Part of Transforming the Trent Valley

Transforming the Trent Headwaters Natural Heritage Audit – terrestrial habitats

Staffordshire Ecological Record
and Staffordshire Wildlife Trust

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Staffordshire Ecological Record

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1 Executive Summary

The Transforming the Trent Headwaters (TTTH) Natural Heritage Audit – Terrestrial Habitats was commissioned during the feasibility phase of the Transforming the Trent Headwaters project, funded by The National Lottery Heritage Fund. Its purpose is to assess the condition and opportunities for terrestrial habitats across the headwaters of the River Trent, focusing on Stoke-on-Trent, urban Newcastle-under-Lyme, and Staffordshire Moorlands. This audit sits alongside a complementary riparian audit and contributes to the wider vision of enhancing natural and cultural heritage, biodiversity, and community engagement within the project area.

The audit identifies the key ecological challenges in a heavily urbanised, post-industrial landscape where rivers and habitats have been extensively modified. Using a combination of desk-based study, GIS mapping, site evaluations, and community input, the report refines the project area and highlights priorities for conservation and restoration. Analysis focused on watercourse data, habitat and species records, habitat condition, and land use commitments, supported by local knowledge and historic project legacies.

Findings reveal substantial opportunities for habitat restoration and connectivity, particularly in grassland and wetland ecosystems, as well as distinctive urban brownfield sites supporting open mosaic habitats. The Nature Recovery Network mapping was instrumental in identifying strategic habitat connectivity opportunities, supported by insights from past projects such as Blooming Stoke, SUNRISE, Wilder Stoke Wilder Newcastle, and Trent ReNEW. These provide both lessons learned and undelivered proposals to inform new interventions.

The audit also recognises the potential for species reintroductions (including beaver, water vole, white-clawed crayfish, and native black poplar), restoration of historic water meadows and palaeochannels, and enhanced green infrastructure to address climate adaptation challenges such as the urban heat island effect. Mineral safeguarding zones, land ownership, and agri-environment schemes are identified as important constraints and considerations for delivery planning.

In total, 36 priority sites have been assessed with outline plans for habitat restoration. These proposals balance ecological benefit, cultural heritage value, and opportunities for public engagement. Citizen science monitoring is recommended to ensure robust evaluation and long-term community involvement.

Overall, the terrestrial habitats audit provides a comprehensive evidence base and a suite of project opportunities designed to strengthen biodiversity, improve ecosystem services, and enhance connections between people and their natural heritage. It forms a critical step in shaping the development phase of the TTTH scheme and securing a resilient and recoverable landscape for the Trent Headwaters.

2. Scope

This report was commissioned for the feasibility phase of the Transforming the Trent Headwaters (TTTH) Landscape Partnership Scheme funded by The National Lottery Heritage Fund through a Resilience and Recovery grant. The report forms an element of a series of audits that were undertaken to identify the opportunities for natural heritage, cultural heritage and community engagement within the headwaters of the River Trent to inform the development phase of the resulting project.

The following report focuses on the terrestrial habitat element of the natural heritage of the project area. The riparian element is covered by a separate natural heritage audit intended to be used alongside this one. The project area broadly covers Stoke-on-Trent and urban Newcastle-under-Lyme.

This report aims to:

- Refine the project area through desk-based study and community consultation.
- Identify the key environmental and ecological challenges facing the project area.
- Collate information on previous and ongoing projects, exploring what has come before and identifying where needs and opportunities for new projects exist.
- Gather information from project partners, including GIS datasets and local knowledge.
- Undertake a desktop mapping exercise to compile, analyse and interpret information from a range of datasets including:
    - Watercourse data
    - Habitat and species data
    - Habitat condition data
- Identify sites with potential for habitat restoration.
- Undertake walk-over studies where sites are missing key information or are identified as priorities.
- Evaluate feedback from community consultation and ensure this is fed into decision-making.
- Consider the cultural heritage of the landscape, such that it is either preserved or enhanced.
- Produce a suite of potential projects that address the challenges identified and take into account the range of information gathered throughout the entire process. These may operate at a site, catchment or project area level.
- Produce an audit of sites suitable for habitat restoration, with outline site plans including site descriptions and potential measures to be taken.

3. Data Review

3.1 Background

The Trent headwaters refer to the various watercourses that rise in north Staffordshire and form the catchment of the early River Trent as it begins its journey across the Midlands. The River Trent rises from a freshwater spring in Biddulph Moor, a small village in the district of Staffordshire Moorlands. The river flows south through moorland and farmland before entering the industrial heartlands of Stoke-on-Trent. From here, it picks up the waters from tributaries that rise in Stoke-on-Trent and Newcastle-under-Lyme before flowing south towards Stafford.

The landscape of the headwaters is predominantly urban, and the area has a long industrial history including pottery and coal mining that is closely connected to the rivers. Two canals, the Trent and Mersey Canal and the Caldon Canal, serve the landscape, fed by the watercourses and creating a vital link through the towns for both people and wildlife. The legacy of industry and development has meant that large stretches of the rivers and streams are heavily modified and constrained, making this a critical area for conservation and environmental restoration.

Within the urban landscape, many stretches of the fledgling river have been hidden from public view, meaning the River Trent has historically been disconnected from those who live and work around it. Decades of urbanisation have also taken their toll on the river's water quality and wildlife. Staffordshire Wildlife Trust has, for many years, been on a mission to change this - to bring back wildlife and see local people reconnecting with their river.

3.1.1 Communities

Our communities have a deep cultural connection with the landscape; whilst the route of the River Trent and its tributaries are not always clear on the ground, the two main urban areas, Stoke-on-Trent and Newcastle-under-Lyme, are named for the watercourses they are built upon. There is a strong industrial history, predominantly focused on the potteries, but also relating to coal mining, that gives this area its character and people are deeply proud of their heritage.

More recently, the city has become culturally diverse with a mix of heritage and traditions that opens new opportunities for understanding our place and narrating the oral histories, stories and folktales that define us through time. This large urban community also presents opportunities to engage with local audiences and facilitate large-scale investment in natural and cultural heritage restoration.

3.1.2 Heritage

The landscape holds layers of heritage from prehistory through to modern. Historically, the river served as a vital waterway for local people and industry and today the remnants of mining, pottery kilns, canals and old transport routes indicate this industrial past. Today, the region is under pressure from challenges relating to urban expansion, land management and climate change that threatens our heritage.

We want to preserve both tangible (monuments, artefacts and sites) and intangible (traditions, stories and memories) heritage. The historic environment is not renewable so once lost it will be lost forever. If we are to be the generation that leave the environment in a better state than we found it, action must be taken now.

3.1.3 Habitats

The Trent Headwaters is a fluvial landscape marking the upper reaches of the watercourse. It initially flows through open countryside, predominantly pasture and woodland, before entering the urban limits where the channel becomes heavily modified, and the water is often constrained within a concrete channel. Opportunities to re-naturalise the channel are varied, however there is broad scope to undertake habitat restoration across the city, enhancing both greenspace and watercourses.

To the south of the catchment is the designed landscape of the Trentham Estate. Here, beavers were recently reintroduced to the area after 400 years of absence. There is an opportunity to explore further opportunities for species reintroductions as well as controlling invasive non-native species.

3.1.4 Project Area

The project area is based on the headwaters of the River Trent, which have been determined as the stretch of the river and its tributaries from the source where it rises to the south of Biddulph Moor, through Stoke-on-Trent to Tittensor (Figure 1). The project area falls within the districts of Stoke-on-Trent, Newcastle-under-Lyme, Stafford and Staffordshire Moorlands (Table 1).

Figure 1 Project boundary with engagement areas

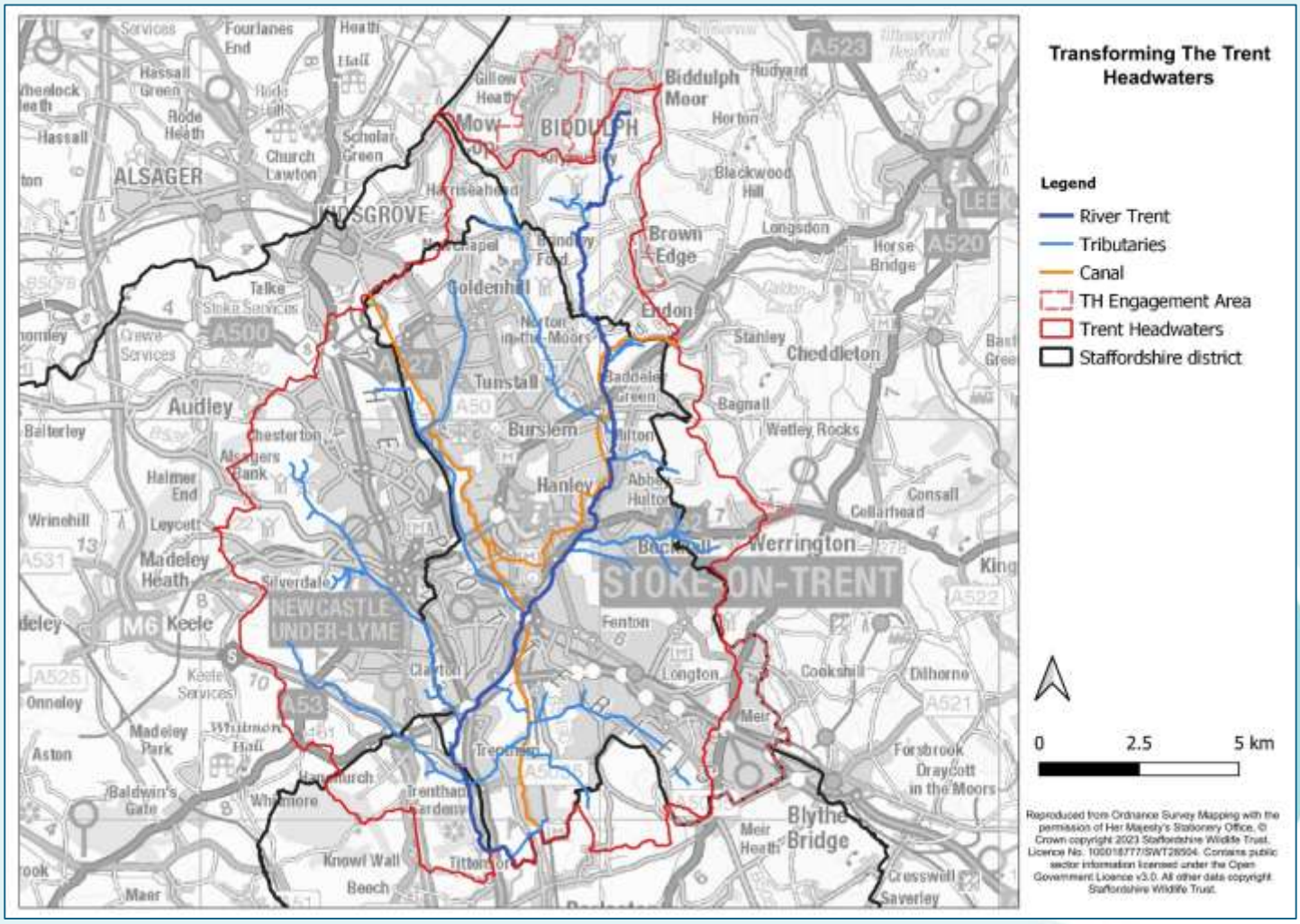

Table 1 Area (km²) of Staffordshire districts within project area excluding 'Engagement Areas'

District	Area (km²)
City of Stoke-on-Trent	88
Newcastle-under-Lyme District	46
Staffordshire Moorlands District	21
Stafford Borough District	13
Total area	168

Four 'Engagement Areas' have also been defined as part of the project area; these are areas where we aim to engage local communities with the scheme but will not undertake practical habitat restoration work due to these areas falling outside of the Trent

headwaters catchment. The total area, excluding the engagement areas, covers approximately 168km² (16,800ha). With the inclusion of the engagement areas the total area is approximately 179km² (17,900ha).

The project boundary is largely derived from the water body catchments identified in the Humber River Basin Management Plan (RBMP) and include the River Trent and its tributaries. Sections of the southern portion of the project boundary follow Staffordshire district boundaries or highways (Figure 1). There is a total of nine watercourses, as identified by the RBMP, within the project area (Table 2).

The project area also contains sections of two canals: the Trent and Mersey from north to south and the Caldon Canal, which is fed by Knypersley Reservoir and joins the Trent and Mersey in the centre of Stoke-on-Trent (Figure 1, Table 2).

Table 2 Watercourses within the project area

Watercourse	Length (km)	Catchment area (km²)
River Trent	26	53
Lyme Brook	9 (minimum)	30
Fowlea Brook	8 (minimum)	27
Longton Brook	7 (minimum)	23
Park Brook	7 (minimum)	15
Ford Green Brook	8 (minimum)	15
Causley Brook	4 (minimum)	7
Trent and Mersey Canal	19	NA
Caldon Canal	15	NA

3.2 Current status and condition of the natural environment

3.2.1 WFD Water Body Classifications

The Water Framework Directive (WFD) objective for all inland waters is to reach 'Good Overall Status' by 2027 which includes both ecological and chemical elements.

The water bodies and their ecological status within the project area are illustrated in Figure 2 and Table 3. None of the water body catchments within the project area have been classified as 'Good'. Fowlea Brook and the Trent from Ford Green Brook to Fowlea Brook both have an overall status of Moderate as a result of having a modified status of

Heavily Modified, but each contain an element classified as Poor and could be prioritised as such.

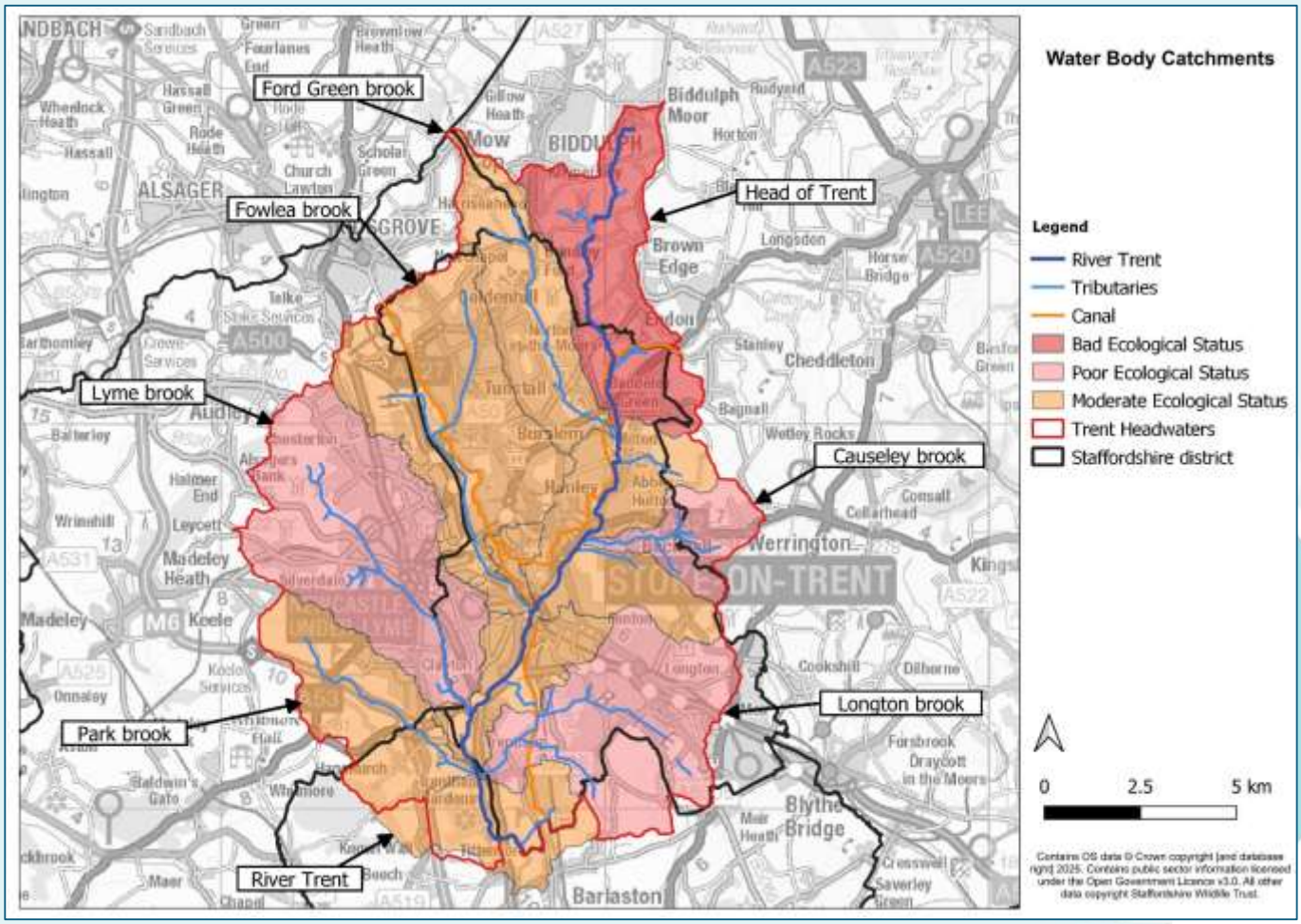

Figure 2 Water body catchments with ecological status

Table 3 Water bodies with EA ecological classifications and failing elements within the Trent Headwaters project area.

Water Body ID	Water Body Name	Ecological Classification	Failing Elements
GB104028053400	Trent from source to Ford Green Brook	Bad	Fish Invertebrates Macrophytes & Phytobenthos Phosphate
GB104028053310	Causley Brook	Poor	Fish

			Invertebrates Macrophytes & Phytobenthos Manganese
GB104028053273	Longton Brook	Poor	Fish Invertebrates Phosphate
GB104028053340	Lyme Brook	Poor	Invertebrates Macrophytes & Phytobenthos
GB104028053301	Trent from Ford Green Brook to Fowlea Brook	Moderate	Fish Invertebrates Macrophytes Sub Element Phosphate Mitigation Measures Assessment
GB104028053360	Fowlea Brook	Moderate	Invertebrates Ammonia (Phys-Chem) Dissolved oxygen Mitigation Measures Assessment Manganese
GB104028053271	Trent from Fowlea Brook to Tittensor	Moderate	Invertebrates
GB104028053280	Park Brook	Moderate	Invertebrates
GB104028053380	Ford Green Brook	Moderate	Invertebrates Phosphate Mitigation Measures Assessment Manganese

3.2.1.1 Designated protected areas for water quality

There are several designated Protected Areas within the project boundary. A surface water Nitrate Vulnerable Zone (NVZ) covers the entire project area and a groundwater NVZ covers parts of Swynnerton Old Park and Trentham Gardens to the south. Nitrate Vulnerable Zones are areas deemed to be at risk from agricultural nitrate pollution in accordance with the Nitrate Pollution Prevention Regulations 2015.

A nutrient sensitive area covers part of the Trent from Fowlea Brook to Tittensor. These concern water companies and the treatment of sewage as defined by the Urban Wastewater treatment Directive (1991).

There are also Source Protection Zones for drinking water covering parts of Swynnerton Old Park and Trentham Gardens to the south and parts of Meir and Weston Coyney to the southeast. A Source Protection Zone is an area around large and public potable groundwater abstraction sites. They are designated due to the increased risk resulting from a source of pollution being within close proximity to a source of abstraction. They are designed to provide additional protection by constraining certain activities that may impact on groundwater in these areas.

3.2.2 Staffordshire Trent Valley Catchment Plan

The Water Framework Directive (WFD) establishes a system for the protection and improvement of all aspects of the water environment. This will be done through the Catchment Based Approach and the setting up of Catchment Partnerships to bring together local knowledge and expertise.

The Staffordshire Trent Valley (STV) Catchment area includes the River Trent from its source to its confluence with the River Tame to the north-east of Burton-upon-Trent. The STV partnership produced a plan in 2018 which sets out the vision, challenges and an action plan for the area.

Across the Staffordshire Trent Valley (STV) catchment, the main challenges identified within the STV Catchment Plan are as follows:

- Pollution from wastewater is a major reason for not achieving 'Good Ecological Status'. Discharges from the sewage network that contain phosphate and ammonia and can adversely affect the ability of rivers to support fish and invertebrates.
- Diffuse pollution from rural areas is a major pressure in the catchment. Land management activities that result in the loss of phosphates, pesticides and sediment to the water environment is a major reason that water bodies are not achieving good status.
- Diffuse pollution from urban areas is a major pressure in the built-up areas within the catchment; of particular concern is the Stoke-on-Trent and urban

Newcastle area as it is close to the source of the Trent. The effects of this can be seen downstream and so tackling source issues is a priority.

- Physical Modifications. Man-made changes to the shape and flow of rivers are also a major pressure in the catchment. These include the engineering of river channels, abstraction of water for public water supply, the introduction of barriers to fish and changes to riparian habitats.

Within urban areas, diffuse pollution is a major concern especially in the Stoke-on-Trent and urban Newcastle area due to their proximity to the Trent source. Some of the key reasons for the stretch of the River Trent from source to the River Sow failing to achieve Good Ecological Status is diffuse pollution from roads as well as misconnections and intermittent discharges from sewage systems alongside physical modifications.

Poor water quality has historically been an issue downstream of Stoke-on-Trent, though this has improved over the last 20 years due to improvements in sewage treatment works and storm discharges.

3.2.3 Nature Recovery Network Mapping

Nature Recovery Network (NRN) mapping has been carried out and adopted as part of the local plan for each local planning authority area in Staffordshire to deliver against objectives set out in national planning policy legislation. The mapping exercise will also direct the spatial delivery of Biodiversity Net Gain as well inform the development of the forthcoming Local Nature Recovery Strategy (LNRS).

The objective of the NRN is to describe the existing network of habitats and identify key locations where habitats may be created or enhanced to contribute to nature's recovery through increased connectivity.

There are three distinct elements to the NRN:

1. Habitat distinctiveness
2. Strategic significance (of habitat areas)
3. Habitat connectivity

3.2.3.1 Habitat distinctiveness

Habitat distinctiveness mapping uses habitat as a proxy for wider biodiversity value via associating and scoring different habitat types according to their relative biodiversity value.

The criteria used for the creation of the habitat distinctiveness map was based on the Biodiversity Net Gain metric which loosely defines what habitats are included within each distinctiveness band. These metrics form the basis of the Environment Act (2021) and represent the most comprehensive set of standards for which to base the distinctiveness mapping on.

Habitats are assigned to distinctiveness bands based on an assessment of their features including for example rarity (at local, regional, national and international scales), and the degree to which a habitat supports species rarely found in other habitats.

An example of this would be broadleaf woodlands scoring very highly (higher relative biodiversity value) compared to intensively managed amenity grassland or highly improved agricultural arable land score lower (lower relative biodiversity value).

Very-high distinctiveness habitats should be preserved and enhanced while low and medium distinctiveness habitats could be restored to a higher quality habitat.

See Figure 3 for NRN distinctiveness mapping across the project area.

Low and very low distinctive habitats account for most of the area within the project landscape due to the urban and built-up nature of Stoke and urban Newcastle, for example houses, buildings, gardens and amenity grassland. There are some areas of semi-natural habitat in the project area of varying size and quality, including unmanaged rank grassland and appropriately managed species rich grasslands, in the medium to very-high distinctiveness categories. Irreplaceable habitats are present primarily in the form of long-established and ancient woodland.

3.2.3.2 Strategic Significance

This mapping is produced by assessing the proportion of broad habitats e.g. woodland, grassland, heathland etc. within a defined spatial area or 'cell' to determine whether these are 'strategic', 'semi-strategic' or 'non-strategic' for the creation or restoration of further habitat based on the proportion of habitat already present in the area. A cell is defined as an Ordnance Survey 100m grid square.

Cells were classified based on the principle that if 30% or more of that square has specific habitat, for instance woodland habitat, within it then it is considered 'ecologically functional' (species associated with that habitat can move freely within this square). A 30% threshold also enables the mapping to tie in with wider government 30 by 30 principles to protect 30% of the UK's land by 2030.

Based on the above, classification of 100m squares is defined as:

- Strategic: 30% or greater specific habitat in the 1km square. Already meets the 30% threshold to be considered 'ecologically functional' but the creation of further habitat will strengthen ability for species to be able to exist and move through this square.
- Semi-strategic: between 5-30% of the 1km square is covered by a habitat e.g. woodland/grassland. Priority as this requires further habitat to reach the 20% threshold to be considered 'ecologically functional' for that specific habitat.
- Non-strategic: less than 5% of the 1km square is covered by a specific habitat making it too onerous to bring the amount of habitat to meet the 20% threshold, it is therefore not a priority area to target biodiversity compensation.

See Figure 4. for NRN strategic significance mapping across the project area

Non-strategic areas are more prevalent in the project area due to the already developed nature of the landscape. There is a network of larger strategically significant areas, centred around large sites with greater areas of semi-natural vegetation, for example Berry Hill Fields, Whitfield Valley, Bradeley Fields etc. These larger strategic areas are interconnected via narrow strips of semi-natural habitat such as road verges, hedgerows, watercourses and canals which are classified as strategic or semi-strategic depending on their size.

3.2.3.3 Habitat Connectivity Opportunity (HCO) areas

The strategic significance mapping described previously does not consider individual habitat type. Certain habitat types may only make up a small proportion of an overall habitat network and may be capable of supporting unique species not supported by other habitat types. Broad habitat types need to be considered to target the ideal location for creation or enhancement within the network.

By using the results of the first two elements and specific habitat connectivity modelling software it has been possible to define Habitat Connectivity Opportunity (HCO) areas based on habitat types.

HCO areas define where habitats are already well connected and broadly identify where to direct the delivery of habitat creation or restoration of broad habitat types to create a connected habitat network.

The opportunity areas reflect and refine the work of the Staffordshire Biodiversity Action Plan Ecosystem Action Plan areas by using finer detail data to pick out more targeted conservation areas.

When delivering against the mapping, care should be taken to ensure that the best possible habitat for that area is being created. It may be tempting, for example where an area is within both a connectivity zone for woodland and grassland, to plant large tracts of woodlands as this is easiest and most cost effective, but grassland enhancement or a combination of the two would provide greater biodiversity benefit.

A total of 9 Habitat Connectivity Opportunity area types have been identified and mapped covering the entirety of the Trent Headwaters project area (Figure 5-14):

1. Grassland
2. Heathland
3. Woodland
4. Wetland
5. Open Mosaic on Previously Developed Land (OMHPDL)
6. Meres and Mosses

7. Pastures
8. Arable
9. Urban

Aside from Urban opportunity areas, Grassland and Wetland opportunity areas account for the majority of habitat opportunities in the project area. Wetland opportunity areas are generally restricted to the periphery of the River Trent and its tributaries whereas grassland connectivity opportunity areas are more broad ranging throughout the project area covering greenspaces both alongside and away from watercourses.

Uniquely, Open Mosaic Habitats on Previously Developed Land (OMHPDL) opportunity areas are also present in the project area whilst being scarce elsewhere in the county. These are generally centred around areas of existing OMHPDL habitat to encourage local expansion of this habitat for the benefit of the species it supports.

It is anticipated that the Nature Recovery Network Mapping, particularly the Habitat Connectivity Opportunity areas element, will be used alongside the specific site proposals during the development and delivery phases of the project, ensuring the right habitats are prioritised in the right places.

3.2.4 Local Nature Recovery Strategy (LNRS)

Local Nature Recovery Strategies (LNRS) are spatial strategies delivering against national government objectives but produced at a local level, which aim to deliver against the objectives laid out in the 2021 Environment Act.

The LNRS will map the existing valuable areas for nature, agree priorities for nature recovery and propose actions in the locations where it would make a particular contribution to achieving those priorities.

The Staffordshire LNRS is still emerging and is due for completion in 2025, when complete, it is hoped that the strategy will provide additional ecological and environmental spatial priorities which the TTTH project will deliver against.

3.3 Past and present schemes within the Trent Headwaters project area

Several schemes have been delivered within the Trent Headwaters project area and two projects (at the time of writing this report) are currently in the delivery phase that together present both constraints and opportunities.

As part of this audit, a range of sites have been identified that are suitable for habitat restoration. Where projects have previously taken place at these sites, a duplication of efforts should be avoided, however where undelivered proposals remain from past projects, these have been considered for inclusion within Trent Headwaters. A full list of sites that crossover with past projects has been included in Table 4.

3.3.1 Blooming Stoke

Funded by The People's Postcode Lottery, The Blooming Stoke project was a partnership project between Staffordshire Wildlife Trust and Stoke-on-Trent City Council that ran from May 2013 to August 2015. It successfully initiated the process of lowland meadow creation and enhancement at 10 sites across Stoke-on-Trent, covering a total of 19.35 hectares.

The successful inoculation of seed at Bradeley Fields in particular makes this site a viable donor resource for other grassland restoration projects within the TTTH scheme and shows valuable continuity.

Several further sites were considered for Blooming Stoke but discounted which have been re-evaluated for potential inclusion within Trent Headwaters.

3.3.2 SUNRISE

The SUNRISE project was a European Regional Development Fund (ERDF) partnership project which took place between 2018-2022. It consisted of 16 interlinked projects achieving a network of 'green and blue' infrastructure improvements across Stoke-on-Trent and urban Newcastle-under-Lyme. The aim was to improve water quality and river habitats.

There is the opportunity to develop the draft SUNRISE proposals that were not delivered into viable projects as part of TTTH and these have been included in the audit. However, it will not be feasible to build upon aspects of the SUNRISE project that were completed due to the constraints of the SUNRISE funding.

3.3.3 Wilder Stoke Wilder Newcastle (WSWN)

WSWN is a legacy project to SUNRISE, delivered in 2022. It was a 16-month project that delivered a programme of habitat restoration and community engagement across eight sites within Stoke-on-Trent and Newcastle-under-Lyme through the Green Recovery Challenge Fund (GRCF) supported by Defra and The National Lottery Heritage Fund (NLHF). It focused on the restoration of grassland and woodland sites across local authority or Staffordshire Wildlife Trust owned parks and nature reserves.3.3.4 Fowlea brook flood mitigation scheme (EA)

This is an Environment Agency (EA) hard engineering project currently in delivery, to reduce flood risk by raising the culvert sides along a stretch of Fowlea Brook from near to its confluence with the Trent to approximately 600m upstream. A fish pass will be created at the downstream end of Fowlea Brook. This should be completed by the end of 2026. Any restoration plans along the Fowlea Brook as part of Trent Headwaters will need to take this into account.

3.3.4 Trent ReNEW (Re-naturalising and enhancing waterways)

Trent ReNEW is a partnership project between the Environment Agency, Staffordshire Wildlife Trust and Support Staffordshire. The project focuses on two catchments within the Staffordshire Trent Valley landscape: The River Sow through Stafford and the Trent headwaters through Stoke-on-Trent. The sites in Stoke-on-Trent include the Ford Green Brook and stretches of the River Trent between the Fowlea and Ford Green brooks and

are relevant to the TTTH scheme area. These rivers have been engineered to provide flood protection and other services. The scheme aims to offset the necessary modifications by maximising the benefit of the stetches which can better resemble a natural water course.

The project aims to improve the biodiversity of these two watercourses, through:

- Improving the dynamics of the water in the channel by changing the structure of the river channel to include more natural features. The features will be chosen on a site-by-site bases to work with the shape of the channel and floodplain kickstarting natural process to better support aquatic and riparian wildlife.
- Reconnect the river to its floodplain. This will create a larger wetland area that is less likely to dry out during drought. Floodplains are key for the resilience of a watercourse providing natural services as well as important habitat.
- Create different habitats. In the river and across its floodplain, a mosaic of habitats will be created which will support lots of different types of wildlife. By supporting wildlife at the bottom of the food chain we can restore the ecosystem upwards, and improve habitat for insects, fish, and birds.
- Protecting the river against pollution. Creating different wetlands, ponds and opportunities for species diversity within the drainage catchment will help to filter pollution coming off the land before it enters the water.

By March 2027, Trent ReNEW aims to complete the enhancement of 8 ha of floodplain habitats and 29km of enhanced river and brook corridor.

The TTTH project will be able to build upon the groundwork delivered through the Trent ReNEW project through collaborative partnerships, which are able to cover a wider remit including pursuing long-term Higher Level Stewardship arrangements, Biodiversity Net Gain opportunities, Natural Flood Management schemes and support of citizen science monitoring schemes.

