

River Trent to Cotgrave Green Infrastructure Study



Interim Feasibility Study Report

Report No: D120103/01



August 2008

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Executive Summary

Scott Wilson was appointed by Rushcliffe Borough Council, on behalf of the Grantham Canal Partnership, to undertake a Green Infrastructure Study to investigate the feasibility of creating a green infrastructure landscape corridor between the River Trent and Cotgrave Country Park, based around former gravel extraction lagoons, a derelict railway and the Grantham Canal. This report presents the findings of Stage 1 of the study, identifying potential constraints and opportunities in the Study Area and in particular reviewing a number of route options for the proposed canal link. As part of the works undertaken to date a consultation exercise has been carried out and the results fed back into the study as appropriate. The second stage of the study will comprise a more detailed investigation of the preferred canal link route, further consideration of financial sustainability and development of a Master Plan for the Green Infrastructure Corridor.

The feasibility study has considered the environmental and engineering issues associated with the following route options:

- four routes identified by previous studies (Trent Link Options 1 to 4);
- two alternative routes proposed by developers (the Mosaic Marina Option M, and the Havenwood Option H);
- a further route proposed by the Scott Wilson team based in particular on environmental considerations (Option T1); and
- a number of variations to the above principal routes.

The Study Area falls within designated Green Belt. The proposed canal link and associated green infrastructure would constitute appropriate development within the Green Belt. Planning policy does not differentiate significantly between the routes proposed for the canal link or the location of additional green infrastructure.

Within the Study Area pressure exists for significant housing led development schemes. Discussions have been held with landowners and developers to identify constraints and opportunities associated with potential linkage with proposed development schemes. Proposed developments within the study area could potentially be used to provide funds to support the canal link and green infrastructure developments through Section 106 Agreements.

In order to inform the feasibility study and Master Planning process, an ecological investigation of the Study Area has been undertaken comprising desk study, consultations and some field surveys. The principal ecological constraint on the selection of the canal link route is the high ornithological interest of the lagoons located between the A52 and the River Trent. This ecological interest is confirmed by the presence of a number of non statutory Sites of Importance for Nature Conservation. The potential has also been identified for the presence of a number of protected species in the Study Area including great crested newt, water vole, otter, badger and bats.

The Study Area includes no statutorily designated archaeological sites and 138 undesignated archaeological sites and find spots. There are fourteen listed buildings, one registered park and garden, nineteen locally listed buildings and a number of structures and buildings of local and historical importance. The greatest concentration of statutory designated structures are located within Holme Pierrepont. There are no conservation areas within the Study Area.

In general, the Study Area exhibits a relatively high potential for evidence of settlement activity during the Iron Age and Roman periods. Important archaeological sites include:

- a Roman Villa to the west of the National Water Sports Centre (NWSC);
- Neolithic long barrow to the north of Holly Farm, Bassingfield;
- Anglo-Saxon cemetery site to the north east of Bassingfield; and
- the deserted medieval villages of Adbolton, Holme Pierrepont and a third located immediately to the south of the NWSC.

The majority of the Study Area lies between 20-25m Above Ordnance Datum and is characteristically flat with little change in grade. The area to the south of the A52 is dominated by farm settlements, simple pattern arable fields and hedgerows with hedgerows trees. The area north of the A52 is dominated by river terraces, recreational developments for water sports and areas of wetland.

The Study Area is bordered by the River Trent and Nottingham to the north, West Bridgford and Gamston to the west, and Radcliffe and Cotgrave to the east, the latter two communities linked by the former Cotgrave Colliery railway line. The area has a fractured network of footpaths, only one designated bridleway and no designated recreational cycle routes.

Recreational and tourist facilities in the Study Area include Holme Pierrepont and Cotgrave Country Parks, Holme Pierrepont National Water Sports Centre, Nottingham Sailing Club, West Bridgford Equestrian Centre, Cotgrave Place Golf Club and the Grantham Canal itself.

The engineering issues associated with seven principal route options have been considered, together with a number of variations. All of the options will require restoration of the existing canal to some extent downstream from Cotgrave. These restoration works will include dredging and general restoration of the main channel, new winding holes, the refurbishment of several locks and the construction of new bridges.

All routes under consideration cross the “functional floodplain” of the River Trent and as such require careful consideration to avoid any net loss of floodplain storage, not impede water flows and not increase flood risk elsewhere.

The original Grantham Canal was fed mainly from two purpose built reservoirs at Denton and Knipton, towards the eastern end of the canal. It would require considerable additional works to reinstate flows from these reservoirs to Cotgrave in order to provide an adequate source of water for the Trent Link project. It has been concluded that all of

the route options will require back-pumping to supply water to a pond above Lock 7 at Cotgrave.

This Interim Feasibility Report provides environmental, planning, engineering and financial information for each of the route options and sub-options considered, so that a comparison can be made. Each of the options and sub-options has its own advantages and disadvantages, the relative importance of which will depend on the specific requirements and aspirations of the Grantham Canal Partnership. Key issues associated with the three least expensive options are as follows:

Option 1 (incorporating variations 1b and 1d)

Cost - £20.8 million

Engineering requirements –

- total number of locks = 9
- number of new locks = 5
- number of new or refurbished road / track crossings = 6
- length of new cut = 3880m
- total length = 7030m

Key issues

- minimises impact on Gamston Pits and Holme Pierrepont SINCS
- passes close to site of Holme Pierrepont deserted medieval village
- alignment may be affected by the “Radcliffe Crossing” highway safeguarded zone of interest
- could provide integrated link with Mosaic Estates proposed Marina
- would reduce severance caused by A52
- reduced opportunities to support the development of Holme Pierrepont compared to Option 1a

Significant risks/opportunities

- funding opportunities associated with integration with Mosaic Estates Marina
- a new broad gauge crossing of the A52 (variation 1c) could be incorporated for an additional cost of approximately £1.4 million

Option T1

Cost - £22.3 million (T1) / £21.1 million (T1a)

Engineering requirements

- total number of locks = 9 or 10
- number of new locks = 5 or 6
- number of new or refurbished road / track crossings = 6
- length of new cut = 2400m (T1) / 1900m (T1a)
- total length = 7700m (T1) / 7200m (T1a)

