that require enhancement (BETTER) or habitat creation on agricultural parcels within the site boundary (BIGGER) .	

Payments for Ecosystem Services

Payments for Ecosystem Services (PES) is the process of users of ecosystem services providing payment to the providers of ecosystem services. There are several examples of where there is funding available for these services, shown in Table 12. Following Brexit, Defra has announced the proposed format for England's replacement for CAP based agri-environment schemes, which will be based on the principle of public funding for public goods, a type of PES scheme.

Table 12: Payment for Ecosystem Services

Funding potential	Ecosystem Service	Opportunity
NHS green prescribing	Health and wellbeing, recreation,	Green space habitat management.
Agricultural subsidies <ul style="list-style-type: none"> 1. Sustainable farming 2. Local Nature Recovery 3. Landscape Recovery 	Flood risk, water quality	Increase area and biodiversity value of habitats in agricultural areas.
FC Woodland Grants	Carbon capture	Tree planting.
Nature for Climate Fund	Carbon capture	Tree planting on community sites.
STEPS – Severn Trent Environmental Protection Scheme	Water quality	Biodiversity grants for farmers in catchment areas to reduce the environmental impact of agricultural activities.
Local Authority Treescapes fund	Carbon capture	Tree planting and natural regeneration in local communities.
Natural Environment Investment Readiness Fund	Carbon capture, water quality	Nature projects which tackle climate change, create and restore habitats, or improve water quality.

Policy Opportunities

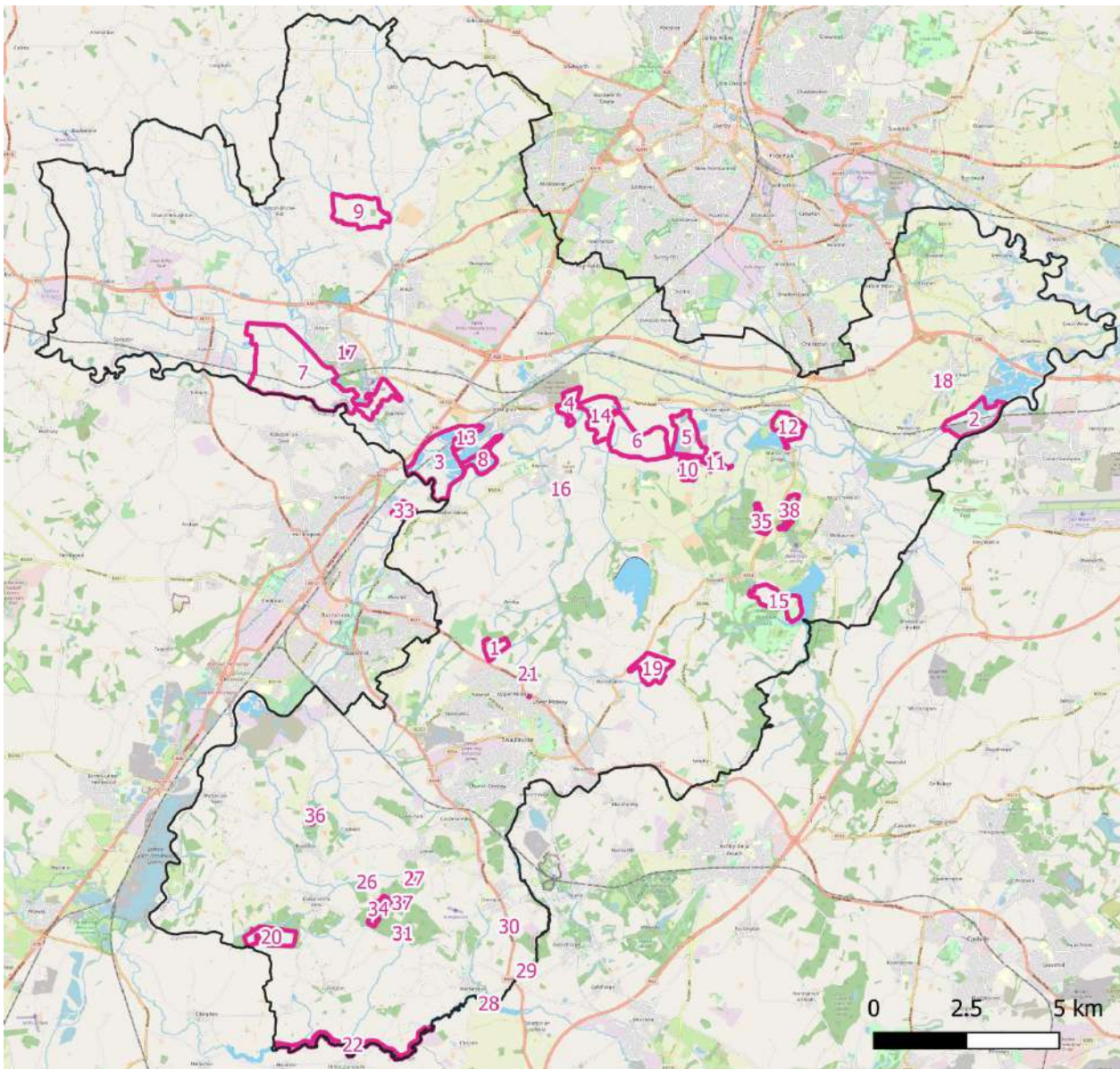
There are a number of factors that impact biodiversity and climate change that are often determined by policy and industry drivers. This is where changes to policy at a local government level could have major positive environmental impacts.

