River Ryton Design and Scoping Report

Aspirational Projects

March 2015
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EXECUTIVE SUMMARY

Recent inter-organisational work delivered through the catchment partnership has identified several areas where small scale projects could be delivered along the River Ryton in Nottinghamshire. In order to retain and improve the moderate overall status of the Ryton, this scoping document has been produced to outline the delivery and costs of aspirational projects which will meet Water Framework Directive and other Catchment Based objectives.

To achieve this, walkover surveys and landowner site visits have been undertaken, and subsequent consents applied for. The surveys and visits allowed the opportunity to gather information on the land use within the catchment, as well as any sources of pollution which may impact the river’s overall status. From the information obtained, eleven project outlines have been put forth in this report. These include two managed wetlands to capture urban water run-off and diffuse agricultural pollution, two backwaters to provide habitat for fish and to control water level, cattle drinks across three different landowner sites, an area of fencing to prevent poaching, installation of willow sapling to prevent bank erosion and an area of wood debris to increase flow and to create habitat for fish.

The overarching targets of the Water Framework Directive and Catchment Based Approach were summarised within the report into 5 key water environment objectives. These include; reducing urban point source pollution, to reduce rural diffuse pollution, to improve hydromorphology, natural flow and water level, to engage with local landowners, communities and other stakeholders, and to improve aquatic ecosystems. All of the eleven projects aim to reduce pollution and improve aquatic ecosystems, and four of the six projects aim to improve hydromorphology. Each of the projects meets at least three of five water environment objectives.

It is concluded that the undertaking of the scoping survey has already met catchment objectives to “promote a better understanding of the environment” and to “encourage local collaboration”. By undertaking the proposed projects, not only will there be the opportunity to meet WFD objectives and improve/retain the overall status of the Ryton, but there will also be the potential to continue engagement with landowners. This engagement could allow the opportunity to work with landowners on other ecological enhancements, such as countryside stewardships, which would further benefit both terrestrial and aquatic ecosystems within the catchment.
INTRODUCTION

Recent inter-organisational work delivered through the catchment partnership has identified several areas where small scale projects could be delivered along the River Ryton in Nottinghamshire. The aim of this scoping document is to report the results of initial engagement with landowners, to provide outline designs for aspirational projects and to be used as background information for the necessary permissions to be obtained. This report assesses the feasibility of the proposed projects, as well as the objectives which will be met as a result.

This scoping project has been funded by the EA.

BACKGROUND INFORMATION

The following information is included to provide an understanding of why the aspirational projects have been proposed for the River Ryton and how these will meet Water Framework Directive (WFD) and other Environment Agency (EA) objectives. A summary of the catchment partnership and scoping work which Nottinghamshire Wildlife Trust (NWT) have been involved in is also included to provide context to previous work undertaken within the Catchment Partnership and the resulting objectives of the River Idle sub-catchment.

Water Framework Directive (WFD) Objectives

The Water Framework Directive 2000 is a piece of European legislation that aims “to protect and improve environmental assets, without compromising local social and economic aspiration.” It states that “Transparent engagement and collaborative working between many people, at a realistic scale, is fundamental to its success”.

The over-arching objective of the WFD is to achieve good ecological and chemical status in all watercourses by:

- preventing and reducing pollution,
- providing environmental protection and by
- improving aquatic ecosystems.
WFD also aims to promote sustainable water usage and to mitigate the effects of floods and droughts.

The status of the water (whether it be good, moderate or poor) is based on the following:

- Biological Quality
- Hydromorphological Structure
- Physio-Chemical Quality
- Chemical Quality

The directive is applied through consultation and engagement with all those involved at whatever level with the watercourse and by a systematic approach to long term management and improvement in water quality by identifying issues and planning effective solutions.

**River Basin Management Plan Objectives**

River Basin Management Plans (RBMP) underpin the delivery of the Water Framework Directive and are allocated for the 10 river basin districts within England and Wales. RMPBs were first published in 2009 and are reviewed and updated on a 6 year cycle. The measures outlined within RBMPs intend to fulfil the following aims (extracted from RMPB draft update):

- Prevent the quality of the water environment deteriorating,
- Meet the objectives of a range of legislation relating to ‘protected areas’,
- Improve as many water bodies as possible to good status or good potential,
- Promote the sustainable use of water,
- Mitigate the effects of floods and droughts.

The River Ryton is based in the Idle and Torne Catchment, which is within the Humber River Basin District Management Plan. The key action within the RBMP relevant to the Ryton scoping project is to **“work to reduce diffuse pollution through agriculture.”** Within the RBMP it is aimed that waterbodies will reach good status by 2015, and where this is not possible by at least 2021 or 2027. Updated RBMPs are currently in consultation. The updated plans will direct considerable investment and action from 2016.
**Catchment-Based Approach**

DEFRA introduced the Catchment Based Approach to target water catchment areas rather than large river basins. The approach is locally focused and is a holistic strategy in which all waterbodies and stakeholders within the catchment area are involved in an integrated approach to deliver WFD objectives. This approach aims to provide a platform for engagement, discussion and decision making.

The Catchment-Based Approach objectives include:

- To deliver positive and sustained outcomes for the water environment by **promoting a better understanding of the environment at a local level**; and
- To **encourage local collaboration** and more transparent decision-making when both planning and delivering activities to improve the water environment.