Key issues

- avoids SINCs
- follows existing boundary features where possible
- affects known Iron Age Romano-British Settlement and passes between the remains of Adbolton deserted medieval village and a Roman villa site (T1a affects the Roman villa site).
- utilises significant length of existing canal
- would create circular recreational route incorporating Gamston, Cotgrave and the River Trent
- would reduce severance caused by A52
- reduced opportunities to support the development of Holme Pierrepont compared to other options

Significant risks / opportunities

- risk of discovery of important archaeological assets. Potential to incorporate these features along the route through, for example, interpretation boards

Option 3

Cost - £21.9 million

Engineering requirements:

- total number of locks = 7
- number of new locks = 1

- number of new or refurbished road / track crossings = 8
- length of new cut = 1350m
- total length = 8300m

Key issues

- avoids Holme Pierrepont and Gamston Pits SINC but passes through Adbolton Pond SINC
- passes close to known remains of Adbolton deserted medieval village
- field severance along length of route
- utilises greatest length of existing canal
- would create circular recreational route incorporating Gamston, Cotgrave and the River Trent
- would not reduce severance caused by A52
- reduced opportunities to support the development of Holme Pierrepont compared to other options

Significant risk / opportunities:

- high risk of discovery of important archaeological assets. Potential to incorporate these features along the route through, for example, interpretation boards
- risk of cost increases and disruption due to construction associated with the new road crossings including on the A52 South of Gamston roundabout at the A6011 west of Gamston roundabout.

Recommendation

The decision of the preferred route will be made by the Grantham Canal Partnership taking into account both the findings of this report and the specific requirements and aspirations of each of the bodies making up the Partnership. On the basis of simply the information provided in this report it is recommended that either Option 1, incorporating variations 1b, 1d and possibly 1c, or Option T1/T1a be progressed to the more detailed investigation and masterplanning stage.

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1.0 INTRODUCTION

1.1 Project Background

Green Infrastructure is a network of multi-functional green spaces that contributes to the natural and built environment required for existing and new sustainable communities. The need for Green Infrastructure space within the East Midlands Region has been endorsed by the East Midlands Development Agency (EMDA) and is recognised within the East Midland Regional Assembly's study, *'Connecting People and Spaces,'* undertaken last year.

In June 2008, Scott Wilson Ltd was commissioned by Rushcliffe Borough Council, on behalf of the Grantham Canal Partnership, to undertake a Green Infrastructure Study. The key objective of the study was to investigate the feasibility of creating a "Green Infrastructure" landscape corridor between the River Trent and Cotgrave Country Park, based around former gravel extraction lagoons, a derelict railway and the Grantham Canal. The study is funded by the East Midlands Development Agency, the Inland Waterways Association, Grantham Canal Partnership, Rushcliffe Borough Council and Nottinghamshire County Council.

Figure 1.1 defines the Study Area, which is bounded to the west by West Bridgford and Gamston, to the south by Cotgrave and Cotgrave Country Park, to the east by the derelict railway and Radcliffe-on-Trent, and to the north by the River Trent. In addition to the Grantham Canal and former gravel extraction lagoons, the National Water Sports Centre at Holme Pierrepont, Nottingham Airport and a section of the A52 all lie within the area.

1.2 Study Objectives

The existing Grantham Canal is a key feature within the Study Area. The canal, which links Grantham and Nottingham in Nottinghamshire, was opened in 1797 and served as one of the principal waterways of the Midlands during the Industrial Revolution. However a decline in canal use led to its closure in the 1930's and as a result, the canal is no longer navigable today. A 1.9 km length of the canal through Cotgrave Country Park was restored by British Waterways as part of the Cotgrave Single Regional Budget (SRB) scheme, assisted by colliery RECHAR funding, which was completed in 2001. A priority of the Grantham Canal Partnership is to create a fully navigable link between the River Trent and Cotgrave Country Park.

The main objective of the River Trent to Cotgrave Green Infrastructure Study is to undertake a Feasibility Study and to draw up a Master Plan for the creation of a canal-based Green Infrastructure corridor between the River Trent and Cotgrave. Key features to be considered as part of the proposed corridor are:

- a new navigable link between Grantham Canal and the River Trent;
- a multi-use route or routes, for use by pedestrians, cyclists and horse-riders;

- a marina – possibly within or on the edge of Cotgrave Country Park;
- new landscape elements, aimed at creating a high quality landscape;
- a possible new Nature Reserve with limited public access.

The study will seek to identify features within the Study Area that are, or which could be, of value to the environment or to the local communities, and will investigate how these features can be enhanced and/or made more accessible to the community through the creation of appropriate linkages. Examples include:

- areas/features of ecological value;
- areas/features of historic value – e.g. archaeological sites, listed buildings;
- recreational routes and facilities;
- landscape areas, local landmarks and viewpoints.

1.3 Project Stages

The project comprises two principal stages. In the first stage, the results of which are reported in this Interim Feasibility Report, potential constraints and opportunities within the Study Area have been identified and a review undertaken of a number of route options for the proposed canal link. A Public Information and Consultation Event was held during Stage 1, in order to inform stakeholders and the general public about the project and to invite them to express their views. Further details are provided in Section 1.5 of this report. As a result of the studies undertaken to date, recommendations for a preferred canal link route have been put forward, as presented in this report.

The results of the first stage of the study are to be presented to the Commissioning Body, comprising representatives from Grantham Canal Partnership, Rushcliffe Borough Council, Nottinghamshire County Council, British Waterways and Natural England, and selected additional members of the Grantham Canal Partnership, on 21st August 2008.

The second stage of the study will comprise a more detailed investigation of the preferred canal link route option selected by the Grantham Canal Partnership and development of the Master Plan for the Green Infrastructure Corridor, taking into account environmental, recreational and planning issues. This stage of the study will also investigate further potential sources of funding for the scheme and will assess the financial sustainability of the scheme. The outputs from Stage 2 of the study will comprise the final feasibility Study Report and the Master Plan, which will include a Prioritised Action Plan for the implementation of the proposals. The economic impact of creating a new navigable canal link and marina are to be examined during the second stage of the Study.

The final study results and Master Plan will be presented to the Grantham Canal Partnership on 9th December 2008.