- Changes to habitat management policy e.g. mowing regimes;
- Inclusion of Blue/Green Infrastructure or Nature Recovery strategy into the Local Plan;
- Inclusion of Biodiversity Banks in local plans funded by BNG offsets/contributions from developers;
- Increase focus within the Local Plan on environmentally sustainable development using nature-based solutions;
- Inclusion of a 'wild belt' designation to provide statutory protection from development on areas recovering for nature;
- Inclusion of mandatory bird boxes/ swift bricks within all building design;
- Recognising and sharing the value of brownfield sites for biodiversity and reducing the number included within the Local Plan.

Stakeholder Consultation

The results of the stakeholder meetings have been analysed and are shown on Figure 9, with reference numbers identifying the opportunity and associated stakeholder in Appendix G. This includes opportunities identified by the author during the process of this report. There are also a number of identified opportunities that are not location specific or the location details can't be shared at this stage, as well as a small number of potential constraints identified by stakeholders, shown in Appendix I and J.

Figure 9: Stakeholder Identified Opportunities



The meetings with stakeholders identified a number of biodiversity opportunities, including existing 'on-site' biodiversity projects, adjacent landowner interest or areas likely to offer potential enhancement given the existing land use or agricultural grade. These were focused around the Trent Valley, National Forest and River Mease catchment. The meetings highlighted that the majority of landowner organisations in the district have biodiversity objectives and there are many potential projects, however, a lack of funding and resources often meant these were not prioritised. The biodiversity projects that are undertaken are often, understandably, driven by finance and feasibility, rather than strategically planned. The opportunities identified were mostly focused around making stakeholder sites better and highlighted little cross boundary working, for obvious and understandable reasons. However, this will mean there are always relatively small pockets of good habitat with abrupt boundaries, lack of ecotones and limited connectivity. While partnership working was highlighted with most stakeholders, it is clear that landscape scale conservation would benefit from much more collaborative working than is currently the case. With landscape partnerships working together towards the same strategic Nature Recovery Network, it is much more likely to be achieved.

Potential Challenges

It is recognised that we are in uncertain times politically and environmentally, with Brexit, the Environment Bill, the climate crisis and a world-wide pandemic causing major disruption to our natural world. Some of the challenges that are likely to have an impact on the recovery of nature in South Derbyshire and implications on local planning are highlighted below.

Biodiversity Net Gain

The mandatory requirement of 10% Biodiversity Net Gain in the upcoming Environmental Bill presents huge opportunities for the Nature Recovery strategy. However, the system has constraints and there will be challenges which should be taken into consideration when planning its implementation.

Table 15: Constraints and challenges of Biodiversity Net Gain

Constraint or challenge	Potential Impact	Example
The metric is based on adding value to a habitat and does not consider potential future decline due to lack of management.	Sites in moderate but declining condition are likely to be overlooked. Increase in poor condition habitats.	Local Wildlife Sites are often of good quality habitat but not necessarily under appropriate management. It is vital to secure long-term management on these sites to avoid habitat decline. However, the BNG metric does not favour the maintenance of habitats of existing value or adding value to an already good quality habitat.
Increasing demand for land for habitat enhancement or creation.	Lack of available land. Soaring costs and competition for land.	Realisation of potential financial incentives to BNG causing higher competition for land.
Potential failure to adhere to the mitigation hierarchy on the basis that impacts can be compensated off-site.	Increase in valuable habitats lost to development.	Planning is granted for a development that could have avoided habitat loss on the basis that they are measured and off-set.
Does not apply to Nationally Significant Infrastructure Projects.	Habitat loss	HS2 and other NSIPs continue to threaten habitats without measurable compensation.

‘Planning for the Future’ White Paper

The Planning White Paper is likely to present both opportunities and challenges. The new system proposes that land is identified under three distinct categories; **Growth areas** suitable for substantial development; **Renewal areas** suitable for some development; and **Protected areas** where development is restricted. If the identification of protected areas is based on areas identified in Nature Recovery strategies then this will make the planning system much more strategic and hopefully protect a much larger area than is currently; statutory designated sites only. However, the growth area is proposed to be subjected to much less scrutiny in order to speed up the process and outline approval would be automatically secured for the types of development specified in the plan. It is proposed that planning permission will be rule-based, rather than the case-by-case judgement of environmental experts. This has the potential to threaten habitats or species e.g. removal of a section of hedgerow that forms a key connective corridor.

Other Challenges

Table 16: Other Environmental Challenges

Challenge	Description	Details
Brexit	The challenges faced by exiting the European Union are undetermined until the details are known. However, changes to the laws and regulations that govern environmental protections could have major consequences for Natures Recovery.	<p>Legal – potential loss or weakening of EU species and habitat protection laws;</p> <p>Trade - Changes to import and export regulations (threats to food supply and increased demand for intensive agriculture);</p> <p>Devolution – coordinating and maintaining minimum standards to the environmental law across the UK.</p>
Covid-19 Pandemic	Further contributing to climate change and impacts on biodiversity.	<p>Increased single use plastics and waste</p> <p>Reduction in recycling</p> <p>Avoidance of public transport</p>

Evaluation

The different components of this strategy have been reviewed to create a table of actions. These are recommendations for nature's recovery. Their priority or even suitability for adoption into local plans and policies and further action will be determined by a range of factors such as finance and resources, land availability and organisational priorities.