**Catchment Partnership and Catchment Hosting Meetings**

Catchment partnerships were created by DEFRA to facilitate the Catchment based approach. During 2013 the Nottinghamshire Wildlife Trust (NWT) was appointed as the Catchment Host for the River Idle part of the Idle and Torne catchment. In 2014 NWT invited all those that have contributed to the previous year's discussions to a series of ‘Idle Catchment Partnership’ meetings, which aimed to create a forum where all interested parties could meet and discuss aspects of the catchment.

As a result of these workshops the Idle Catchment Partnership was formed. Within this an existing group, the “River Idle Management Partnership” (RIMP) group took on additional catchment based responsibilities within their geographical location. This includes the Ryton as it is a tributary to the Idle. The meetings are held on a regular basis to allow the group members to work towards delivering Water Framework Directive and other aims.

Environmental objectives of the group are to:

- Reduce diffuse pollution, which accounts for about 50% of the watercourse failures, and point source pollution from discharges from industrial or agricultural sources.
- Protect habitats, especially those designated as SSSI, LNR’s and LWS.
To improve ecological status in water bodies by creating additional habitats, improving fish stocks and aquatic life.

- Mitigate flood risk.
- Improve access and amenity for recreation.

**GEOLOGY OF THE RIVER RYTON**

The River Ryton covers over 30km and is situated in north Nottinghamshire. The landscape surrounding the course of the river has remained mainly rural, resulting in runoff from farmland being one of the primary issues affecting the water quality. However, the river’s passage through the town of Worksop, where the course has been altered and also under and adjacent to major carriageways, such as the A1, means there are urban issues such a surface water run-off and consequently less suitable habitat for aquatic species. A summary of the course of the Ryton and the surrounding land use is included to provide context and reason for the proposed projects.

**Location of River Course**

Beginning at Lindrick Common in the Metropolitan Borough of Rotherham, the Ryton flows east through the town of Worksop with Chesterfield canal to the south and through the village of Scofton before turning north, west of Ranby, and travelling parallel to the A1. The river meanders east through Blyth and under the A1, then north until outside the village of Scrooby. The mouth of the Ryton is south of Bawtry, where it then joins the River Idle. Within Nottinghamshire, the Ryton is solely within the Bassetlaw District Council area.

**Surrounding Land Use**

The majority of the land surrounding the Ryton is rural and dominated by arable farmland, with occasional areas of pasture. There are pockets of woodland adjacent the river, including Low Wood Local Wildlife Site (LWS), Asholt and Hodsock Red Bridge LWS, Ash Holt Hodsock LWS, Chequer Bottoms LWS and both parts of Osberton Woodland LWS. There are no other statutory or non- statutory designated sites of nature conservation adjacent the Ryton; however, a section of the river south west of Blyth is recognised as a LWS (ref 5/2209) due to supporting a population of
white-clawed crayfish. Map 01 shows the distribution of statutory and non-statutory sites.

Worksop is historically an industrial area and consequently, the majority of the Ryton’s course through Worksop is modified. It is culverted as it passes under Bridge Street, and as it reaches Watson Road Bridge there are sluices and extra channels. The river, a manmade watercourse and the Chesterfield Canal run under Priorswell Road and Bracebridge before meeting at the High Hoe Bridge. The man-made channel, known as “The Canch” is used to control water levels within the Ryton in the centre of Worksop, before joining the Chesterfield Canal. The land surrounding The Canch is currently used as a formal park.
After Worksop, other notable landmarks that the river flows through include the nine-arch viaduct under the Sheffield to Lincoln railway line and through the estate of Osberton Hall. From Oldcotes Dyke to the River Idle a network of drainage channels (which collect the surrounding run-off water) accompany the River Ryton as it passes under the A1. Towards the end of the river’s course, the river has been diverted to the north of the village of Scrooby.

**LIKELY CAUSES OF POLLUTION AND ECOLOGICAL ISSUES**

This information emphasises the rural agricultural landscape of the Ryton Catchment. Due to this, diffuse pollution from agriculture (one of the key issues within the Torne and Idle Catchment in the Humber District RBMP) is likely to be a primary factor impacting water quality and ecological status. However, it is also known that sewage treatment works are also a source of phosphate and other pollutants, even though they meet their discharge consent requirements. It is recognised that the channel of the Ryton has undergone manmade alterations, resulting in the river course becoming less natural with the likely consequent of degrading aquatic and riparian habitats. In addition to this, the river passes under, and adjacent to, major carriage ways, such as the A1 and through urban areas. It is likely that this makes the River Ryton and the River Idle susceptible to pollutants from urban surface water run-off.

This evidence relates to the information provided in the Idle and Torne River Basin Management Plan. As shown in Figure 01 the most significant pressures within the catchment are identified to be rural diffuse pollution, point source inputs from Water Treatment works and urban run-off, and hydromorphology issues linked to straightened channels.

This is further supported in the evidence provided within the EA “Catchment Data Explorer” (CDE) as shown in Table 01. From this data, it is shown that the overall status of the River in 2013 was considered to be moderate. Specific pollutants are currently not an issue and determined as high (This does not refer to pollutant levels as being high, rather the scoring, in which “high” is above good). However, within the physicochemical quality elements, phosphate levels are scored as poor, which further indicates pollution, most likely from agricultural sources but may also be the result of permitted discharges from Sewage Treatment Works. The overall ecological
status and biological quality elements are considered to be moderate and therefore there is the potential to improve in this area. Chemical statuses are currently determined as good.