3.3.5 Recommendations from past projects

There have been several recommendations, lessons learned, and risks identified over the course of delivering past landscape-scale schemes which are outlined below.

- Clearly defining the scale and scope of intended conservation and engagement activity with a project application is necessary to provide a clear set of programme deliverables that can feed into individual work programmes.
- Project evaluation should be put in place as early as possible to identify the key output and outcome information that needs to be collected, supporting the development of the necessary monitoring systems to help evidence the impact, benefit and change of project delivery
- Restoration projects on a large scale – such as this one – require lengthy preparatory periods with a large suite of consenting requirements with the

potential for unforeseen delays. Considering this from the outset means that we can account for this within a development phase.

- There is an element of seasonality to any restoration work that must be considered early on. River restoration work can only be undertaken during a brief window over the summer with grassland restoration often occurring during a similar time. Woodland work is frequently undertaken during autumn and winter months. This then adds an additional layer of complexity when linked with other notable factors such as the requirement for planning permission or application of a Flood Risk Activity Permit.

- Officer capacity is a key consideration. For projects of this size, it is advisable to have one dedicated project manager to set up the necessary reporting and monitoring systems and line management support for project staff.

- Having a dedicated communication resource is essential for a programme of this scale and scope. Project communication must be clear with positive use of social media, a helpful dedicated website and appropriate funder acknowledgement.

- Once delivery has been completed, it is important to consolidate the impacts achieved, lessons learned and elements of good practice in one place to incorporate these into future schemes and reflect on achievements.

4 Methodology

This report brings together information that has been gathered from a combination of sources. These have primarily involved local knowledge derived from Staffordshire Wildlife Trust (SWT) and project partners, ecological and environmental reports, Geographic Information System (GIS) datasets and community engagement. The full list of GIS resources can be found in Table 5.

There were five key areas of investigation in order to achieve the following aims:

1. to refine the project boundary
2. to identify the priority issues or challenges within the project area
3. to identify a range of projects to help tackle these
4. to identify a number of sites suitable for habitat restoration
5. to develop outline plans for each of these sites

4.1 Refinement of the project boundary

The project boundary was determined with the foremost objective of enhancing the headwaters of the River Trent for its wildlife. It was therefore underpinned by environmental data with due consideration of the communities impacted.

The core data source on which the Trent Headwaters boundary is based are the catchments identified in the Humber River Basin Management Plan, which ensures any restoration work within this boundary will impact the River Trent. There is no single definition of the extent of the headwaters of a river, so it has been defined in this context in a way that suits the scope of the project as detailed below.

There are multiple scales at which catchments operate, as defined by the Environment Agency (EA). River basin districts cover the entire catchment of a river from source to estuary. These are comprised of management catchments which are themselves comprised of operational catchments which are comprised of water body catchments. In this context a water body refers to the various stretches of a river and its tributaries.

The project area falls within the Humber River Basin districtwhich drains into the Humber Estuary and covers multiple counties. It falls within the Staffordshire Trent Valley management catchment and the Trent – Source to Sow operational catchment, both of which cover an area too large for the purposes of this project, extending to Burton-on-Trent and Great Haywood respectively.

Therefore, the water body catchments from the source to Longton Brook were used to refine the boundary. The downstream limit was determined as the confluence of the River Trent and Longton Brook to provide a clear boundary for community engagement as this covers all of Stoke and urban Newcastle and does not split a community unnecessarily. The catchment at the downstream limit, the Trent from Fowlea Brook to Tittensor, was modified slightly to follow the district boundaries and highways for this reason.

Where the water body boundaries divided communities elsewhere, to the north and east, it was not possible to extend the boundary as this would extend into the River Blythe operational catchment, the River Dove management catchment or the Northwest district catchment. Rivers within the Northwest district do not flow into the Trent at any point along its length and, while the Blythe and Dove rivers ultimately flow into the Trent, their confluence is outside of the area determined to be its headwaters, which would therefore fall outside of the scope of this project.

Instead, 'Engagement Areas' were added at these locations so that communities could still be involvedin the projecteven when no capital deliverycould take place there.

4.2 Identification of key priorities and challenges

The key priorities and challenges within the project area have been identified from the Staffordshire Trent Valley Catchment Plan 2018, the Nature Recovery Network mapping as well as EA waterbody ecological status classifications, all of which are detailed in the '3.2 Current status and condition of the natural environment' section of this report.

Further issues were identified or expanded on by drawing from the expertise of both Staffordshire Wildlife Trust and the partners involved who have detailed knowledge of the local area. These partners include the Environment Agency (EA), Trent Rivers Trust, Groundwork West Midlands, Canal and River Trust, Wild Trout Trust and Together Active.

Feedback from community consultations has also fed into this with issues around accessing the Trent and its tributaries highlighted as a key concern.

The opportunities for projects have naturally grown from an understanding of the challenges within the area and have similarly been derived from local knowledge and feedback from community conversations. GIS datasets have been explored to develop habitat restoration projects, specifically site plans, which are detailed in the following section.

4.3 Identification of sites for habitat restoration

4.3.1 Legacy opportunities from past projects

Several sites have been derived from undelivered proposals leftover from past projects that took place within the project area. These include SUNRISE and Blooming Stoke.

There is the opportunity to develop the draft SUNRISE proposals that were not developed into viable projects as part of TTTH. These have been included in the audit and represent significant opportunities for high impact work largely involving weir removal where much of the groundwork has already been completed.

All proposed work as part of Blooming Stoke was successfully completed, however there were several sites that were considered but discounted which may now be suitable for Trent Headwaters. These have been included in the audit along with details of the reasons for which they were originally discounted.

Through evaluation of these projects, several recommendations were made and are listed in the above section '3.3.5 Recommendations from past projects', which will help with the prioritisation process of a final inventory of deliverable projects.

4.3.2 Designated nature conservation sites

Designated nature conservation sites present a potential opportunity or constraint depending on the condition of the habitats present and the nature of the project. Habitats in good condition may restrict the type of opportunities due to the preservation of these existing habitats being a priority, however there may be an opportunity to expand or connect these habitats. On the other hand, if the habitats are in poor condition, then they could be suitable for restoration. There was a lack of up-to-date condition data available and, as such, local knowledge was used to determine which sites to include for viable opportunities.

The number of designated nature conservation sites within the project area and those covered by an audit site are detailed in Table 5.

Table 5. Number of designated nature conservation sites within the project area and Natural Heritage Audit.

Designation	Included in project area	Included in audit
National Nature Reserve	1	1
Site of Special Scientific Interest	5	3
Local Nature Reserve	14	8
SWT Nature Reserve	1	1
Site of Biological Importance	59	24
Biological Alert Site	20	4
RIGS	14	3

The project area included one SWT Nature Reserve, Hem Heath and Newstead Woods, and one National Nature Reserve, Hulme Quarry, which have both been included in the audit.

Three of the SSSI sites were included in the audit. The two that were excluded were King's & Hargreaves Woods, which was discounted because this site is already in 'Favourable' condition, and the Metallic Tileries at Park House, which has been designated for geological reasons which constrained the opportunity for a natural heritage project.

The six Local Nature Reserves that were discounted from the audit included Marshes Hill Common, Smith's Pool, Bridgett's Pool, and Ferndown, which have low potential for restoration, Bradwell Woods, which was discounted because an aggregate site has mineral rights here restricting opportunities, and Bathpool Park because the majority of the boundary falls within the North West River Basin leaving only a small section within the TTTH boundary.

The 3 RIGS sites included within the audit are Apedale Furnace Quarry, Knypersley Reservoir Sandstones, and Bucknall Glacial Erratic at the Fenton Road/Causley Brook site. As RIGS sites are designated for their geological interest, the remaining sites did not have enough opportunity to be considered within the audit.

Where a reason for the exclusion of a site has not been detailed, this was likely due to it being considered of lower priority compared to the large number of sites already included in the audit. Some of these sites were privately owned without public access, limiting the opportunity for thorough investigation at this stage and for community engagement at later stages. Furthermore, in the absence of up-to-date condition data, it can be assumed that Local Wildlife Sites may already be in reasonable condition and therefore not high priority targets for restoration.

4.3.3 Historic Water Meadows

The assessment of the historical water meadow resource in the project area has drawn upon the Staffordshire Water Meadows Survey (Breeze, Challis and Kincey, 2008). This project produced a GIS data set for known water meadows across Staffordshire using historical maps, which were assessed for condition using aerial photography image comparison between the years 1963 and 2000 to determine the state of water meadow earthworks and features.

All historic water meadows included in this dataset have been considered for inclusion within the audit. According to this dataset, 12 historic water meadows are present in the project area of which eight are located within a site included in the audit. Where a historic water meadow is not included in the audit this is likely due to there being already a large number of sites of a higher priority. They are also more likely to be on privately owned sites lacking public access. Where they are present within a site included in the audit, this is noted in the site plan.

4.3.4 Palaeochannels

Palaeochannels have been mapped across the Trent catchment as part of a project for Historic England and demonstrate a historically highly mobile river system which has created widespread palaeochannel formations. These represent opportunities to restore sections of river in a way consistent with these historical formations. The mapping was based predominantly on aerial photography and LiDAR data.

All palaeochannels included in this dataset have been considered for inclusion within the audit. According to this dataset, 61 palaeochannels are present in the project area of which 39 are located within a site included in the audit. Where a palaeochannel is not included in an audit site this is likely due to there being already a large number of sites of

a higher priority. They are also more likely to be on privately owned sites lacking public access. Where they are present within a site included in the audit this is noted in the site plan.

4.3.5 Aerial Photography

Once all potential sites from past projects, nature conservation sites and palaeochannel and historic water meadow datasets had been extracted, a further desk-based assessment was undertaken to search for any remaining high priority sites. Priority sites were deemed to be areas that were large, publicly accessible and adjacent to a watercourse, particularly where these connected other green spaces together. Amenity grassland sites were considered where there was scope for a change in land use. Sites along canals were also considered as these present a greater opportunity for community engagement as they are often more easily accessed via towpaths. This involved the use of aerial photography, watercourse data and the Ordnance Survey (OS) Open Green Space dataset. Several sites were identified via this method, most notably Cockster Brook Valley.

4.3.6 Local knowledge and Community Engagement

Additional sites were identified by SWT and partners who had local knowledge of the area. Together Active, whose aim is to improve levels of activity among the public within Staffordshire and Stoke-on-Trent, identified the more socio-economically deprived wards within the project area that they considered a priority. These included Bentilee, Ubberley and Abbey Hulton.

They suggested a number of sites of importance to the community within these wards. Within Abbey Hulton, this included Bucknall Park, Wallace Sports Centre, land between Birches Head Road and Cromer Road, and Hulton Abbey. Wallace Sports Centre has been included, while the land at Cromer Road has been excluded due to difficulties obtaining landowner consent. The abbey has also been excluded due to the remains of Hulton Abbey which would prevent restoration work on this site. Within Bentilee and Ubberley, Berryhill Fields was suggested, which has been included, and several other sites had already been identified in these areas.

Three sites have been suggested directly by residents: The Dingle, Tank Field and Baldies Field. The first two have been included in the Site Plans section (where there are specific objectives tied to a site) while the latter has been included in the Projects section (for projects not linked to a specific site or with relevant objectives across more than one site).

Community consultations have identified the inclusion of a large public park in or near Hanley as a priority due to its central location, ease of access and the large numbers of visitors they receive. This could potentially have a great impact on residents from across the project area and not just local communities. As a result of this feedback, Grange Park and Burslem Port Open Space were selected for site visits to assess the potential for restoration. Hanley Park was considered, however as this site is managed intensely for amenity value it was deemed unsuitable. Grange Park has also been discounted due to a

lack of opportunities. As a result of the site visits Central Forest Park was included in the audit.

4.3 6 Land use commitments

When identifying sites for inclusion in the audit, consideration was given to the potential complexities around land ownership, site status and designations, existing management commitments, and future land use arrangements. These included examples such as agri-environment schemes, tenancies and ownership, Mineral Safeguarding Zones and contaminated land.

Agri-environment schemes provide funding to farmers and land managers to incentivise land management that supports biodiversity. This would prevent a grant from The National Lottery Heritage Fund from being used on the same area of land. Several of the sites identified through this audit are covered by an agri-environment scheme however these are due to end within the next three years, which would fall within the development or beginning of the delivery phase of this project. As a result, this may present an opportunity to explore options to renew or consider alternatives. A full list of sites covered wholly or partially by an agri-environment scheme can be found in Table 4.

Landownership data, such as local authority public asset registers and PROW routes, were consulted to establish public access. A lack of public access contributed to the exclusion of some sites.

Staffordshire County Council's Mineral Safeguarding Zones and contaminated land datasets were consulted. Mineral Safeguarding Zones cover several of the audit sites and, while the risk of mining or quarrying is low, contaminated land is expected across the project area as this is a post-industrial landscape. As a result, this information has not been included in site plans, but it is advisable to explore this further on a site-by-site basis during the development phase.

4.4 Development of outline site plans

The outline plans drew upon multiple resources for each of the sites contained within this audit. This includes local knowledge, gathered from SWT, partners and community engagement, and information extracted from past project reports such as SUNRISE. Various GIS datasets were also consulted, which are detailed in the below section. A full list of datasets consulted can be found in Table 5.

It is important to note that the habitat data, site citations, palaeochannels and historic water meadows referred to below do not necessarily provide up to date information on the condition of habitats. Where no other information is available, proposed measures are tentative dependent on a site visit to establish condition.

4.4.1 Nature conservation site citations

Many of the sites contained in the audit are covered wholly or partially by a nature conservation designation. Records of designated nature conservation sites often include information on habitats and species present, habitat condition, suggestions for future management and potential threats.

Local Wildlife Site (SBI & BAS), NNR and LNR citations and SSSI condition assessments have been explored, and this information has been included in the site plans where it is likely to still be relevant as some of this information is now several decades old and may no longer be accurate.

4.4.2 Habitat data

Habitat data has been used to inform site descriptions and suggest options for restoration. The following datasets have been explored:

Natural England's Priority Habitat Inventory (PHI) describes the geographic extent and location of Natural Environment and Rural Communities Act (2006) Section 41 habitats of principal importance.

Habitat composite mapping has been produced by Staffordshire Ecological Records (SER). This is a very comprehensive dataset which is a composite of thousands of layers created for various surveys. Where data exists for multiple surveys at the same site, this has been merged to remove overlaps. While this has good coverage of the area, some of the data is several decades old and may no longer be accurate.

Natural England's Ancient Woodland Inventory has been consulted. This dataset identifies the location and extent of woodland that have been present for at least the last 400 years. This relative lack of disturbance enables unique communities of plants, fungi, invertebrates and microorganisms to develop. Recently, a review of the Ancient Woodland Inventory (AWI) across Staffordshire has also identified a number of Long-Established Woodlands (LEW) which may be of ancient origin. A long-established woodland is defined as a site that has been continuously wooded for at least the previous 150 years.

4.4.3 Historical environment data

Information on the presence or absence of palaeochannels, historic water meadows and Scheduled Monuments has been included in site plans. Scheduled Monuments refer to archaeological monuments listed on the National Heritage List for England. Where historic monuments or features are present the local Historic Environment Records (HER) will need to be consulted to assess potential impacts which may impose limits or exclude any plans for habitat restoration. A full list of sites with Scheduled Monuments can be found in Table 4.

4.4.5 Watercourse data

Several EA datasets have been consulted with details of Combined Sewage Outflows (CSO), river obstacles and water body catchments included in site plans where present. Water body catchment information can be used to identify sites that can contribute to projects focused on specific catchments. However, detailed analysis of watercourse elements is beyond the scope of this report but can be found in the accompanying Natural Heritage Audit– watercourses and water dependent habitats.

4.4.6 Aerial photography

Aerial photography from 2017 was used to verify the accuracy of the aforementioned datasets as far as possible and provide additional information. This included information about habitats, urban development, desire paths denoting public access, and land use (for example it can provide evidence of grazing, flooding or amenity value). Potential inaccuracies may be present due to the age of the data and sites will require surveying to ground-truth this information.

4.4.7 Trent Valley Way

The Trent Valley Way (Figure 16) is a long-distance footpath established through Staffordshire, Nottinghamshire and Lincolnshire that follows the Trent Valley. Trent Rivers Trust are in the process of extending the route through the Trent Headwaters project area. Any development of sites along the Trent Valley Way will need to consider impacts on the footpath and involve consultation with Trent Rivers Trust. A full list of sites that contain sections of the Trent Valley Way can be found in Table 4 and this information has been noted in site plans where applicable.

4.4.8 Agri-environment schemes

Sites covered by an agri-environment scheme will require consultation with landowners to discuss options and may be excluded if the scheme will still be in place by the time of delivery. A full list of sites covered wholly or partially by an agri-environment scheme can be found in Table 4 and this information has been noted in site plans where applicable.

5 Projects

5.1 Habitat enhancement focused projects

The development of a strategy to restore the headwaters of the River Trent draws upon the principle that an ecological network must be 'more, bigger, better and joined', in order to accomplish sustainable restoration (Making Space for Nature – Lawton et. al., 2010).

This report focuses on terrestrial habitats, although sites adjacent to or connected to a watercourse have been prioritised as this presents a greater opportunity to reduce fragmentation of habitats by creating effective corridors.

Watercourse restoration elements will form part of the riparian natural heritage audit to be read alongside this terrestrial audit. This will include the removal or modification of river obstacles, such as weirs and culverts, water pollution, flood mitigation, substrate management, soil erosion, floodplain reconnection and the re-naturalisation of watercourses through bank reprofiling or similar.

The full list of site plans can be found in section 6.1 Site Plans. See Figure 17 for a map of all sites.

5.2 Species Re-introductions

Many species have declined or been lost from the UK due to human impacts (State of Nature partnership, 2023). Habitat restoration and a reduction in pressures such as pollution or predation can be sufficient for a species to recover, however, in some cases, species re-introductions may be more effective. Through re-introductions, also known as translocations, these species can be returned to their former habitats by re-locating them from existing healthy populations elsewhere or raising wildlife in captivity.

There are four types of conservation translocation:

- reinforcement – moving and releasing an organism into an existing population of the same species
- reintroduction – moving and releasing an organism to areas from which it has been lost
- assisted colonisation – moving an organism outside its natural range to where current or future conditions are more suitable
- ecological replacement – moving and releasing an organism outside its natural range to perform an ecological function that has been lost due to extinction of another organism

Natural England prioritise a conservation translocation where:

- the species creates or restores habitats that serve many other species as well as ecosystem functions (e.g. beavers)
- the species is threatened nationally or globally (e.g. large blue butterfly)

- the geographic distribution of a species population is extended
- the species is iconic and engages the public and stakeholders in support of packages of wider objectives (e.g. red-backed shrike, white-tailed eagle)

A feasibility study would be required that should follow the principles set out by DEFRA to maximise the chances of success. The principles are as follows:

- Identify the conservation need for a species and ecosystem, and set goals
- Evaluate if translocation is appropriate
- Develop a plan
- Get legal permissions and licences
- Maximise chances of successful establishment
- Maximise biodiversity benefits and minimise risks of harm to biodiversity
- Consider how to deliver wider benefits to society and minimise conflict with others
- Show accountability, transparency and openness
- Record actions and communicate outcomes

Consultation will be required with DEFRA and Natural England (NE) and IUCN guidance must be followed. Permissions and licences will need to be sought from DEFRA who provide a code and guidance[1] and IUCN guidelines must be observed[2].

A number of species have been identified as potentially suitable for reintroduction due to their particular strengths as ecological engineers, their historical significance, or intrinsic part of the headwaters environment. Beaver, water vole, white-clawed crayfish and black poplar are of particular interest and further information is included in the following sections (5.2.1– 5.2.4). A wider suite of complimentary species are also worth considering for reintroduction. These include grizzled skipper, freshwater mussels (including depressed river mussel), spined loach, osprey, white stork and willow tit.

In order for the reintroductions to be successful, the pressures which culminated in their local extinction must have been addressed sufficiently. An assessment should form part of a feasibility exercise.

5.2.1 Beaver (*Castor fiber*)

Beavers are a keystone species. They are ecosystem engineers who create wetlands in which other species can thrive. They live in freshwater habitats and prefer rivers and streams that are surrounded by wetlands.

[1] https://www.gov.uk/government/publications/reintroductions-and-conservation-translocations-in-england-code-guidance-and-forms.
[2] https://portals.iucn.org/library/sites/library/files/documents/2013-009.pdf

Beavers were hunted to extinction in the UK 400 years ago. In 2022, legislation was changed to protect beavers. They are now listed in schedule 2 of the Conservation of Habitats and Species Regulations 2017. As of 2025, they can now be released into the wild with a licence from Natural England.

The first step to reintroductions is raising awareness and making space for beavers. Suitable sites will also need to be identified. To then obtain a licence for release, there must be evidence that the project would have a clear benefit to society (e.g. providing natural flood management) and any risks need to be avoided, mitigated or managed.

Once released, Natural England has grants available to help with managing dams and protecting trees and crops and they have provided a training resource in how to manage beavers.

In terms of their distribution within the project area, there is a breeding population of enclosed beavers at Trentham Gardens Estate and there have been two sightings of wild beavers in 2022, one at Whitfield Valley and the other on the Trent and Mersey Canal north of Westport Lake. Outside of the project area, a small population of beavers (of unknown origin) have been recorded along the River Trent between Armitage and Burton, on the River Dove between Rocester and Doveridge, and the River Tame at Fazeley.

Potential sites that have been identified include Knypersley Reservoir and its sub-catchment, including The Head of Trent.

5.2.2 Water vole (*Arvicola amphibius*)

Water voles are a source of food for predators such as barn owls and otters. Their grazing provide space for rarer plants to grow, and they can also help to naturalise the riverbanks through their burrowing. They prefer soft, undisturbed and well-vegetated riverbanks but can also be found in lakes and wetlands too.

They are protected in the UK under the Wildlife and Countryside Act, 1981, they are a Priority Species under the UK Post-2010 Biodiversity Framework and they are listed as endangered on both the Great Britain and the England Red List for Mammals. They are one of the most endangered species in UK and have been lost from 90% of the places they used to inhabit.

Water voles face multiple threats including habitat loss, pollution and predation by American mink (*Neovison vison*) which became established in the wild in the 1950s.

Within the project area, water vole are not widely distributed and are considered very rare. In 2022, over 200 were introduced into Trentham Gardens Estate. It is hoped that they may spread north through Stoke, but there are no clear indications of this to date. There have been only three records in the last 5 years that are considered correct. These have been at Silverdale Country Park and Lyme Valley Parkway with a further possible but unconfirmed sighting at Westport Lake. The last location that water voles were recorded was Silverdale Country Park in 2024.

They may also be present at a site known locally as Baldies Field situated within the Newcastle-under-Lyme ward of Cross Heath, to the east of Liverpool Road, which falls

within the Lyme Brook catchment. This site consists of a number of small open spaces connected by greenways, which a residents' group is monitoring for signs of water voles, however this has not been verified by experts and additionally the site is threatened by development.

Water voles were previously more common at Scotia Valley, Silverdale Country Park, Apedale, Spring Fields, Berry Hill Fields, Whitfield Valley and Chatterley Whitfield Heritage Country Park.

The focus for any potential re-introductions would likely be Lyme Brook, however other potential sites identified that may be suitable for introductions include Knypersley Reservoir, Ford Green Brook more generally and Scotia Brook, near Westport Lake, which has good areas of wet heath. It is also hoped they may be able to recolonise areas they were previously recorded in.

Initially, the rivers and brooks of interest would need to be groundtruthed to assess their suitability. Water vole surveys would also be required to establish the size of the current population and whether reintroduction is necessary. Evaluation of the Trentham Gardens water vole introductions could be useful to understand why the water voles appear to have been unable to spread further north. The presence of mink will also need to be considered as this could limit the long-term success of reintroduction and coordinated; ongoing mink control in the project area may be required.

5.2.3 White-clawed crayfish (*Austropotamobius pallipes*)

The white-clawed crayfish is protected under the Wildlife and Countryside Act, 1981 and it is endangered globally. It has a widespread distribution but is rare. They prefer small, clean freshwater streams that are less than 1m deep.

They face multiple threats including habitat loss and predation by the invasive American signal crayfish (*Pacifastacus leniusculus),* which became established 30 years ago after escaping from farms. The signal crayfish also spreads the fungal disease crayfish plague, which the native species has no defence against. Signal crayfish are spreading fast throughout much of the project area with established populations in the River Trent, Lyme Brook, Fowlea Brook and Park Brook.

Apart from a single Ark site established in 2022, White-clawed crayfish are probably extinct within the project area. In the last 20 years, there have only been two confirmed records at Longton Brook Greenway. Surveys, including the use of eDNA, will be required to confirm the latest situation.

Potential sites identified that may be suitable for introduction include The Head of Trent at Knypersley Reservoir. There is also scope to establish a White-clawed Crayfish hatchery within the project area. These sites have been identified as the preferred locations, as they have opportunities to create more isolated locations from existing streams and rivers that may be colonised by invading non-native crayfish, and hence are safe for native, White-clawed crayfish.

5.2.4 Native Black poplar (*Populus nigra* subsp. *betulifolia*)

The native black poplar is one of the United Kingdom's rarest trees with fewer than 15,000 trees believed to be in existence. The trees are dioecious, meaning there are separate male and female trees. Over 90% of the remaining trees are estimated to be male with approximately 10% female.

Until the autumn of 2021, Staffordshire only had one known confirmed female native black poplar in the county. Following a publicity campaign across the membership of Staffordshire Wildlife Trust, three more confirmed females were discovered.

Following the discoveries, a concerted effort commenced to propagate both male and female trees and begin a planting strategy to increase the number of trees in the Trent catchment. The aim across all sites is to plant both sexes to secure the presence of the species and improve the conservation status. Additionally, all trees are being genetically tested to ascertain which clones of the species are being propagated and to enable a focus on the rarer clones.

Through the TTTH project, we aim to ensure the species maintains a secure foothold in the project area with a particular focus on the tributaries of the River Trent.

5.2.5 Further species reintroduction and 'flagship' species recovery opportunities

The conservation partners are considering further candidate species for reintroduction. These include:

Depressed River Mussel (*Pseudanodonta complanata*). A rare bivalve that is considered to be extinct in Staffordshire. There are historic records from the Caldon Canal and surviving populations nearby on the Shropshire Union Canal in Cheshire. Options for a bivalve hatchery to facilitate the reintroductions are being explored.

White stork *(Ciconia ciconia)*. Migratory visitors to the UK, white storks have not been recorded breeding on the British Isles for several hundred years until recently. Recent reintroduction efforts have seen a wild breeding pair successfully nest and there are now locally planned reintroductions of this iconic species.

In addition to reintroductions, there are opportunities for the targeted recovery of a series 'flagship' and 'indicator' species. These species have very specific habitat requirements that, if met, should benefit a wider assemblage of associated species. These include:

- Rivers, Streams, Riparian Zones: Otter, Dipper, Blue-winged Olive Mayfly, Logjammer Hoverfly, Brown Trout, Brook Lamprey, and Bullhead.
- Canals, Lakes, Ponds, Wetlands: Swan Mussel, Red-eyed Damselfly, Emperor Dragonfly, Grass Snake, Great Crested Newt, Little Egret, Osprey, Daubenton's Bat, Harvest Mouse, and Water Shrew.
- Open Mosaic/Brownfield Sites (including old quarries, former mines and disused railway lines), Heathland, Grassland, Scrub & Bare Ground: Grizzled Skipper, Dingy

Skipper, Sand Bear-Spider, Peregrine Falcon, Skylark, Common Lizard, Slow Worm, and Noctule Bat.

5.3 Ecological projects shaped by the historical environment

5.3.1 Restoration of Historic Water Meadows

Historic water meadows are an important part of our agricultural heritage for managing land in the floodplain and are present within the project area. These historical farming practices have shaped the land and habitats as we see them today. These represent a valuable link and opportunity for crossover projects enhancing both the natural and cultural elements of the landscape.

The control of water by a system of channels, sluices and ditches, enabled farmers to manage the water levels manually on a field with the aim of encouraging early and lush growth of the sward, which differ from floodplain meadows that flood naturally (Historic England, 2017). The water was allowed to continually flow in order to prevent stagnant pools forming which could harm the grass (Historic England, 2017).

The presence of water meadow features can also be an indication of relatively undisturbed semi-natural grassland, an important resource which has declined across the UK, the preservation of such can have both biodiversity and cultural benefits. Additionally, water meadows can capture excess nutrients before they enter watercourses, store water and reduce flood risk.

Within the project area, the water meadows are distributed predominantly around the Lyme Brook and its confluence with the Trent and along Longton brook. They are also found to a lesser extent along Park Brook, a tributary within the Head of Trent catchment and along a stretch of the Trent between the Lyme and Fowlea brooks.

All of the historic water meadows fall to a greater or lesser extent within a Flood Zone 3, which is land with a 1% or greater chance of flooding, categorised as high probability. However, this Environment Agency data is largely based on modelled data and is therefore indicative rather than specific.

In terms of the likely condition of the historic water meadows, only one site is partially covered by a Countryside Stewardship agreement, this site is located just downstream of the confluence of the Trent and Lyme Brook and is not included in the audit as aerial photography suggests privately owned agricultural land, potentially multiple landowners and no PROW route, preventing public access. There are two sites which are partially covered by an SBI, the condition of which is unknown.

There is potential for a more detailed review of historic water meadows across the project area. These sites would need to be further investigated by field survey to establish condition and potential for wetland restoration.

5.3.2 Restoration of palaeochannels

Palaeochannels are depressions within the landscape indicating the former course of the river. They contain important sediment deposits from ancient river channels and show

evidence of historical environmental and landscape formations. Sometimes they can support diverse assemblages of species associated with water bodies that have been cut off from the former river's course.

Palaeochannel restoration, such as re-wetting or reconnection to the floodplain, may be considered to conserve the existing resource. They may serve as a Natural Flood Management system storing flood waters and, in some cases, acting as Sustainable Drainage Systems (SuDS), as well as providing small open water bodies for a variety of associated wetland species. Where palaeochannel restoration could be an opportunity, the decision for restoration should be taken on a site-by-site basis, depending on a variety of factors such as existing biodiversity or contaminant status. Palaeochannel sediments near historical mining activity could contain contaminants which may be detrimental if released into a watercourse.

Palaeochannels are under threat from aggregate extraction and infrastructure enhancement as well as lowered water levels due to water abstraction (Malone and Stein, 2017).

Within the project area, the palaeochannels are distributed in higher densities along the Trent at the confluence of Ford Green Brook corresponding to the site called Milton and at another confluence with a tributary within the Head of Trent catchment corresponding to the site Heakley Marshes. Palaeochannels are also present to a lesser extent along the Longton, Park, Lyme and Causley books.

There is potential for a more detailed review of palaeochannels across the project area. Areas of higher density could be targeted for further investigation to ascertain their condition, threats and potential conservation and restorability.

5.3.4 Mineral sites

Mineral Safeguarding Areas cover sections of the project area and several of the audit sites, which presents both challenges and opportunities in planning for nature conservation. It is important to recognise that that these areas could potentially have a huge impact on the proposed site plans, either positively, negatively or both and where overlaps exist there is an opportunity to deliver multiple outcomes.

Whilst the likelihood is that much of the safeguarding area will never undergo any mineral extraction, planning any developments within them must be considered to ensure that this will not prevent mineral extraction on potential future extraction sites.

It is possible that high quality habitats may be lost as a result of mineral extraction, a Mineral Safeguarding Zone may also provide protection to important habitats by protecting them from other types of developments. Whilst it is always best to avoid the loss of habitats and improve the diversity of the existing landscape, any ecological impact of mineral extraction can be negated through careful planning and ensuring that a suitable minerals restoration plan for the site is in place, which recreates and expands the area of habitat on a like-for-like basis in the case of losing high quality habitats. Post extraction habitat restoration should be guided by the nature recovery network map to create habitats which will most suitably contribute to habitat connectivity within the

landscape. In doing this it is possible for mineral extraction sites in the long term to benefit through the creation of a diverse and well-connected landscape, providing further justification to not avoiding these areas when planning for nature conservation.

When considering planning for nature conservation on a landscape scale, Mineral Safeguarding Zones cannot be excluded from the mapping exercise, land within the safeguarding zone may never be worked for minerals in the long term but could be of huge value in terms of contributing to diverse well connected habitats and landscape either if no mineral extraction were to occur or through well planned sympathetic habitat restoration which may lead to more diverse habitats in the long term.