Table 17: Plan of Actions

Action	Detail	Who?
Use the strategic significance maps	Use these maps to prioritise land for habitat creation or enhancement. Incorporate areas of low strategic significance in the Local Plan. Avoid, where possible, development on areas of importance for the network.	SDDC
Change road verge management	Where appropriate, manage road verges for biodiversity.	SDDC
Change recreational site management	On areas surrounding recreational facilities consider managing for biodiversity. Change mowing regimes of amenity sites to increase diversity, using mown footpaths to allow access.	SDDC
Increase ecological features on recreational or amenity sites	Consider the creation of ponds, scrapes, tree planting and habitat piles to increase the sites stepping stone connectivity.	SDDC
Use green space sites in BNG schemes	Appropriate green space sites without designations or recreational facilities should be offered up to BNG schemes to increase their ecological value.	SDDC
Continue to acquire/ adopt land for BNG enhancement or habitat creation	Ensure a continuation of BNG sites by adding a 'land acquisition' cost to off-setting schemes to allow for further purchase of land.	SDDC
Put a call out to landowners for available land	Create a bank of BNG sites for off-setting development schemes within the LPA.	SDDC

Set up a biodiversity action group	Utilise the increased ecological resource and knowledge (appointment of a district ecologist in 2021) to create an action group involving all the major stakeholders.	SDDC and stakeholders

Conclusion

To conclude, the Action Plan for Nature should provide the basis for nature's recovery in South Derbyshire. Protection and enhancement of existing core sites, such as Nature Reserves, Local Wildlife Sites and SSSI's is vital to maintain the district's biodiversity hotspots, however, nature needs more than these sparse and fragmented areas. There must be improvement in the stepping stone sites and corridors to enhance connectivity, using the strategic mapping to prioritise areas. Creation and improved management of hedges, road verges, field margins, ponds and streams will contribute significantly towards the recovery. Finally, the recovery network should be used to safeguard key areas and connections, using Plans and Policies to strengthen the network of habitats using funding opportunities and biodiversity net gain schemes appropriately, steering development away from the key recovery areas and encouraging nature friendly development and farming.



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Appendix A GIS Datasets

Dataset	Source
Statutory designated sites – SAC, SSSI, NNR, LNR	DEFRA – Natural England
Derbyshire Wildlife Trust reserves	DWT
Non-statutory designated sites – LWS, pLWS	Derbyshire Biological Records Centre
Local BAP Action Areas	Derbyshire Biological Records Centre
Section 41 Priority Habitats (NERC), TPO trees	Derbyshire Biological Records Centre
Species Records - EPS, Section 41 species, notable species	Derbyshire Biological Records Centre
Land allocations, planning applications, settlement boundaries	SDDC
Local Green Spaces	SDDC
Grounds Management Polygons	SDDC
National Forest Inventory	DEFRA – Forestry Commission
National Character Areas	DEFRA – Natural England
Environmental Stewardship Scheme Agreements	DEFRA – Natural England
Ancient Woodland and Planted Ancient Woodland	DEFRA – Natural England
Agricultural Land Classification Grades Post 1988 Survey	DEFRA – Natural England
Flood Map for Planning – Rivers and Sea Flood Zone 3	DEFRA – Environment Agency
River Catchment Data	DEFRA – Environment Agency
Crop Map of England	Rural Payments Agency
England Land Cover Map 2019 - vector	Centre for Ecology and Hydrology
Open Zoomstack	Ordnance Survey

Appendix B Land Cover Map Habitat Classifications

Aggregate Class	Broad Habitat	Target Class	Number	Description
Broadleaf woodland	Broadleaved, Mixed and Yew Woodland	Broadleaved woodland	1	Broadleaved woodlands are characterised by stands >5 m high with tree cover >20%; scrub
Coniferous woodland	Coniferous Woodland	Coniferous Woodland	2	Coniferous Woodland includes semi-natural stands and plantations, with cover >20%. This includes new plantation and recently felled areas.
Arable	Arable and Horticulture	Arable and Horticulture	3	This includes annual crops, perennial crops such as berries and orchards and freshly ploughed land. Orchards with a ground flora are hard to distinguish.
Improved grassland	Improved Grassland	Improved Grassland	4	Improved grassland is distinguished from semi-natural grasslands based on its higher productivity, lack of winter senescence and location and/or context.
Semi-natural grassland	Neutral Grassland	Neutral Grassland	5	Neutral Grassland is mapped spectrally, however, the inclusion of layers for slope and distance to rivers is expected to improve the classification on flood plains. These habitats should be treated as having the potential to be 'Neutral grassland' as for a conclusive classification field survey is required to make a determination based on botanical composition.
	Calcareous Grassland	Calcareous Grassland	6	Calcareous Grassland is mapped spectrally, however, the inclusion of layers for slope and distance to rivers is expected to improve the classification in some cases. These habitats should be treated as having the potential to be 'Calcareous grassland' as for a conclusive classification field survey is required to make a determination based on botanical composition.
	Acid Grassland	Acid Grassland	7	Acid Grassland is mapped spectrally. Bracken can be mapped, but it depends on image timing so for consistency it is assigned to 'Acid Grassland'.
	Fen, Marsh and Swamp	Fen, Marsh and Swamp	8	Fen, Marsh and Swamp includes fen, fen meadows, rush pasture, swamp, flushes and springs.