Figure 01: Extract from Idle and Torne River Basin Management Plan showing reasons for not achieving good status of water bodies.

As the Ryton is a tributary of the River Idle, it is also worth referring to the CDE data for the River Idle (Table 02). In 2013, specific pollutants and biological elements were scored as moderate, which is below the objective of good. Therefore, any projects on the Ryton which tackle these elements will also contribute to the objectives of the Idle.
### Table 01: Ryton From Aston Brook to Idle CDE Data

<table>
<thead>
<tr>
<th>Water course</th>
<th>Element</th>
<th>Specific</th>
<th>2013</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Ryton from Aston Brook to the Idle</td>
<td>Overall status</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Ecological status</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>Specific pollutants</td>
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<td>Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hydromorphological supporting elements</td>
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<td>Not high</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physicochemical quality elements</td>
<td>Phosphate - Poor</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biological quality elements</td>
<td>Moderate</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemical status</td>
<td>Overall</td>
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<td>Good</td>
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</tbody>
</table>

### Table 02: Idle from River Ryton to River Trent CDE Data

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<th>Water course</th>
<th>Element</th>
<th>Specific</th>
<th>2009</th>
<th>2013</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idle from River Ryton to River Trent</td>
<td>Overall status</td>
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<td>Moderate</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ecological status</td>
<td>Poor</td>
<td>Moderate</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Specific pollutants</td>
<td>High</td>
<td>Moderate</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hydromorphological supporting elements</td>
<td>Not High</td>
<td>Not High</td>
<td>Not High</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physicochemical quality elements</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biological quality elements</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemical status</td>
<td>Overall</td>
<td>Fail</td>
<td>Good</td>
<td>Good</td>
</tr>
</tbody>
</table>
Measures Proposed for the Idle and Torne Catchment

Within the Idle and Torne Catchment Summary (ITCS), the following measures are proposed to tackle the above issues identified:

- **Improve modified physical habitats**
  This is to improve riparian/wetland habitats and channel/bank/bed/shoreline structure, and to remove barriers to migrating fish.

- **Manage pollution from waste water**
  This is to prevent and reduce diffuse pollution at the source and pathway, and mitigate point/source impacts at the receptor.

- **Manage pollution from towns, cities and transport**
  It is aimed that through this, diffuse pollution pathways can be reduced.

- **Improve the natural flow and level of water**
  By undertaking improvements, this will allow for management of water demand and control pattern/timing of extraction.

- **Manage pollution from rural areas**
  This is required to reduce diffuse pollution at the source and to mitigate impacts at the receptor.

- **Manage pollution from mines**
  Again, this is to mitigate/remediate point source impacts on the receptor.

Within the summary, it is recognised that measures also need to fulfil the following:

- Protect or improve ‘protected areas’ within the operational catchment.
- Prevent water bodies deteriorating from their current status.

Reason for Scoping Survey along the River Ryton

Due to the need for the Ryton to meet WFD and other objectives, and the pollution and ecological issues identified, it is evident that the scoping survey was needed to enhance understanding of the surrounding land use, identify sources/pathways of diffuse pollution and other areas where ecology could be improved. From this, the following proposed projects were outlined to achieve objectives.
METHODOLOGY

The scoping survey included an initial walkover survey to identify factors which may be affecting the overall status of the Ryton, such as sources of pollution, pollution diffuse pathways and man-made alterations to the water course. Further mapping of land use and identifying landowners was also undertaken to then identify where site visits were required. Site visits were conducted in early 2015, which included discussions with landowners about WFD and other catchment objects, and the possibility of projects to achieve these goals. The aim of the engagement was also to raise awareness of the status of the river and actions which are needed to improve it.

Area of Study

This scoping survey covered the River Ryton within Nottinghamshire between Worksop to the north of Scrooby (as shown below, map 02).

Identifying Landowners

NWT has worked with landowners throughout the county for 50 years. As such, the majority of landowners along the Ryton were already known. These were mapped using Mapinfo to identify gaps in knowledge. From this, Natural England’s MAGIC was used to find landowner boundaries and to identify landowners within environmental stewardships, who had not been previously contacted by NWT. The mapping of landowners was then taken to the RIMP group, where local knowledge assisted in filling any remaining gaps. Using this technique, the vast majority of the landowners along the Ryton were identified. The maps with Appendix 2 show the area covered.
Prioritising Landuse

A general understanding of the surrounding land use was needed to identify priority areas to visit, which were likely to be sources of diffuse pollution or other target areas, such as previously modified channels. In order to obtain this information, NWT undertook a walkover survey with the EA along the course of the Ryton in 2014. Mapped results of the survey are provided in Appendix 1.

Contacting Landowners

A letter (Appendix 3) was initially sent out to all landowners identified during the mapping process. Additional information, in the form of a leaflet, outlining WFD objectives and reasons for the project, was then sent to landowners once a response in interest was received and an appointment to visit the site organised.
**Site Visits**

Site visits were conducted during January and February 2015, in partnership with Lesley Sharpe (Agricultural Advisor, Nottinghamshire Farming & Wildlife) once interests from landowners were received. The aims of the site visits were to gain a more in-depth knowledge of:

- Land use,
- If the land is within an environmental stewardship,
- Any current riverside management and,
- Any sources where there is potential to improve the river course and water quality to meet WFD objectives.