1.4 The Canal Link

1.4.1 Previous Studies

Since closure of the canal in the 1930's a number of developments within Nottingham have resulted in the destruction of sections of the canal and the creation of physical obstructions to navigation at a number of points. These include: the existing Lady Bay Bridge; the Lings Bar dual carriageway, the Rutland Road link to Radcliffe Road and the outbound A6011 Radcliffe Road. Reinstatement of a navigable waterway between Cotgrave and the River Trent along the original canal route through West Bridgford would need to overcome these obstacles and this could only be achieved at considerable cost and with major disruption to traffic.

An alternative would be to create a new canal link between the existing canal and the River Trent, located to the east of the main urban area. Several potential routes have previously been considered, each of which has different advantages and disadvantages in terms of environmental impacts, engineering difficulties and cost. **Figure 1.2** identifies four routes that have previously been put forward and these are identified as Trent Link Options 1, 2, 3 and 4. In addition, two options, one for a link between the canal near to Tollerton Road and the River Trent and the other for a navigable link from north of the A52 at Polser Bridge to the River Trent, have been put forward by Havenwood Construction Ltd and by Mosaic Estates Ltd respectively. These are shown on Figure 1.2 as Options H and M.

Previous relevant studies relating to the potential restoration of the Grantham Canal, creation of a new canal link or to Green Infrastructure, are referenced where appropriate within this report.

1.4.2 The Current Study

For the purposes of obtaining background information and for focussing site survey efforts, (in particular environmental and engineering surveys), initial studies were based around the four previous route options. As a result of those surveys and initial studies, a number of significant alternatives and minor variations have been identified. These included variations to Trent Link Options 1 to 4 as well as a number of different routes. The alternative route options are also shown on Figure 1.2.

A brief description of the route options considered is given below in Table 1.1.

Table 1.1 Description of canal link options considered.

Route Name	Description	Additional Comments
Trent Link Option 1	Restore the existing Grantham Canal from Hollygate Bridge down to the bend just south of Bassingfield. Construct a new cut in a generally northerly direction, crossing beneath the A52 using the existing Polser Bridge, continue in a generally northerly direction, crossing beneath Holme Lane and incorporating two existing bodies of water,	

Route Name	Description	Additional Comments
	before turning northeast in a new cut to join the River Trent near the downstream end of the rowing course at Holme Pierrepont.	
Option 1a	As Option 1 but incorporating the existing water ski lake as part of the final section.	New variation
Option 1b	As Option 1 but turning northeast immediately after Polser Bridge in a cut alongside the southern branch of the Polser Brook, crossing beneath Sandy Lane and Holme Lane and joining the River Trent to the west of the railway bridge over the River Trent.	New variation
Option 1c	As Option 1 and other sub-options but with a new bridge to the west of the existing Polser Bridge to permit the passage of broad boats in accordance with the original canal gauge.	New variation
Option 1d	As Option 1 and other sub-options but with the new cut leaving the existing canal just west of the Thurlbeck Dyke aqueduct, approximately 350m to the southeast of the bend at Bassingfield.	New variation. This is the landowner's preferred variation for this option as it reduces severance of farmland.
Trent Link Option 2	Restore existing Grantham Canal from Hollygate Bridge down to the bend just south of Bassingfield. Construct a new cut in a generally northerly direction, crossing beneath the A52, using the existing Polser Bridge. Continue north-northwest before turning west-southwest through existing bodies of water south of Adbolton Lane. Finally turn north across the National Water Sports centre Caravan and Camping Park before passing beneath Adbolton Lane and joining the River Trent to the west of the Sailing Club.	
Option 2a	As Option 2 and other sub-options but with River Trent connection to the east of the Sailing Club.	New variation
Option 2b	As Option 2 and other sub-options but with a new bridge to the west of the existing Polser Bridge to permit the passage of broad boats in accordance with the original canal gauge.	New variation
Option 2c	As Option 2 and other sub-options but with the new cut leaving the existing canal just west of the Thurlbeck Dyke aqueduct approximately 350m to the southeast of the bend at Bassingfield.	New variation. This is the landowner's preferred variation for this option as it reduces severance of farmland.
Trent Link Option 3	Restore the existing Grantham Canal to just north of Gamston Bridge at Radcliffe Road (A6011). Construct a new cut in a generally northerly direction, passing beneath Adbolton Lane before joining the River Trent.	
Trent Link Option 4	A new cut following the line of the abandoned former Cotgrave Colliery railway line	

Route Name	Description	Additional Comments
	commencing in the vicinity of Lock 6, crossing Stragglethorpe Road, Radcliffe Road and Holme Lane before connecting into the River Trent. This route would be at more or less existing ground level until the vicinity of the track between Main Road and Stragglethorpe Road, after which it would be on the embankment of the old railway before descending to the River Trent after the Holme Lane bridge.	
Option 4a	As Option 4 but with the new cut descending to the floodplain to the south of Holme Lane using four locks with the cut passing beneath Holme Lane at river level.	New variation
Option 4b	As Option 4 but descending from the embankment between Radcliffe Road and Holme Lane before turning north west to link into the cut between the possible Mosaic Marina and the River Trent.	New variation.
Option 4c	As Option 4, 4a or 4b but with the existing canal being made navigable between Hollygate Bridge and Tollerton Road.	New variation
Option M	The "Mosaic Marina" option. This option is based upon the construction of a marina in conjunction with a housing development between the railway embankment and Radcliffe. It would be situated to the west of the railway embankment and north of the A52 with a connection to the River Trent and a new canal cut to Polser Bridge. This would form a route that is essentially the same as Option 1b. If this development took place, then a link could be made to the canal as described in the upstream parts of Options 1 or 2 (and the relevant sub-options) with the existing canal being restored between the Tollerton Road and Hollygate Bridge.	New option
Option H	The "Havenwood" option. This option is based on a new cut from the River Trent upstream of Holme Sluice that connects to the south western end of the rowing lake. A second cut in a southerly direction would pass beneath Adbolton Lane and enter the large lake in a former gravel pit. A further connection would be made southwards to join the Grantham Canal just east of Tollerton Road with a high profile double inclined plane that would transport boats across the A52 Radcliffe Road. A sub-option would be to connect to the River Trent to the east of the Sailing Club instead of passing through the rowing lake. A marina would be constructed in the large gravel pit lake and also in the rowing lake.	New option.