Mountain, heath, bog	Dwarf Shrub Heath	Heather	9	Dwarf Shrub Heath is divided into two classes, depending on the density of Heather, producing 'Heather' and 'Heather grassland' classes respectively.
		Heather Grassland	10	
	Bog	Bog	11	Bog' includes ericaceous, herbaceous and mossy swards in areas with a 17 peat depth > 0.5 m. 'Bog' forms part of an ecological continuum covering 'Acid Grassland', 'Dwarf Shrub Heath' and some types of 'Fen, Marsh and Swamp' and the separation of these habitats can be difficult,
	Inland Rock	Inland Rock	12	This covers natural and artificial exposed rock surfaces which are >0.25ha, such as inland cliffs, caves, screes and limestone pavements, as well as various forms of excavations and waste tips such as quarries and quarry waste.
Built-up areas and gardens	Built-up Areas and Gardens	Urban	20	Urban and suburban built up areas and gardens.
		Suburban	21	

Appendix C Stakeholder Contacts

Organisation	Name and Job Title	Contact
Trent Rivers Trust (TRT)	Emma Smail – River Mease Project Manager	emma@trentriverstrust.org
Environment Agency (EA)	Tracey Doherty – Biodiversity Technical Officer	tracey.doherty@environment-agency.gov.uk
National Forest (NF)	Sam Lattaway	slattaway@nationalforest.org
Forestry England (FE)	Adrienne Bennett – Environment Manager	adrienne.bennett@forestryengland.uk
Forestry Commission (FC)	Charles Cuthbert – Woodland Officer	charles.cuthbert@forestrycommission.gov.uk
Woodland Trust (WT)	David Logan – Central England Site Manager	davidlogan@woodlandtrust.org.uk
Severn Trent Water (STW)	Zara Turtle – Senior Biodiversity Coordinator	zara.turtle@severntrent.co.uk
RSPB	Carl Cornish – Conservation Officer	Carl.cornish@rspb.org.uk
Derbyshire Wildlife Trust (DWT)	Matt Buckler (MB) – Head of Nature's Recovery	mbuckler@derbyshirewt.co.uk
	Kate Lemon (KL) – Regional Manager	klemon@derbyshirewt.co.uk
	George Bird (GB) – Living Landscape Officer	gbird@derbyshirewt.co.uk
	Kieron Huston (KH) – Biodiversity Planning and Policy Manager	khuston@derbyshirewt.co.uk
South Derbyshire District Council (SDDC)	Bernard Sheridan - Open Spaces and Facilities Manager	bernard.sheridan@southderbyshire.gov.uk
	Kevin Exley – Planning Policy Officer	kevin.exley@southderbyshire.gov.uk