The site visits included further mapping of surrounding land use and discussions with landowners on projects which could be achieved in the future (Appendix 4). Consents have been collected from landowners who are willing to allow proposed projects to be undertaken within their area of ownership.

**ASPIRATIONAL PROJECTS**

The overall status of the River Ryton in 2013 (cycle 2) was determined to be at moderate. The following projects aim to contribute to the targets for the Ryton to achieve good overall status by 2021, and/or to prevent deterioration from its current status. In order to achieve this, the proposed projects aim to meet to the following water-environment objectives:

**Water Environment Objectives for the River Ryton**

<table>
<thead>
<tr>
<th>Objective 1</th>
<th>Reduce urban point source pollution from villages, towns and transport.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 2</td>
<td>Reduce rural diffuse pollution from agricultural sources.</td>
</tr>
<tr>
<td>Objective 3</td>
<td>Improve hydromorphology, natural flow and level of water.</td>
</tr>
<tr>
<td>Objective 4</td>
<td>Engage local landowners, communities and other stakeholders groups in making improvements to water quality.</td>
</tr>
<tr>
<td>Objective 5</td>
<td>Improve aquatic ecosystems by creating riparian habitat and improving water quality.</td>
</tr>
</tbody>
</table>

Each of the water environment objectives fulfil WFD and other catchment objectives, as demonstrated below.
WFD goals met through the water environment objectives include:

- Prevent and reduce pollution,
- Provide environmental protection,
- Improve aquatic ecosystems,
- Mitigate the effects of floods and droughts.

The water environment objectives will also fulfil the following measures within RBMPs which intend to:

- Prevent the quality of the water environment from deteriorating,
- Meet objectives of legislation (WFD),
- Improve as many water bodies as possible to good status,
- Mitigate the effects of floods and droughts.

The above objectives will also fulfil the requirement within the Humber Basin District Management Plan to, “Work to reduce diffuse pollution from agriculture.”

It will also achieve the following measures outlined in the Idle and Torne Catchment summary including:

- Improve modified physical habitats,
- Manage pollution from towns, cities and transport,
- Improve the natural flow and level of water,
- Manage pollution from rural areas,
- Prevent water bodies from deteriorating.

Finally, the objectives will also fulfil the aims outlined within the catchment hosting meetings including:

- Reduce diffuse pollution,
- Protect habitats,
- Improve ecological status,
- Mitigate flood risk.

Each project will be assessed on its strength to meet the five objectives. With each project brief, a table will be provided, which relates back to which number objectives will be met.
Summary of Proposed Projects

The table below (Table 03) summarises the proposed projects, showing which objectives will be met as a result, and estimated cost. Ease of delivery refers to cost, time scale and value for money of each project. This is scored on a scale of 1 to 3, where 1 is considered to be a “quick win”, 3 is considered to require the most investment and time.

Table 03: Assessment of projects against overall water environment objectives for the River Ryton

<table>
<thead>
<tr>
<th>Project Number</th>
<th>O1 Urban</th>
<th>O2 Rural</th>
<th>O3 Ecology</th>
<th>O4 Hydromorphology</th>
<th>O5 Engagement</th>
<th>Approx. Cost</th>
<th>Ease of Delivery</th>
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<td></td>
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<td>£8,300</td>
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<td>P4</td>
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Map 03 shows the location and distribution of the projects within the Ryton Catchment:

Map 03: Location and Distribution of Proposed Projects Identified during the River Ryton Scoping Project.
Potential Project No 1:

**Background**

During heavy rainfall road surface run-off from the A1 (SK646 833) containing oil, salts etc. enters the River Ryton. Pollution is visible on the river surface.

At the time of the scoping survey, the landowner for this site was Mr Green.

**Project proposal**

To create a managed wetland approximately 2500m2, that will capture run-off from the A1 and allow suspended particles and chemical contaminants to leave the water column. Planting of native marginal and aquatic plants will reduce the amount of nitrate entering the River Ryton. The wetland would also create additional water storage, providing a ‘head’ of water which will be released slowly throughout the year into the River Ryton. The newly created wetland will collect diffuse pollution before it gets into the main watercourse. Native marginal and aquatic plants will provide a biodiversity element to the project.

**Costs**

- Machinery 360 excavator x 3 days £800
- 2 Men x 3 days £725
- Plants marginal / aquatics £750
- Officer Time x 3 days overseeing works £900
- **Total costs** £3,175

**Other considerations**

Landowner permission will be required but cannot be guaranteed. The issue of pollution from the A1 was highlighted by the landowner but a strategy for dealing with it was not discussed with him. In regards to wildlife interest, the site will require protected species surveys including a desk top search of records for bats (all species), otter, badger and water vole. No works will be carried out during the bird breeding season (March to September inclusive). Planning permission will be required because this will be viewed as an engineering operation.
<table>
<thead>
<tr>
<th></th>
<th>O1 Urban</th>
<th>O2 Rural</th>
<th>O3 Ecology</th>
<th>O4 Hydromorphology</th>
<th>O5 Engagement</th>
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</thead>
<tbody>
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<td>✓</td>
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</tbody>
</table>
Potential Project No. 2

**Background**

Two drains were identified that drain water from arable fields and transport it to the River Ryton.

At the time of this scoping survey, the landowner for this site was Sir A. Buchanan.

**Project Proposal**

The proposal is to create an in–channel wetland within each drain to capture silt, phosphate and nitrates. The drainage ditches will be modified to include a two stage channel that can be planted to help filter nitrates and a silt trap to combat phosphates (SK618 861 / SK615 866). The vegetation will also provide a biodiversity element to the project.