Route Name	Description	Additional Comments
Option T1	Restore the existing Grantham Canal from Hollygate Bridge down to a point just east of Tollerton Road. Create a new cut northwards from a point approximately 150m east of Tollerton Road, generally following field boundaries, passing under the A52, crossing open ground to the west of the large lake, passing to east of Greenfields Mobile Park, crossing beneath Adbolton Lane and joining the River Trent at a similar point to Option 3.	New option This option was developed to have a minimal impact on the surroundings and to blend in with the existing landscape features.
Option T1a	As Option T1 but with a more direct route being followed from the Greenfields Mobile Home Park to join the River Trent just to the west of the sailing club.	New option variation

1.5 Green Infrastructure

1.5.1 Background

Green Infrastructure (GI) is defined in the Draft East Midlands Regional Plan as “networks of multi-functional green space which sit within and contribute to, the type of high quality natural and built environment required to deliver “sustainable communities”. Delivering, protecting and enhancing these networks require the creation of new assets to link with river corridors, woodlands, nature reserves, urban green space, historic sites, and other existing assets. “...if properly planned and managed Green Infrastructure should also contribute to wider Environmental Infrastructure through local climate and air quality amelioration floodplain management”... Green infrastructure in this instance is defined as the sub-regional network of protected sites, nature reserves, green spaces and greenway linkages. Green infrastructure should provide (where possible) multi-functional uses i.e., wildlife, recreational and cultural experience, as well as delivering environmental services, such as flood protection and microclimate control. It should also operate at all spatial scales from urban centres through to the open countryside.

Well-designed and integrated green infrastructure improves environmental quality, health and well-being, sense of community and provides an opportunity for exercise, sport and informal recreation. Green infrastructure in the East Midlands should contribute to and enhance the quality of life of both present and future residents and visitors through:

- providing a focus and attraction for the increased population proposed within the three cities growth area (see 1.5.2);
- providing an enhanced environmental backdrop that respects existing landscape character and that will assist in attracting and retaining inward investment in the area;
- protecting and enhancing existing biodiversity, creating new areas for biodiversity and reversing the fragmentation of habitats by restoring the connectivity between them;

- providing continued, new and enhanced links to the countryside; and
- co-ordinating the use of green space to optimise its use for leisure, biodiversity, drainage and flood management and its other socio economic value.

1.5.2 Local Context

The 3 cities sub-region and growth point is defined within the Draft East Midlands Regional Plan. As well as the Principal Urban Areas of Leicester, Nottingham and Derby it includes the towns of Loughborough (Charnwood), Hinkley (Hinkley and Bosworth) and Coalville (North West Leicestershire) as the focus of growth within their districts.

Derby, Leicester and Nottingham are three of the fifteen largest cities in England and are located within thirty miles of each other. They represent half the economy of the region and are home to 4.3 million people. Their economies, labour markets, shopping catchments, travel patterns and housing markets overlap to varying degrees. They are home to some of the most deprived communities in the country and have areas that need urgent regeneration, both within the city centres and in the outlying housing estates. Parts of the sub-region have a rural character with areas such as Charnwood providing significant landscape and biodiversity value as well as many recreational opportunities. With such a high population in close proximity it is essential that a sub-regional approach is taken to GI provision, the Three Cities GI strategy will form the bedrock to a co-ordinated and long-term approach. Co-operation and partnership across administrative boundaries will ensure consistency and give a strong voice for GI investment. An action based green infrastructure strategy will inform and compliment growth. Opportunities to extend and enhance the green infrastructure network will be delivered through the Growth Point funding as well as through other programmes and developer contributions. The strategy will function at different levels, showing the sub-regional scale, through to a finer grained analysis for the urban areas

Growth Point status is conditional on fulfilling specific conditions, in particular ensuring that growth is sustainable and this involves Local Authorities developing a Green Infrastructure Strategy using an approach that is consistent across the Growth Point.

The Three Cities GI partnership is currently an informal grouping of relevant stakeholders including Local Authorities, Statutory Agencies and the Voluntary Sector. A more formal partnership to guide and deliver the strategic GI work across the sub-regional area is being developed. The development of a GI Strategy is in line with the Draft Regional Plan which requires the development of GI implementation plans by Local Authorities.

1.6 **Consultation**

Consultation with a range of stakeholders has been undertaken as part of the specialist studies reported in this report. Consultation has been undertaken by meetings, by telephone, by letter or by e-mail, as appropriate. A list of consultees is provided in Appendix A1. Comments received from consultees are referred to in this report within the relevant sections.

In addition, a Public Information and Consultation Event was held on 24th July 2008 at Cotgrave Futures, in Cotgrave. The purpose of that event was to inform identified stakeholders and members of the general public about the project and to provide the opportunity for comments. A list of invitees and attendees to that event is provided in Appendix A2. Comments received both during and after the event are included in Appendix A3. A dedicated e-mail address was also set-up, to enable comments to be sent directly to the project team. Comments received via the e-mail link have also been summarised in Appendix A3. The majority of comments received during the public event concerned the possible routes for the proposed canal link. Comments were also received in relation to bridleways, pedestrian and cycle routes, to the possible location of a marina, or marinas and to the biodiversity and nature conservation value of the area. Comments have been taken into account during the consideration of the preferred route for the canal link, as discussed in Chapter 8 of this report.

1.7 Report Format

This report comprises the following:

Chapter 2 provides an overview of relevant planning context of the proposals together with other development issues in the vicinity.

Chapters 3 to 5, Ecology, Cultural Heritage and Landscape: these provide summaries of the studies undertaken, the main constraints and opportunities identified and a brief review of the issues associated with the four previous canal link options.

Chapter 6 provides a summary of recreational issues, in particular a review of existing recreational routes for pedestrians, cyclists and equestrians, and existing green infrastructure.

Chapters 7 presents a summary of the key engineering constraints and considers these in terms of potential canal route options.

Chapter 8 compares the options and makes recommendations for the preferred canal link route.

2.0 PLANNING CONTEXT

2.1 Introduction

This feasibility report sets out the evidence base upon which the Master Plan will be developed. Within the Study Area pressure exists for significant housing led development schemes. This is linked to emerging Regional Plan housing requirements and Greater Nottingham's status as a 'New Growth Point'. This part of the study explores the scope that exists for linkages to be established with potential development schemes. The aim is that the Green Infrastructure Master Plan will inform any development proposals, planning briefs and development related masterplans in the locality.