5.3.5 Brownfield sites

Brownfield sites are areas of land, usually in urban areas, which have previously been developed but are no longer used and are often cleared of buildings etc. Brownfield sites can support a mosaic of early succession habitat types, for example bare ground, short grassland, ephemeral and ruderal plants, as well as habitats such as heathlands and marsh. When multiple such habitats are present in the same site, this can often be referred to as Open Mosaic Habitats on Previously Developed Land (OMHPDL) which is a UK Priority habitat and can be of high importance for a range of species, particularly invertebrates.

Because of the post-industrial nature of Stoke and urban Newcastle along with the built-up nature of much of the project area, there are several existing brownfield sites within the project boundary which may possess OMHPDL habitat. Natural England has compiled a draft inventory of OMHPDL habitat[3] and many sites are located within the project boundary. Because OMHPDL habitat occur on brownfield land, which is either in transition between developments, earmarked for further development or has no management to maintain the open and varied nature of habitat, they are usually only short-lived.

To ensure that there is continuity of this habitat within the project area, it would be beneficial to help develop meaningful policies which both account for the need for planned development and growth but also protect, enhance and expand the existing areas of OMHPDL in the project area. This may be achieved through measures such as:

- Ensuring that existing high quality OMHPDL habitats which are sympathetically managed are monitored and remain in place as a biodiversity source for the species which utilise these habitats.
- Ensuring that existing OMHPDL on publicly owned sites are managed appropriately, including training operatives to recognise high quality OMHPDL habitats and how to manage early successional sites. In addition, explore opportunities for the expansion of OMHPDL where there are suitable sites.

[3] https://naturalengland-defra.opendata.arcgis.com/datasets/Defra::open-mosaic-habitat-draft/about

- Public education and awareness of OMHPDL habitats, as often from public perception these can look like sites which have just been left without management without understanding their importance.
- Maintaining an inventory of brownfield/OMHPDL sites to track the change in overall area of brownfield land.

5.3.3 Improving access through the enhancement of greenways

Access has emerged as a major issue from the community engagement aspect of the project, specifically that the watercourses are difficult to access and it is often not known where they are.

One of the ways in which the Trent Headwaters project can address the issues of access is through the identification and enhancement of greenways.

Greenways are often found along watercourses due to the constraints they pose to urban development, thus providing space for nature. Canals also present a significant opportunity for the enhancement of greenways as they are often more easily accessed than natural watercourses due to the existence of towpaths.

Where greenways are connected to larger green spaces, this can encourage increased access to these sites via active means by providing a more appealing route with greater biodiversity. Another significant benefit of restoring greenways is that they can improve habitat connectivity, enabling species to move between larger sites.

There are several greenways contained within the 6.1 Site Plans' section of this report such as Longton Brook Greenway, Scotia Valley and Fenton Road/Causley Brook.

Further greenways that may present opportunities include the Trent Valley Way (Figure 16), the feeder channel from Knypersley Reservoir to Caldon Canal, which is a popular walking route that follows the Trent Valley Way, and the greenway along Longton Brook at Trentham Fields, which may be suitable for community restoration.

Road-side verges also offer an opportunity to create or enhance a greenway through tree planting and wildflower seeding. For example, Plantlife's 'No Mow May' was successfully implemented at Newport Lane green space and along the road-side verges connected to this on Newport Lane. 'No Mow May' is an initiative to discourage mowing during the month of May. This was well received by residents, and the community group Middleport Matters, who were active in surveying the verges and wrote an article about it in their newsletter.

The focus for any intervention could be on verges along major pedestrian routes to popular locations, those in more socio-economically deprived areas as well as those that improve the connectivity between larger green spaces.

5.4 Climate change adaptation - tackling the urban heat-island effect

The urban heat-island effect refers to the phenomenon whereby urban areas experience significantly higher temperatures when compared to the surrounding rural area. This is

due to the quantity of hard surface, such as buildings and roads, which absorb and retain heat to a greater degree than vegetation or bodies of water.

Furthermore, socio-economically deprived areas have been shown to experience higher temperatures (Krenz & Amann, 2025) and higher mortality risk in response to heat (Son et al., 2019).

An in-depth analysis of social deprivation data, land surface temperature and habitat data would be required in order to target resources to the most appropriate areas. The development of targets for urban tree-planting could be established along with a monitoring programme to assess impacts on land surface temperature.

Tree Equity Score UK combines information from a variety of sources to create a score reflecting the level of need in an area. The sources of information include tree canopy cover, income, temperature and air pollution. Stoke-on-Trent and urban Newcastle have both been assessed and this information is freely available.[4]

There is also the potential to replicate the Burton i-Tree Eco assessment[5] within the Trent Headwaters project area. This study by Treeconomics aimed to investigate and quantify the benefits delivered by the woodland, individual trees and hedgerows found across the urban area.

5.5 Monitoring and evaluation

There have been a number of habitat restoration projects within the project area over the last few years and there is rarely the resource to monitor and evaluate the outcomes of these to identify where further work remains or to improve our understanding of the most effective methods.

Building monitoring into the initial development plans increases the likelihood that it will be implemented. It is advisable to follow the River Restoration Centre's Practical River Restoration Appraisal Guidance for Monitoring Options (PRAGMO) for best practice.

Citizen science offers an opportunity for monitoring the impact of habitat restoration while engaging the community. The production of short videos using drone footage have also proven popular and an effective means of increasing public engagement.

A further option could involve a comparison of the biological records from the Penny Anderson Biodiversity Assessment Report with the current records to assess longer term changes within the area.

5.5.1 Citizen science monitoring

Monitoring is an activity that can be highly accessible to the public and when carried out this way it is known as citizen science. Citizen science represents an opportunity to both collect valuable data at low cost and to increase public engagement. It can be particularly impactful as people gain a sense of ownership and responsibility for local sites and can

[4] https://uk.treeequityscore.org/map#10.75/53.0544/-2.2177
[5] https://treeconomics.co.uk/reports/burton-i-tree-eco-report

directly see the results of delivering habitat enhancement in identifying harmful practices, contributing to a society better educated in the natural environment.

Citizen science can play a significant role in monitoring by leveraging the power of volunteers to collect and analyse data about biodiversity and environmental change. This approach allows for large-scale and long-term monitoring efforts, providing valuable data for project evaluation, future research and for policymakers. There are various points at which citizen scientists can contribute to a monitoring scheme from the initial data collection point to the data analysis and interpretation stage. Citizen scientists can collect data through various methods, including observations of species, habitat assessments, and analysis of camera trap images. Ideally, citizen scientists would follow a repeatable measurable methodology following a standardised collection process in order to create statistically comparable data sets. This should be advised through linking with experts within the partnership. While some data can be analysed by citizen scientists themselves, others may require professional expertise for validation and interpretation. Subsequently, identifying and reporting trends to relevant organisations and partners in order to raise a local issue can give purpose to local monitoring groups.

Effective citizen science projects require strong partnerships between researchers, organizations, and volunteers. Ensuring data quality is equally crucial, which can be achieved through protocols, training, and validation processes.

The future of monitoring also increasingly integrates with developing technological advances and, if utilised in the correct way, they can facilitate more accurate data capture and analysis. Emerging technologies like AI, passive acoustic monitoring, drones, and eDNA sampling are increasingly used to enhance citizen science projects.

5.5.1.1 Examples of citizen science in terrestrial monitoring

- *iRecord:* A national recording scheme for terrestrial and freshwater species, where volunteers submit sightings and observations.
- UK Butterfly Monitoring Scheme (UKBMS) and the UK Pollinator Monitoring Scheme (UKPoMS): Schemes that measure trends in butterfly and pollinator populations, with citizen scientists contributing data.
- WildLIVE!: A project where citizen scientists analyse camera trap images, using the platform Labelbox.
- Monitoring events: Events such the City Nature Challenge are effective ways of gathering large amounts of ad-hoc species data.

5.5.1.2 Examples of citizen science in aquatic and riparian monitoring

- Riverfly Monitoring Initiative (The Riverfly Partnership)

This is a simple, nationally standardised monitoring technique that uses biological indicators to infer water quality and can detect severe pollution events.

The quality of the waterbody is determined by counting the abundance of key groups of freshwater invertebrates. Following the determination of a baseline, a trigger level is then set by the Environment Agency (EA). If the monitoring score falls below the trigger level this is a sign of a pollution event and is reported. All collected data is stored on the Cartographer data system and freely available to view and download.

Riverfly monitoring allows for volunteers to advocate for their local waterbody and has scope for continued development, through improving species identification. The regular engagement with the watercourse also puts volunteers in an advantageous position to gather hydrological data and report other species, like fishes and otters.

- SmartRivers (WildFish)

SmartRivers is a comprehensive citizen science method and toolkit that aims to collect professional grade data. The nationally standardised method, with detailed training to record the invertebrates within streams, is curated and reviewed to make it as comparable to professional monitoring as possible. An invertebrate fingerprinting method is used to collect spring and autumn samples, which are preserved and analysed to species level away from the riverbank. The indentation is completed by a mix of volunteers and professionals. The species and abundance are used to infer the impact of reduced flows, chemicals, sediment, phosphorous and organic pollution.

- Outfall Safari

Outfall Safari aims to identify the misconnections between foul wastewater drains and surface water drains (rainwater run-off). In these cases, sewage can end up flowing directly into rivers. Surface water outfalls are monitored to check for signs of pollution which would indicate a misconnection. This information is then passed to Severn Trent who can investigate it further. Misconnections from housing and business developments will also need to be assessed. Commercial car wash facilities should also be targeted.

- FreshWater Watch

This is a global citizen science project to monitor water quality. FreshWater Watch will provide 'participation packages' for groups, which includes access to full training, water testing kits and their online platform, providing instructional videos, mapping and visualisation tools. There is a fee for this package, however funding is also available.

FreshWater Watch also organise 'The Great UK WaterBlitz' on a biannual basis each spring and autumn. This involves engaging as many people as possible over a weekend to test water quality in their local watercourse to provide a UK-wide snapshot of the health of our rivers and to monitor changes through time. Water quality Kyoritsu Packtest kits are provided to test for nitrates and phosphates, with a form to gather information on turbidity.

- MoRPh citizen science river surveys (Modular River Survey)

Modular River Survey have developed several field survey techniques for assessing river structure and habitats. These can record sediments, physical habitat mosaic and the

vegetation structure of river channels and their margins, the physical processes that affect the river channel and human pressures. Records are freely available online and are stored in a user-friendly database.

There are four surveys available for citizen scientists of relevance to the project area. These include MoRPh Rivers, Urban River Survey, Mud Spotter and Riverwood (pilot) for which training is available.

6 Opportunities

Where a cost estimation exercise has been carried out. All estimations of cost are based on previous experience with similar projects and up to date 2025 contracting costs. It should be noted that inflation will need to be factored in to update costs in-line with the delivery timeline. To accommodate this, a contingency of 10% has been added to final calculations. They are rough ballpark figures as itemised detail is not possible until further project development has been undertaken. All figures are exclusive of VAT.

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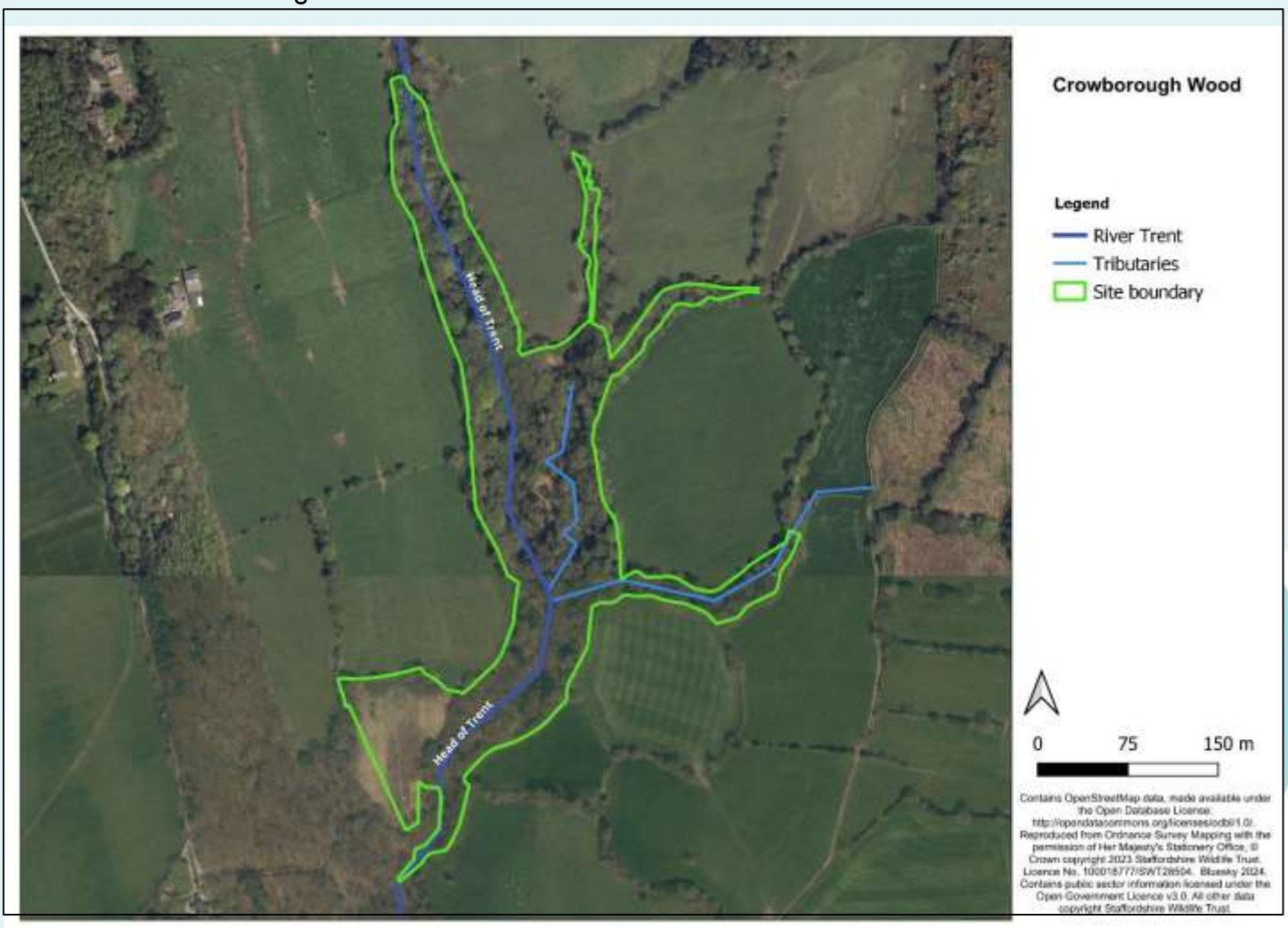
6.1 Site Plans

6.1.1 Crowborough Wood



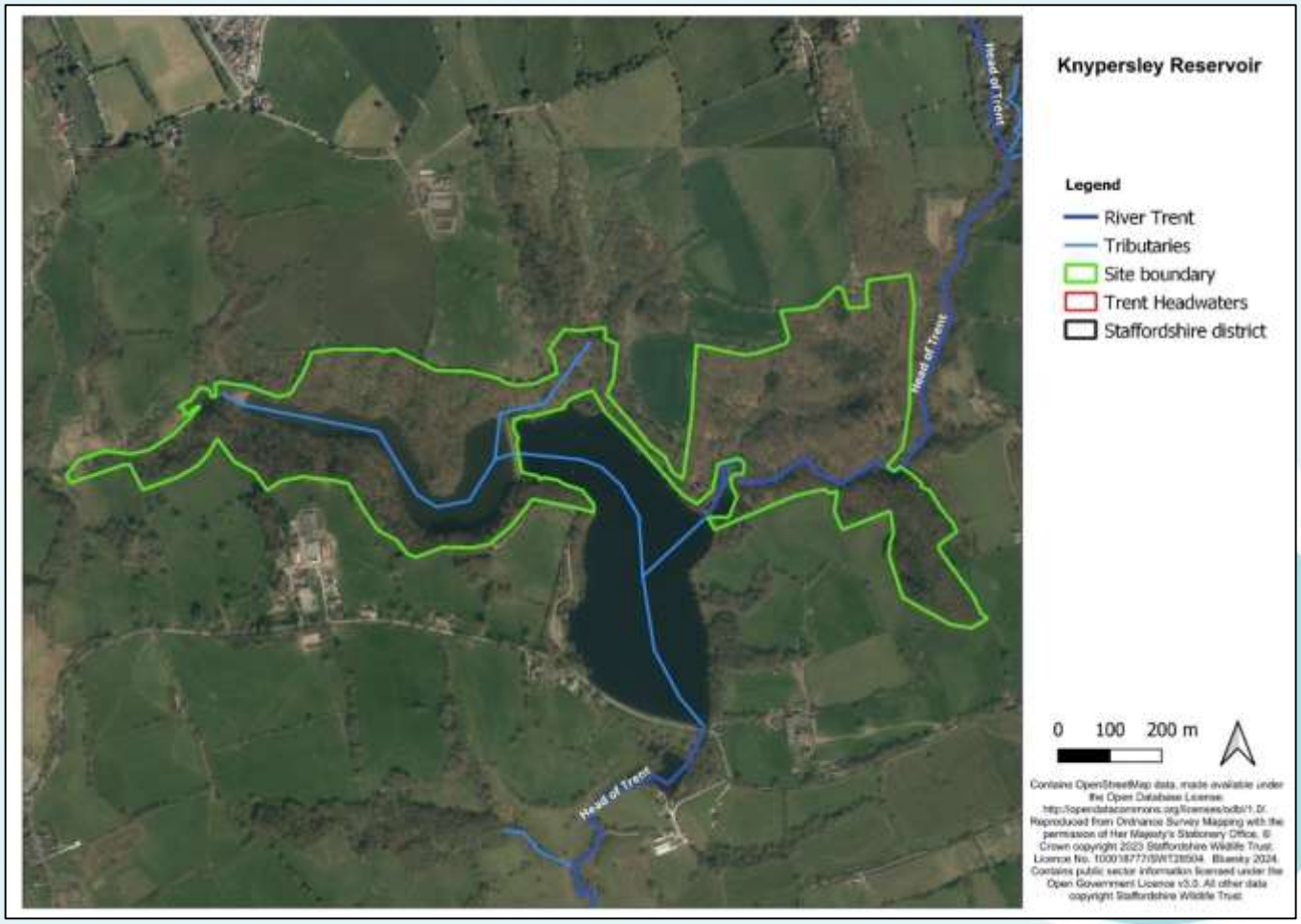
Water body catchment	Head of Trent
District	Staffordshire Moorlands
Grid Reference	SJ 90249 56062
Size	6 hectares
Landowner	Private
Public Access	No
Lead Organisation	Staffordshire Wildlife Trust

Site description	A designated SBI largely covered by ancient semi-natural woodland that follows the course of the Trent and a number of its tributaries. Located close to the source of the Trent. Habitats include Lowland Mixed Deciduous Woodland with an area of Lowland Meadow. There is a small area of marsh/marshy grassland to the south which is managed in accordance with a mid-tier Countryside Stewardship agreement ending in December 2028. Himalayan balsam highlighted as a priority management recommendation during a 2014 SWT survey.
Restoration measures	Invasive non-native species (INNS) The site would benefit from the management of Himalayan balsam within the riparian zone and rhododendron within the woodland. Invasive non-native species typically outcompete other native flora and are considered invasive as they expand their territory rapidly. The control of them should plan for long-term treatment and management options as eradication not always achievable if there is an outside resource. Natural Flood Management (NFM) This site is high in the catchment and the benefits form Natural Flood Management techniques, such as the introduction of large woody material to the watercourse, could be significant downstream. The LWM would slow the flow of water during high flow events, delaying and lowering peak flows at flood pinch points. It should be noted that a catchment wide approach will be most effective in generating significant results. Grassland enhancement The grassland covered by the Mid-Tier Countryside Stewardship agreement has the potential to renew or consider alternative options after its expiry to continue to promote floristic diversity and appropriate management. Pollution management Identify pollution pathways from agriculture and roads. Carry out professional ADAS farm audits for all livestock farms in the Head of Trent sub-catchment. Provide catchment sensitive farming style 50% grants for agreed improvements to help with legal compliance issues, reduce pollution pathways, reduce soil compaction, buffer watercourses and increase farm profits.

	Tufa springs Restoration plans should factor in the preservation of existing tufa petrifying springs. This will involve minimal disturbance to the underlying geology, minimising pollution inputs, establishing buffer zones and minimising access. The water table should not be altered in a way that affects flow to the springs. Wetland enhancement Creating ponds and scrapes within the woodland and grassland will promote diversity by maintaining a wetland mosaic which supports a broader range of floodplain species. The areas of open water help with climate resilience of species by providing valuable refuge during drought events Species opportunities The site being high in the catchment lends itself to a White-clawed Crayfish introduction. Tributaries isolated from the main river are less likely to support American Signal Crayfish which are non-native and are a significant factor in the population decline of native White-clawed Crayfish. A Feasibility study should be conducted to assess the viability. There is also an opportunity to install osprey platforms.
Priority Overview	Medium
Estimated budget	Total cost = £35,000-£45,000 Designs = £5,000 Capital works = £20,000-£30,000 Project management: £10,000

Photographic Record	

6.1.2 Knypersley Reservoir



Water body catchment	Head of Trent
District	Staffordshire Moorlands
Grid Reference	SJ 89507 55522
Size	39 hectares
Landowner	Staffordshire County Council (SCC), Canal and River Trust (CRT)
Public Access	Yes
Site description	This site is a designated SBI, consisting largely of ancient semi-natural oak woodland surrounding the reservoir, which is the only reservoir along the entire length of the Trent. The head of the Trent flows through the north-east of the woodland and adjacent to this

	is Crowborough Wood SBI described in the above site plan. There are a number of tributaries with their source located within the woodland to the north of the site, which is likely private land. Invasive non-native species typically outcompete other native flora and are considered invasive as they expand their territory rapidly. The control of them should plan for long-term treatment and management options as eradication not always achievable if there is an outside resource. The site boundary contains a designated RIGS site, the Knypersley Reservoir Sandstones, as an example of Sandstone from the lower Coal Measures. The site supports a mosaic of wetland habitats including marshy grassland, marginal and swamp vegetation with east of the reservoir being more frequently wet in character but with some areas of swamp to the west. The north and western sides (Knypersley Wood) are denser and include planted rhododendrons which suppress ground flora. A regionally important Daubenton's Bat roost was recorded within the site in 2018. The last record of water voles was in 2000. Trout 'redds' have been found near here which suggests suitable habitat for White-clawed crayfish and freshwater mussels, which occupy similar habitat niches. The Trent Valley Way follows the PROW running north to south through the centre of this site.
Restoration measures	Invasive Non-native Species (INNS) The woodland would benefit from the control of rhododendron, which is supressing native ground flora and the removal of Himalayan Balsam. Floodplain Wetland Mosaic There are opportunities to enhance the grassland and wetland mosaic habitats by creating scrapes and ponds and using conservation management techniques which needed to open up areas or reduce scrub encroachment. This will encourage mosaic structure which brings diversity to this habitat type. Species opportunities Potential for White-clawed crayfish and freshwater mussel ark sites upstream of Knypersley Reservoir in the feeder streams. Tributaries isolated from the main river are less likely to support American Signal Crayfish, which are non-native and are a significant factor in

	the population decline of native White-clawed Crayfish. This would require ark site feasibility studies of the entire area upstream of the dam and possible habitat improvements and a translocation licence from Natural England. There is also an opportunity to install osprey platforms adjacent or on poles above the reservoir lake. Ospreys tend to nest within a 2-mile radius of open water near to good populations of fish in shallow waters. Platforms placed in marshes or out in the middle of the water have a much better chance of being used; platforms should also be away from disturbance by humans. There is possibility that this location would be viable as a release site for wild beavers, the large area of open water and numerous tributaries of the Trent through extensive wetland habitats make it a highly suitable site. Beavers have the ability to engineer the ecosystem around them as they shape the landscape by cutting trees and building their dams to increase the water depth. This enables the Beavers to swim easier and keeps them safe from predators. This is beneficial as it maintains a wetland mosaic. By holding the water back, these dams store and slow the flow of the water, reducing flood risks downstream. It is recommended that an in-depth feasibility for the release of wild beavers is caried out at this location.
Constraints	Multiple landowner agreements required
Priority Overview	High
Estimated budget	Total cost = £130,000 Designs and feasibility = £100,000 Capital works = £20,000 Project management: £10,000

Photographic Record	
Other information	Canal and River Trust own the reservoir while Staffordshire County Council own the remainder of the site. Of cultural significance is Gawton's Well located to the north-east and a Georgian trout hatchery. The fishing rights are owned by the Cheshire and North Staffs Angling Association who may be able to provide further information regarding the ecology and water quality of the reservoir.

6.1.3 Greenway Bank

Water body catchment	Head of Trent
District	Staffordshire Moorlands
Grid Reference	SJ 88678 55211
Size	8 hectares
Landowner	Staffordshire County Council (SCC)
Public Access	Yes
Lead Organisation	Staffordshire Wildlife Trust

Site description	This site has not been visited and therefore information was derived entirely from desktop GIS layers that were available to the project. The site was formerly managed as landscaped grounds of a stately home. The site supports features consistent with long-established wood pasture and remote sensing suggests improved grassland to be present across the site. There is a section of ancient semi-natural woodland along the boundary to the east. This site sits adjacent to Knypersley reservoir.
Restoration measures	Wood pasture The wood pasture appears degraded from aerial photography in that it lacks tree cover and ideally tree planting would restore the historical structure of the habitat. The importance of wood pasture for wildlife is in its ancient trees and their resource for invertebrates and the mosaic between open and shaded areas providing a variety of habitat niches. Grassland The enhancement of the floristic diversity of the grassland may be an opportunity as analysis indicates it is currently improved grassland (a low diversity community). Ideally, a higher frequency and diversity of flowering plants would be introduced. This option is only considered viable if a complimentary cutting regime can be implemented to maintain the diversity. The majority of the grassland is covered by a CS Capital Grants Countryside Stewardship agreement ending December 2026 with the potential to renew or consider alternative options.
Estimated budget	Total cost = £30,000 Designs = £2,000 Capital works = £25,000 Project management: £3,000

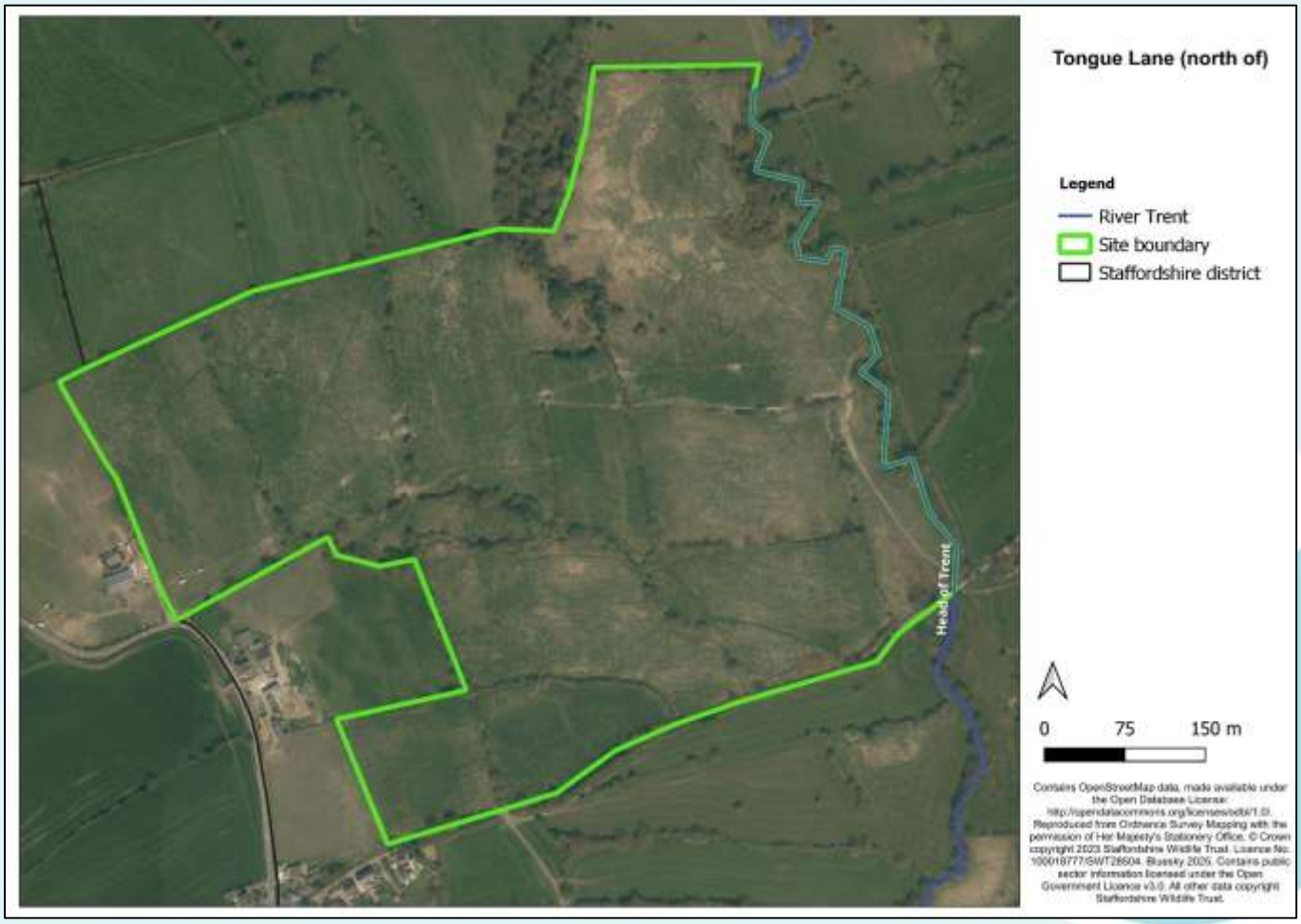
6.1.4 Tank Field

Water body catchment	Head of Trent
District	Stoke-on-Trent
Grid Reference	SJ 90061 52191
Size	0.5 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	Tank Field is a Local Wildlife Site (LWS) designated for its wet grassland and woodland habitats. Tank Field is centrally located in Norton Green and lies alongside the River Trent in its floodplain. It is predominantly covered by a mosaic of marsh and wet grassland

	with some woodland cover to the east and is subject to regular flooding from road runoff. There is a local community group for Norton Green village who may have an interest in managing the site for nature conservation.
Restoration measures	Pond creation Small-scale scrape and dragonfly ponds creation to increase structural diversity of the wetland mosaic were recommended in 2005 and remain viable. Pollution buffer / swale To combat potential diffuse pollution from the road, which were noted in previous site reports, a buffer to the brook or a buffer of taller vegetation or a swale within the grassland adjacent to the road could be created. Grassland The grassland would benefit from being managed via a conservation cutting regime to promote floristic diversity. Species opportunities Creation of a butterfly bank and viewing platform has been suggested by the local community. River The watercourse here is not within the LWS boundary however, if the ownership extends to the river, further investigation into in-channel flow diversity measures such a large woody material, gravels and boulders should be considered to enhance this artificially straightened section. Monitoring There is a potential for a water quality monitoring point and opportunity for community monitoring of the scheme using citizen science.
Priority Overview	Low
Estimated budget	Total cost = £18,000 Designs = £2000 Capital works = £15,000

	Project management = £3,000
Other information	This site has been put forward by the Norton Green Residents Association who have expressed interest a viewing platform, butterfly bank and water quality monitoring.