**Costs:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
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<tr>
<td>Machinery excavator, 1.5 ton mini-digger £660.00 / day</td>
<td>£1320</td>
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<tr>
<td>Man x 2 days</td>
<td>£225</td>
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<td>Plants marginal / aquatics/seed</td>
<td>£400</td>
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<td>Officer Time x 2 days</td>
<td>£300</td>
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<tr>
<td>Pipe</td>
<td>£7.62</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td><strong>£2701.62</strong></td>
</tr>
</tbody>
</table>

**Other considerations**

The landowner is supportive of the scheme but the arable land is currently managed by W Moore and Sons and therefore further discussion will be required. There is an existing ditch at both locations but the estate is well known for its historic features and there may be archaeological interest running the full length of this waterway. Therefore, any earth works will require full investigation by archaeologists prior to the commencement of work, with possibly a watching brief during the earth work stage of any project. This cost will have to be factored in to any funding bid.

The site will require a protected species survey for water vole, otter and bats, including a desk top search of records for those species. No works will be carried out during the bird breeding season (March to September inclusive).
<table>
<thead>
<tr>
<th>O1 Urban</th>
<th>O2 Rural</th>
<th>O3 Ecology</th>
<th>O4 Hydromorphology</th>
<th>O5 Engagement</th>
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<tr>
<td>✓</td>
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Potential Project No. 3

**Background**

A section of the River Ryton has been modified (straightened) in the past. This has reduced its value to fish and water invertebrates. During high flows fish will be swept along the channel.

At the time of the scoping survey, the landowner for this site was Sir A. Buchanan.

**Project Proposal**

The proposal is to create a backwater that has a permanent connection with the river channel of the River Ryton (approximately SK620 859). This will provide an area for fish to shelter in when the river is in high flow and a spawning area. It will also re-naturalise the water course to some degree.

The second part of this project is to place and anchor material within the channel to create riffles and pools to further enhance habitat for fish and invertebrates.

**Costs**

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machinery 360 excavator, dumper, JCB, drivers x 4 days</td>
<td>£4,500</td>
</tr>
<tr>
<td>Man x 2 x 4 days</td>
<td>£1,000</td>
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<tr>
<td>Plants marginal / aquatics/seed</td>
<td>£1,300</td>
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<tr>
<td>Officer Time x 4 days overseeing works</td>
<td>£1,200</td>
</tr>
<tr>
<td>Material for riffles 10 ton x £30 / per ton</td>
<td>£300</td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td><strong>£8,300</strong></td>
</tr>
</tbody>
</table>
Other considerations

The landowner is supportive of the scheme for an in-channel wetland. The estate is well known for its historic features and there may be archaeological interest running the full length of this waterway. Any earth works will require full investigation by archaeologists prior to the commencement of work, with possibly a watching brief during the earth work stage of any project. This cost will have to be factored in to any funding bid. Planning permission will be required for the creation of a back-water.

The site will require a protected species survey for water vole, otter and bats, including a desk top search of records for those species. No works will be carried out during the bird breeding season (March to September inclusive).
Potential Project No. 4

**Background**

The River Ryton periodically floods adjacent land here making it difficult to farm. In response to this the landowner has created a broad grass margin approximately 40m in width. Floodwater, however, still reaches adjacent arable land at certain times exacerbating run-off and soil erosion.

At the time of the scoping survey, the landowner for this site was Mr Platts.

**Project Proposal**

To create a managed wetland that will collect run-off, capture suspended particles that are likely to contain phosphates and removal of nitrates with native marginal and aquatic plants (SK63511 83893). The wetland would create additional water storage to slow flows along the River Ryton when in spate.

**Costs**

- Machinery 360 excavator, Dumper, JCB, drivers x 4 days: £4,500
- Man x 2 x 4 days: £1,000
- Plants marginal / aquatics/seed: £1,300
- Officer Time x 4 days overseeing works: £1,200
- **Total costs**: £8,000

**Other considerations**

The area is well known for its historic features. It is likely that archaeologically interesting sites will run the full length of this waterway so any earth works will require full investigation by archaeologists prior to the commencement of work, with possibly a watching brief during the earth work stage of any project. This cost will have to be factored in to any funding bid. Planning permission will be required for this project.

In regards to wildlife interest, the site will require protected species surveys including a desk top search of records for bats (all species), otter, badger and water vole. No works will be carried out during the bird breeding season (March to September inclusive).
Photograph 02: Area of land which often floods and considered a suitable location for the creation of a managed wetland.

<table>
<thead>
<tr>
<th>O1 Urban</th>
<th>O2 Rural</th>
<th>O3 Ecology</th>
<th>O4 Hydromorphology</th>
<th>O5 Engagement</th>
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<td>✓</td>
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</table>
Potential Project No. 5

Background

The River Ryton periodically floods adjacent land here making it difficult to farm. In response to this the landowner has created a broad grass margin approximately 40m in width. This area provides an opportunity to enhance its biodiversity value by creating a backwater for fish.

At the time of the scoping survey, the landowner for this site was Mr Platts.