At the same time, the Study Area falls actively within the Notts-Derby Green Belt and a major part of the site (north of the A52) is within the River Trent floodplain.

In respect of the brief, it is intended that this planning chapter of this feasibility report will provide:

- i. A planning policy review and examination of planning designations located in and immediately adjacent the Study Area;
- ii. Examine the status of the Green Belt review and Nottingham's status as a 'New Growth Point';
- iii. Review of planning applications that have been submitted within or fall immediately outside the Study Area;
- iv. Review of all planning related documents provided by the client; and
- v. Review of Canal Link Route Options (four original routes, two developer proposed routes and one new route suggested by Scott Wilson).

In addition to providing the above the following aspects have also been considered:

- i. An outline of the synergies and scope for mutual benefits between potential housing led development schemes and the canal links and other green infrastructure;
- ii. An outline of any conflicts between potential housing led developments and the canal link and how these might be overcome;
- iii. Consultation with relevant developers and landowners to help identify opportunities and constraints associated with potential housing led development schemes within the Study Area;
- iv. Suggestions as to how the canal link and other green infrastructure links could be best integrated with any potential housing led development schemes; and

- v. The mechanism for unlocking funding from development schemes (e.g. Section 106 Agreements) and canal income (e.g. marina development) to ensure the future maintenance of the Green Infrastructure space to be identified.

2.2 Planning Policy Context

This chapter and **Appendix B** provide the planning policy context for a range of policies and plans, at a national, regional and local level for the creation of a Green Infrastructure landscape corridor to link the River Trent and Grantham Canal. It accepts that in the past green infrastructure links can be provided independently of the actual canal link. The planning policy review has been undertaken for the Study Area identified in the original tender brief. The review identifies local planning designations that fall within or immediately adjacent to the Study Area. The summary of national, regional and local policies associated with those designations have been reviewed.

National planning policy through legislation, guidance and objectives informs policy adopted in the East Midlands Region and more locally within Rushcliffe Borough Council.

The subsequent sections and Appendix B outline the national, regional and local policies and strategic documents that provide the framework relevant to this study. Where possible, key components of the policies that relate to the planning designations (refer to **Figure 2.1**) include opportunities, constraints and objectives. A thorough and detailed policy review has not been undertaken on any constraints outlined by other disciplines.

Policy documents relating to the key issues at national level that have been reviewed include:

- i. PPS1 - Delivering Sustainable Development (2005)
- ii. PPG2 - Green Belts (1995)
- iii. PPS25 - Development and Flood Risk (2006)
- iv. PPS9 - Biodiversity and Geological Conservation (2005)
- v. PPG17 - Planning for Open Space, Sport and Recreation (2002)

Policy documents relating to the key issues at regional level that have been reviewed include:

- i. The Nottinghamshire and Nottingham Joint Structure Plan (2006)
- ii. Regional Spatial Strategy for the East Midlands (RSS8) (2005)
- iii. Draft Regional Plan for the East Midlands (2006)
- iv. Regional Economic Strategy for East Midlands (2006)

Policy documents relating to the key issues at local level that Rushcliffe Borough Council have produced that have been reviewed include:

- i. The Rushcliffe Borough Non-Statutory Replacement Local Plan (2006) which replaced the Rushcliffe Borough Local Plan (1996);

The relevant text from the policy documents reviewed above have been added to the main planning policy review section. The complete policies that have been referenced are listed in Appendix B.

A review of the following documents produced by Rushcliffe Borough Council has also been provided in Appendix B.

- i. Supplementary Planning Guidance: Developer Requirements (2003);
- ii. Supplementary Planning Guidance: Affordable Housing (2003);
- iii. Supplementary Planning Guidance: Draft Affordable Housing (2006);
- iv. Nottingham Core Strategic Housing Market Assessment (2007);
- v. Nottingham Principal Urban Area Strategic Land Availability Assessment (2007);
- vi. Nottingham Core Housing Market Area Strategic Land Availability Assessment (2007);
- vii. Appraisal of Sustainable Urban Extensions (2008); and
- viii. Greater Nottingham Strategic Flood Risk Assessment (2008)

Other documents that are relevant to this study that have been reviewed and which are also included in Appendix B are:

- i. British Waterways Guide on Inland Waterways Investment (2006)
- ii. Grantham Canal Strategy (2001); and
- iii. East Midlands Inland Waterways Study A Report to the East Midlands Development Agency.

2.3 Status of the Regional Plan and the Local Plan

2.3.1 Regional Spatial Strategy for the East Midlands (RSS8) (2005)

Following the enactment of the Planning and Compulsory Purchase Act 2004, the *Regional Planning Guidance for the East Midlands* (RPG8) was replaced by the *Regional Spatial Strategy for the East Midlands* (RSS8). The latest version of RSS8 was published in 2005.

A further review is currently taking place which will be conducted under the Regional Spatial Strategy principles established by the Planning and Compulsory Purchase Act 2004. Some key aspects that were not included in the previous revision will be reviewed and these include: housing provision figures; the percentage of housing to be built on previously developed land; the sequential approach to encourage sustainable development; and affordable housing. The revised RSS is due to be issued by the Secretary of the State in autumn 2008.

RSS8 covers the counties of Derbyshire, Leicestershire, Lincolnshire, Northamptonshire and Nottinghamshire and includes the unitary authorities of Derby, Leicester, Nottingham and, Rutland. The main role of the RSS is to provide a strategy within which local authorities planning documents and local transport plans can be prepared. It provides a broad development strategy for the East Midlands up to 2021.

The RSS (2005) provides details on:

- i. setting housing requirements for the Borough of Rushcliffe;
- ii. policies that are provided within the Borough (aimed at securing sustainable development); and
- iii. as far as practicable, minimising the environmental impacts of development.

Furthermore, the RSS 8 (2005) provides guidance that is then used to determine planning applications, which cover the issues of:

- i. design quality;
- ii. protection of the natural and cultural heritage; and
- iii. biodiversity enhancement and landscape protection.