Appendix D National Character Areas

Character Area Name	Overview	Environmental Opportunities		
Melbourne Parklands	This is a landscape of rolling farmland, ancient and plantation woodland and landscaped parklands with grand country houses, including Calke Abbey which has been designated a National Nature Reserve (NNR), and contains many notable ancient and veteran trees. One-quarter of the NCA is within The National Forest and 10 per cent is woodland. The NCA is predominantly rural, although there are strong contrasts with the urban areas on its peripheries. Two valleys have been dammed to create large reservoirs; Foremark and Staunton Harold Reservoirs	Manage the new planting of The National Forest and restore the characteristics of the historic parklands and woodlands. Conserve and manage the hedgerows and hedgerow trees, preserving the field patterns of early enclosures.	Promote sustainable agricultural practices to help protect and manage areas of semi-natural habitat and, where appropriate, link these areas together to create a coherent and resilient habitat network.	Protect the important water resource in the NCA to safeguard the quality of public, private and agricultural water supplies, and to improve its contribution to biodiversity and recreation.
Leicestershire and South Derbyshire Coalfield	This NCA has a developing woodland character, heavily influenced by work of The National Forest that covers the majority of the NCA and which aims to link the remnant ancient forest landscapes of Melbourne Parklands NCA in the north with those of Charnwood NCA in the east and Needwood and South Derbyshire Claylands NCA in the west. The River Mease Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC) forms part of the boundary with the Mease/Sence Lowlands NCA in the south-west.	Protect and manage the area's riverine and flood plain environment, its manmade and natural wetland habitats, especially the River Mease for its internationally and nationally important species and range of river plants, for the benefit of biodiversity.	Manage and conserve ancient and plantation woodland and plan appropriately scaled new woodland cover. Restore and reinstate hedgerows and hedgerow trees.	Balance the needs of forestry, commercial, industrial and agricultural growth with the developing visitor economy and maintain a high level of public access.
Needwood and South Derbyshire Claylands	This NCA is predominately a rolling plateau that slopes from the southern edge of the Peak District to the valley of the River Trent in the south-west. Also in the south are frequent plantations and ancient woodlands of the former Forest of Needwood. Elsewhere, the extensively hedged and pastoral landscape is dominated by mixed farming. Hedgerow trees contribute to the wooded character of this NCA. Part of The National Forest is situated on the eastern side of the NCA.	Conserve and enhance the character of mixed farm landscape including hedgerow trees and varied hedgerow types	Manage woodlands, veteran trees, wood pasture and parklands to safeguard their biodiversity value. Plan for new opportunities to plant woods and new areas of wood pasture to expand existing sites; and create short rotation coppice to reduce habitat fragmentation.	Manage and enhance the network of rivers, flood plains and wetlands, increasing the landscape's ability to naturally and sustainably manage flood and drought risk and provide other ecosystem services such as water supply and food provision, while recognising the needs of individual species and habitats.
Trent Valley Washlands	This NCA comprises the river flood plain corridors of the middle reaches of the River Trent's catchment. It is a distinctly narrow, linear and low-lying landscape, often clearly delineated at its edges by higher ground, and it is largely comprised of the flat flood plains and gravel terraces of the rivers.	Carefully plan and manage new development within this NCA to ensure that ecosystem services are strengthened and woodland and the hedgerow networks are enhanced.	Manage and enhance the river and flood plain landscape to combine its essential provision and regulation of water role with landscape enhancement, nature conservation and climate regulation.	Join up and expand areas of pasture and associated attributes and habitats, to preserve enhance biodiversity and geodiversity.
Mease/Sence Lowlands	This NCA is a gently rolling agricultural landscape centred around the rivers Mease, Sence and Anker. The National Forest extends into the area north of the River Mease. The NCA contains one Special Area of Conservation (SAC) – the River Mease, and has 139 ha of nationally designated SSSI, including the Ashby Canal SSSI. Important habitats include neutral grasslands, wet meadows, parkland, wet woodlands, rivers and stream.	Protect and appropriately manage this important network of natural and manmade rivers, streams, ponds, canals and other wetland habitats for its internationally important populations of white-clawed crayfish, spined loach and bullhead fish.	Manage and conserve the woodland habitat of the landscape and plan to expand appropriately scaled woodland cover, particularly in The National Forest.	Protect and appropriately manage the features of this landscape, in particular its ancient woodlands, veteran trees, landscaped parklands and areas of archaeological interest, including ridge and furrow.

Appendix E Roadside Nature Reserves

Verge	Description	Species	Current status
Rosliston Road Verge RV32	Situated on a sweeping bend the site is formed by a narrow verge, adjacent small ditch and a main area of grassland beyond these features. Drainage grips facilitate surface water drainage from the road into the ditch.	Field Wood-rush, Pignut, Yarrow, Cat's-ear, Lesser Stitchwort and Bush Vetch, locally areas are more acidic with Sheep's Sorrel and Harebell. In the ditch and drainage grips species indicative of damper conditions include Hard Rush and Toad Rush.	The main area although previously recorded as being botanically diverse, was species poor at the time of last survey. The reason for this decline is likely to be attributable to past management of one late season annual cut with the cuttings left in-situ – resulting in nutrient enrichment.
Staunton Lane Verge RV33	The south west verge supports unimproved neutral grassland grading to damper conditions with tall herbs. Locally, seasonally wet ruts create small microhabitats. A ditch separates the grassland from a species rich hedgerow. The northern verge, whilst still of interest, is less species rich. The verges are located on a straight section of carriageway with good visibility.	Common Knapweed, Meadow Vetchling, Lesser Stitchwort, Greater Stitchwort, Goat's-beard, Tufted vetch and Bush Vetch. In the tall herb areas species indicative of damper conditions include; False Fox-sedge, Hairy Sedge, Tufted Hair-grass, Great Willowherb and Great Burnet.	Inspection in spring 2006 suggested that the south verge was mown when the neighbouring landowner cut the adjacent hedge during the winter.


Appendix F BNG Assessment Overview


Map Ref	Site Name	Size (Ha)	Assessed	Notes	Suitability for BNG enhancement or creation
1	Meadow Lane	2.3	Yes	Some of this is already designated as LWS. Planning application in covering this land parcel.	Site not suitable for BNG due to existing value of habitats.
2	Oversetts Road	2.4	Yes		Could provide 4.93 units through 1.6ha of grassland enhancement.
3	Cavendish Close	0.9	Yes	General purpose land. Protected through LP2 BNE8 Local Green Space.	Could provide 2.52 units through 0.7ha of grassland enhancement.
4	Eaton Close	0.07	No		
5	Sealey Close	1.3	Yes	General purpose land with half located in flood zone 3b, therefore offered some protection.	Could provide 6.29 units for 1.1 ha neutral grassland creation and 0.2 ha ponds.
6	Hassall Road	0.19	No		
7	Daisy Lane	0.65	No		
8	Askew Grove	0.3	No		
9	The Crescent	0.3	No		
10	Old Station Close	0.6	No		
11	Humber Street - Hilton Memorial	0.95	Yes	Managed by the Parish. Assessed for LWS but doesn't meet criteria. Designated as pLWS.	No - memorial tree planting land and already of existing value.