6.1.5 Tongue Lane (north of)

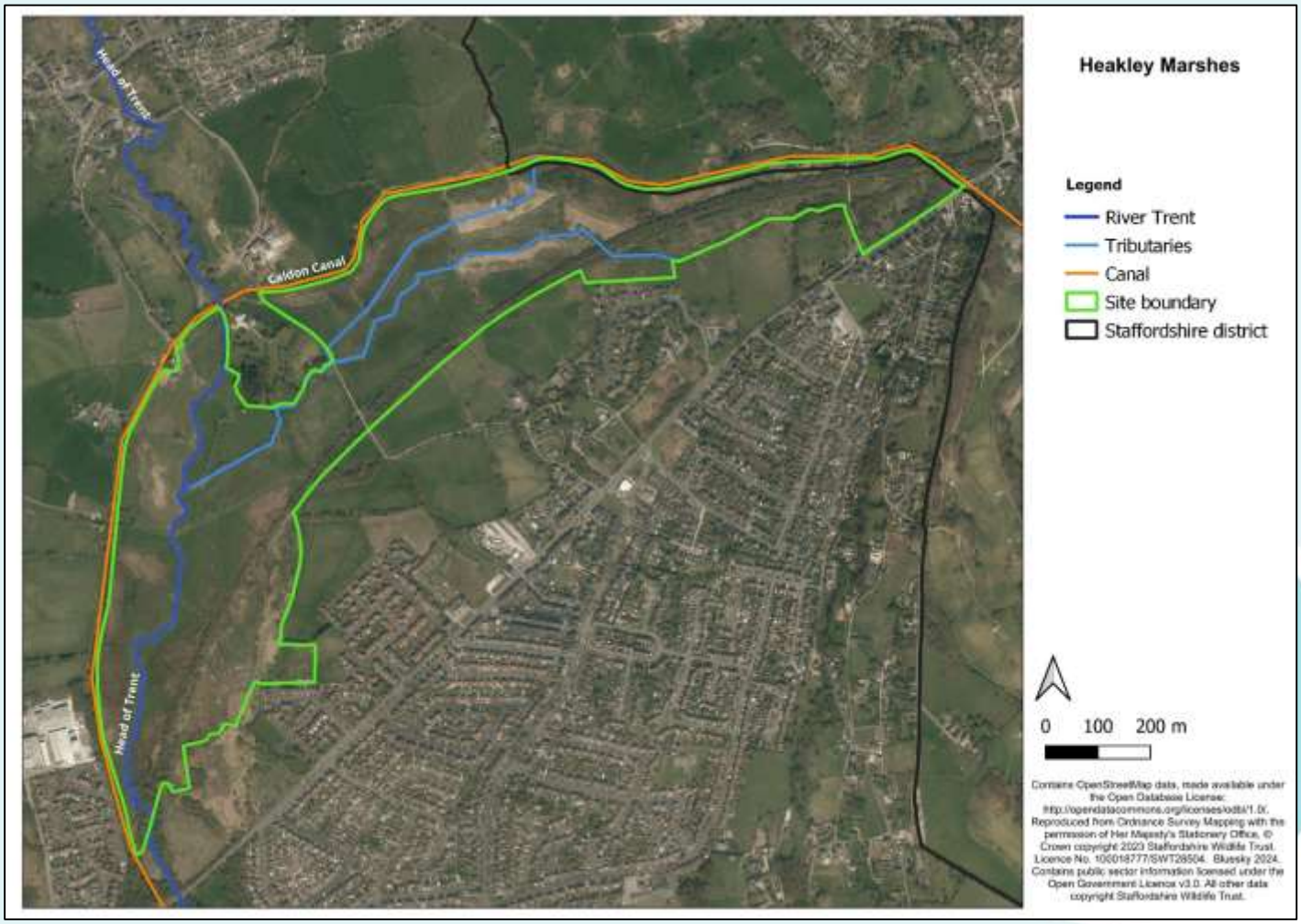


Water body catchment	Head of Trent
District	Staffordshire Moorlands
Grid Reference	SJ 90250 50497
Size	32 hectares
Landowner	Private
Public Access	PROW
Lead Organisation	Staffordshire Wildlife Trust

Site description	The site previously supported grassland over several irregular fields. Much of it has since been planted through a grant scheme with deciduous trees. The are still some open areas of grassland, however the condition is unknown and they appear to be unmanaged from aerial photography. The River Trent runs near to the eastern boundary of the site. Previously, the site had some preliminary feasibility on a beaver release.
Restoration measures	Ponds The creation of multiple ponds and scrapes of various depths would be an opportunity to increase the water resource within the floodplain and encourage a better mosaic of wetland habitats. Woodland The woodland would benefit from thinning out the planted lines to create a more naturalised structure; some more open areas with grassy glades would result in a range of light conditions to support different species requirements. There is a small drain or watercourse across the western portion of the site; it is possible that this could be blocked in places to encourage out-of-bank water flows and a more wet woodland community. Grassland Establishing a management regime of the grassland aimed at supporting a more floristically diverse sward would be beneficial. Hedgerows To improve woody species connection along field boundaries, new hedgerows could be planted with a mixture of native deciduous species complimenting the existing woodland. River Riverbank reprofiling can be considered to create a shallow profile. Riverbank reprofiling offers several benefits, including enhanced bank stability, improved habitat for aquatic and riparian species, and reduced erosion. By creating flatter slopes and encouraging vegetation growth, reprofiling can help reconnect the river with its floodplain, reduce flow rates, and improve water quality. Species opportunities There is possibility that this location could be adapted to be viable as a release site for wild beavers. The site would need to be modified to accommodate a population through the creation of multiple open water areas. If there are opportunities to do this

	along historical river features such as palaeochannels, this would be ideal. The large, wooded areas would supply the beavers with a resource to build their dams. Beavers have the ability to engineer the ecosystem around them as they shape the landscape by cutting trees and building their dams to increase the water depth. Any ponds created would therefore not require maintenance and once a beaver population is established the creation of more pools may follow through their grazing habits.
Priority Overview	High
Other information	Landowner has planted trees for nature conservation and may be interested in further work. They own 700m of river here and may be interested in buying other land for purposes of conservation. The landowner is interested in beaver reintroduction. If this site were to be used for a future release location for beavers a series of ponds would need to be created in advance.

6.1.6 Heakley Marshes

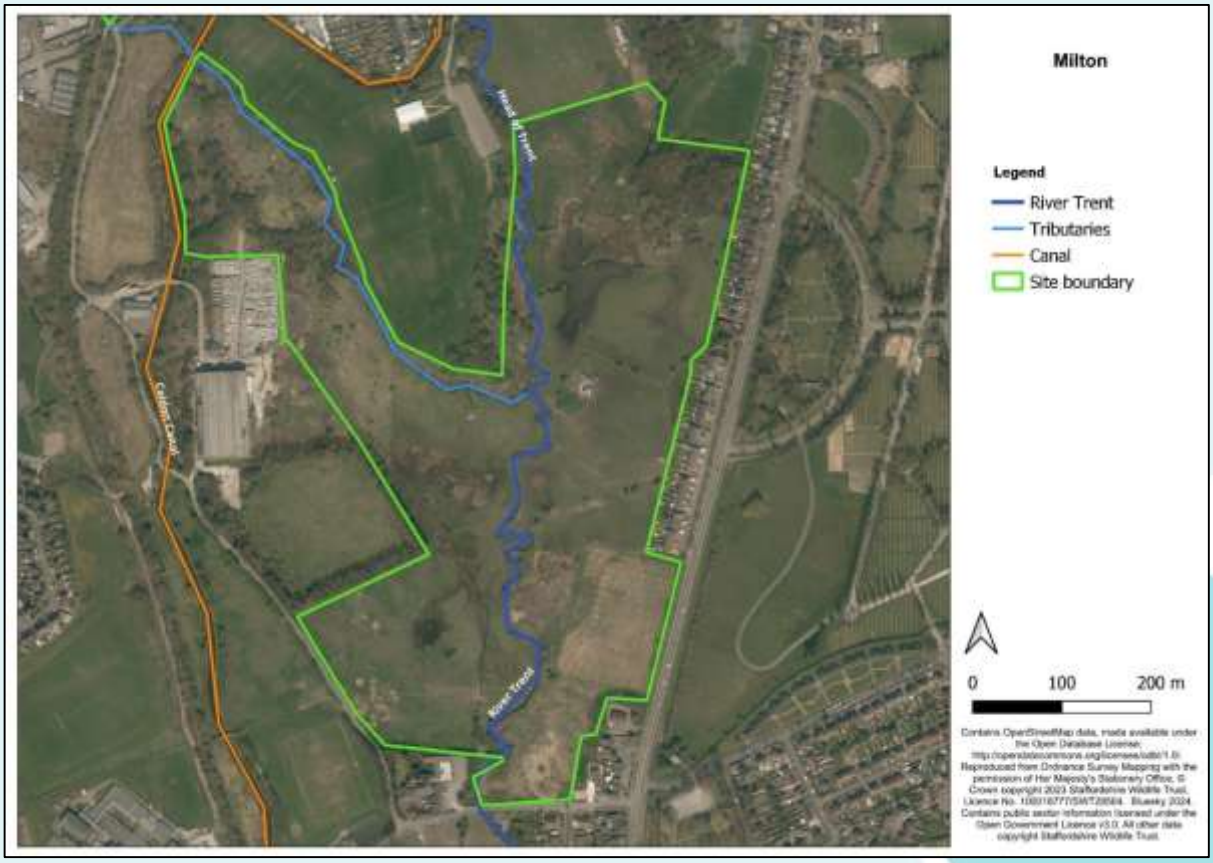


Water body catchment	Head of Trent
District	Stoke-on-Trent
Grid Reference	SJ 90400 51516
Size	52 hectares
Landowner	Stoke-on-Trent City Council (SOTCC), Network Rail, Canal and River Trust (CRT)
Public Access	Partial, PROW
Site description	This site is a designated Local Wildlife Site following the course of the River Trent, Caldon Canal and a tributary.

	The site supports predominantly UK Priority habitat Floodplain Wetland Mosaic. Multiple palaeochannels are evident across the site, in particular to the south-west. Additionally, there is a historic water meadow located to the north. Across the site there are remnant pockets of reed swamp and areas with high water table. Currently, the site is grazed by horses, with some areas of overgrazing. The Trent Valley Way follows the canal through this site. This site lends itself to a multi-disciplinary project marrying up elements of cultural and natural regeneration.
Restoration measures	Grassland A small section of the site to the east falls under Entry-Level plus Higher Level Environmental Stewardship agreement ending July 2028 with the potential to renew or consider alternative options. The continuation and expansion of a scheme would secure appropriate grassland management across the whole of the site. Ponds A series of ponds, hollows, scrapes and wildlife ditches would help to better establish a more diverse mosaic of grassland and wetland communities in keeping with Floodplain Wetland Mosaic. Heritage features Locating ponds along palaeochannels or relinking these historic channels with the river will be beneficial for the resilience of the floodplain environment, providing better connectivity between the river and its floodplain and supporting an increased water resource during drought conditions. The opportunity to restore the historic water meadow could also be investigated. Restoring historic water meadows offers significant benefits for wildlife by supporting a variety of habitat niches. By managing water levels and promoting the growth of species-rich vegetation, restored water meadows can significantly enhance biodiversity and contribute to a healthier environment. Communities The access across the site by local communities could be improved as part of engaging local people in the natural environment.
Constraints	Potential development site.

	Restoration of palaeochannels or historic water meadows will require consultation of the Historic Environment Record (HER).
Priority Overview	Medium
Estimated budget	Total cost = £120,000 Designs = £10,000 Capital works = £100,000 Project management = £10,000
Other information	Identified as a priority site by Canal and River Trust and Together Active for improving biodiversity and access to the canal and Trent for nearby communities.

6.1.7 Milton



Water body catchment	River Trent (Ford Green Brook to Fowlea Brook), Ford Green Brook, Head of Trent
District	Stoke-on-Trent
Grid Reference	SJ 90321 49643
Size	25 hectares
Landowner	2 private landowners, Stoke-on-Trent City Council (SOTCC)
Public Access	PROW
Lead Organisation	Trent Rivers Trust
Site description	The site at Milton is located in the north of Stoke and supports a mixture of rough grassland and grassland managed for amenity use. There is scattered woodland and some riparian trees along the Trent and the Ford Green Brook, which both run through the site

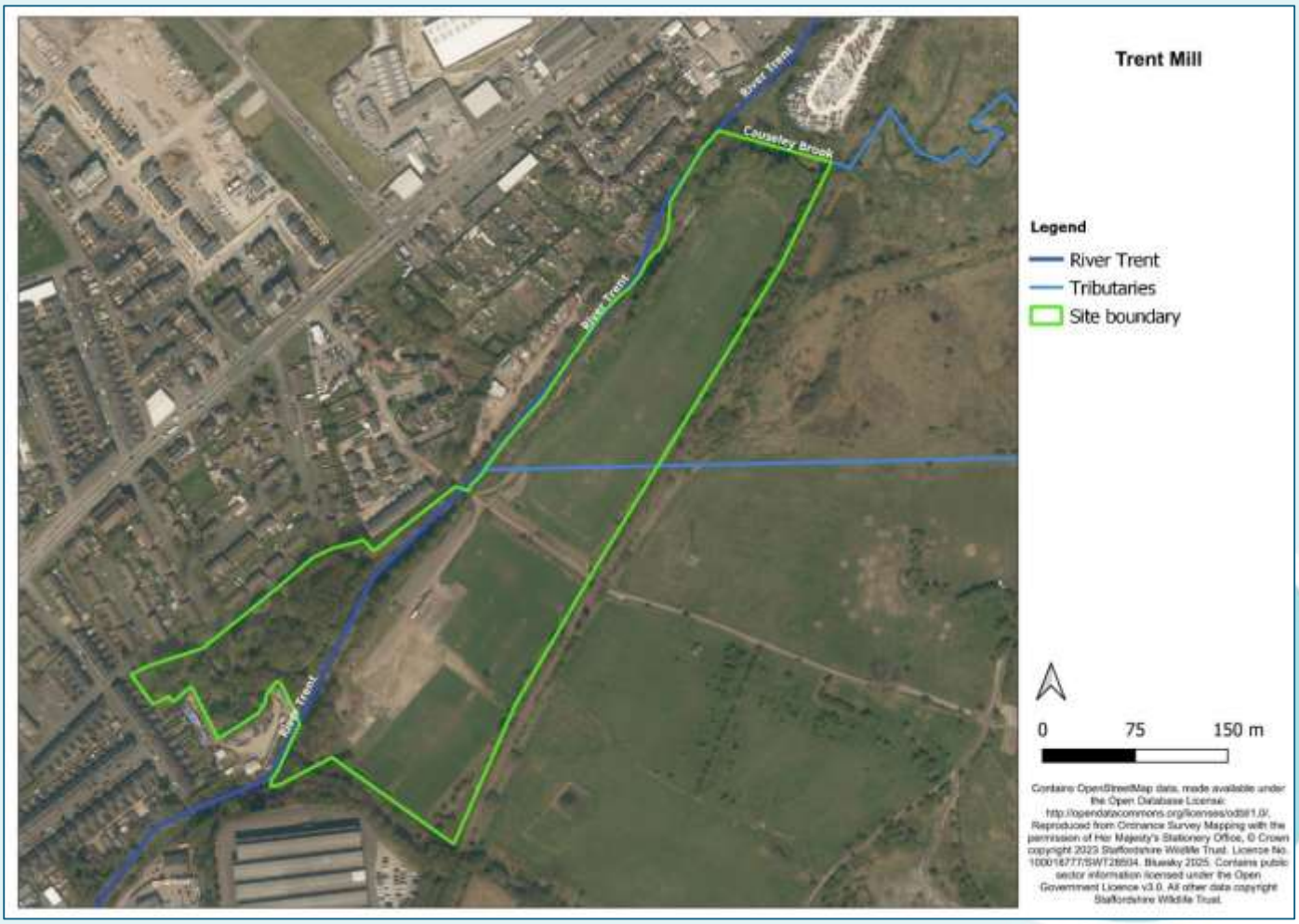
	meeting in the north at their confluence. Palaeochannels are present along both the Trent and Ford Green Brook. The Trent Valley Way follows the PROW through this site.
Restoration measures	River The river has a weir, which could be modified or removed to improve the passage for fish. A recommendation following the SUNRISE project was that a low-flow survey should be conducted on the river with suggestions of potential solutions made. Grassland The sward on its own would likely improve in structure and diversity by starting to introduce regular management. The enhancement of the floristic diversity of the grassland may be an opportunity. Ideally, a higher frequency and diversity of flowering plants would be introduced. This option is only considered viable if a complimentary cutting regime can be implemented to maintain the diversity. A habitat management plan supported by an environmental land management scheme or biodiversity net gain opportunity could be a way to secure funding for regular management.
Constraints	Restoration of palaeochannels will require consultation with HER. As part of the SUNRISE project, the removal of the weir and other proposed river restoration works were unable to take place due to lack of engagement and permission from the landowner. There is potential for a further attempt to complete this work and to undertake a low-flow survey. The weir also has the potential to be removed through EA enforcement action.
Priority Overview	Medium

6.1.8 Wallace Sports Centre Grounds

Water body catchment	River Trent (Ford Green Brook to Fowlea Brook)
District	Stoke-on-Trent
Grid Reference	SJ 90725 49046
Size	2.5 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	This site consists of the grounds of the Wallace Sports and Education Centre which is an SOTCC leisure centre. The Foxley Brook flows through its centre and it is adjacent to the remains of

	the Scheduled Monument Hulton Abbey. There is a play area in very poor condition that is subject to anti-social behaviour. The majority of the grounds consists of amenity grassland, however there may be scope for small areas to be used for biodiversity enhancements with some areas appearing to be subject to relaxed management already.
Restoration measures	Grassland Floristic enhancement of the grassland on a small scale would be suitable here subject to favourable soil analysis. This option is only considered viable if a complimentary cutting regime can be implemented to maintain the diversity. Woodland Scattered tree planting to add habitat variation would support a more diverse range of species across the site. River The river has been straightened through this site; there is little opportunity to do large scale re-meandering of the channel without impacting site use. However, in-channel enhancement to the water flow diversity through the placement of flow deflectors such a woody material would be beneficial to fish and aquatic invertebrates.
Constraints	Anti-social behaviour.
Other information	Anti-social behaviour is an issue at this site, which lies within the more socio-economically deprived area of Abbey Hulton. However, the Sports and Education centre is working to encourage young people to join the centre instead of engaging in anti-social behaviour. Together Active are also delivering training for guided walks in this area. It is hoped that options for other age groups/communities besides young people could be included.

6.1.9 Trent Mill



Water body catchment	River Trent (Ford Green Brook to Fowlea Brook)
District	Stoke-on-Trent
Grid Reference	SJ 89284 46712
Size	0.09km²
Landowner	2-3 private landowners, Stoke-on-Trent City Council (SOTCC)
Public Access	Partial
Site description	This site is partially covered by the Berryhill Ponds Local Wildlife Site between Trentmill Road and Causley Brook. Trent Mill predominantly supports semi-improved neutral grassland. This site consists primarily of a series of sports pitches with a car park to the north and it connects to the SOTCC owned Trent Mill

	Nature Park (Joiners Sq.) to the south-west. The Trent flows along the north-eastern boundary along with a corresponding strip of woodland and rough grassland which widens at the confluence of the Causley Brook and Trent. There are five Combined Sewage Outflows located along the River Trent and an Environment Agency gauging station. 5 hectares of invasive species control and woodland management has been carried out as part of SUNRISE at the confluence of the Trent and Causley brook and Trent Mill Nature Park.
Restoration measures	Invasive Non-native Species (INNS) There may be a requirement for further Japanese knotweed control as well as Himalayan balsam control. River There is an opportunity to re-design the culvert and rock ramp to secure better watercourse connection and fish passage, lowering of the riverbed downstream to reduce sediment impoundment (see photo). Ponds Within the riparian zone, scrapes and ponds could be created to support a more diverse mosaic of wetland habitats along the narrow strip between the river and the sports pitches. Species Along the river there is scope for an otter holt installation. Otter, which are present along the River Trent, have relatively little riparian habitat along this section of watercourse and creating otter holts would improve the resource for them.
Constraints	One landowner was unwilling to engage at the time of the SUNRISE project. Several potential bat roosting features were identified as well as otter spraints at the time of SUNRISE, therefore it will be necessary to ensure that no current holts / resting places are at risk of being disturbed. It may not be feasible to build upon SUNRISE projects that were completed due to the constraints of the SUNRISE funding.
Priority Overview	Low

Photographic Record	Railway Culvert 

	Rock ramp 

	EA Gauging Station 
Other information	One privately owned land parcel extends from Trentmill Road to Causley Brook. Land south of Trentmill Road is Eastwood Hanley Football Club. SOTCC land includes riverbanks and Trent Mill Nature Park. Public accessibility is not known but it is likely accessible from Trentmill Road to Causley Brook and throughout Trent Mill Nature Park. Trentmill Road is subject to flooding.

6.1.10 Berryhill Fields

Water body catchment	River Trent (Ford Green Brook to Fowlea Brook)
District	Stoke-on-Trent
Grid Reference	SJ 90805 45758
Size	0.77km²
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	A designated Local Nature Reserve and Local Wildlife Site, this former colliery is a large public open green space for communities in the more socio-economically deprived area of Bentilee.

	It is composed of a mosaic of habitats including lowland meadow, lowland heath, broadleaved and mixed plantation woodland, reedbeds, ponds managed for nature, and hedgerows. There may be some remaining areas of unimproved acid grassland and semi-improved grassland, marshy grassland, swamp and tall ruderal. Species of note include dingy skipper, great crested newts and long eared and short eared owls. There have been records in the past of several different species of orchid as well as water voles. The entire site is covered by a Higher Level Environmental Stewardship agreement. Lawn Farm moated site is situated to the south-east which is a Scheduled Monument.
Restoration measures	Heathland The heathland habitats on site would benefit from their expansion alongside scrub removal. Heathlands benefit from structural diversity through promoting a different age range of shrubs maintained through management. Heathlands are a UK Priority habitat to protect and support a range of associated invertebrates. Hedge laying Restoring historical field boundaries across the site would create better connectivity between small wooded sections providing corridors to small mammals across the site. Securing support for long-term habitat management Environmental Stewardship scheme ending April 2028 with potential to renew this will provide long-term management funding. This would likely be a useful resource on biodiversity units to the local authority and, as an alternative to a scheme, its potential as a biodiversity net gain site should be investigated.
Constraints	Possible housing development site Any restoration work that may affect Lawn Farm Scheduled Monument will require consultation with HER.

Other information	There are key cycling paths and cultural heritage interest such as the outdoor artwork, six towns viewing point, stone circle and amphitheatre. There was a Friends of Berryhill Fields group active as of 2018. The site contains Lawn Farm, a 13th century moated manor house and Scheduled Monument

6.1.11 Park Hall

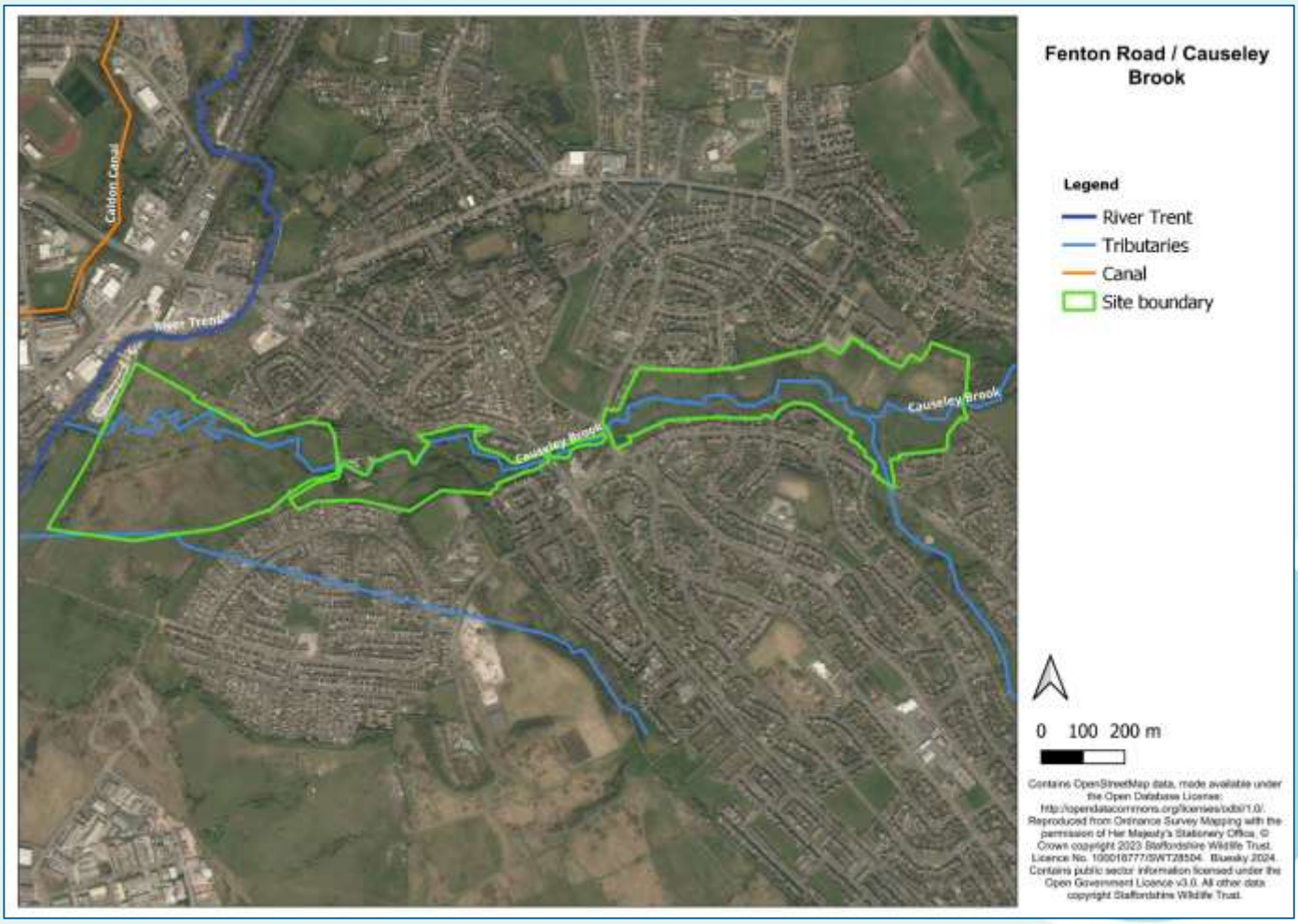
Water body catchment	River Trent (Ford Green Brook to Fowlea Brook), Causley Brook, Longton Brook
District	Stoke-on-Trent
Grid Reference	SJ 92615 45147
Size	113 hectares
Public Access	Yes
Site description	A designated Local Wildlife Site, which includes Hulme Quarry SSSI which is in favourable condition and is of national geological value. It is further designated as an NNR.

	This former sand and gravel quarry and tip site, which has now been reclaimed to form a County Council Country Park, has a range of predominantly acidic habitats including a series of pools that are used by several uncommon species of invertebrates as well as lowland meadow, lowland heathland, acid grassland, broadleaved and coniferous woodland and scrub. Species of note include barn owl, great crested newts, historical records of long eared owls, little owls and important bird species such as linnet. Much of the site is covered by a Higher Level Environmental Stewardship scheme.
Restoration measures	Heathland The heathland habitats on site would benefit from their expansion alongside scrub removal. Heathlands benefit from structural diversity through promoting a different age range of shrubs maintained through management. Heathlands are a UK Priority habitat to protect and support a range of associated invertebrates. Creating bare earth scrapes within the heathland and grassland will further support invertebrate assemblages. Hedge laying Restoring historical field boundaries across the site would create better connectivity between small, wooded sections providing corridors for small mammals across the site. Grassland The sward on its own would likely improve in structure and diversity by starting to introduce more regular management. The enhancement of the floristic diversity of the grassland may be an opportunity. Ideally, a higher frequency and diversity of flowering plants would be introduced. This option is only considered viable if a complimentary cutting regime can be implemented to maintain the diversity. Ponds Scrape and pond creation in the meadow would provide a greater resource during drought conditions increasing the resilience of

	habitats and species. There are existing ponds onsite which are surrounded by woodland, managing the riparian tree cover to ensure a variation in light levels will support the development of any macrophyte vegetation bordering the pools. Woodland Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. Wood material generated would be retained in hibernacula to support small mammals and invertebrates. Securing support for long-term habitat management Environmental Stewardship scheme ending April 2028 with potential to renew this to provide long-term management funding. This would likely be a useful resource on biodiversity units to the local authority and as an alternative to a scheme its potential as a biodiversity net gain site should be investigated. Visitor experience The site would benefit from improvement to its footpath networks through scraping and resurfacing a significant length of footpath. This site is currently delivering educational visits through its stewardship scheme for schools. There is an opportunity to further this integration with local schools.

Photographic Record	

6.1.12 Fenton Road / Causley brook



Water body catchment	Causley Brook
District	Stoke-on-Trent
Grid Reference	SJ 90275 46871, SJ 89741 46965
Size	13 hectares
Landowner	Stoke-on-Trent City Council (SOTCC), private
Public Access	Unknown
Site description	This site is partially included in the Berryhill Ponds Local Wildlife Site to the west, which consisted of semi-improved neutral grassland at the time of survey in 2004, as well as a pond. It also encompasses the Bucknall Glacial Erratic designated RIGS site. Beyond this it comprises a patchwork of both rough grassland and

	amenity grassland with broadleaved woodland, scrub and ruderal vegetation. There are several notable engineered features along the brook. There is a culvert under the old railway crossing on the boundary to the west. There is a sewer pipeline crossing and weir located between Fenton Road and Dividy Road and there is a defunct weir and associated brick channel located just north of Trowbridge Crescent. 50m upstream of Fenton Road is an outflow and concrete bank protection. There are several possible palaeochannels which can be clearly seen on aerial photography images; these are situated to the west of Fenton Road. Previous work east of Fenton Road as part of SUNRISE included 5.24ha of grassland restoration through spreading of green hay and invasive species control as well as woodland thinning. Previous grassland restoration took place east of Fenton Road as part of the Blooming Stoke project, which involved seed spreading in 2015.
Restoration measures	Grassland The sward on its own would likely improve in structure and diversity by starting to introduce more regular management. The enhancement of the floristic diversity of the grassland may be an opportunity to build upon past projects. Ideally, a higher frequency and diversity of flowering plants would continue to be introduced. The enhancement of the current wildflower meadow and creation of an additional 0.75 hectare larger wildflower meadow resource by sowing wildflower seeds will support less common plant species and pollinators. This option is only considered viable if a complimentary cutting regime can be implemented to maintain the diversity. River There is the potential to develop the detailed concept plans for river and floodplain restoration proposal that were created as part of SUNRISE. Options included the removal or modification of the two weirs and the brick channel, improved stream morphology and the addition of large woody material. Further opportunities included bridge maintenance and associated water course improvements and additional outfall repair. Possible modification of the culvert under the railway crossing to accommodate fish passage is recommended if supported by Network Rail. The network of palaeochannels could have some level of reconnection

	to the river to expand the connectivity of water resource across the floodplain and provide a large area of habitat for aquatic species. Woodland Additional tree planting across the site coupled with the management of dense tree coverage within the riparian zone will allow more variation in light levels across the site and along the river. Reedbed There are a couple of opportunities to manage pollution inputs to the brooks including either the removal of an outflow or creation of reedbed to help filter pollution. Ponds Potential restoration of palaeochannels could manifest as the creation of pools or scrapes within these areas creating a greater open water resource within the floodplain.
Constraints	Restoration of palaeochannels will require consultation with the Historic Environment Record (HER). It may not be feasible to build upon SUNRISE projects that were completed due to the constraints of the SUNRISE funding.

Photographic Record	 Railway culvert  Weir

Severn Trent sewer crossing

Outflow, defunct weir and associated brick channel

	
Other information	A geomorphological assessment has been completed with outline designs for removal of weirs as part of SUNRISE. These did not go ahead due to difficulties in obtaining planning consent within the time frame. However, these were approved in principle by the landowners SOTCC. Potential to consider land further upstream, between Malthouse Road and Ash Bank Road, which is also within SOTCC ownership. Public accessibility is unknown but likely to be East of Fenton Road only based on aerial photography.