The Study Area is located within the three-cities sub area of the region. Within the RSS, there are a number of policies that relate to development within the three-cities sub area. In addition, the Borough has been identified in the revised regional plan as a substantial new growth location.

The RSS (2005) has significant implications for the Borough of Rushcliffe including:

- i. Setting housing and employment requirements;
- ii. Setting affordable housing targets;
- iii. Setting a target for finding gypsy and traveller sites; and
- iv. The likely revision of the Green Belt as a result of development required within the Borough.

The revised RSS is likely to have implications for the Nottingham/Derby Green Belt as a major review is recommended that suggests that only land between Nottingham and Derby is worthy of retention. This could have an effect on the Green Belt land within which the proposed green infrastructure Study Area is located.

2.3.2 The Nottinghamshire and Nottingham Joint Structure Plan (2006)

The Nottinghamshire and *Nottingham Joint Structure Plan*, adopted in 2006 remains part of the Statutory Development Plan until it is superseded by the East Midlands RSS. The plan period is 2001 – 2021 and takes into account the RSS that was approved by the Secretary of State in 2005. In future, strategic planning is going to be undertaken by the East Midlands Regional Assembly (EMRA) and the status of the RSS was described in the previous section.

The plan sets out the strategic land use policies to guide the scale and location of development in the plan area. The plan covers the broad location and scale of:

- i. Housing and employment land;
- ii. Protection and enhancement of the Green Belt;
- iii. Transport;
- iv. Recreation and tourism; and
- v. Shopping.

The vision for the Joint Structure Plan area is the promotion of: “A thriving and prosperous county and city, with a good and improving quality of life for the whole community based on new development which promotes greater accessibility to homes, jobs, services and facilities in an enhanced built and natural environment.”

2.3.3 The Rushcliffe Borough Non-Statutory Replacement Local Plan (2006)

The Rushcliffe Borough *Non-Statutory Replacement Local Plan* (2006) replaced the Rushcliffe Borough *Local Plan* (1996).

Some of the policies from the 1996 Rushcliffe Borough Local Plan have been saved until the Non-Statutory Local Plan is superseded by the Local Development Framework, which is due for adoption between 2009 and 2010. The policies that are saved include:

- i. ENV15 Green Belt (which is EN14 in the 2006 Non Statutory Replacement Local Plan)
- ii. E1 Employment Land Provisions
- iii. E4 Tollerton Airport (which is EMP3 in the 2006 Non Statutory Replacement Local Plan)

2.3.4 Local Development Framework

The Rushcliffe Borough Council's local development scheme sets out the documents that the council will produce before 2009. These include: the *Statement of Community Involvement* (which has now been produced); the *Core Strategy* (work started late 2006); *Site Specific Proposals* (work started late 2006); and *Generic Development Control policies* (work started late 2006).

The local development scheme also provides details of the documents that will be produced after 2009. These include:

- i. The Development Requirements Supplementary Planning Document;
- ii. The Affordable Housing Supplementary Planning Document;
- iii. Open Space, Sport and Recreation Supplementary Planning Document; and
- iv. Design Guidance Supplementary Planning Document.

The Affordable Housing SPD will provide an update on the adopted *Affordable Housing Supplementary Planning Guidance* (SPG). The development requirements SPD will also provide an update of the present SPG. The document will also be amended to reflect changes that the Government makes to the planning obligations system. The Open Space, Sport and Recreation SPD will tie together the findings of the Borough Councils Playing Pitch Assessment, the findings of the *Open Space Audit Review* (September 2006) and the Borough Councils Childs Play Strategy (due for completion at the end of 2006). The Design Guidance SPD will provide advice primarily on householder applications and new residential development. It is possible that additional Local Development documents may be prepared where it is considered to be appropriate.

2.4 **Planning Policy Review**

The Planning Policy Review is described in Appendix B.

The Study Area lies within the East Midland Region and falls within the boundary of Rushcliffe Borough Council and Nottinghamshire County Council. The Planning Policy Review identified that the Study Area or certain areas located within the Study Area are designated, as discussed below.

2.4.1 Green Belt

The Study Area falls within an area that is designated as Green Belt under Policy EN14 of the Rushcliffe Borough Non-Statutory Replacement Local Plan. Policy EN14 and Policy 1/2 of the Nottinghamshire and Nottingham Joint Structure Plan (2006) protect against development in the Green Belt and development that compromises the openness of it. The Trent Link will preserve the openness of the Green Belt and provide enhanced facilities for leisure and recreation.

Policy EN19 of the Local Plan also stresses that any development proposed in the Green Belt must not have an adverse impact upon the nature of the Green Belt or open countryside, or upon important buildings, landscape features or views. The Trent Link will provide a green corridor that will enhance the rural landscape and help to build ecological habitats.

Paragraph 30 of PPG17 states that planning permission should be granted on land designed under Green Belt for proposals which establish or modernize essential facilities for outdoor sport and recreation where the openness of the Green Belt is maintained. Very special circumstances which outweigh the harm to the Green Belt will need to be demonstrated if inappropriate development is to be permitted. The link would not compromise the openness of the Green Belt but will further improve it by linking areas to promote formal and informal recreation and accessibility via walking and cycling. This will allow unrestricted movement for cyclists, walkers and boaters along the new corridor. The link will further enhance the range and quality of existing green spaces through improvements that are planned as part of the scheme.

Although the Green Belt policy restricts development unless it meets the test for appropriate development it is important to highlight that the Green Belt within the Study Area is currently under review as stated Policy 14 of the Regional Spatial Strategy (2005) - Nottingham/Derby Green Belt Review (2006). Policy 14 states that a strategic review of the Nottingham-Derby Green Belt will be undertaken in relation to development requirements arising in this part of the Three Cities Sub- Area up to 2026. The review will take into account:

- i. the sequential approach to development outlined in Policies 2 and 3;
- ii. the wider principles and purpose of existing Green Belt designations as set out in PPG2; and;
- iii. the case for adding land to or removing land from the Green Belt.

Within the Study Area pressure exists for significant housing led development schemes. This is linked to the emerging Regional Plan housing requirements and Greater Nottingham's status as a 'New Growth Point'. Further details on the Green Belt review are outlined in Appendix B.