12	Hilton Derby Road	0.85	No		
13	Hilton Brook	1.2	Yes	Local Green Space Designation so policy protection from BNE8. Flood risk area.	Could provide 1.06 units but most of site not suitable as already of existing value.
14	Orwell Road	0.3	No		
15	Elmhurst	0.6	No		
16	Aston Bowling Green	0.8	No	Potential to enhance grassland around the outside of recreational areas.	
17	Sandholes	3.7	Yes	Already allocated for BNG.	Yes - receptor for Woodville Link Road.
18	George Street	1.5	Yes	Already allocated for BNG.	Yes - receptor for Woodville Link Road.
19	Common Road	0.7	Yes	General purpose land.	Could provide 1.23 units through 0.7ha of grassland enhancement.
20	Park Road	1.5	Yes	General purpose land. Protected from development through policy INF9 of LP1.	Could provide 5.94 units through 1.5ha of neutral grassland creation.
21	Arthur Street	0.8	No	Housing/general purpose land. Historical interest in delivering affordable housing.	
22	Hunts Lane	0.7	No	Located in settlement boundary - potential for future development.	
23	Coppice Side	2.5	No	Large area of amenity grassland. Could be enhanced with footpath cut through to keep recreation value.	
24	Midland Road	1	No	Large area of amenity grassland. Could be enhanced with footpath cut through to keep recreation value.	

Appendix G BNG Site Assessments


Site Name: Cavendish Close		Location: SK 29303 21241 Planning Authority: SDDC		Size: 0.9 ha	
Description: An area of improved grassland with small pockets of tree and shrubs at the intersection of Edgecote Drive and Cavendish Close in Swadlincote.					
Habitat connectivity: Low Situated in a housing development in Swadlincote. A few other small green spaces and gardens provide stepping stones to nearby arable and improved grassland habitat.					
Main habitat type(s): Modified grassland Broad-leaved plantation woodland			Habitat condition: Poor – Score 1 <ul style="list-style-type: none">Abundant ryegrassRegularly mown Moderate – Score 2 <ul style="list-style-type: none">Few very young/old treesNo deadwood		
Habitat enhancement or creation potential: Medium <ul style="list-style-type: none">Potential to enhance species diversity of grassland but only a small area and practical issues from the amount of scrub and trees on-site.			Location Map 		
Strategic significance	Low	Potential net unit change delivered through habitat enhancement or creation		2.52 Creation of moderate neutral grassland on 0.7ha	
Spatial Risk Category	Inside LPA				
Approximate baseline habitat units	2.2				
Post-intervention units	4.72				

Site Name: Common Road		Location: SK 30077 18628 Planning Authority: SDDC	Size: 0.7 ha
Description: An area of semi-improved grassland south of Common Road in Swadlincote that is bordered by native tree species.			
Habitat connectivity: Medium South of Maurice Lee Memorial Park and close to other recreational and woodland sites.			
Main habitat type(s) (UKHAB): Modified (semi-improved) grassland Broad-leaved plantation woodland		Habitat condition: Poor – Score 1 <ul style="list-style-type: none"> • Presence of undesirable species Good – Score 3	
Habitat enhancement or creation potential: <ul style="list-style-type: none"> • Potential to control undesirable species and enhance species diversity of grassland. 		Location Map 	
Strategic significance	Low	Potential net unit change delivered through habitat enhancement or creation	1.23 Enhancement of grassland from poor to moderate condition, reducing undesirable species and increasing wildflower diversity.
Spatial risk category	Inside LPA		
Baseline habitat units	3.08		
Post-intervention units	4.31		

Site Name: Hilton Brook		Location: SK 24243 30061 Planning Authority: SDDC		Size: 1.2ha	
Description: An area of semi-natural habitat south of Derby Road in Hilton at the intersection with Welland Road. The site is bounded by Hilton Brook to the north-west and there is no public access. The north-western end of the site is more diverse with scrub, trees, ponds and more herb-rich grassland. The southern end of the site is poor semi-improved grassland. Much of the site has large patches of nettle and bramble.					
Habitat connectivity: High Surrounded by arable and pastoral farmland. Mease Meadow is adjacent to the site, situated to the north of Derby Road. Connectivity via Hilton Brook.					
Main habitat type(s) (UKHAB): Modified grassland Scrub Ponds Tall Ruderal			Habitat condition: Poor – Score 1 <ul style="list-style-type: none">Undesirable species at 25% Moderate – Score 2 <ul style="list-style-type: none">Missing ages classes (over mature)High cover undesirable nettles Good – Score 3 <ul style="list-style-type: none">Meet all criteria [Assessed under Grassland criteria]		
Habitat enhancement or creation potential: Moderate <ul style="list-style-type: none">Potential to enhance grassland and manage scrub			Location Map 		
Strategic significance	Low		Potential units delivered through habitat enhancement or creation		1.06 Most of site not suitable for enhancement as already of existing value. Enhancement of poor condition grassland to moderate condition could provide a single unit.
Spatial risk category	Inside LPA				
Baseline habitat units	11.01				
Post-intervention units	12.07				