6.1.13 Coyney Woods

Water body catchment	Longton brook
District	Stoke-on-Trent
Grid Reference	SJ 92856 43634, SJ 92860 43177, SJ 925604 3837
Size	26 hectares, 4 hectares & 1 hectare
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	Coyney Wood is a designated Local Nature Reserve and Local Wildlife Site which includes three parcels of land individually named Weston Sprink, Birch Wood and Ransome Wood. Weston Sprink, the larger of the parcels, is long-established semi-natural woodland

	and may be ancient; it also supports semi-improved neutral grassland which has species associated with damp conditions, such as Sneezewort, Devil's-bit Scabious and Marsh Marigold. The small two parcels, Birch Wood and Ransome Wood, also support predominantly woodland habitat with small areas of rough grassland. There are areas which are more waterlogged, particularly along a small stream, which borders the western edge of birch wood. Previous grassland and woodland enhancement have taken place here as part of Wilder Stoke Wilder Newcastle Site is comprised of predominantly oak woodland and grassland. A stream runs along the western boundary of the wood and has created a number of small ponds. Species of note include bluebells, sneezewort devil's-bit scabious, marsh marigold, owls, woodpeckers and bats.
Restoration measures	Grassland To maintain the condition of the grassland, managing for structure and diversity with annual cuts would support floristic diversity. The enhancement of the floristic diversity of the grassland may be an opportunity but would need further investigation. This option is only considered viable if a complimentary cutting regime can be implemented. Ponds Scrape and pond creation in the woodlands, particularly near the stream, would provide a greater resource during drought conditions increasing the resilience of habitats and species. Some of the grasslands support species associated with waterlogging; investigating the potential for small ponds here also would be recommended. Woodland Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. Wood material

	generated would be retained in hibernacula to support small mammals and invertebrates.
Photographic Record	 

6.1.14 Florence Meadows

Water body catchment	Longton Brook
District	Stoke-on-Trent
Grid Reference	SJ 91650 341507
Size	37 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	Florence Meadows supports broadleaved woodland, some of which is plantation, scrub, species-rich grassland managed through a hay

	meadow management regime, and wetter grassland associated with waterlogging. Previous grassland restoration has been undertaken here as part of the Blooming Stoke project.
Restoration measures	Invasive non-native species (INNS) There is Japanese Knotweed in the woodland which continues to require treatment. Invasive non-native species typically outcompete other native flora and are considered invasive as they expand their territory rapidly. The control of them should plan for long-term treatment and management options as eradication not always achievable if there is an outside resource. Woodland Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. Wood material generated would be retained in hibernacula to support small mammals and invertebrates. Grassland The meadow should continue to receive an annual cut and collect to maintain floristic diversity. Much of the site is covered by a Mid Tier Countryside Stewardship scheme ending December 2028 with potential to renew this to provide long-term management funding. River The site would benefit from de-culverting the Longton Brook, which would greatly improve the wetland resource on site and create more of a mosaic of habitats encouraging greater species diversity. This would also be beneficial to fish passage and provide a better environment for aquatic invertebrates.
Priority Overview	Medium

Photographic Record	

6.1.15 Cockster Brook Valley

Water body catchment	Longton Brook
District	Stoke-on-Trent
Grid Reference	SJ 89717 43346
Size	16 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	The Cockster Brook site is a local authority owned park consisting of former industrial land dissected by Cockster Brook from north to south. Predominantly covered by broadleaved woodland, lowland fens and grassland which has reclaimed the land since industrial activity ceased. The black rock geological feature

	reportedly was formed by a blast furnace which was situated in the area. The hills are known locally as the Camels Humps and are shraff mounds from the former pottery industry.
Restoration measures	Grassland To improve the condition of the grassland managing for structure and diversity with annual cuts would support floristic diversity. The enhancement of the floristic diversity of the grassland may be an opportunity but would need further investigation. This option is only considered viable if a complimentary cutting regime can be implemented. Ponds Scrape and pond creation in the woodlands, particularly near the brook, would provide a greater resource during drought conditions increasing the resilience of habitats and species. Woodland Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. Wood material generated would be retained in hibernacula to support small mammals and invertebrates. Species Within the open areas around the black rock and within the grassland there is the potential for a Grizzled Skipper introduction to the site. This would be dependent on securing suitable management of Grizzled Skipper habitats, which includes woodland, grassland and areas of sparser vegetation for basking, which can be found particularly around recently abandoned industrial sites. Within these, they favour warm, sheltered locations where there is an availability of their food source such as Common Bird's-foot Trefoil and Bugle. These plants, if not already on site, could be added to the grassland sward. Long term management This is a site where Staffordshire Wildlife Trust could potentially offer their support in taking on the management of the site. This would be subject to an agreement with Stoke-on-Trent City Council.

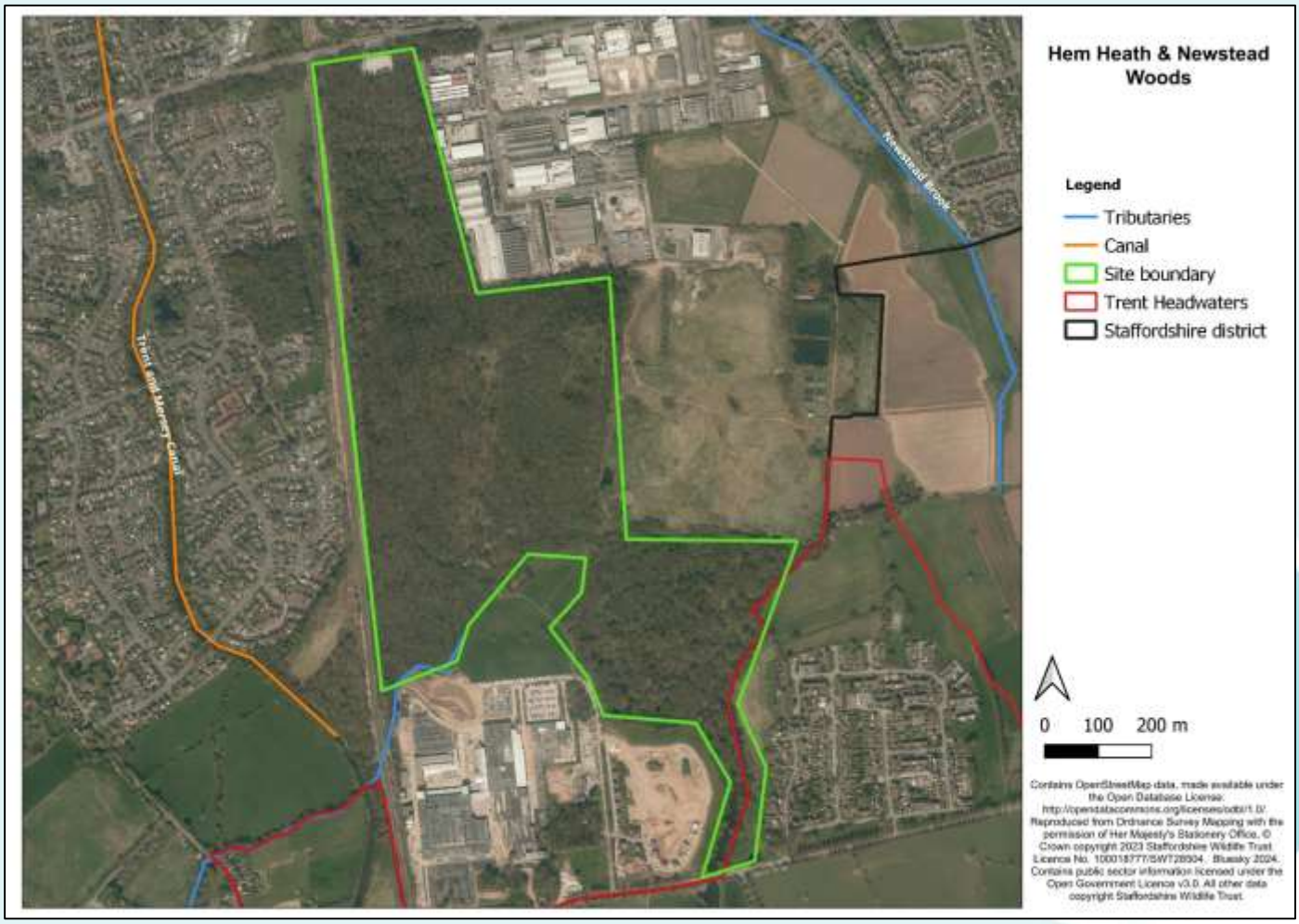
Constraints	As this is a former industrial site with old spoil heaps; soil testing will be required.
Other information	There are highly visible remains of the site's industrial past, such as slag heaps, that add interest and demonstrate the site's cultural heritage. There was previously a volunteer group, Cockster Brook Valley Community Association, but it is unknown if they are still active.

6.1.16 Longton Brook Greenway

Water body catchment	Longton Brook
District	Stoke-on-Trent
Grid Reference	SJ 87134 41051
Size	4 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	Longton Brook is a designated Local Wildlife Site, within it there is an historic water meadow and a section of long-established broadleaved woodland that may be ancient. The Longton Brook

	runs the length of the site. The remainder of the site is a mix of woodland and grassland. A storm overflow is located immediately upstream from Bainbridge Road. The Trent Valley Way follows the brook through this site.
Restoration measures	River The Longton Brook has been artificially straightened at this site and is contained by the Trent Valley Way. An opportunity to diversify the flow regime within the river, such as inputting natural deflectors, would support a greater variety of conditions within the river, which is more ecologically beneficial to aquatic wildlife. Water meadow restoration The opportunity to restore the historic water meadow could also be investigated. Restoring historic water meadows offers significant benefits for wildlife by supporting a variety of habitat niches. By managing water levels and promoting the growth of species-rich vegetation, restored water meadows can significantly enhance biodiversity and contribute to a healthier environment. Woodland Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. Wood material generated would be retained in hibernacula to support small mammals and invertebrates.
Constraints	Restoration of historic water meadows will require consultation with Historic Environment Record (HER).
Priority Overview	Low

6.1.17 Hem Heath and Newstead Woods



Water body catchment	River Trent (Fowlea Brook to Tittensor)
District	Stoke-on-Trent
Grid Reference	SJ 88781 40360
Size	53 hectares
Landowner	Staffordshire Wildlife Trust (SWT)
Public Access	Yes
Lead Organisation	Staffordshire Wildlife Trust

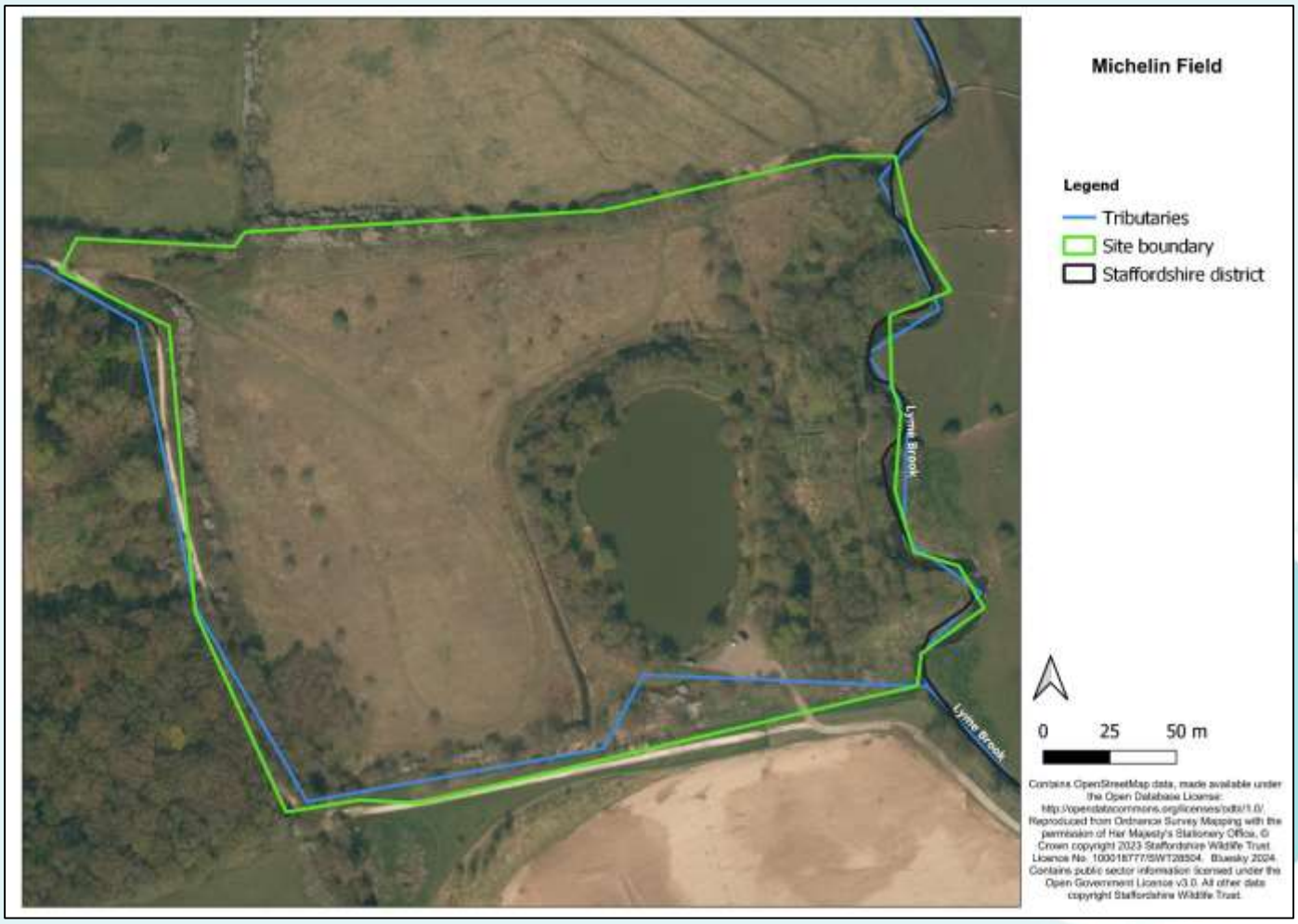
Site description	A designated Local Wildlife Site and an SWT nature reserve, the majority of this site is covered by broadleaved, semi-natural woodland, which is registered in the Ancient Woodland Inventory, with small areas of grassland adjacent to footpaths and occasional glades. The woodland is waterlogged in parts supporting species associated with wetter woodland communities and there are also some pools. The woodland is under an existing management regime by SWT. Woodland thinning has previously taken place as part of the Wilder Stoke Wilder Newcastle project.
Restoration measures	Woodland Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. Ash is dense in places and could be thinned. Wood material generated would be retained in hibernacula to support small mammals and invertebrates. Access The site would benefit from an improved footpath network to discourage public use of informal routes which is detrimental to the flora as it causes erosion.
Photographic Record	 Hem Heath, Adrian Clarke

6.1.18 Tag Marsh

Water body catchment	River Trent (Fowlea Brook to Tittensor)
District	Stafford
Grid Reference	SJ 87110 39391
Size	6 hectares
Landowner	Trentham Estate
Public Access	Yes
Site description	Tag Marsh contains Floodplain Wetland Mosaic with a mixture of standing water across wet grassland and swamp vegetation. There is evidence of a potential Palaeochannel located through the centre of the subsidence wetland site which is noticeable on aerial

	imagery. River reprofiling and floodplain lowering has taken place in the northern half of the site along with re-naturalising the riverbank, removal of a bund and adding gravels and large woody debris to the River Trent.
Restoration measures	River Ideally, continuation of similar restoration measures including bank reprofiling and gravel seeding would extend the benefits to the southern half of the site. Reconnecting the floodplain should be considered and if this can be done through the palaeochannel network this would be in keeping with the historical geology of the site. Long-term management This site is covered by a Higher Level Environmental Stewardship agreement with the potential to renew or consider alternative options once this comes to an end.
Constraints	This site is already subject to private funding. Restoration of palaeochannels will require consultation with HER.
Priority Overview	Low

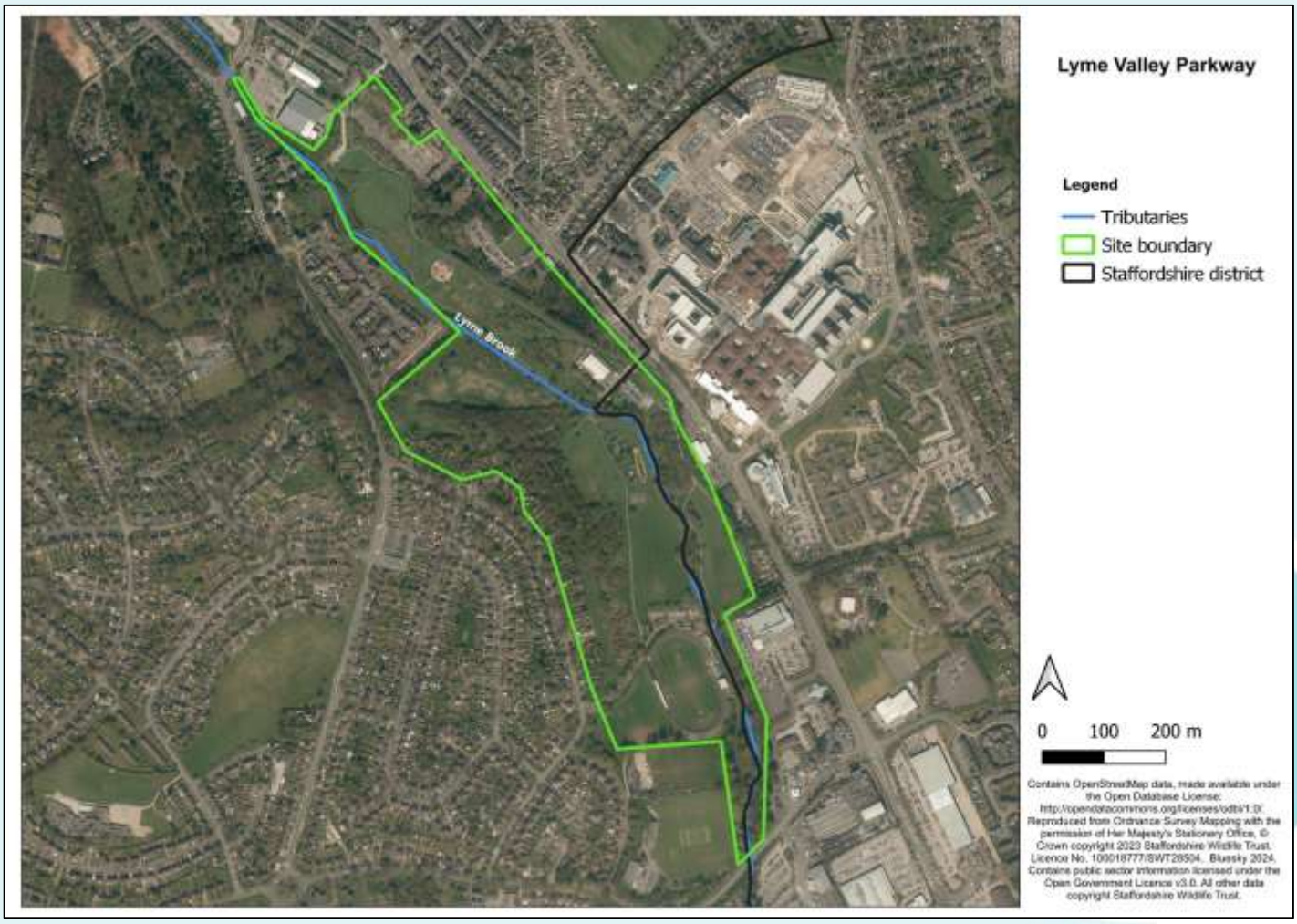
6.1.19 Michelin Field



Water body catchment	Lyme Brook
District	Newcastle-under-Lyme
Grid Reference	SJ 85833 43143
Size	6 hectares
Landowner	Michelin
Public Access	PROW along boundary
Site description	Michelin Field is the former site of a factory, which has been recolonised by grassland and scrub surrounding a large pool. The grassland is of high species diversity and contains a large number of orchids among other less common flowering species, however

	there is some scrub encroachment. There is a small amount of broadleaved semi-natural woodland surrounding a pond. The site is bordered on three sides by Lyme Brook and its tributary. The field may also contain remnants of an historic water meadow. Currently, the site appears to be unmanaged for ecology.
Restoration measures	Water meadow restoration The opportunity to restore the historic water meadow could also be investigated. Restoring historic water meadows offers significant benefits for wildlife by supporting a variety of habitat niches. By managing water levels and promoting the growth of species-rich vegetation, restored water meadows can significantly enhance biodiversity and contribute to a healthier environment. Grassland The meadow would benefit from an annual cut and collect to maintain floristic diversity. Controlling the further spread of scrub without eliminating it will continue to provide additional resources, such as shade and shelter to small mammals and a food resource for birds onsite, without causing loss of the species-rich grassland. Currently the site is not within any kind of agri-environment agreement and this could be a possibility to support long term management of the site.
Constraints	Potential development site Grassland restoration may be constrained by the need to preserve any historic water meadow features. This may also require consultation with the Historic Environment Record (HER).
Priority Overview	Medium

6.1.20 Lyme Valley Parkway

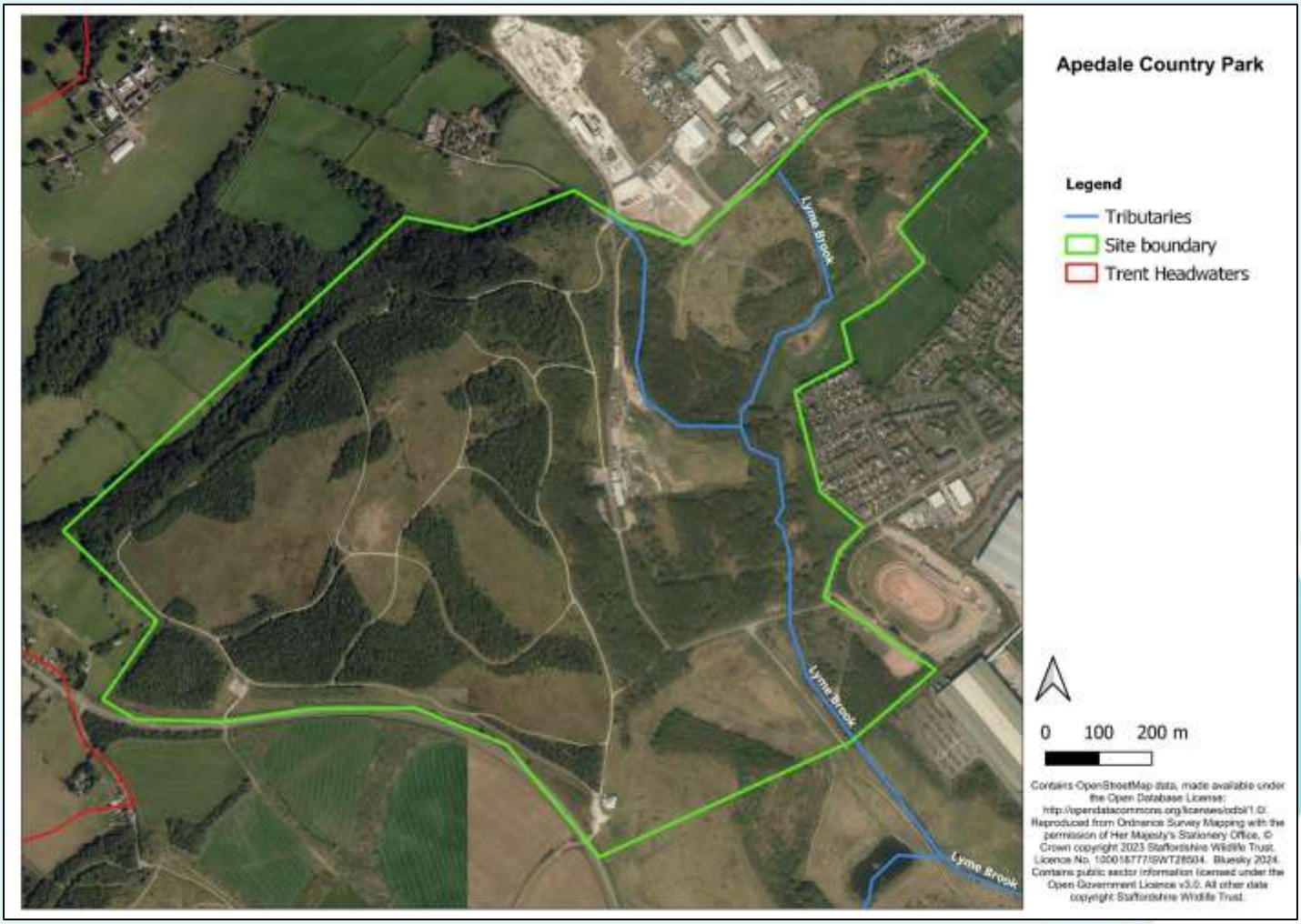


Water body catchment	Lyme Brook
District	Newcastle-under-Lyme
Grid Reference	SJ 85463 44891
Size	32 hectares
Landowner	Newcastle-under-Lyme Borough Council (NULBC)
Public Access	Yes
Lead Organisation	Groundwork

Site description	Lyme Valley Parkway is a large public open space that extends from near Newcastle town centre at its northern-most extent to Stafford Avenue at its southern-most extent and lies on the boundary with Stoke-on-Trent. The Lyme Brook runs through the entire length of the site, and has been artificially straightened in the past, however, there has been some recent small interventions to improve short stretches of the brook channel including berms and other watercourse enhancements completed through a partnership led by Groundwork. There are a number of combined sewage outflows along the Lyme Brook. There is also potentially an historic water meadow located to the east of the brook along with a possible palaeochannel. Grassland and woodland restoration have taken place here as part of SUNRISE. This involved green hay strewing as well as woodland thinning and control of invasive species. The friends of Lyme Brook are active on site and carry out a wide variety of ecological enhancement activities as well as monitoring wildlife on the site. This is a Riverfly survey site.
Restoration measures	Woodland Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. The woodland at Lyme Valley Parkway is dense in places and would benefit from thinning throughout the site and particularly along the riparian zone. Wood material generated would be retained in hibernacula to support small mammals and invertebrates or within the brooks itself adding diversity to the in-channel habitat and water flow regime. River The river itself is extensively straightened through the site and there is an opportunity to improve flow regimes through the introduction of gravels and woody material input. Possible bank regrading will improve conditions for riparian wildlife including Water Vole. Heritage The opportunity to restore the historic water meadow could also be investigated. Restoring historic water meadows offers significant benefits for wildlife by supporting a variety of habitat niches. By managing water levels and promoting the growth of species-rich

	vegetation, restored water meadows can significantly enhance biodiversity and contribute to a healthier environment. Locating ponds along palaeochannels or relinking these historic channels with the river will be beneficial for the resilience of the floodplain environment, providing better connectivity between the river and its floodplain and supporting an increase water resource during drought conditions. There is interest in the community in reopening up the disused canal section.
Constraints	Restoration of palaeochannels or historic water meadows will require consultation with Historic Environment Record (HER). It may not be feasible to build upon SUNRISE projects that were completed due to the constraints of the SUNRISE funding.
Photographic Record	
Other information	Friends of Lyme Brook are involved in this site and carry out Riverfly monitoring here as well as scything.

6.1.21 Apedale Country Park



Water body catchment	Lyme Brook
District	Newcastle-under-Lyme
Grid Reference	SJ 82156 48378
Size	136 hectares
Landowner	Staffordshire County Council (SCC)
Public Access	Yes
Site description	Apedale is the former site of an open cast mine that has subsequently been restored. A designated Local Wildlife Site covers Watermills wood to the north-east, much of which is registered in

	the Ancient Woodland Inventory though some is plantation. A Biodiversity Alert Site covers the disused tips to the east of the railway, which were previously opencast workings and is dissected by Lyme Brook. Centrally there are a number of small parcels of long-established, semi-natural woodland that may be ancient. The remainder of the site is predominantly broadleaved woodland and lowland meadow with pockets of wetland and marshy grassland. The site also contains the Apedale Furnace Quarry designated RIGS site.
Restoration measures	Grassland To improve the condition of the grassland, managing for structure and diversity with annual cuts would support floristic diversity. The enhancement of the floristic diversity of the grassland may be an opportunity but would need further investigation. Controlling the further spread of scrub without eliminating it will continue to provide additional resource such as shade and shelter to small mammals and a food resource for birds onsite without causing loss of the species-rich grassland. The site is partially covered by a Higher Level Environmental Stewardship agreement ending February 2028 with the potential to renew or consider alternative options. Floodplain Wetland Mosaic The wetland element of the park would benefit from strategically blocked ditches and ponds creation increasing the coverage of wetland communities.
Priority Overview	Low

Photographic Record	
Other information	Managed by SCC ranger team

6.1.22 Hartshill Park

Water body catchment	Fowlea Brook
District	Stoke-on-Trent
Grid Reference	SJ 86804 45923
Size	14 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	A designated Local Nature Reserve supporting long-established, broadleaved, semi-natural woodland that may be ancient. A mosaic

	of other habitats are present include scrub, reedbeds, grassland, hedgerows and approximately five ponds managed for nature.
Restoration measures	Woodland Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. The woodland at Hartshill park is dense in places and would benefit from thinning throughout the site. Wood material generated would be retained in hibernacula to support small mammals and invertebrates. Ponds Several ponds are present on site, most of which are within the woodland and would benefit from thinning in the riparian zone to improve light levels within the ponds. The creation of small dragonfly ponds across the site would be complimentary to the existing habitat mosaic and expand the water resource on site. Grassland To improve the condition of the grassland, managing for structure and diversity with annual cuts would support floristic diversity. The enhancement of the floristic diversity of the grassland may be an opportunity but would need further investigation. The benefit of floristic enhancement will only be viable if a complimentary grassland management regime can be established. Controlling the further spread of scrub without eliminating it will continue to provide additional resource such as shade and shelter to small mammals and a food resource for birds onsite without causing loss of the species-rich grassland. Site infrastructure improvements The is a community site and improving access by repairing steps, paths and fences will lead to better enjoyment and engagement of the natural environment.
Other information	There is Friends of Harthill Park community group which doesn't appear to be recently active.

6.1.23 Central Forest Park

Water body catchment	Fowlea Brook
District	Stoke-on-Trent
Grid Reference	SJ 88300 48606
Size	47 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	Large, publicly accessible open space centrally located within Stoke-on-Trent.

	Grassland and woodland restoration have previously been undertaken here as part of the Wilder Stoke Wilder Newcastle project.
Restoration measures	Woodland Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. Wood material generated would be retained in hibernacula to support small mammals and invertebrates. Grassland To improve the condition of the grassland, managing for structure and diversity with annual cuts would support floristic diversity. The enhancement of the floristic diversity of the grassland is not considered an opportunity due to previous soil analysis indicating unsuitable levels of phosphate within the soil. Ponds There is a large waterbody on site which would be investigated for opportunities to enhance its riparian zone. The ponds itself is used by anglers but in between their fishing platforms and on the wooded bank riparian planting using coir mats would bring more floristic diversity to the littoral zone; this would help to minimise wildfowl, which are present in damaging numbers adjacent to the lake. The thinning of trees on the riparian zone may also help with an improvement in the lake's riparian vegetation cover.
Constraints	There may be potential for conflicts of interest on pond enhancements due to its amenity use. The site was considered as part of Blooming Stoke but discounted for grassland restoration due to issues with topography and high levels of phosphorous.
Priority Overview	Low

6.1.24 The Dingle

Water body catchment	Fowlea Brook
District	Newcastle-under-Lyme
Grid Reference	SJ 85407 48851
Size	2 hectares
Landowner	Newcastle-under-Lyme Borough Council (NULBC), private
Public Access	Yes
Site description	The majority of the Dingle site is covered by broad-leaved woodland, and an unnamed brook flows through the site with much of it culverted and only a short stretch flowing above ground. There is also a pond and the ruins of Porthill House.

	This is a well-used site and appreciated by the community. However, it is neglected and minimal maintenance works carried out. The onsite pools, which are stream fed by constant flowing fresh water from several points and geological drainage on the site, have always supported a good stock of healthy coarse fish, and the pools have for many years been leased to local angling clubs.
Restoration measures	River An investigation into de-culverting sections of the brook could be considered. De-culverting the brook would greatly improve the wetland resource on site and create more of a mosaic of habitats, encouraging greater species diversity. This would also be beneficial to fish passage and provide a better environment for aquatic invertebrates. Wetland communities Within areas of waterlogging, the improvement of wetland communities through scrape and pool creation and management of wet grassland would add diversity in the plant resource. Community monitoring There may be an opportunity here to involve the community with monitoring of the water quality within the watercourse and implementing actions to minimise inputs from pollution pathways. Grassland To improve the condition of the grassland, managing for structure and diversity with annual cuts would support floristic diversity. The enhancement of the floristic diversity of the grassland may be an opportunity but would need further investigation. The benefit of floristic enhancement will only be viable if a complimentary grassland management regime can be established. Woodland Tree and shrub planting to restock existing woodland would be favourable to the local community. Community engagement The installation of historical and ecological interpretation panels will support public engagement in the site.
Constraints	May be multiple landowners of the brook east of Inglewood Drive.