In respect of the emerging Regional Plan housing requirements and Greater Nottingham's status as a 'New Growth Point', discussions have been undertaken with landowners and developers that have drawn up major housing development schemes that fall within the Study Area. Potentially there is scope for linkages to be established with potential development schemes particularly when creating a new canal link between the existing canal and the River Trent, which will form part of a green infrastructure corridor. Further details are outlined in Section 2.6.

2.4.2 Recreational Facilities

Grantham Canal is a 33 mile waterway linking Nottingham and Grantham. The importance of Grantham Canal as an environmental and amenity resource has been acknowledged. The Canal is designated and protected under Policy COM11 in the

Rushcliffe Borough Non-Statutory Replacement Local Plan (2006). The Canal is recognised for promoting recreational, tourist and commercial potential with particular protection given to environmental and wildlife features which contribute to the character of the area.

The Canal has been an attraction for walking, cycling, angling, canoeing, bird watching and photography. Horse riding itself is not currently allowed on the towing path but is a popular pursuit within the wider canal corridor. The Rushcliffe Borough Non-Statutory Replacement Local Plan recognises that improvements to Grantham Canal have already taken place to improve its recreational value which has included the construction of car parking and picnic sites. The Local Plan recognises that there are long-term proposals by the Grantham Canal Partnership to reconnect the canal to the River Trent. The Borough Council supports the principle of these proposals and will seek to encourage the provision of a link along an acceptable route.

As well as promoting recreational opportunities, the River Trent and Grantham Canal link will help to form a 'greenway corridor' which will link existing areas and new areas proposed under major residential development schemes by landowners and developers that have an interest in the Study Area. The link will provide an important linear feature for recreational and wildlife purposes and create a multi-functional Green Infrastructure (GI) corridor between Cotgrave and the River Trent which will help to promote principles of a sustainable community for local communities and visitors to the area. Policy 27 of the Draft Regional Spatial Strategy for the East Midlands highlights the importance of a multi-functional green space which will contribute to a high quality natural and built environment which is required to deliver 'sustainable communities'. This link will help to connect communities by making use of green infrastructure such as cycle-ways, public walking paths and bridleways. This will benefit the local community in terms of providing formal and informal recreational opportunities and promote healthy lifestyles.

The Draft Regional Spatial Strategy stresses the importance of co-ordinating the provision of enhanced and new green infrastructure under Policy 6. Promoting the improvements in recreational opportunities, regeneration and biodiversity is also highlighted in the Nottinghamshire and Nottingham Joint Structure Plan under Policy 2/13 which states that local planning authorities will seek to maintain and enhance the multi-functional importance of the River Trent and its tributaries (including the Idle, Leen, Maun and Meden). The consideration of development proposals will have regard to the contribution that they would make to the improvement of biodiversity, landscape character, recreational opportunities and regeneration.

Paragraph 25 of PPG17 states that local authorities should encourage the creation of sports and recreational facilities and the development of areas of managed countryside. Local planning authorities should also ensure that facilities are accessible by walking, cycling and public transport as alternatives to the use of the car. This link will promote a multi-use route (footpath/cycleway/bridleway) which will reduce the need to travel by car and help to connect communities by providing a key recreational link between the River Trent and Grantham Canal.

The Trent Link is in accordance with Policy 6/3 of the Nottinghamshire and Nottingham Joint Structure Plan which states that public rights of way and other recreational routes should be provided, maintained and wherever possible improved. Priority will be given to

developing routes linking urban areas to the countryside and the reuse of former railway lines and other transport features such as canals. All of the proposed routes support policy 6/3 as each would provide a multi-functional route.

Policy 32 on Regional Priorities for Sports and Recreational Facilities states that local Authorities should work with County based Sport Partnerships, the East Midlands Regional Sports Board, Sport England and other relevant bodies to ensure that there is adequate provision of sports and recreational facilities consistent with the priorities for urban and rural area...where appropriate, local authorities should work across administrative borders to ensure that identified need is met in the most effective manner. The link may open up the recreational use and potential pond/lakes at the National Water Sports Centre. This will help to promote greater use of the site and provide a catalyst for future investment. The link will potentially reconnect and improve access to the City of Nottingham via the National Sports Centre at Holme Pierrepont and the surrounding countryside.

The Nottinghamshire and Nottingham Joint Structure Plan maintains that all members of the community have improved access to a wide range of employment, housing, services, education, training, cultural and leisure opportunities;" (Para 1.6). The River Trent and the Grantham Canal link will promote regeneration and enhance recreational facilities particularly with relation to the National Water Sport Centre located at Holme Pierrepont. Consequently, the link will form a focus for rural regeneration and attract inward investment in the leisure and tourism sector.

2.4.3 Road Schemes

It is important to note that land to the north east of the Study Area has been designated under Policy 5/10 in the Nottinghamshire and Nottingham Joint Structure Plan as a Local Authority Road Scheme which states that land towards the north east of the Study Area will be safeguarded for a new crossing over the River Trent to the west of Radcliffe-on-Trent.

The previous structure plan identified land for the crossing at Colwick, but the proposal was reconsidered in more detail as part of the A52 Multi Modal Study. The East Midlands Regional Assembly has endorsed this recommendation, subject to further detailed investigation.

2.4.4 Tollerton Airport

Tollerton Airport is located towards the south west of the Study Area which is designated under Policy EMP3 in the Rushcliffe Borough Non-Statutory Replacement Local Plan. The proposed routes will not have any affect on Tollerton Airport.

2.4.5 Flood Risk

The area to the north of the A52 is at risk from flooding as identified on the environment Agency's website and in the Strategic Flood Risk Assessment carried out by Rushcliffe Borough Council. Flood risk policies in PPS25, RSS8, the Nottinghamshire and Nottingham Joint Structure Plan and the Rushcliffe Borough Non-Statutory Replacement Local Plan state that development should not be permitted if it is at an unacceptable risk

from flooding or would create such as unacceptable risk elsewhere. The proposed link will be acceptable on the basis that conditions or agreements for adequate mitigation measures are proposed.

2.4.6 Biodiversity

There are two SINCs located at Gamston Pits and Holme Pierrepont therefore Policy EN11 in the Rushcliffe Borough Non-Statutory Replacement Local Plan (2006) is applicable. Policy EN11 states that any development proposals likely to have an adverse impact on Sites of Importance for Nature Conservation (SINCs) will not be permitted unless the reasons for the proposal clearly outweigh the need to safeguard the nature conservation value of the site. Where development is permitted, planning conditions may be used, or a legal agreement sought to ensure that, if unavoidable loss or damage to the site or feature or its setting is likely, measures of mitigation will be required to ensure features are retained or incorporated into an agreed landscape scheme.