Site Name: Oversetts Road		Location: SK 28398 19977 Planning Authority: SDDC		Size: 2.4 ha	
Description: An amenity area situated to the south of Oversetts Road in Newhall, Swadlincote consisting of semi-improved grassland and planted woodland copses. Paths criss-cross the site which is bounded by hedges to the north-east, and fringed by scrub and tall ruderal to the west and south.					
Habitat connectivity: Medium Bounded by semi-natural habitat on three sides – improved grassland to the east, semi-improved grassland and woodland to the west and Swadlincote Family Golf Centre to the south.					
Main habitat type(s) (UKHAB): Other neutral grassland Broadleaved plantation woodland Scrub (dense, lower distinctiveness) Hedgerow (species-poor)			Habitat condition: Poor – Score 1 <ul style="list-style-type: none">Low density and frequency wildflower speciesCoarse grass dominantUndesirable species 15% Moderate – Score 2 <ul style="list-style-type: none">Trees of similar age and heightLittle standing or falling deadwood Moderate – Score 2 <ul style="list-style-type: none">Single woody species > 75%Age range is missing some classesUndesirable species at 5-20% Good – Score 3 <ul style="list-style-type: none">One fail - undesirable nettles exceed 20%		
			Location Map  0 50 100 m (C) Google Satellite 2020		
Habitat enhancement or creation potential: High <ul style="list-style-type: none">Diversify grassland using green hay where possible			Potential units delivered through habitat enhancement or creation 4.93 Enhancement of grassland from poor to moderate condition, reducing undesirable species and increasing wildflower diversity.		
Strategic significance					
Spatial risk category					
Baseline habitat units					
Post-intervention units					

Site Name: Park Road		Location: SK 30065 18893 Planning Authority: SDDC	Size: 1.5 ha
Description: An area of improved grassland south of Park Road in Swadlincote. A line of native trees borders all but the northern edge. It may be used as the location for a fairground.			
Habitat connectivity: Medium The site is north of Maurice Lee Memorial Park in Swadlincote, with recreational grassland and woodland to the east and housing to the north.			
Main habitat type(s) (UKHAB): Modified grassland Scattered trees		Habitat condition: Poor – Score 1 <ul style="list-style-type: none"> Abundant ryegrass and white clover 	
Habitat enhancement or creation potential: High <ul style="list-style-type: none"> Diversify grassland using green hay or over-seeding. 		Location Map 	
Strategic significance	Low	Potential units delivered through habitat enhancement or creation	5.94 Creation of moderate condition neutral grassland over 1.5 ha.
Spatial risk category	Inside LPA		
Baseline habitat units	3.3		
Post-intervention units	9.24		

Site Name: Sealey Close		Location: SK 30250 28325 Planning Authority: SDDC	Size: 1.3 ha
Description: An amenity area of improved grassland south of Sealey Close in Willington. The entire area appears to be regularly mown. There are a few trees scattered along the edges.			
Habitat connectivity: Medium Immediately bound by housing and arable farmland but close to the River Trent and areas of semi-natural habitat.			
Main habitat type(s) (UKHAB): Modified grassland		Habitat condition: Poor – Score 1 <ul style="list-style-type: none"> Frequent rye-grass and white clover Mown regularly 	
Habitat enhancement or creation potential: High <ul style="list-style-type: none"> Blank canvas for creation of species-rich grassland, scrub, woodland or ponds. 		Location Map 	
Strategic significance	Low	Potential units delivered through habitat enhancement or creation	6.29 Creation of 1.1 ha neutral grassland in moderate condition and 0.2 ha ponds in moderate condition.
Spatial risk category	Inside LPA		
Baseline habitat units	2.86		
Post-intervention units	9.15		

Appendix H Stakeholder Identified Opportunities

Map Reference	Identifier	Lawton Principle	Opportunity
1	DWT - MB	More	Link three LWS by designating whole site and improving farmland management and connectivity
2	DWT - MB	More	Extension to Witch's Oak nature reserve
3	DWT - MB	More	Restoration of minerals site and management being handed over from Cemex to DWT
4	DWT - MB	More	Central Electricity Generating Board wilding site
5	DWT - MB	More	Swarkestone quarry restoration
6	DWT - MB	More	Swarkestone quarry extension and future habitat restoration
7	DWT - MG	More	Talk to landowner about converting agricultural farmland from Environmental Stewardship into BNG scheme
8	DWT - KL	Better	Talk to Derbyshire County Angling Club about improving the management for biodiversity or allowing DWT to manage as part of the reserve
9	DWT - MG	More	Talk to landowner about converting agricultural farmland from Environmental Stewardship into BNG scheme
10	DWT - MG	More	Talk to landowner about converting agricultural farmland from Environmental Stewardship into BNG scheme
11	DWT - MG	More	Talk to landowner about converting agricultural farmland from Environmental Stewardship into BNG scheme
12	DWT - MG	More	Talk to landowner about converting agricultural farmland from Environmental Stewardship into BNG scheme
13	DWT - GB	Bigger	DWT in talks with landowner about taking on management of this land or potential to use land for BNG
14	DWT - MG	More	Talk to landowner about converting agricultural farmland from Environmental Stewardship into BNG scheme
15	DWT - MB	Bigger	Link Staunton Harold with Calke park by enhancing farmland through BNG and managing cohesively