Project Proposal

To create a fish refuge / backwater that is permanently connected to the River Idle along a modified section of the river (where it has been straightened) at SK63532 83857. This will provide an area for fish to shelter in when the river is in high flow and a spawning area. It will also re-naturalise the water course to some degree. The second part of this project is to carefully place and anchor material within the channel to create riffles and pools to further enhance habitat for fish and invertebrates

Cost

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
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<tr>
<td>Machinery 360 excavator x 3 days</td>
<td>£800</td>
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<td>2 Men x 3 days</td>
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<td>Plants marginal / aquatics</td>
<td>£750</td>
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<tr>
<td>Officer Time x 3 days overseeing works</td>
<td>£900</td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td><strong>£3,175</strong></td>
</tr>
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</table>

Other considerations

The area is well known for its historic features. It is likely that archaeologically interesting sites will run the full length of this waterway so any earth works will require full investigation by archaeologists prior to the commencement of work, with possibly a watching brief during the earth work stage of any project. This cost will have to be factored in to any funding bid. Planning permission will be required for this project.

In regards to wildlife interest, the site will require protected species surveys including a desk top search of records for bats (all species), otter, badger and water vole. No works will be carried out during the bird breeding season (March to September inclusive).
<table>
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<tr>
<th>O1 Urban</th>
<th>O2 Rural</th>
<th>O3 Ecology</th>
<th>O4 Hydromorphology</th>
<th>O5 Engagement</th>
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Potential Project No. 6

**Background**

Cattle are entering the River Ryton, poaching the bank, mobilising silt and potentially introducing faeces. At the time of the scoping survey, the landowner for this site was Mr Ashton.

**Project Proposal**

To create a hard surfaces cattle drink at SK 61457 79114.

![Photograph 03: Section of river which has been poached by cattle.](image)

**Cost**

Costs include clearance and disposal of the brash for the new fence line, re-fencing with 3 strands of barb wire, digging out the entrance gateway, the access slope and the drinking hole. All these areas will be back filled with two sized porous stone and includes provision for 30 tonnes to be used.

This also includes a new 12ft gateway to be installed to the field and construct the drinking enclosure with posts and rails, plus 2 x 12ft metal gates that overlap on the end so they can be opened back to the far bank in the event of the stream drying up, hence ensuring the cattle always have access to water.

The price for all these works include tractors, trailers digger, post knocker, stone, fencing materials gates and labour (the works should take 3-4days).

= £3935.00+vat
Alternatively, a pasture pump could be installed.

Pasture Pump Excl. Tax: £230.00 Incl. Tax: £276.00

Pasture Pump Suction Kit Excl. Tax: £66.00 Incl. Tax: £79.20

Photograph 04: Example of a pasture pump

Other considerations

In regards to wildlife interest, the site will require protected species surveys including a desk top search of records for otter and water vole. No works will be carried out during the bird breeding season (March to September inclusive). Planning permission will be required because this will be viewed as an engineering operation.

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<td>Engagement</td>
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Potential Project No. 7

Background
Cattle are poaching the banks of the River Ryton causing erosion and mobilising silt.
At the time of the scoping survey, the estate manager and contact for this site was Mr Paul Barnes.

Project Proposal
To install fencing along River Ryton between SK64290 89772 – SK64197 90117 to prevent cattle from poaching the river bank and mobilising silt.

Cost
The price for works would be £5.50/m for the stock netting supplied and erected.

Length of fencing 1.5km x £5.50 = £8250 plus VAT = £9,900

Other considerations
The area is well known for its historic features. It is likely that archaeologically interesting sites will run the full length of this waterway so any earth works will require full investigation by archaeologists prior to the commencement of work, with possibly a watching brief during the earth work stage of any project. This cost will have to be factored in to any funding bid.

Photograph 05: Area of land found to be poached by cattle
In regards to wildlife interest, the site will require protected species surveys including a desk top search of records for bats (all species), otter, badger and water vole. No works will be carried out during the bird breeding season (March to September inclusive)

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Potential Project No. 8

**Background**

Bank erosion was noted at a number of locations between SK62884 88910 – SK62923 89152. At the time of the scoping survey, the estate manager and contact for this site was Mr Paul Barnes.

![Photograph 06: Example of erosion along section of the river.](image)

**Project Proposal**

Installation of willow spiling to protect the bank and prevent mobilisation of silt. It is anticipated that this willow will be managed by the estate.
Cost

Approximate cost of spiling £2940 + VAT per 100m = £3528

Other considerations

The area is well known for its historic features. It is likely that archaeologically interesting sites will run the full length of this waterway so any earth works will require full investigation by archaeologists prior to the commencement of work, with possibly a watching brief during the earth work stage of any project. This cost will have to be factored in to any funding bid.

In regards to wildlife interest, the site will require protected species surveys including a desk top search of records for bats (all species), otter, badger and water vole. No works will be carried out during the bird breeding season (March to September inclusive).

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<td>Ecology</td>
<td>Hydromorphology</td>
<td>Engagement</td>
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Potential Project No. 9

Background

Cattle are entering a series of drains that feed into the River Ryton, poaching the banks, mobilising silt and potentially introducing faeces. At the time of the scoping survey, the estate manager and contact for this site was Mr Paul Barnes.

Project Proposal

To install cattle drinks at the following three locations SK63533 87103 / SK63533 87484 / SK63526 88006. The ditch network in this area has recently been fenced but it can be seen from the photograph below (Photograph 07) that areas have been left un-fenced to allow cattle access to water. This is causing significant poaching and mobilising silt and introducing animal faeces into the water system that ultimately enters the River Ryton at SK63450 87092 and SK63393 88128.