	The site appears to be situated on the former water meadow and the restoration of habitats on historic water meadows will require consultation with the Historic Environment Record (HER).
Other information	Ruins of Porthill House provide cultural heritage interest. This site was suggested by a local resident/community group whose aim is to increase the number of volunteers from groups such as the fishing club, general public, dog walkers, sports and educational groups, the Porthill Litter Pickers Club, Friends of the Dingle and Porthill Whatsap groups, the adjacent Friend of Porthill Lodge Community Centre, which is run by a private community management committee and especially the Aspire Housing Association tenants, who reside on the site.

6.1.25 Westport Lake

Water body catchment	Fowlea Brook
District	Stoke-on-Trent
Grid Reference	SJ 85544 50114
Size	35 hectares
Landowner	Canal and River Trust (CRT), Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	This well used site is a designated Local Nature Reserve and Local Wildlife Site centred around a lake which formed as a result of mining subsidence. It is situated between the Trent and Mersey Canal, Fowlea Brook and Scotia Brook. The lake is used for fishing and supports an important overwintering assemblage of birds. A series of smaller water bodies form a wetland mosaic alongside reedbed, broadleaved woodland

	and scrub. There are also grassland areas including meadow and amenity grassland. Species of note include bats and waders. Previous grassland restoration has been undertaken here as part of the Blooming Stoke project.
Restoration measures	Woodland Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. Wood material generated would be retained in hibernacula to support small mammals and invertebrates. Grassland To improve the condition of the grassland, managing for structure and diversity with annual cuts would support floristic diversity. The enhancement of the floristic diversity of the grassland may be an opportunity but would need further investigation. The benefit of floristic enhancement will only be viable if a complimentary grassland management regime can be established. Controlling the further spread of scrub without eliminating it will continue to provide additional resource such as shade and shelter to small mammals and a food resource for birds onsite without causing loss of the species-rich grassland. River The brook flowing through the site should be investigate for opportunities to create diverse flow regimes and, as it flows predominantly within the woodland, installing natural flow deflectors such as large woody material would be recommended as a starting point. Thinning within the riparian zone would supply a wood resource to the river. Reedbed Reedbed extension through thinning of trees in the riparian zones should be considered alongside a possible opportunity for floating reedbed islands within the lake.

	Site infrastructure improvements The is a community site and improving access by repairing steps, paths and fences will lead to better enjoyment of and engagement with the natural environment.
Priority Overview	Medium
Photographic Record	
Other information	This site is managed by SOTCC. The lake is owned by CRT. The fishing rights are managed by Middleport Angling Club.

6.1.26 Scotia Valley

Water body catchment	Fowlea Brook
District	Stoke-on-Trent
Grid Reference	SJ 86405 53009
Size	16 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	This is a greenway which follows the course of Scotia Brook, which is a tributary of Fowlea Brook. The site is designated as a Local Wildlife site for its broadleaved woodland, heathland, scrub and a series of pools with diverse macrophyte and marginal assemblages. As of 2002, this was an important wildlife corridor, supporting a major water vole colony and included a valuable area of dry acidic dwarf shrub heath and acid grassland.

Restoration measures	Heathland The heathland habitats on site would benefit from their expansion alongside scrub removal. Heathlands benefit from structural diversity through promoting a different age range of shrubs maintained through management. Heathlands are a UK Priority habitat to protect and support a range of associated invertebrates. Creating bare earth scrapes within the heathland and grassland will further support invertebrate assemblages. Grassland To improve the condition of the grassland, managing for structure and diversity with annual cuts would support floristic diversity. The enhancement of the floristic diversity of the grassland may be an opportunity but would need further investigation. The benefit of floristic enhancement will only be viable if a complimentary grassland management regime can be established. River The river itself is extensively straightened through the site and there is an opportunity to improve flow regimes through the introduction of gravels and woody material. Possible bank regrading will improve conditions for riparian wildlife including Water Vole.

6.1.27 Golden Hill Ex-golf Course

Water body catchment	Fowlea Brook
District	Stoke-on-Trent
Grid Reference	SJ 85688 53669
Size	49 hectares
Landowner	Staffordshire County Council (SCC)
Public Access	PROW
Site description	This is the site of a former golf course which was active until 2011 and since has been largely left unmanaged. There is a pool located centrally and surrounding it the site supports species-rich grassland containing orchids with small pockets of broadleaved woodland.

Restoration measures	Grassland To improve the condition of the grassland, managing for structure and diversity with annual cuts would support floristic diversity. The enhancement of the floristic diversity of the grassland may be an opportunity in some areas however this would need further investigation. The benefit of floristic enhancement will only be viable if a complimentary grassland management regime can be established. Pools The creation of a network of scrapes and pools across the site would greatly improve the water resource on site which would provide greater resilience during climate pressures, such as drought, on species. Ditches Reprofiling of the ditch network would help to create more of a wetland mosaic across the site increasing the opportunities for ecological diversity. Long-term ecological preservation This site has the potential to be designated as a Local Nature Reserve.
Constraints	Potential development site. Anti-social behaviour involving quad bikes and motorbikes is prevalent.
Other information	A resident is campaigning for this to be turned into a nature reserve.

6.1.28 Holden Lane Pools

Water body catchment	Ford Green Brook
District	Stoke-on-Trent
Grid Reference	SJ 89501 50096
Size	9 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	Holden Lane Pools is designated as a Local Nature Reserve and a Local Wildlife Site and is centred around a large fishing pool with a mosaic of wetland habitats, including further pools, reedbeds and swamp, with the Ford Green Brook flowing through them to the

	east. Also on site, there is a grassland under meadow management, broadleaved woodland and an area of mixed plantation. Species of note recorded here include bats, grass snake and dingy skipper. Woodland thinning was conducted as part of SUNRISE in 2019 to facilitate watercourse restoration works that did not then go ahead. Grassland and woodland restoration have previously been undertaken here as part of the Wilder Stoke Wilder Newcastle project.
Restoration measures	River The SUNRISE recommendations included the excavation of the brook inlet to remove deposited silt and aid through flow of water from Whitfield Valley. Bank re-profiling and rotational tree felling alongside the watercourses, these Natural Flood Management techniques will slow the flow of water helping to reduce downstream flood peaks and provide a better resource to aquatic animal species. These proposals should be followed up and feasibility conducted. Grassland To improve the condition of the grassland, managing for structure and diversity with annual cuts would support floristic diversity. Wildflower scrapes on banks within the carpark and along the two main footpaths have been suggested by the local community. Reedbed Improvements to the reedbed habitat through woodland thinning within the riparian zone to support its expansion would be recommended. Woodland Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. Wood material generated would be retained in hibernacula to support small mammals and invertebrates. Woodland thinning provides a source of large woody material for the brook enhancements. Ponds

	To maintain open water within the ponds, vegetation clearing was recommended by the SUNRISE project. The addition of more pools would complement the existing habitats on site.
Constraints	Some planning permissions/consent issues were identified as part of SUNRISE.
Photographic Record	
Other information	Fishing pool run by Berwick Angling Club

6.1.29 Ford Green Walkway

Water body catchment	Ford Green
District	Stoke-on-Trent
Grid Reference	SJ 89177 50463
Size	9 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	This site consists of an almost 1km long greenway that follows Ford Green Brook stretching from Leek New Road to Ford Green Road, connecting Holden Lane Pools and Whitfield Valley. Two Sustainable Drainage Systems (SUDS) features are present, one at either end of the site. To the southwest it is bordered by the former Newford Valley Landfill site.

	The site supports rough grassland and broad-leaved woodland as well as the watercourse itself. Woodland thinning was conducted here as part of SUNRISE in 2019 to facilitate watercourse restoration works that did not then go ahead. There are proposals within the Trent ReNEW scheme to be delivered along the brook including the introduction of large woody debris to the watercourse, backwaters and bank reprofiling to create cliff features to support invertebrates.
Restoration measures	Ponds There is the potential to deliver on the management plans developed as part of the SUNRISE project which did not then go ahead. This includes vegetation clearing from ponds to maintain some open water. The opportunity for further scrape or pond creation could be investigated. River Similar recommendations to the SUNRISE scheme are already being carried out through Trent ReNEW, these include the introduction of wood to the watercourse and bank reprofiling. Once they are completed a review of additional complimentary opportunities could be carried out.
Constraints	Some planning permissions/consent issues were identified as part of SUNRISE.

Photographic Record	

6.1.30 Bradeley Fields

Water body catchment	Ford Green Brook
District	Stoke-on-Trent
Grid Reference	SJ 88143 50690
Size	14 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	The majority of this site is grassland managed through amenity cuts with some scattered trees and a coal board silt trap. There are also meadows which are within a hay meadow management regime and previous grassland restoration has been undertaken within these as part of the Blooming Stoke project. This involved hay strewing in 2014/15 and cut and collect management thereafter. This project was very successful, and these meadows should be considered as a seed resource for neighbouring grassland restoration sites in Stoke-on-Trent in the future.

Restoration measures	Grassland The meadow would benefit from continuing its annual cut and collect to maintain floristic diversity. Currently the site is not within any kind of agri-environment agreement and this could be a possibility to support long term management of the site. Further floristic enhancement to the grassland could occur with supplementary seeding to add target species missing from the sward.
Photographic Record	 Bradeley Fields, B.Noake
Other information	Potential donor site for wildflower seed

6.1.31 Whitfield Valley

Water body catchment	Ford Green Brook
District	Stoke-On-Trent
Grid Reference	SJ 88696 51018
Size	55 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Lead Organisation	Trent Rivers Trust – reedbed enhancements

Site description	This is a designated Local Nature Reserve (LNR) and Local Wildlife Site (LWS) which follows the course of the Ford Green Brook. It includes Ford Green Reedbed Site of Special Scientific Interest (SSSI), with a condition of Unfavourable – No change. Designated due to the presence of swallows, these are less frequent now as the water level has risen reducing the number of reeds. At the time of designation in 1990, the reedbed was of national ecological significance. A former colliery, this is an extensive site with a diversity of habitats including species-rich lowland hay meadows, lowland fens, tall ruderal vegetation, scrub, broadleaved woodland, a small heathland area, ponds, hay meadows and hedgerows, with swamp and pools surrounding the Ford Green Reedbed SSSI. Species of significance include dingy skipper and grass snakes. At the time the LNR was designated in 1991, this site supported the largest known colony of dingy skipper butterflies in the West Midlands and also supported water voles.
Restoration measures	Reedbed There is the potential for reed bed enhancements, such as transplanting them to other locations, reducing the water level through the installation of a sluice gate to promote an expansion to their range by fencing adjacent sections off to protect them from geese and ducks, and thinning riparian willows to reduce shading. This would support the change of condition of the SSSI to "recovering". The introduction of native Swan Mussels would support the preservation of the reedbed habitat within the SSSI lake. Swan Mussels are filter feeders and play a vital role in maintaining clear water in ponds and lakes. Their long lifespans and ability to filter water make them a valuable addition to aquatic ecosystems. Heathland The heathland habitats on site would benefit from their expansion alongside scrub removal. Heathlands benefit from structural diversity through promoting a different age range of shrubs maintained through management. Heathlands are a UK Priority habitat to protect and support a range of associated invertebrates. Creating bare earth scrapes within the heathland and grassland will further support invertebrate assemblages. Long-term management The entire site is covered by a Higher Level Environmental Stewardship agreement ending 2028 with potential to renew this to

	provide long-term management funding. This suite of floodplain reconnection options should be considered to support the delivered capital works through the Trent ReNEW scheme. A feasibility study for entry into a Higher Level Stewardship scheme is recommended. Heritage Protection of possible medieval/post-medieval ridge and furrow is an important consideration at this site. River The Ford Green Brook has existing proposals for its enhancement through the Trent ReNEW project. Following this, an investigation into the feasibility of a reintroduction program for Water Voles should be carried out with further recommendations made to habitat improvements along the brook to support a population.
Constraints	Pressure to protect Ford Green Hall from flooding, however this has not re-occurred since defence measures were put in place. Likely medieval or post-medieval ridge and furrow present that may restrict grassland restoration. Some planning permissions/consent issues were identified as part of SUNRISE.
Photographic Record	
Other information	Whitfield Valley is bordered by Ford Green Hall, a 400 year old timber-framed farm house accessible to the public as a museum.

	Volunteers working at Ford Green Hall may be interested in taking part in habitat management.

6.1.32 Chatterley Whitfield Heritage Country park

Water body catchment	Ford Green Brook
District	Stoke-On-Trent
Grid Reference	SJ 88175 52961
Size	72 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	The Chatterley Whitefield site is designated as a Local Nature Reserve and a Local Wildlife Site. This is the site of the former Chatterley Whitfield Colliery, Britain's biggest remaining colliery site, which has been designated by Historic England as a Scheduled Monument. The site has since been transformed into a

	green space and now supports a mosaic of habitats in the valley and hills around the Ford Green Brook. The brook was de-culverted in 2008 and now follows a steep sided valley along the western edge of the site. At the time of Local Wildlife Site designation review (2008) the associated spoil heaps around the colliery supported the Biodiversity Action Plan (BAP) habitat of 'open mosaic habitats on previously developed land' and are a rich habitat for both plants and invertebrates. The habitats have been subject to succession and within the site there is now an extensive mix of wetland, scrub, woodland, grassland and a small heathland area along with ponds managed for nature and hedgerows. There is a historic water meadow to the south. In 1991, when the Local Nature Reserve was designated, this site supported the largest known colony of dingy skipper butterflies in the West Midlands and reported a colony of water voles along the brook. The priority BAP species butterfly-the dingy skipper, is found on the site in close association with its food plant, bird's-foot-trefoil. Other species of note include white letter hairstreak, great crested newts, grass hopper warblers, skylarks, barn owls and grass snakes. Grassland and woodland restoration have previously been undertaken here as part of the Wilder Stoke Wilder Newcastle project.
Restoration measures	Grassland Within the grassland, increased scrub management would be supportive of the dingy skipper population. The meadow areas would benefit from continuing annual cut and collect to maintain floristic diversity. Further floristic enhancement to the grassland could occur with supplementary seeding to add target species missing from the sward. There may also be the opportunity to expand the existing area of species-rich grassland across the site to other suitable locations. Heathland The heathland habitats on site would benefit from their expansion alongside scrub removal. Heathlands benefit from structural diversity through promoting a different age range of shrubs maintained through management. Heathlands are a UK Priority habitat to protect and support a range of associated invertebrates. Creating bare earth scrapes within the heathland and grassland will further support invertebrate assemblages.

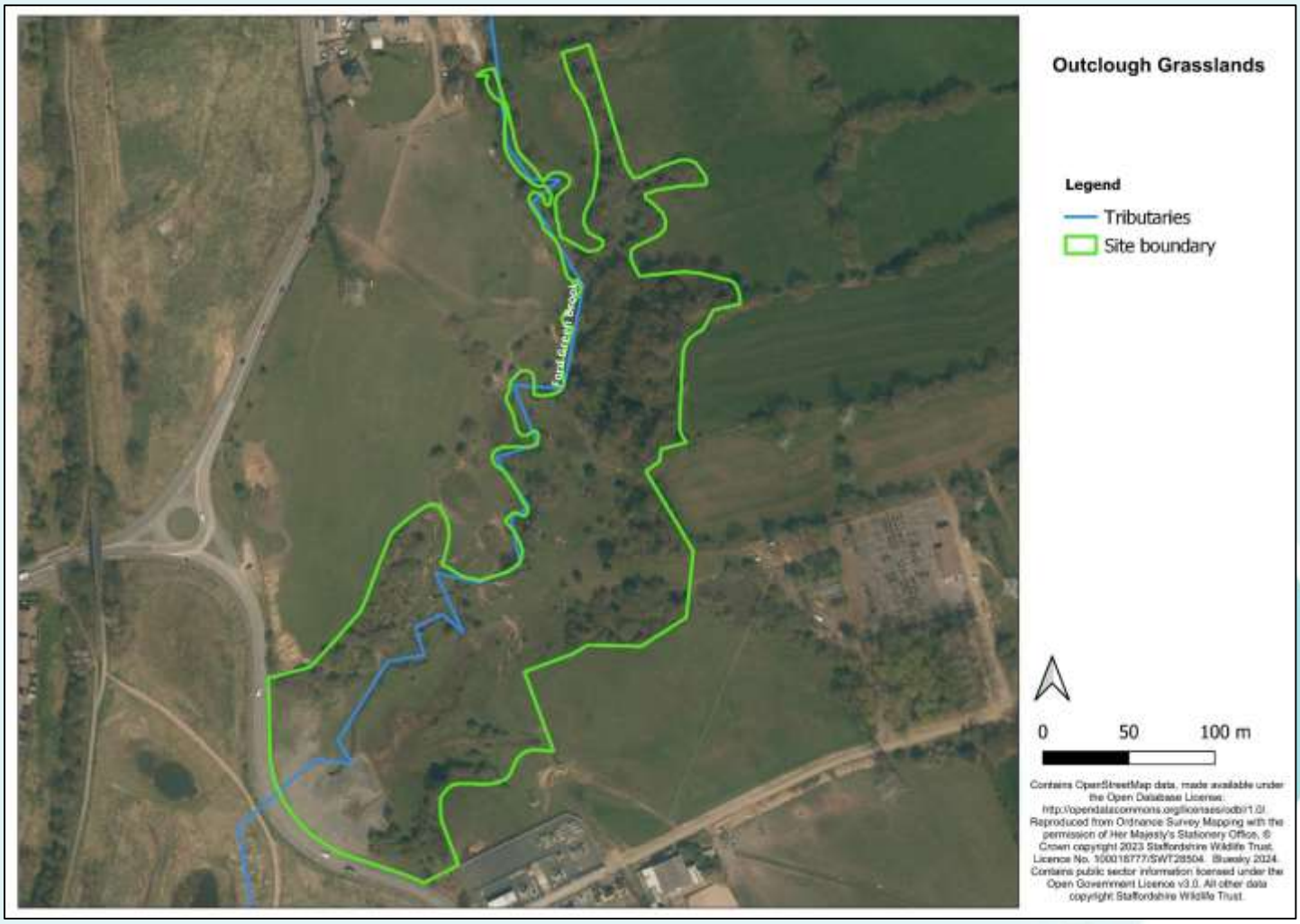
	Heritage The opportunity to restore the historic water meadow could also be investigated. Restoring historic water meadows offers significant benefits for wildlife by supporting a variety of habitat niches. By managing water levels and promoting the growth of species-rich vegetation, restored water meadows can significantly enhance biodiversity and contribute to a healthier environment. **Woodland** Dutch elm resistant Elm trees could be planted in strategic locations to benefit white letter hairstreak butterflies, the adults feed on honeydew secreted by aphids which feed on the leaves of the Elm. **River** The Ford Green Brook has existing proposals for its enhancement through the Trent ReNEW project. Following this an investigation into the feasibility of a reintroduction program for Water Voles should be carried out with further recommendations made to habitat improvements along the brook to support a population.
Constraints	Restoration of historic water meadows and any works that may affect the colliery will require consultation with Historic Environment Record (HER).
Photographic Record	

6.1.33 Ball Green

Water body catchment	Ford Green brook
District	Stoke-on-Trent
Grid Reference	SJ 88869 52172
Size	11 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	Yes
Site description	Ball Green is an open space connected to Whitfield Valley to the west. The site is predominantly grassland with areas of lowland heath and woodland. The grassland is wet in places and there is varying levels of floristic diversity across it.

	Previous grassland restoration has been undertaken here as part of the Blooming Stoke project. This involved hay strewing in 2014/15
Restoration measures	**Grassland** There is further opportunity to add supplementary species to the area subject to grassland restoration (1.8 Ha) as well as create more diverse grassland resource. The meadow areas would benefit from continuing annual cut and collect to maintain floristic diversity. This site is covered by a Higher Level Environmental Stewardship agreement ending 2028 with potential to renew this to provide long-term management funding. **Woodland** Additional tree planting can be targeted towards Whitfield Valley. Woodland should be managed to create variation in structure through a restocking and coppicing program to encourage a diverse age range and height of the trees as well as spatially, creating glades to encourage variation in light levels. Wood material generated would be retained in hibernacula to support small mammals and invertebrates. Any woodland thinning can also provide a source of large woody material for the brook enhancements.
Photographic Record	 Ball Green, B.Noake

6.1.34 Outclough Grasslands



Water body catchment	Ford Green
District	Stoke-on-Trent
Grid Reference	SJ 88164 53755
Size	4 hectares
Landowner	Stoke-on-Trent City Council (SOTCC)
Public Access	No
Site description	A designated Local Wildlife Site with evidence of palaeochannels and some long-established semi-natural woodland to the north that may be ancient. The Ford Green Brook meanders

	unconstrained through this part of the valley. There is an unvegetated area adjacent to Outclough Road identified on aerial photography which may be a source of sedimentation to the brook. As of 2005, the eastern side of the valley had extensive banks of unimproved acidic and neutral grassland, with a substantial and very botanically rich, flushed zone and elsewhere with orchid hybrids and sneezewort present. The remaining land includes scattered scrub and broadleaved woodland.
Restoration measures	Grassland The grassland does not lend itself to a cut and collect due to the steepness of the valley side and wetland mosaic along the valley bottom. Light grazing during drier months would help maintain the sward diversity. There is a risk of poaching if grazing is too heavy or it is done during wetter periods. There are areas of bare earth that would benefit from increased vegetation coverage to better buffer the brook. Wetland mosaic To improve the wetland mosaic, reconnecting the river along its palaeochannels or creating a pool network would be beneficial for the resilience of the floodplain environment, providing better connectivity between the river and its floodplain and supporting an increase water resource during drought conditions.
Constraints	Restoration of palaeochannels will require consultation with Historic Environment Record (HER).
Other information	Land is likely to be leased if it is SOTCC owned as aerial photography indicates sheep grazing.

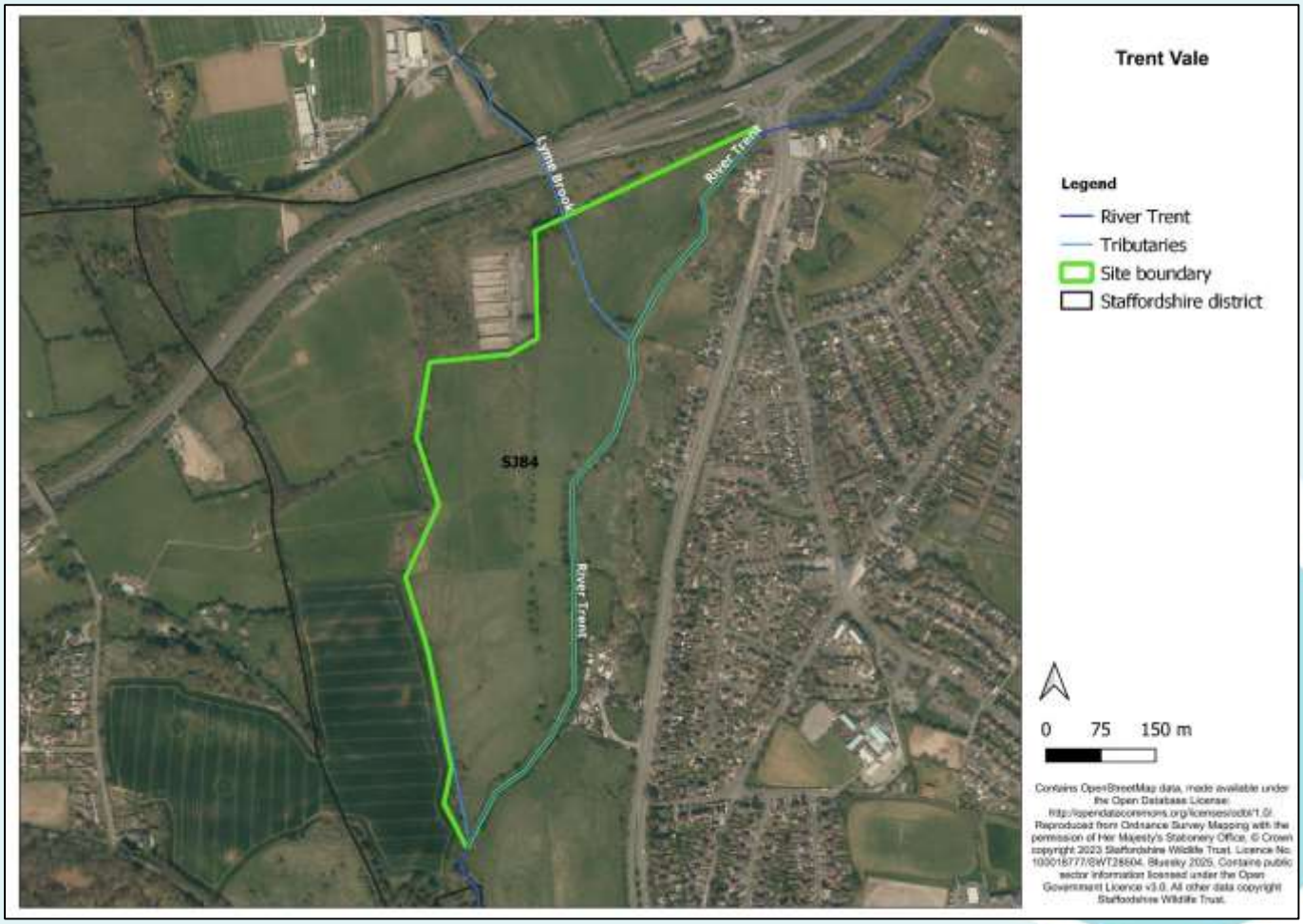
6.1.35 Pool Dam Marsh

Water body catchment	Pool Dam Marsh
District	Newcastle-under-Lyme
Grid Reference	SJ 83801 46248
Landowner	Newcastle-under-Lyme Borough Council (NULBC)
Public Access	Public
Lead Organisation	Groundwork
Site description	Pool Dam Marsh is an area of floodplain wetland in the Lyme Brook valley, to the west of Newcastle town centre. Historically, it was used as a grazing marsh, and was drained to make that use viable by maintaining a lower water table than would naturally occur. Of that drainage, one primary drainage ditch remains.

	The Lyme Brook was previously straightened here to accommodate a railway branch line which borders the north of the site and has now been decommissioned for many years. A river restoration project was undertaken in the mid-2000's to re-create a meandering channel. During that restoration work, live willow was used as a bank reinforcement and that willow has now grown substantially, crowding the banks of the river and, in some places, choking the river itself. Very little in the way of habitat management of the site has taken place since this restoration activity and large sections of the site are now succeeding to scrub and woodland, and vegetation communities linked to drier habitats. What little there is in the water of standing water features in the eastern portion of the site have extensive vegetation growth dominating the standing water areas. To the west of the site, wetter conditions, including some small areas of open water, remain and the site is known to provide valuable habitat for a range of wetland species, particularly in the winter.
Restoration measures	River Existing weir structure could be broken up and removed from the water course, including any connecting structure built back into the banks. The water course bed would be regraded to allow an appropriate gradient suitable for fish passage, likely incorporating a sequence of stepped pools connected by shallower riffle. It is anticipated that the regrading of the watercourse will involve working up to 25m back from the current weir location to achieve this aim. There is an additional opportunity to re-align and re-profile water course to incorporate more diverse morphology and habitat opportunity and to repair and replace degraded outfall infrastructure to improve environmental and aesthetic considerations. Wetland There is an opportunity to install leaky dams along the drainage network allowing water to spill out across the floodplain improving connectivity and water resource on site. Allow to improve the incidence of water within the floodplain a flood storage scrape / wetland feature inside meander bend would be beneficial. Maintaining existing scrapes on site and reduce scrub encroachment across the site by selective scrub clearance will improve the condition of the wetland. Woodland

	The basin in which the weir is located presents a challenge for traditional public green space management due to the topography of the site. It is therefore proposed that, as part of this enhancement scheme, some of this area be planted with trees to complement and expand the existing tree cover alongside the watercourse. The existing woodland on site needs managing to prevent further encroachment into the wet grassland and swamp. Ditches Reprofiling of the ditch network would help to create more of a wetland mosaic across the site increasing the opportunities for ecological diversity. Water meadow A potential water meadow has been identified on the Historical Environment Record which could be restored and should also be taken into account when considering the above interventions to avoid any damage to existing structures.

6.1.36 Trent Vale



Water body catchment	Trent Vale
District	Stoke-on-Trent
Grid Reference	SJ 86315 42225
Landowner	Severn Trent Water
Public Access	No
Lead Organisation	Staffordshire Wildlife Trust (SWT)
Site description	A grassland site, which was a former water meadow with visible ditches indicating the former water meadow structure. The River Trent runs to the east of the site with the Lyme Brook - River Trent conference in the north. The condition of the grassland is unknown.

Restoration measures	River The River Trent forms the eastern boundary of the site; opportunities to reprofile its banks and improve floodplain connection could be investigated. There may also be opportunities along the Lyme Brook. Wetland Allow to improve the incidence of water within the floodplain by creating scrapes and pools would be beneficial. Water meadow The opportunity to restore the historic water meadow could also be investigated. Restoring historic water meadows offers significant benefits for wildlife by supporting a variety of habitat niches. By managing water levels and promoting the growth of species-rich vegetation, restored water meadows can significantly enhance biodiversity and contribute to a healthier environment.
Constraints	Landowner permission – probably tenants too

7 Glossary

Biodiversity Action Plan (BAP) – A plan that sets objectives and actions for the conservation of biodiversity, with measurable targets, following the UK Biodiversity Action Plan, published following the 1992 Rio de Janiero Convention on Biological Diversity.

Biodiversity offsetting – A system used predominantly by planning authorities and developers to fully compensate for biodiversity impacts associated with economic development, through the planning process. Offsets should aim to achieve no net loss and preferably a net gain of biodiversity, and be managed or maintained in perpetuity.

Citizen science – The collection and analysis of data relating to the natural world by members of the general public, typically as part of a collaborative project with professional scientists.

Ecological networks – A way of thinking about landscapes and how we can create linkages between key wildlife areas to benefit habitats and species. Ecological networks are created by identifying opportunities to connect habitats through the provision of corridors, stepping stones and buffer zones.

Ecosystem Action Plan (EAP) – In Staffordshire, Habitat and Species Action Plans are replaced with 14 "Ecosystem Action Plans", the Staffordshire BAP aims to prioritise conservation management at a landscape level and contribute to local, regional and national conservation targets.

Ecosystem services – These are the benefits which the natural environment produces that are freely utilised by humans including carbon storage, flood mitigation, and food production.

Good overall status – An assessment of the biological quality of UK watercourses based on standards set in accordance with the Water Framework Directive and other EU water directives.

Habitat and Species Action Plan – Measurable targets for priority habitats and species which set out the priorities, which will contribute to meeting local and national BAP conservation targets.

Historic water meadow – The control of water in fields by a system of channels, sluices and ditches, enabling the management of water levels manually with the aim of encouraging early and lush growth of grass. These differ from floodplain meadows which flood naturally. Historical water meadows are an important part of our agricultural heritage for managing land in the floodplain.

Humber River Basin Management Plan - describes the challenges that threaten the water environment of the Humber River Basin District and how these challenges can be managed.

Local Nature Reserves (LNR) - a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949 by principal local authorities and in some cases Parish and Town Councils. LNRs are designated for people and wildlife. They are places with wildlife or geological features that are of special interest locally.

Local Wildlife Sites (LWS) – Areas that are locally important for the conservation of wildlife, identified and selected locally by partnerships of local authorities, nature conservation charities, statutory agencies, ecologists and local nature experts using robust scientifically-determined criteria and detailed ecological surveys. They are identified and selected for the significant habitats and species that they contain.

National Character Area (NCA) - A National Character Area is a natural subdivision of England based on a combination of landscape, biodiversity, geodiversity and economic activity. There are 159 in total as defined by Natural England.

Natural capital – The naturally occurring assets and systems that sustain life on Earth, including minerals, soils, and nutrient cycles, water and hydrological cycles, cellular life (for example, plants, animals and bacteria), energy resources, and atmospheric and climatic processes.

Natural Flood Management (NFM) – Natural Flood Management is the alteration, restoration or use of landscape features, working with natural hydrological and morphological processes, in order to reduce flood risk.