16	DWT - MG	More	Unmanaged area of land potentially suitable for enhancement through BNG
17	DWT - MG	More	Unmanaged area of land potentially suitable for enhancement through BNG
18	DWT - MG	More	Unmanaged area of land potentially suitable for enhancement through BNG
19	DWT - MG	Bigger	Talk to landowner about BNG woodland creation to link two existing large areas of woodland
20	DWT - MG	Bigger	Raddle Farm - potential interested party - approach regarding BNG woodland creation to connect surrounding woodland areas
21	DWT - MG	Bigger	Talk to landowner about BNG woodland creation to connect surrounding woodland areas
22	DWT/ EA	Bigger	Buffer the River Mease by 20-50m using developer contributions or BNG to create riparian habitats
23	SDDC - BS	Better	Remove vegetation from quarry to uncover nesting sites for Sand Martins
24	TRT/EA	Better	Landowner at Raddle Farm - Rural SUDS work close to Pessal Brook
25	TRT/EA	Better	River restoration at Home Farm Clifton Campville
26	TRT/EA	Better	Woodland Trust - Penguin Wood - wet woodland enhancement, river restoration and silt trapping
27	TRT/EA	Better	Woodland Trust - Top Wood - silt trapping, opening piped channel, wet woodland enhancement
28	TRT/EA	Better	Yew Tree Farm river restoration
29	TRT/EA	Better	Seale pastures rural SUDS
30	TRT/EA	Better	Overseal Road flood alleviation - silt trapping
31	TRT/EA	Better	Landowner at Grangewood Farm - rural SUDS
32	WT	Bigger	Grangewood Farm - potentially interest party - approach regarding BNG potential
33	STW	Better	Claymills water treatment - lagoons biodiversity project
34	WT	Bigger	Woodland creation, grassland enhancement
35	FE	Bigger	New land acquisition to be planted with a broadleaf and conifer mix.

36	FE	Better	Review mowing regime of the 37% of Rosliston that is amenity grassland. Consider enhancement through seeding or green hay where appropriate and necessary.
37	WT	Better	Landowners considering natural flood management options to alleviate flooding on the track.
38	FE	Better	Large areas of open space - potential for grassland and pond enhancement

Appendix I Non-spatial Stakeholder Opportunities

Stakeholder	Opportunity	Details
Severn Trent Water	Great Big Nature Boost	Nature based solutions to water quality
Severn Trent Water	Grants for partnership working	National Forest partnership – working with communities and schools.
Trent River Trust	Agricultural land Biodiversity Net Gain potential	Raising awareness of Biodiversity Net Gain with farmers within the River Mease catchment. Potential to DWT or SDDC ecologist to attend the Farmers Facilitation meeting to discuss opportunities.
Environment Agency	River Mease developer contributions	Bespoke projects to remove phosphate from the River Mease Special Area of Conservation (SAC) and its tributaries.
Forestry England	GCN licences - pond restoration and creation	Through the GCN district level licencing there is opportunities to restore existing ponds on FE land with potential for pond creation in the future. Existing wet areas or hollows already being noted for their suitability and would provide natural flood management and increase aquatic habitat.
Forestry England	Ecosystem services agenda	Projects with an ecosystem service benefit such as improving natural flood management, improving soil health or increasing health and wellbeing are high on Forestry England's agenda and are prioritised for any partnership working. One of the first organisations to carry out natural capital accounts.
Forestry England	Biodiversity improvements through the 10-year forest planning	The Rosliston and Robin/Repton forest plans include biodiversity improvements through management. 'The water courses will be actively managed moving back the tree line to allow more light onto the water course and open space for a diverse aquatic and riparian zone to develop into. Individual trees with good crowns will be retained within these areas and provide cover for birds.

		<p>The rides within the mature woodlands will be gradually opened up during thinning operations and subsequent restocking, creating a wide woodland edge where an understorey of trees and shrubs will develop to link the herbaceous vegetation associated with forest roads to the forest canopy. In both mature and new woodlands, the edge effect will be gradually broken up through harvesting and new planting to remove straight edges and create a more irregular edge. This will in turn increase the woodland edge habitat and increase sheltered sunny glades especially on the north side of rides which will receive more sunlight. This will benefit the ground flora and increase the available breeding and feeding habitats for the woodland fauna’.</p>
National Trust	50-year vision of habitat enhancements	<p>The National Trusts plan for habitat enhancement will be announced in their 50-year vision. This is currently confidential until all stakeholders have been informed.</p>

Appendix J Stakeholder Constraints

Stakeholder	Constraint	Details
Severn Trent Water	Biodiversity Net Gain land potential	Leased agricultural land unlikely to be offered for BNG purposes due to potential to be required for development or their own net gain in the future.
Trent Rivers Trust	Biodiversity Net Gain time commitment	Farmers potentially wary about committing to 30 years of management.
Forestry England	Timescales for Planted Ancient Woodland (PAWS) restoration / conflicts with economic value	A number of FE woodlands are PAWS and currently consist of mature conifer species. These will be restored to native broadleaf species which will increase their biodiversity value, however the timeline for restoration is not specified. As stated in the Forestry Commission practise guide 'In general, restoration is best done via several cycles of thinning, with the whole process taking a decade or even much longer. Although it is desirable for sites to be restored as soon as possible, waiting until economic maturity of the present stand is usually acceptable'.
Various	Time, staffing and financial resources	Various stakeholders expressed the difficulty in initiating projects or working collaboratively due to time, financial resources or limited staffing. It is hoped that an increase in funding for green jobs due to the climate crisis or Covid-19 recovery might increase these opportunities.