Photograph 07: Unfenced area, where poaching has occurred.

Costs include clearance and disposal of the brash for the new fence line, re-fencing with 3 strands of barb wire, digging out the entrance gateway, the access slope and the drinking hole. All these areas will be back filed with a single size porous stone and includes provision for 30 tonnes to be used.

This also includes a new 12ft gateway to be installed to the field and construct the drinking enclosure with posts and rails plus 2 x 12ft metal gates that overlap on the
end, so they can be opened back to the far bank in the event of the stream drying up hence ensuring the cattle always have access to water.

The price for all these works including tractors, trailers digger, post knocker, stone, fencing materials gates and labour (the works should take 3-4 days)

£3935.00+vat = £4722.

Other considerations

The area is well known for its historic features It is likely that archaeologically interesting sites will run the full length of this waterway so any earth works will require full investigation by archaeologists prior to the commencement of work, with possibly a watching brief during the earth work stage of any project. This cost will have to be factored in to any funding bid.

In regards to wildlife interest, the site will require protected species surveys including a desk top search of records for bats (all species), otter, badger and water vole. No works will be carried out during the bird breeding season (March to September inclusive).

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<th>O3 Ecology</th>
<th>O4 Hydromorphology</th>
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Potential Project No. 10

Background

Cattle are entering a drain, poaching the bank, mobilising silt and potentially introducing faeces. The drain feeds into the River Ryton. At the time of the scoping survey, the estate manager and landowner for this site was Mr Paul Barnes.

Project Proposal

To install a cattle drinking bay at SK65163 91188. Cattle have used this location as a crossing and drinking point. Consequently there is a significant level of disturbance and mobilisation of silt and potentially faeces entering the channel which enters the River Ryton at SK65715 91285.

Cost

Cost includes clearance and disposal of the brash for the new fence line, re-fencing with 3 strands of barb wire, digging out the entrance gateway, the access slope and the drinking hole. All these areas will be back filed with a two sized porous stone and includes provision for 60 tonnes to be used.

This also includes a new 12ft gateway to be installed to the field and construct the drinking enclosure with posts and rails plus 2 x 12ft metal gates that overlap on the end so they can be opened back to the far bank in the event of the stream drying up hence ensuring the cattle always have access to water.
The price for all these works including tractors, trailers digger, post knocker, stone, fencing materials gates and labour (the works should take 3-4 days) £3935.00+vat = £4722. This is a large area and is likely to cost double the amount quoted.

**Other considerations**

The area is well known for its historic features. It is likely that archaeologically interesting sites will run the full length of this waterway so any earth works will require full investigation by archaeologists prior to the commencement of work, with possibly a watching brief during the earth work stage of any project. This cost will have to be factored in to any funding bid.

In regards to wildlife interest, the site will require protected species surveys including a desk top search of records for bats (all species), otter, badger and water vole. No works will be carried out during the bird breeding season (March to September inclusive).

<table>
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<tr>
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<th>O3 Ecology</th>
<th>O4 Hydromorphology</th>
<th>O5 Engagement</th>
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Potential Project No. 11

**Background**

This section of the River Ryton has been straightened in the past, reducing its value to fish. At the time of the scoping survey, the landowner for this site was Mr Thompson.

**Project Proposal**

To install 3 pairs of woody debris from SK64963 91401 to SK65033 91336. This will increase flows and reveal gravel which will benefit spawning fish.

Map 04: Stretch of the River Ryton where woody debris proposed to be installed.
Cost

Cost
2 men x 2 days £600.00
Fuel £5.00
Cost of materials (Inc. VAT) £205.00

Total costs £810.00

Other considerations

The area is well known for its historic features. It is likely that archaeologically interesting sites will run the full length of this waterway. Any earth works will require full investigation by archaeologists prior to the commencement of work, with possibly a watching brief during the earth work stage of any project. This cost will have to be factored in to any funding bid.

In regards to wildlife interest, the site will require protected species surveys including a desk top search of records for bats (all species), otter, badger and water vole. No works will be carried out during the bird breeding season (March to September inclusive).

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EVALUATION AND CONCLUSION

A total of eleven potential projects were discussed during the site visits and have been put forward in this report. The following evaluates the strengths and limitations of the scoping survey and proposed projects, as well as the threats to, and opportunities as a result, of the projects:

**Strengths**

Each of the six projects put forward will meet at least three of the five water environment objectives outlined in this report for the River Ryton. All of the projects aim to meet objectives 3 and 5, which will include improvements to aquatic ecosystems and further engagement with landowners. Further to this, all of the projects aim to reduce pollution (objectives 1 and 2), which will address the issue of the Ryton scoring “poor” for phosphates and consequently contribute to improve its status. The majority of the projects (9 out of 11) will improve hydromorphology by creating natural flow and by managing the level of water. This will consequently mitigate flood risk, which, as previously stated, is an objective within the WFD, RBMP, River Idle Sub-Catchment partnership and ITCS. Further to this, all of the projects will meet WFD objectives to prevent and reduce pollution, and to improve aquatic ecosystems, which again are also objectives under the RBMP, River Idle Sub-Catchment Partnership and ITCS.