Natural heritage – Natural heritage refers to the sum total of the elements of biodiversity, including flora and fauna, ecosystems and geological structures. Heritage is that which is inherited from past generations, maintained in the present, and bestowed to future generations.

Palaeochannel – A remnant of former river or stream channel which is inactive and filled with younger sediment.

Priority habitats (Habitats of Principal Importance) – Habitats of Principle Importance (HPI) included in the England Biodiversity List published by the Secretary of State under section 41 of the Natural Environment and Rural Communities Act (NERC) 2006.

Priority species (Species of Principal Importance) – These are defined as those listed in the NERC Act 2006. Schedule 41: Species of Principal Importance in England, and Staffordshire Biodiversity Action Plan (SBAP) Priority Species.

Protected species – These are defined as those listed on the Birds Directive, Habitats Directive, Badgers Act, and the Wildlife and Countryside Act 1981 excluding those on Schedule 5 (section 9.5) sale only.

Site of Special Scientific Interest (SSSI) – SSSI is a statutory designation placed on an area of land that is considered to be of special interest by virtue of its fauna, flora, geological or geomorphological features. Owners and occupiers of SSSIs are required to obtain consent from Natural England if they want to carry out, cause or permit to be carried out within the SSSI, any activity that may affect the interest of the site.

Special Area of Conservation (SAC) – A SAC is a site designated under the Habitats Directive.

Sustainable Drainage Systems (SuDS) – SuDs are a natural approach to managing drainage in and around properties and other developments.

Water Framework Directive (WFD) – European Union legislation – Water Framework Directive (2000/60/EC) – establishing a framework for European Community action in the field of water policy.

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9 Appendices

9.1 Maps

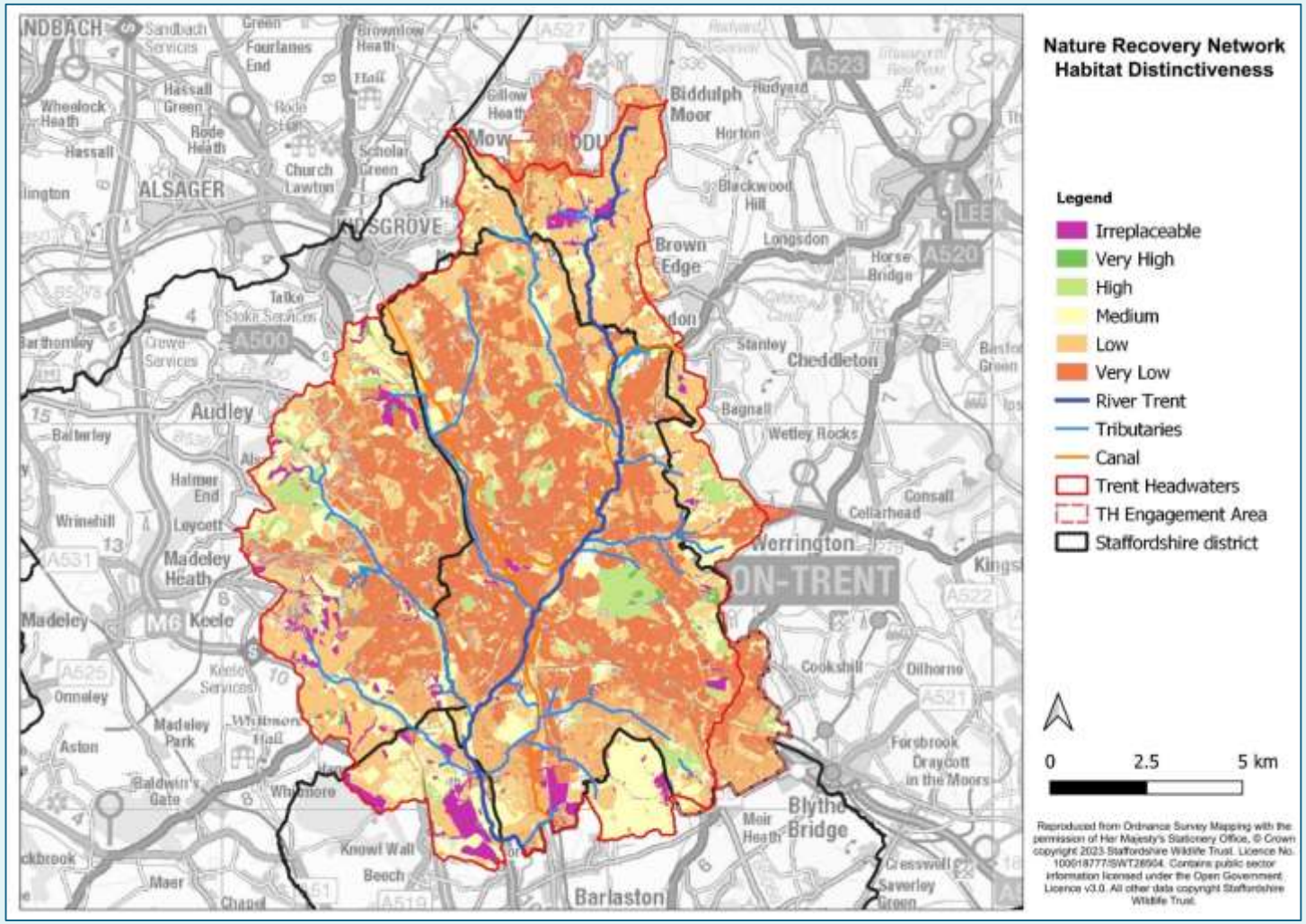

Figure 3 Nature Recovery Network (NRN) Habitat Distinctiveness

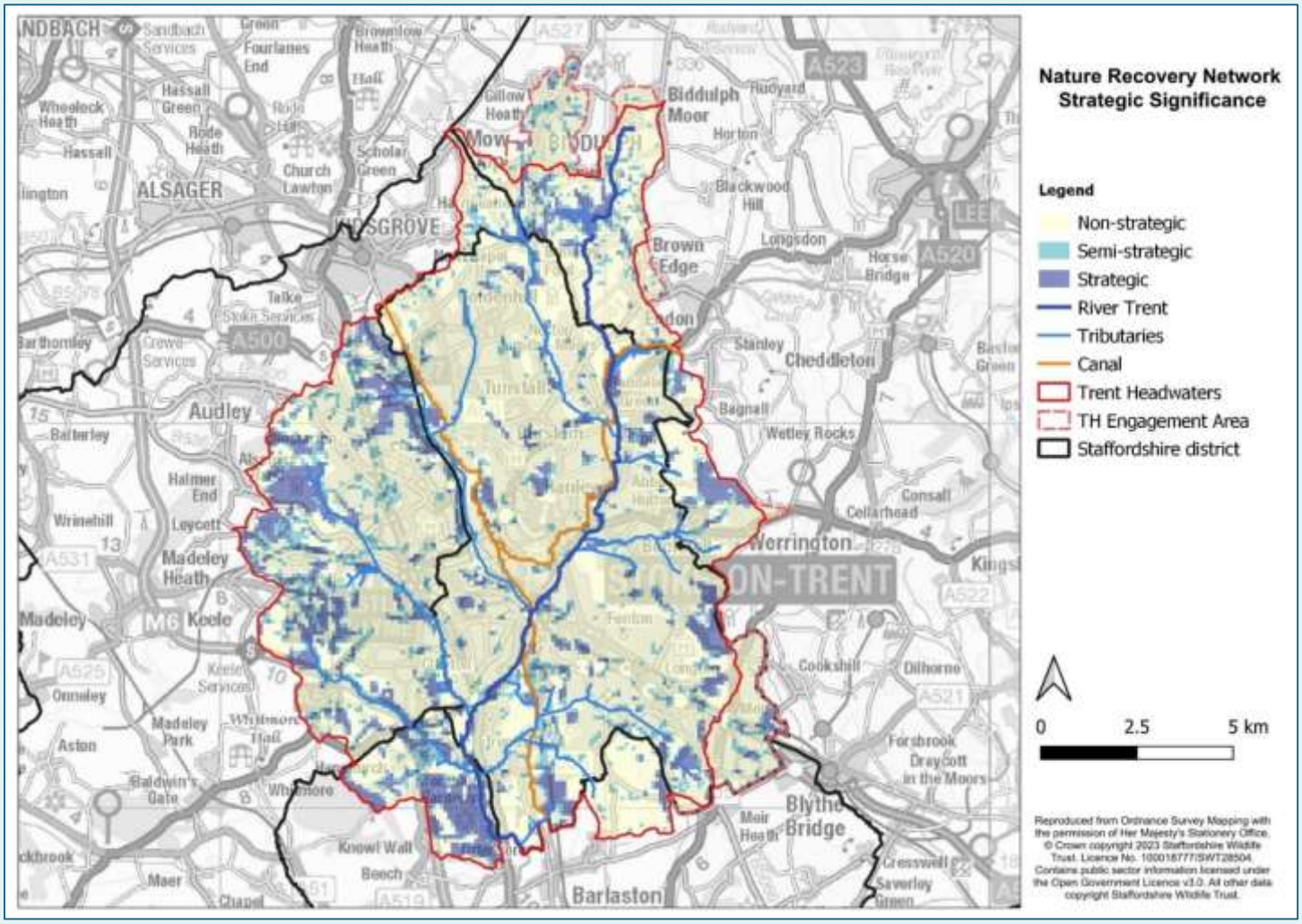

Figure 4 Nature Recovery Network (NRN) Strategic Significance

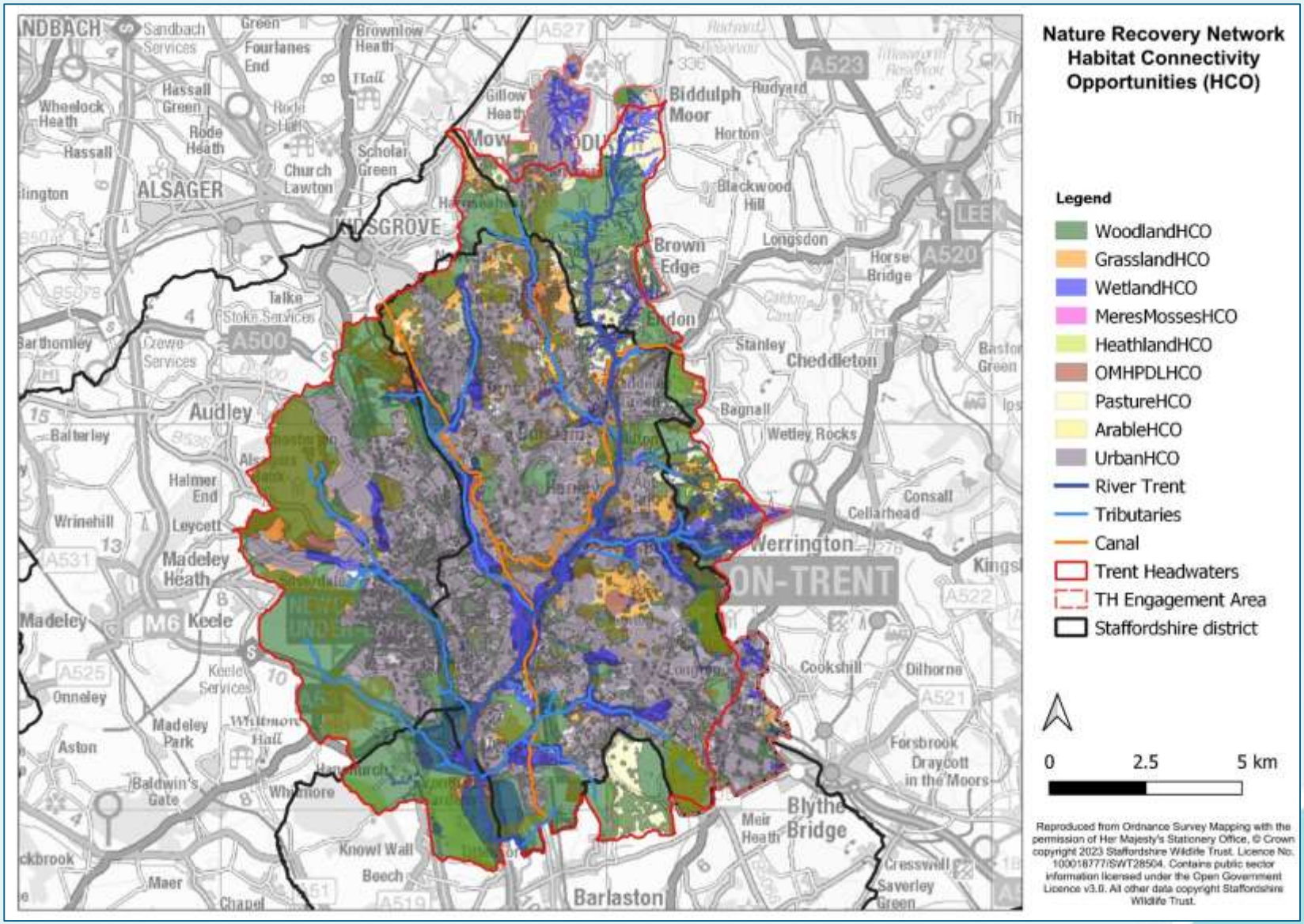

Figure 5 Nature Recovery Network (NRN) Habitat Connectivity Opportunities

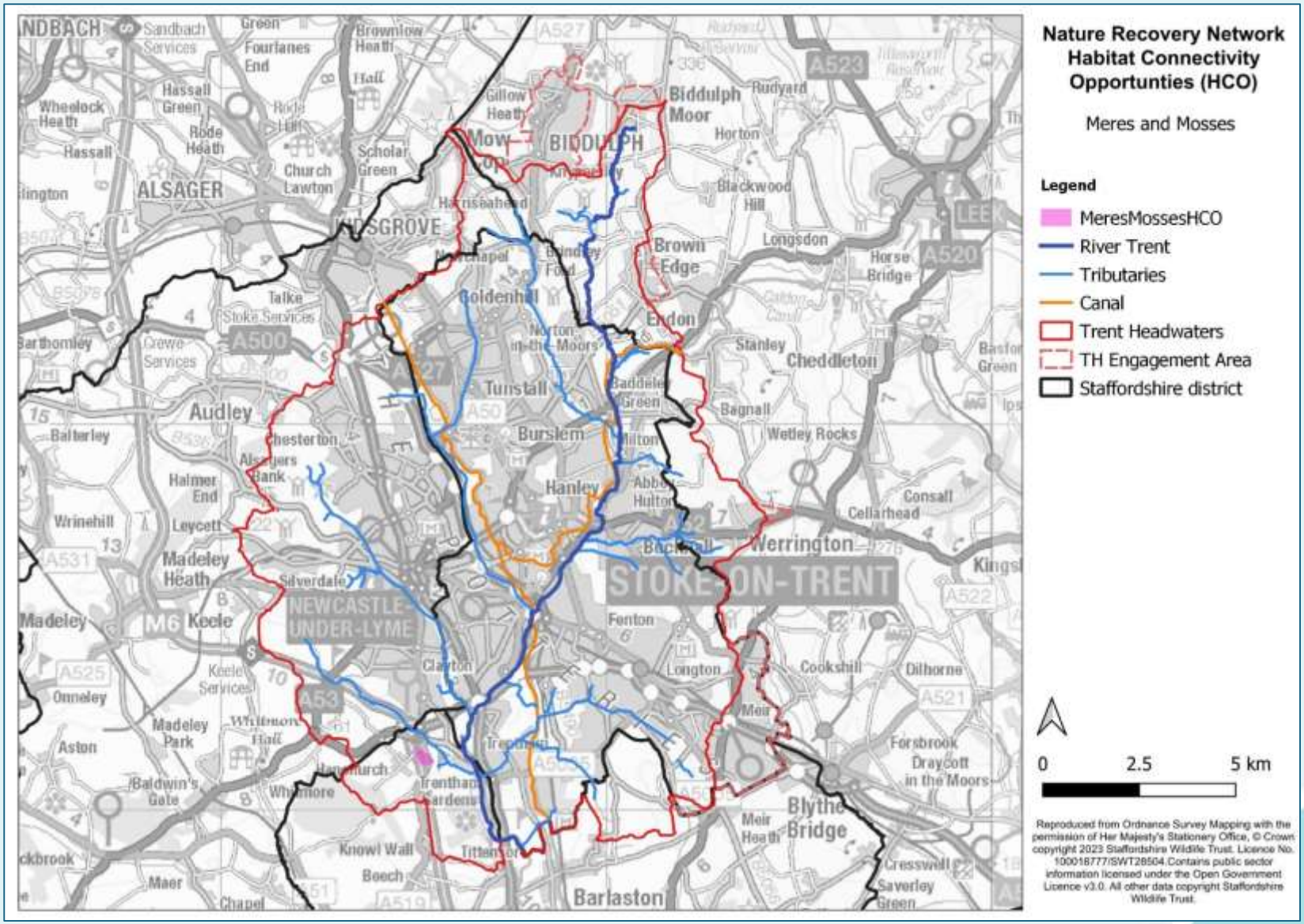

Figure 6 Nature Recovery Network (NRN) Habitat Connectivity Opportunities – Meres and Mosses

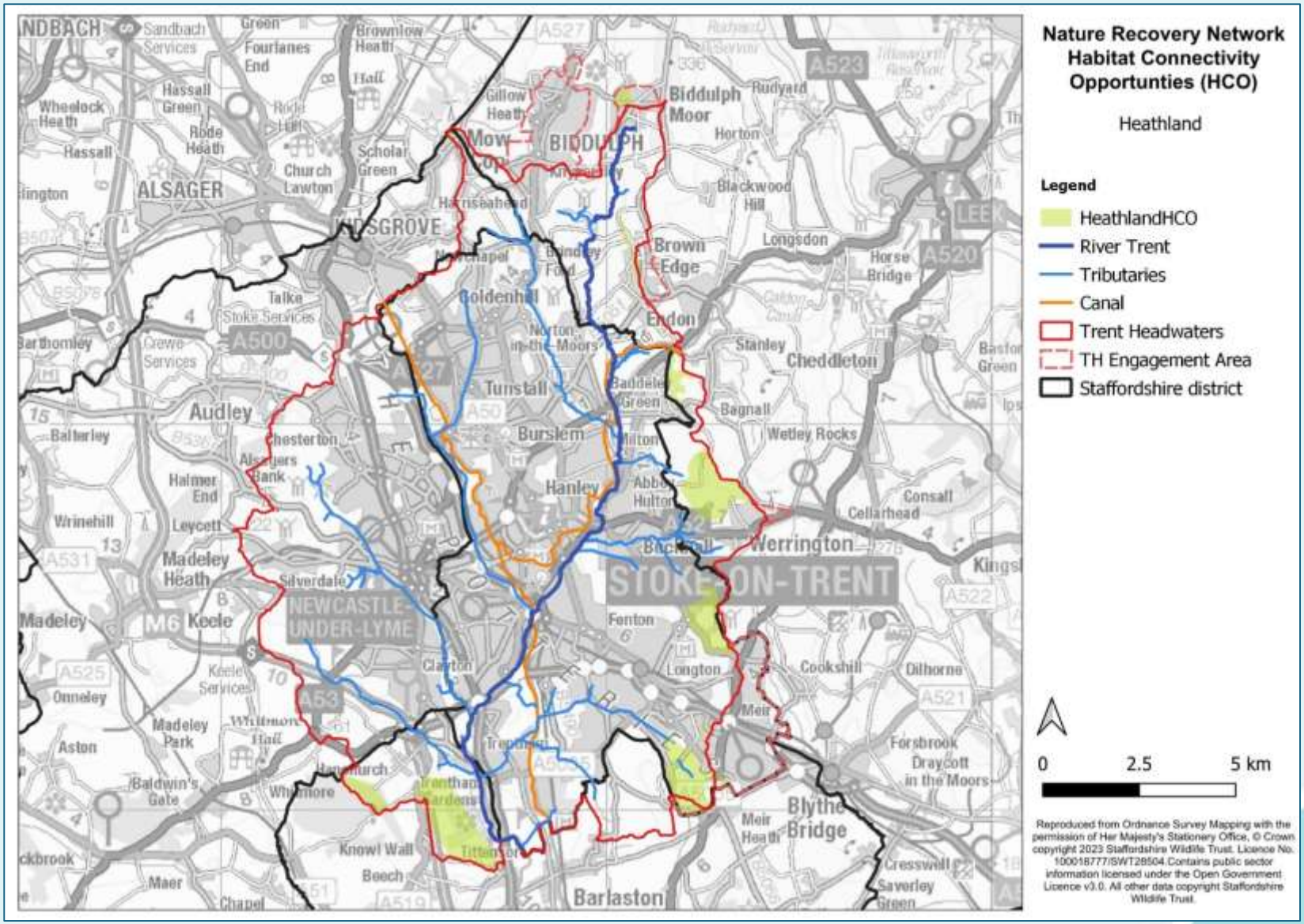

Figure 7 Nature Recovery Network (NRN) Habitat Connectivity Opportunities - Heathland

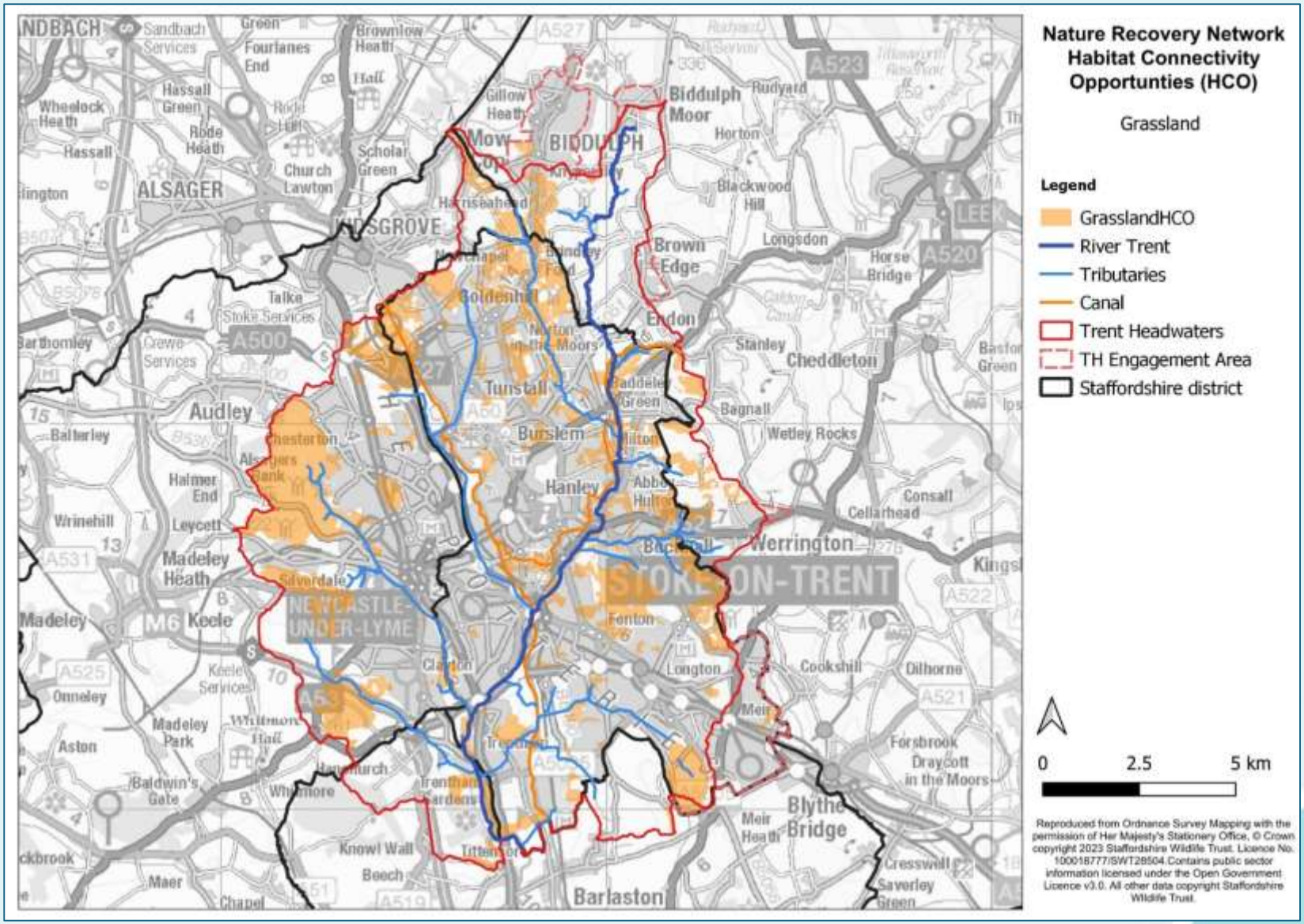

Figure 8 Nature Recovery Network (NRN) Habitat Connectivity Opportunities - Grassland

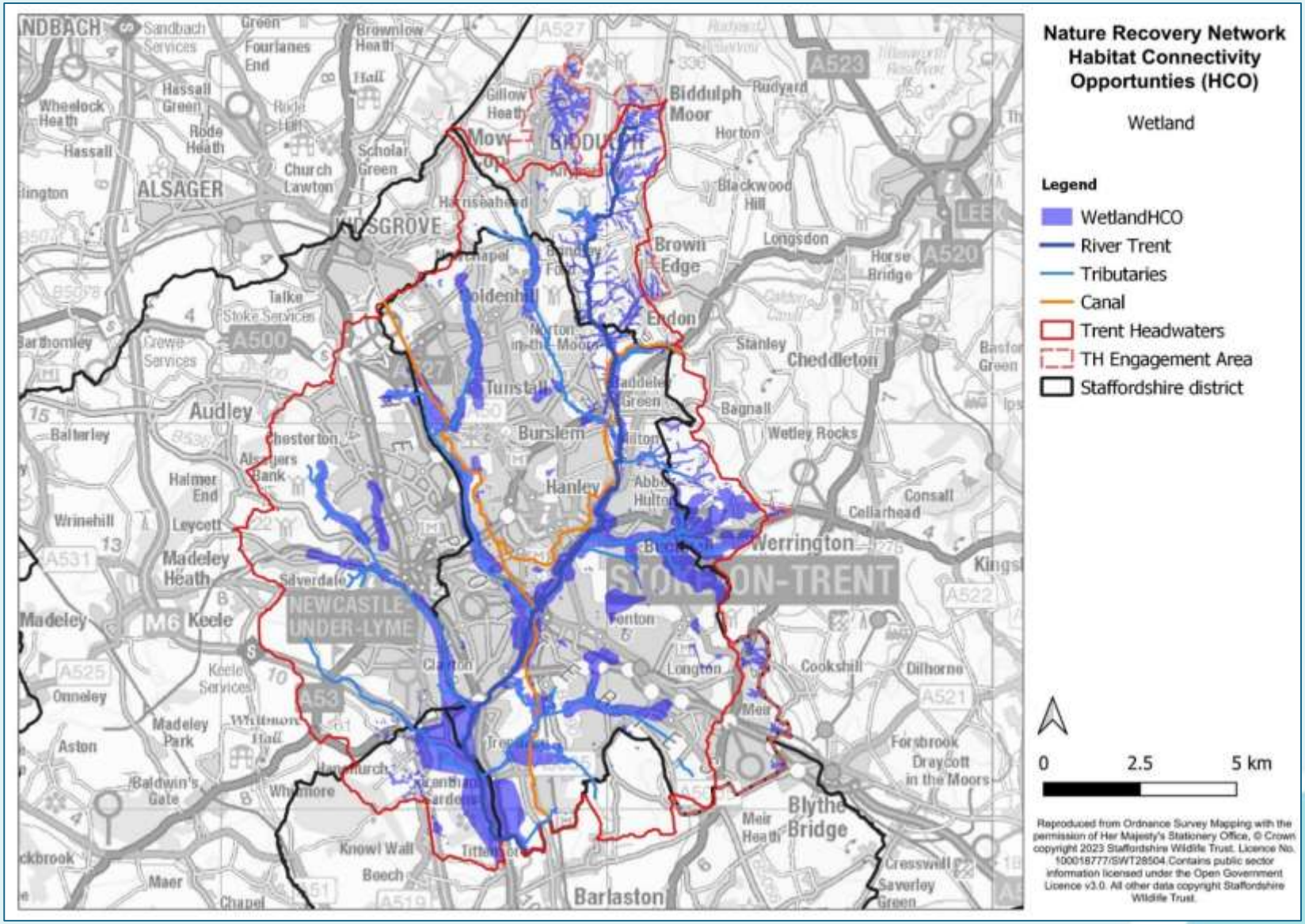

Figure 9 Nature Recovery Network (NRN) Habitat Connectivity Opportunities – Wetland

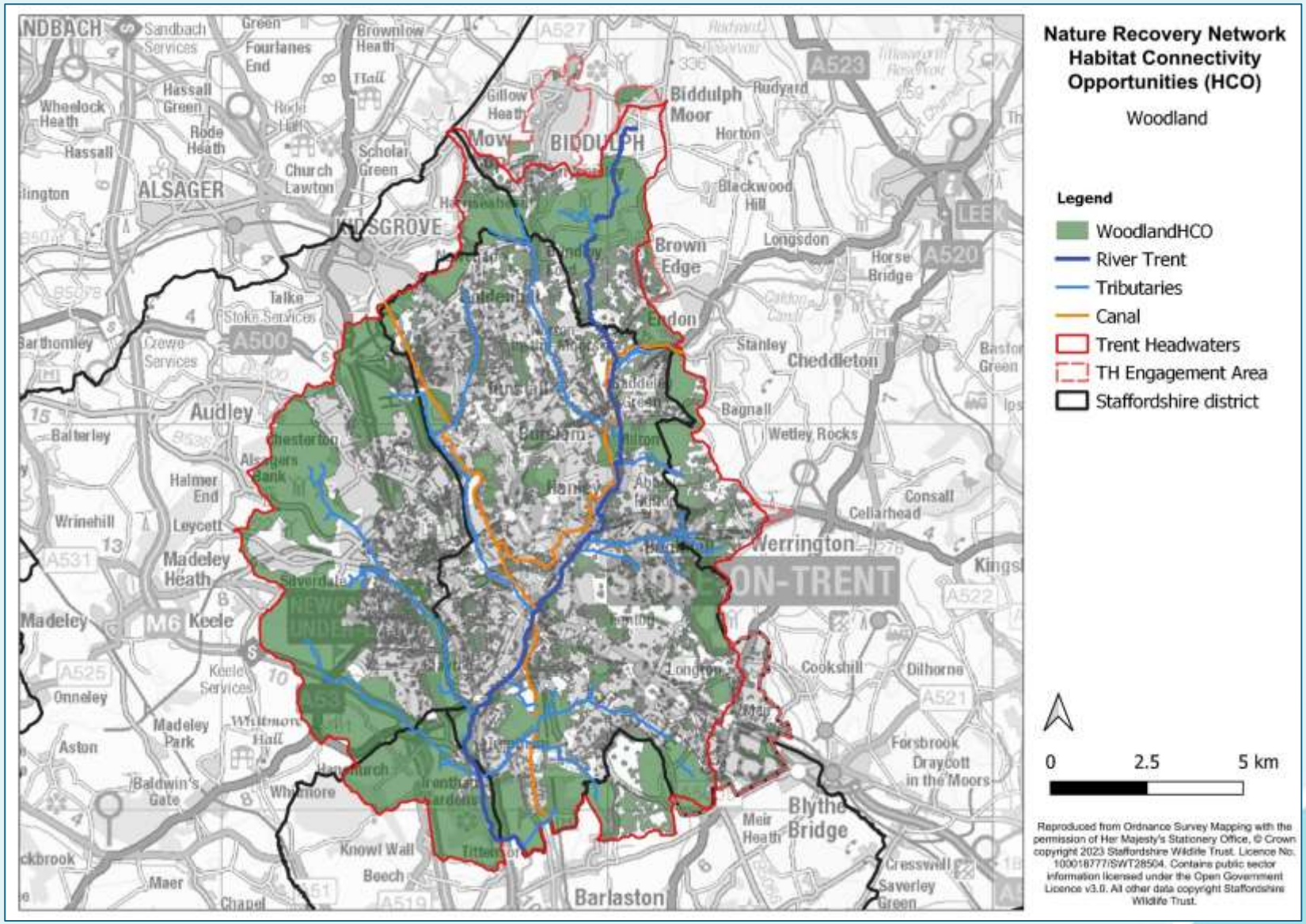

Figure 10 Nature Recovery Network (NRN) Habitat Connectivity Opportunities – Woodland