Furthermore, through the landowner visits undertaken as part of the scoping survey, the Catchment Based Approach objectives to “promote a better understanding of the environment” and to “encourage local collaboration when both planning and delivering” have been, and will continue to be, met. The site visits to locate sources of pollution or to create improvements have allowed the opportunity to make landowners aware of WFD objectives and of the water environment. The majority of landowners on the Ryton were contacted and visited, including larger estates. It is hoped that as a consequent of the visits and of the information exchanged, the majority of landowners are now more environmentally aware and have an understanding of how to reduce negative impacts to the water quality of the Ryton. As a result, it is envisaged that in the near future, this will lead to agricultural practice which is mindful of the river’s needs.
Limitations

The proposed projects have been limited in distribution within the catchment due to landowner consent. Despite this, the majority of landowners along the Ryton did agree to site visits, resulting in engagement, raised awareness and the ability to obtain knowledge and data on the river, land use, point sources/diffuse pathway of pollution and ecological issues. Again, this will have resulted in increase awareness of environmental issues within the river catchment, which is likely to create indirect benefits in the future. Continued engagement is required to retain relationships with landowners and to further local awareness of the requirements to meet Catchment and WFD objectives.

Threats

Sufficient funding will need to be sought in order to deliver the proposed projects. If this is not achieved it may jeopardise the ability to undertake works. However, the cost and timescale of projects have been evaluated in this report, which will reduce delivery lead-in times and will allow for projects to commence under short notice should a suitable amount of funding become available.

Further to this, a change of landowner within sites which have been identified for potential projects could inhibit the ability to deliver. However, NWT continues to work with landowners throughout the county and is likely to be aware if a change of landowner takes hold. Should this occur, there will be the opportunity to engage with the new landowner and to overcome this potential issue by providing leaflets and face to face meetings to increase awareness of the Ryton Catchment and objectives.

Opportunities

The proposed projects outlined within the report provide the opportunity to improve and maintain the overall status and ecological status of the River Ryton, as well as the opportunity to tackle specific issues such as phosphates (which scored as poor in 2013). These projects will allow continued collaboration with local landowners and with the Idle sub-catchment partnership in the future. As the Ryton is a tributary, any improvements to the water quality will subsequently benefit the River Idle and further provide the potential to meet the targets of an overall good status.

Not only is there the opportunity to meet WFD objectives and to improve/retain the overall status of the catchment, but the initial engagement with landowners as part of the scoping survey has provided the opportunity to further develop relationships. From this, there is the potential to provide advice to landowners on future countryside stewardship schemes. This could result in further ecological
improvements within the landscape, which will consequently benefit ecosystems and the catchment.

**Conclusion**

To conclude, the undertaking of the scoping survey has already met catchment objectives to encourage local collaboration and to promote a better understanding of the environment. It is hoped that this initial engagement has raised awareness of WFD/Catchment objectives and that consequently land use practices will be more ecologically sensitive as a result of this. If the projects proposed are undertaken, issues such as phosphates which result in the Ryton having only a moderate ecological status, will be addressed and potentially improved. Not only will there be the opportunity to meet WFD objectives and improve/retain the overall status of the Ryton, but there will also be the potential to continue engagement with landowners. This engagement could allow the opportunity to work with landowners on other ecological enhancements, such as countryside stewardships, which would further benefit both terrestrial and aquatic ecosystems within the catchment.
REFERENCES


Department for Environment, Food and Rural Affairs (2013) Catchment Based Approach: Improving the Quality of our Water Environment: A policy framework to encourage the wider adoption of an integrated Catchment Based Approach to improving the quality of our water environment.


APPENDICES
APPENDIX 2 – LANDOWNER LOCATIONS AND LAND USE ALONG THE RIVER RYTON
Map to show Landowner Boundaries and Landuse Data Obtained during the River Ryton Scoping Project

Map 1
Map 2

Key
- Landowner boundary
- River Ryton
- Pasture/forested
- Arable/immersed

Map to show Landowner Boundaries and Landuse Data Obtained during the River Ryton Scoping Project
Map to show Landowner Boundaries and Landuse Data Obtained during the River Ryton Scoping Project

Map 3

Key
- Landowner boundary
- River Ryton
- Pasture
- Farmland

Scale: 1:25,000
Map to show Landowner Boundaries and Landuse Data Obtained during the River Ryton Scoping Project

Map 4

Key
- Landowner boundary
- River Ryton
- Pastureland
- Arable land
APPENDIX 3 – INFORMATION SENT TO LANDOWNERS PRIOR TO SITE VISITS
River Idle Catchment Project

We are working towards the improvement of the River Ryton and need your help.

The ecological status of the River Ryton is under threat due to high phosphate levels and declining numbers of fish and invertebrates. Nottinghamshire Wildlife Trust (NWT) is working with other organisations and landowners to improve the quality of the Ryton, so that it meets the requirements of the Water Framework Directive (WFD).

Water Framework Directive

The WFD aims to improve water quality throughout the EU. From the directive, a series of River Basin Management Plans have been implemented. The Ryton is a tributary to the River Idle, and so falls within the Idle & Torne Catchment.

An example of Spilling.

Restoration Methods

NWT aims to work with landowners to find methods which will improve the ecological status of the Ryton. Funding is available and could include some of the following methods:

- Fencing & cattle drinks - Reduce poaching and additional silt entering the water.
- Berms – To quicken the flow of the water, reduce silt build up and to create meanders resulting in more ecological niches.
- “Spiling” – Planting of willow within river banks to prevent erosion and to create ecological niches.
APPENDIX 4 – MAPPING AND NOTES DURING SITE VISITS