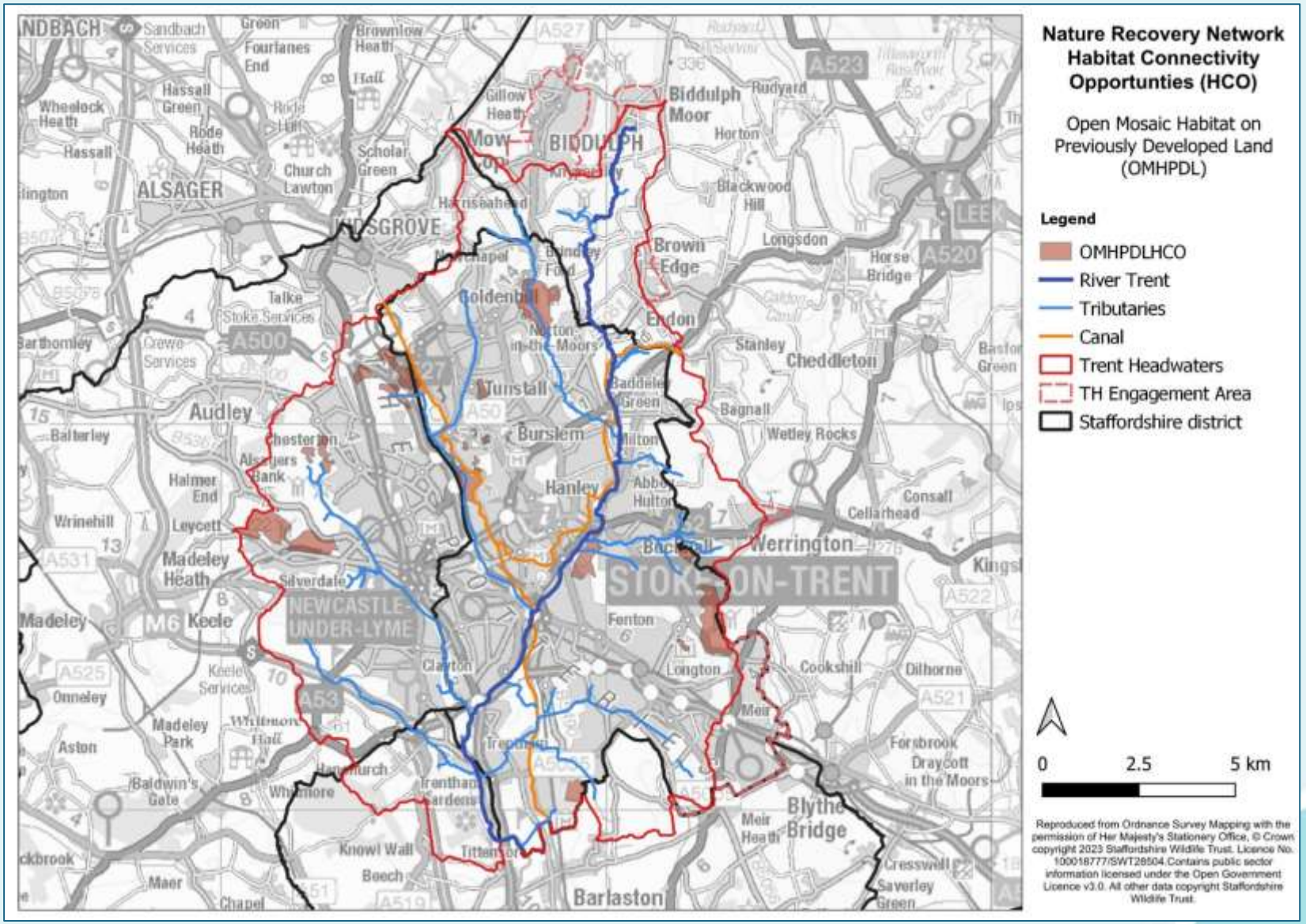

Figure 31 Nature Recovery Network (NRN) Habitat Connectivity Opportunities - Open Mosaic Habitat on Previously Developed Land (OMHPDL)

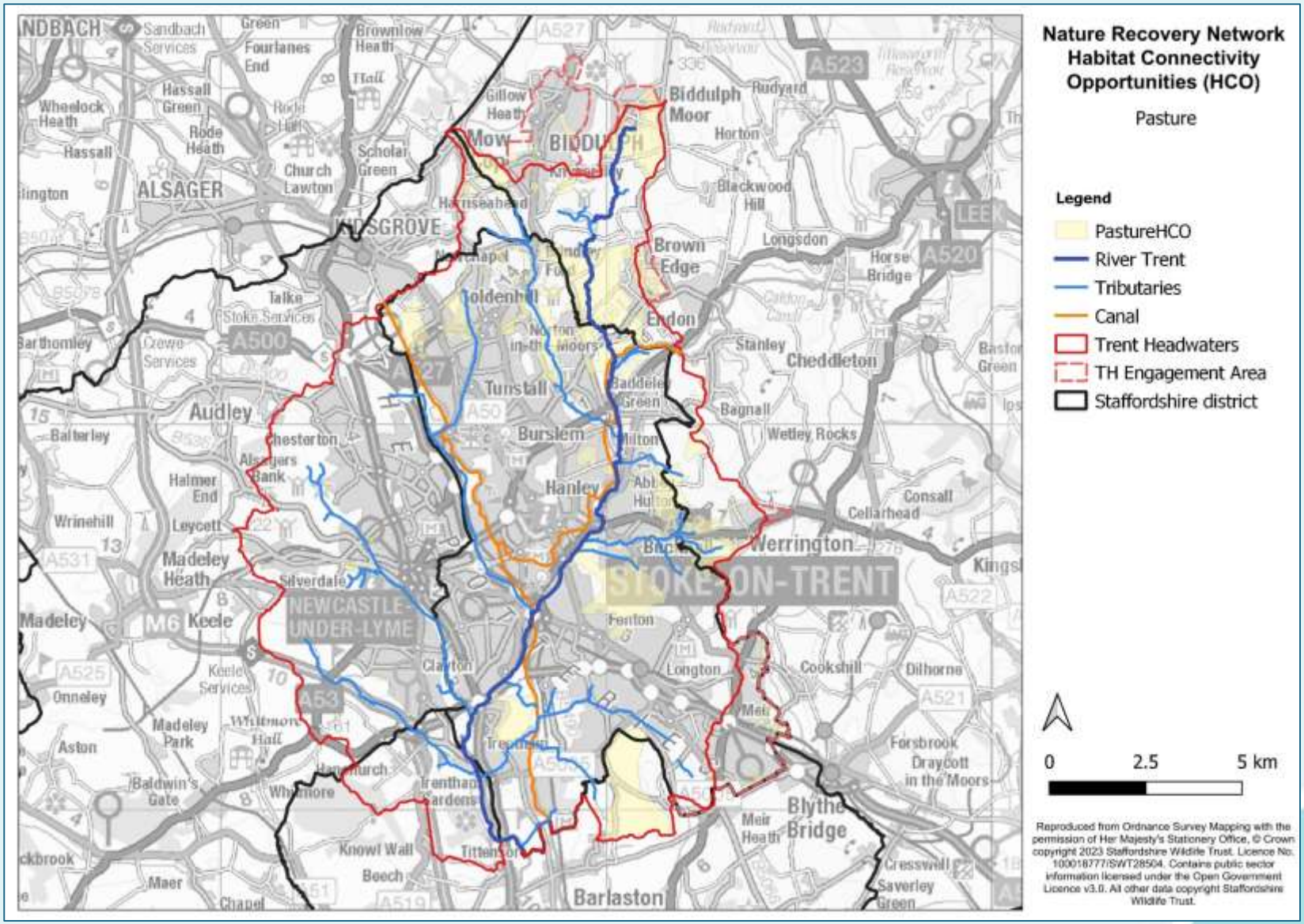

Figure 12 Nature Recovery Network (NRN) Habitat Connectivity Opportunities - Pasture

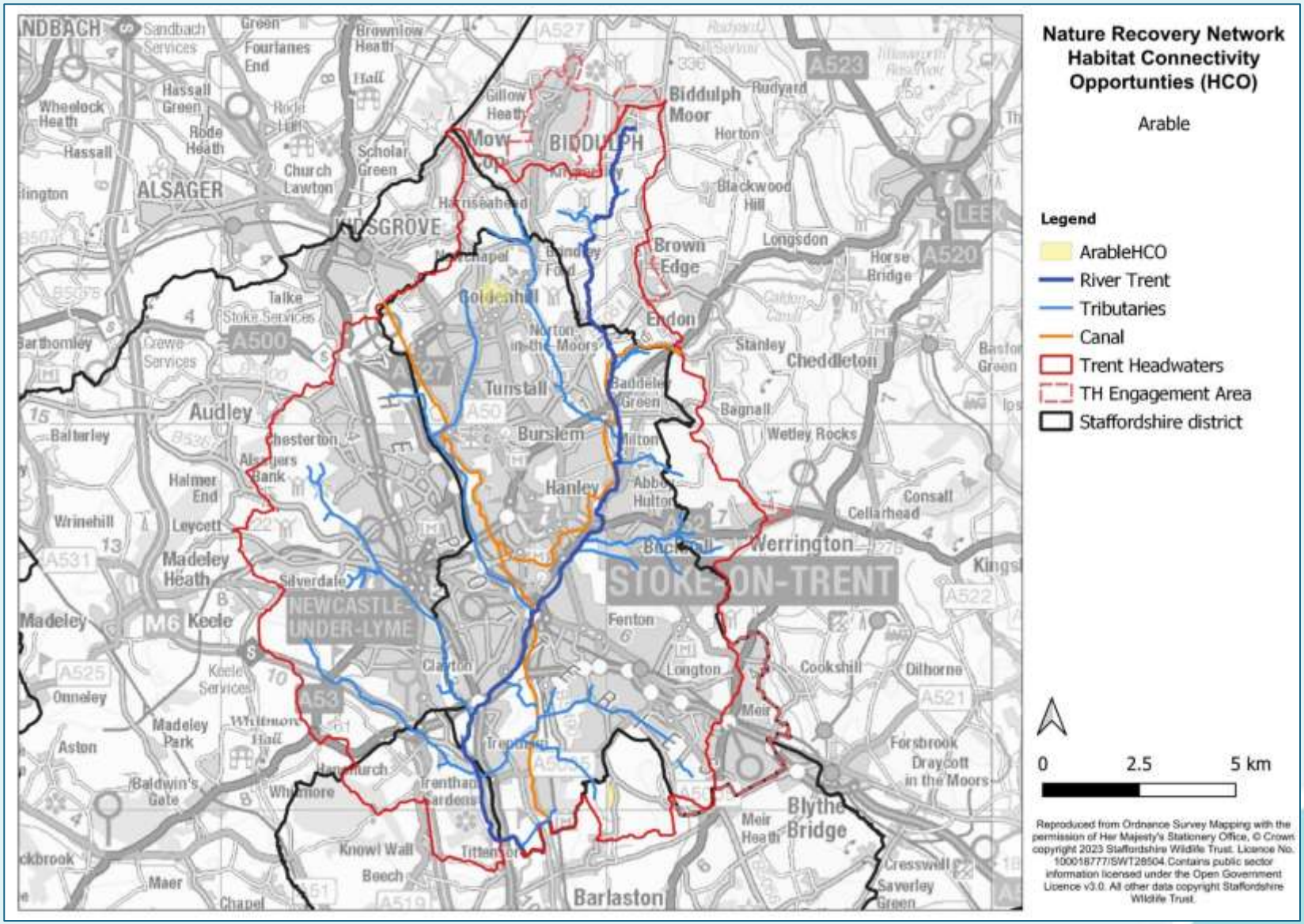

Figure 43 Nature Recovery Network (NRN) Habitat Connectivity Opportunities - Arable

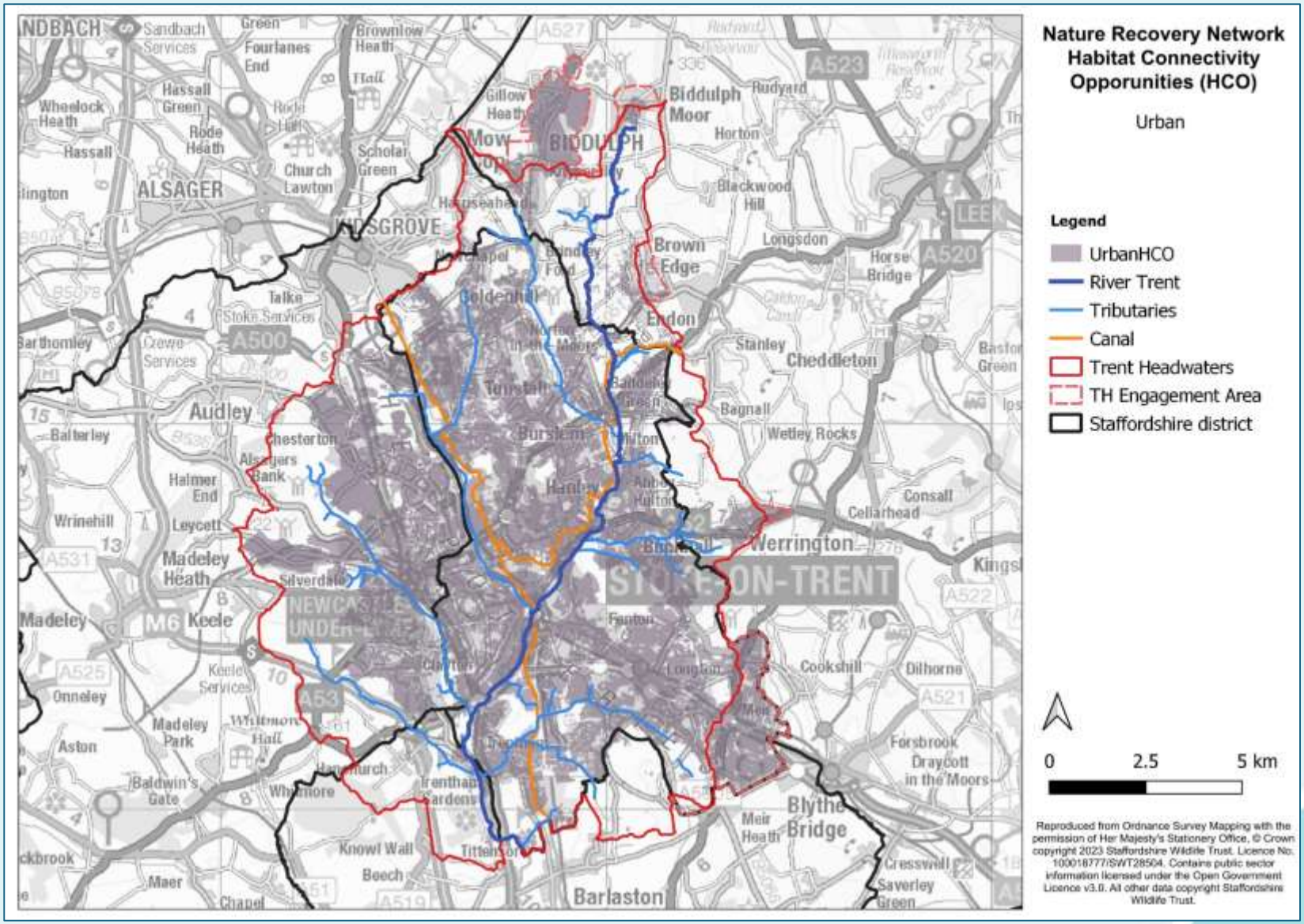

Figure 14 Nature Recovery Network (NRN) Habitat Connectivity Opportunities - Urban

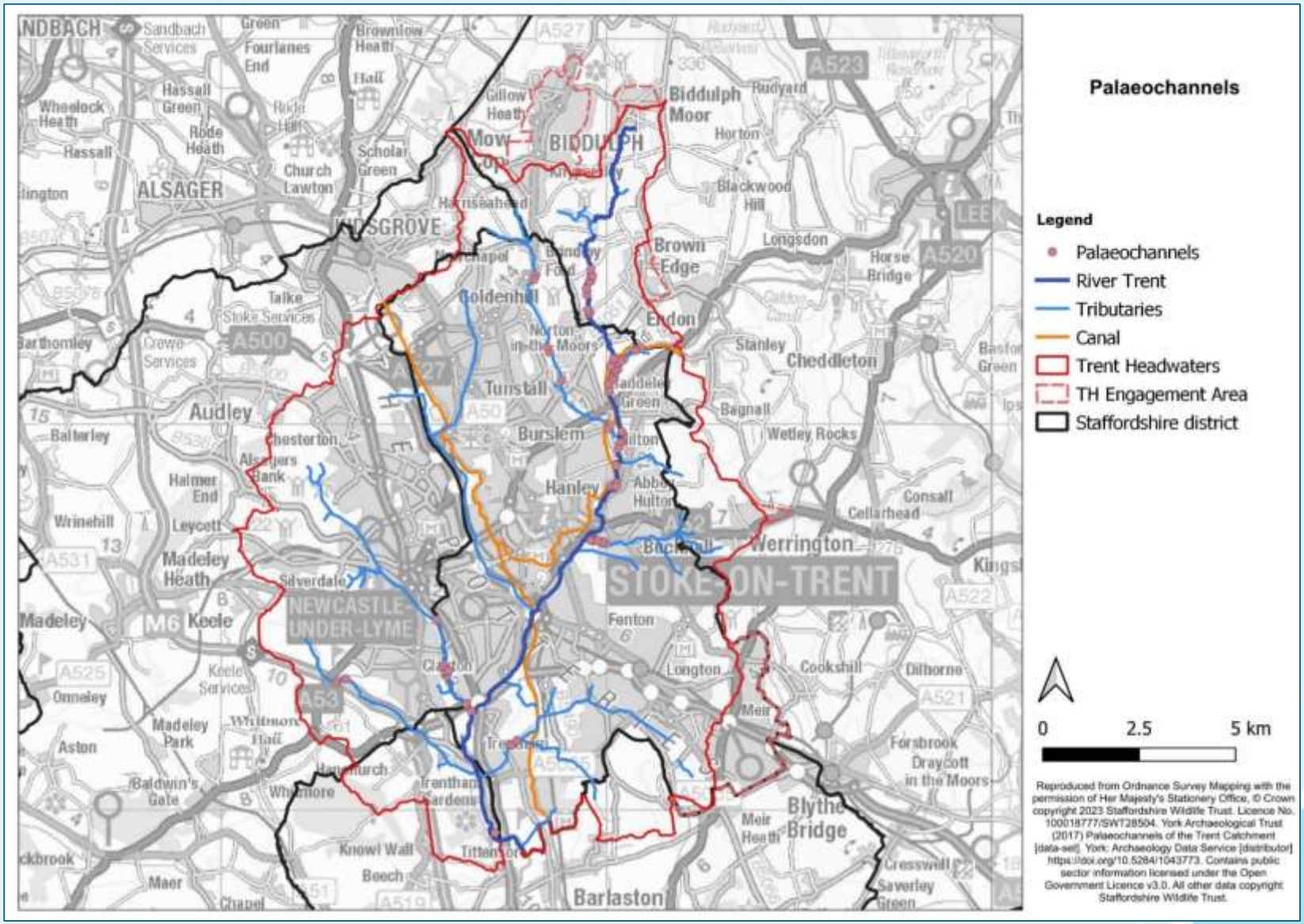

Figure 15 Palaeochannels

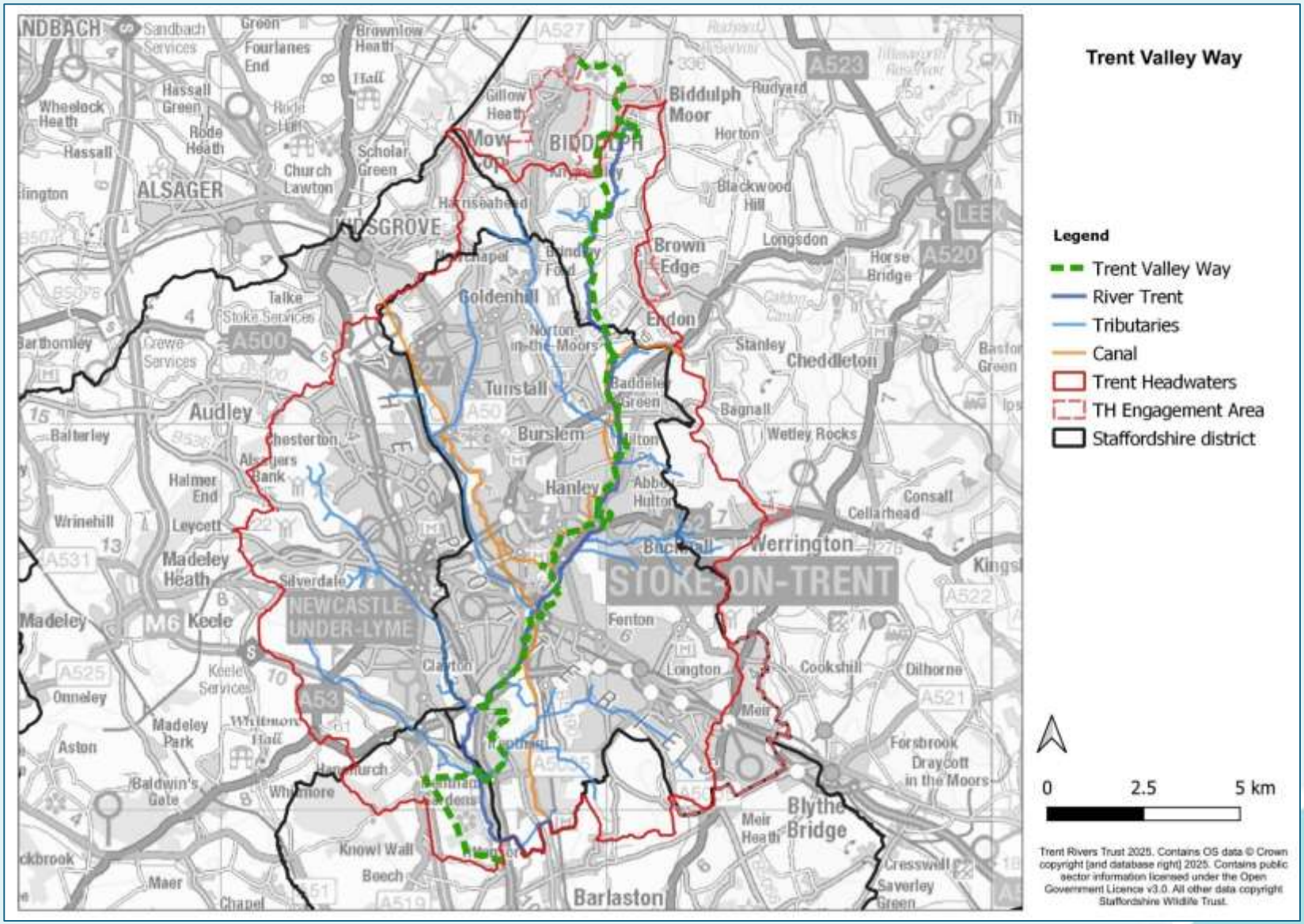

Figure 16 Trent Valley Way

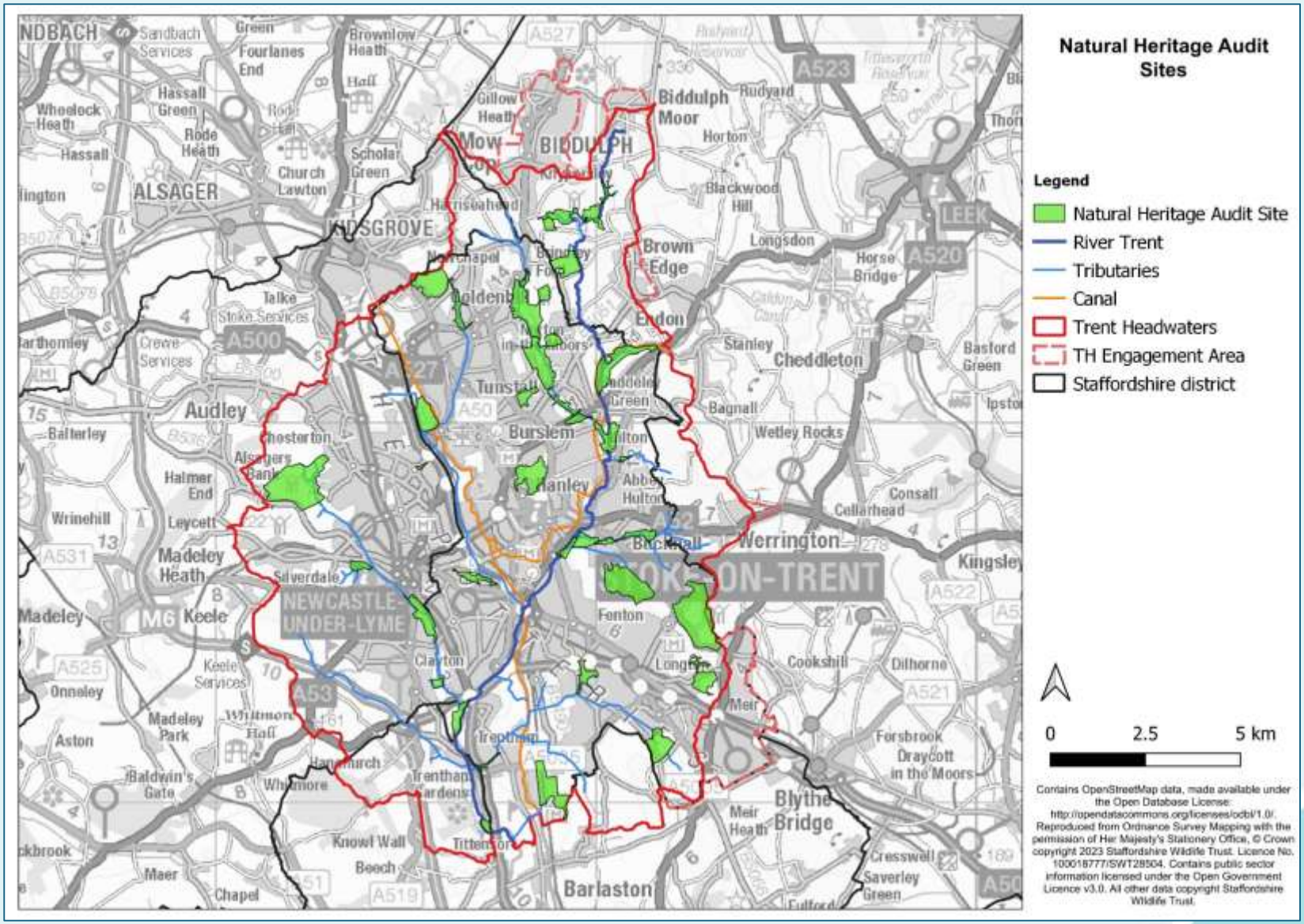

Figure 17 Natural Heritage Audit Sit

9.2 Summary of schemes on sites included within the audit

Table 4 Sites that crossover with agri-environment schemes, the Trent Valley Way, Scheduled Monuments and past projects

Site Name	Agri-environment scheme	Trent valley Way	Scheduled Monument	SUNRISE	Wilder Stoke Wilder Newcastle	Blooming Stoke
Crowborough Wood	✓					
Knypersley Reservoir		✓				
Greenway Bank	✓					
Heakley Marshes		✓				
Milton		✓		✓		
Trent Mill				✓		
Berryhill Fields	✓		✓			
Park Hall	✓					
Fenton Road / Causley Brook				✓		✓
Coyney Woods					✓	
Florence Meadows	✓					✓
Longton Brook Greenway		✓				

Hem Heath & Newstead Woods					✓	
Tag Marsh	✓					
Site Name	Agri-environment scheme	Trent valley Way	Scheduled Monument	SUNRISE	Wilder Stoke Wilder Newcastle	Blooming Stoke
Lyme Valley Parkway				✓		
Lymedale Business Park (South of)					✓	
Apedale Country Park	✓		✓			
Central Forest Park					✓	
Westport Lake						✓
Holden Lane Pools					✓	
Ford Green Walkway				✓		
Bradeley Fields						✓
Whitfield Valley	✓			✓		
Chatterley Whitfield Heritage Country Park					✓	
Ball Green						✓

9.3 GIS Dataset Resource

Table 5 GIS datasets used in the production of the Natural Heritage Audit Report

GIS Dataset	Usage	Justification	Limitations
Water Body catchments - Environment Agency (EA)	Define project area	Delivery projects must impact the headwaters of the river Trent	
Water Body classifications - EA	Identify reasons for not achieving good and priority catchments	Good Overall Status required by 2027 under Water Framework Directive	
Nitrate Vulnerable Zones - EA	Assess coverage of project area	Potential constraint	
Nutrient sensitive area -DEFRA & EA	Assess coverage of project area	Potential constraint	
Source protection zones - EA	Assess coverage of project area	Potential constraint	
Nature Recovery Network mapping – Staffordshire Ecological Record (SER)	Identify key challenges and opportunities Identify ecological corridors	Most up to date habitat mapping for the county	Modelling is predictive and has not been ground-truthed
Statutory sites maps (SSSI, SAC etc.)	Identify sites for audit and establish condition	Priority sites for restoration where condition is poor. Constraint where condition is good.	
Local Wildlife Sites (LWS)	Identify sites for audit and establish condition	Priority sites for restoration where condition is poor. Constraint where condition is good.	
Historic Water Meadows - The University of Birmingham on	Identify sites suitable for habitat restoration	Historic water meadows have potentially high	

behalf of Staffordshire County Council		ecological and historic value Potential constraint	
GIS Dataset	Usage	Justification	Limitations
Palaeochannels – York Archaeological Trust	Identify sites suitable for habitat restoration	Palaeochannels have potentially high ecological and historic value. Potential constraint	
Flood maps for planning - Rivers and sea flood zones - EA	Assess suitability of restoring of historic water meadows Ensure audit includes sites covered by flood zones	Flooding indicates connection to watercourse	Modelling is predictive and has not been ground-truthed
Aerial Photography (2017) – Bluesky	Identify sites Identify measures to be taken on site		Limited ability to assess habitat condition. Potential inaccuracies due to age of data
Countryside Stewardship Scheme – DEFRA	Identify land managed under an agri-environment scheme	Potential constraint or opportunity	
Environmental Stewardship Scheme – DEFRA	Identify land managed under an agri-environment scheme	Potential constraint or opportunity	
Mineral Safeguarding Zones – Staffordshire County Council	Assess coverage of project area	Potential constraint	

Contaminated Land – SMDC, SOTCC, NULBC	Assess coverage of project area	Potential constraint	
GIS Dataset	Usage	Justification	Limitations
OS Green Spaces – Ordnance Survey	Identify publicly accessible land	Enables community engagement	Sites may not be local authority owned
Local Authority land ownership – SMDC, SOTCC, NULBC	Identify local authority owned land	Enables community engagement	
PROW – SCC, SOTCC	Identify publicly accessible land	Enables community engagement	
Species Data - Staffordshire Ecological Record (SER)	Provide details of species presence	Most complete and up-to-date database of species records in the county	Not a consistent survey – may be some species present which are missed
Priority Habitat Inventory - Natural England	Identify priority habitats for restoration as documented in site plans	Identification of key habitat sites within the landscape to be conserved and connected.	Partial coverage of project area. Wide range of ages which may limit accuracy
Habitat Composite – SER	Identify priority habitats for restoration	Provides complete coverage of the project area	Wide range of ages and sources which may limit accuracy
Ancient Woodland Inventory – Natural England	Identify priority habitats for restoration	A key habitat to be restored and connected	Lack of historical evidence may limit accuracy
Long-established Woodland – SER on behalf of Natural England	Identify priority habitats for restoration	A key habitat to be restored and connected	Lack of historical evidence may limit accuracy
Scheduled Monuments – Historic England	Identify Scheduled Monuments within audit sites	Potential constraint if present	

GIS Dataset	Usage	Justification	Limitations
Combined Sewage Outflows (CSOs) - EA	For inclusion within site plans	CSOs contribute to the water pollution	
River obstacles - EA	For inclusion within site plans	River obstacles prevent the upstream movement of fish and other species	Not a complete survey – some river obstacles may not have been mapped
Trent Valley Way – Trent Rivers Trust	Identify which sites overlap with this walking route	Potential constraint or opportunity	