The link may have implications for wildlife and natural habitats that are found in the Study Area such as Great Crested Newts, badgers, reptiles and other local BAP species. PPS9 in particular identifies that networks of natural habitats provide a valuable resource. They can link sites of biodiversity importance and provide routes or stepping stones for the migration, dispersal and genetic exchange of species in the wider environment. The canal link will help enhance and connect biodiversity and geological conservation interests in the Study Area particularly where they have been lost or damaged through lack of management.

Such networks should be protected from development, and, where possible, strengthened by or integrated within it. This may be done as part of a wider strategy for the protection and extension of open space and access routes such as canals and rivers, including those within urban areas.

The importance in the protection and enhancement of the natural environment is further stressed in Policy 27 of the RSS. Policy 28 of the RSS highlights that local authorities, environmental agencies, developers and businesses should work together to promote a major step change increase in the level of the region's biodiversity. This should be done by promoting the recreation of key wildlife habitats. Policy 2/1 on Sustaining Biodiversity in the Nottinghamshire and Nottingham Joint Structure Plan states that planning permission will not be granted for development which will adversely affect the integrity or continuity of landscape features which are of major importance for wild flora and fauna and habitats and species identified in the UK and Nottinghamshire Local Biodiversity Action Plans, unless an overriding need for the development is demonstrated which clearly outweighs the nature conservation value of the habitat or species. Appropriate management of these features will be encouraged through the use of conditions, planning obligations and management agreements.

It is therefore important to conserve the wildlife habitats and natural resources of the canal corridor by promoting environmental improvements and restoring areas adjacent to the proposed new link that have been neglected.

2.4.7 Archaeology and Heritage

In light of heritage constraints within the Study Area, there may be a slight effect on Simkins Farmhouse Grade II Listed building on Adbolton Lane when considering the route options therefore policies EN4 and EN5 of the Local Plan will be applicable. There is also a risk that the Anglo-Saxon funerary activity south of the A52 near Bassingfield will be affected. Archaeological deposits both to the north and south of the A52 may be affected but the deserted medieval village will not be affected. The Roman Villa located to the north of the Study Area may also be affected therefore Policy EN7 in the Local Plan will be applicable. Policy EN7 states that development affecting sites of known or suspected archaeological importance will only be permitted where:

- i. there is a need for development which outweighs the importance of the archaeological site or its setting;
- ii. the proposal is supported by an archaeological field evaluation of the site; and
- iii. the proposed development would not damage the archaeological remains where these can be preserved in situ.

Where preservation in situ is not feasible or justified, a programme of preservation by surveying, excavation and recording of the archaeological remains will be required (through the use of planning conditions).

2.4.8 Mineral Resources

Nottinghamshire County Council has confirmed that there are no active mineral sites within or close to the Study Area. No further sand and gravel extraction is currently proposed or is likely to be proposed. A potential further extension to Holme Pierrepont quarry east to the railway embankment was put forward in the mid- 1990s for allocation in the former Minerals Local Plan but this was not accepted and now that the quarry is closed this is unlikely to be pursued again.

2.5 **New Growth Point Policy and Guidance**

2.5.1 Review of the Green Belt

Within the Study Area pressure exists for significant housing led development schemes. This is linked to the emerging Regional Plan housing requirements and Greater Nottingham's status as a 'New Growth Point'. This part of the feasibility report will highlight the scope for linkages that can be established with potential development schemes. In light of these housing pressures a series of policy reviews have been undertaken which have been reviewed. The findings of these reviews have highlighted possible implications of the routes identified.

The RSS8 was released in 2005 and provided specific guidance on development within the Three-Cities sub area of the East Midlands. Policy 14: The Nottingham/Derby Green Belt specified the need to undertake a strategic Green Belt review in relation to development requirements up to 2026. The review was required to take into account: the sequential approach to development; the wider principles and purpose of existing Green

Belt designations as set out in PPG2; and the case for adding land to or removing land from the Green Belt. The implications that the Nottingham/Derby Green Belt Review has for the Study Area were dealt with earlier in this section.

The review identified the East of West Bridgford to Bingham (area 9) as an area of medium importance in terms of its value or potential value for recreational uses and nature conservation as part of the green infrastructure in this part of the region. This Green Belt area which encompasses that part of Rushcliffe District east of West Bridgford includes Radcliffe, Cotgrave, Cropwell Bishop and East Bridgford. It extends to the western edge of Bingham. The A52 is the main transport route.

Extension of the Gamston area east would result in development on the eastern side of the A52 which currently forms a clear inner boundary for the Green Belt in this area. Development here would also affect the existing site of Nottingham Airport.

North-east of West Bridgford the Green Belt coincides with the floodplain around the River Trent, and land held for recreational uses such as the National Water Sports Centre. Development in this area, such as an extension of Lady Bay, faces issues relating to flooding. The villages within the area are under pressure to expand. While there is no real threat of settlements merging, there is the threat of encroachment into the countryside and concern about the open character of the Green Belt generally.

In addition to the above review, the 'Appraisal of Sustainable Urban Extensions' (released June 2008) led by Tribal Urban Studio (formerly the planning and urban design practice of Llewelyn Davies) supported by Roger Tym & Partners was produced. The Client group was coordinated by Nottingham Regeneration Limited and consisted of planning officers from the following councils: Ashfield District, Broxtowe Borough, Erewash Borough, Gedling Borough, Nottingham City, Notts County and Rushcliffe Borough. The report will provide the local planning authorities with a technical evidence base to consider future options for housing allocations.

The aim of the study was to provide advice on the most sustainable location or locations for the development of sustainable urban extensions adjacent to the Nottingham principal urban area. The report represents the final assessment of the consultant team in the supplementary work for the Nottingham Core Housing Market's Strategic Housing Land Availability Assessment (SHLAA). A number of locations were assessed against a number of criteria indicating the suitability for development.

Two particular areas that were assessed in the first part of the study fall within the Cotgrave to River Trent Green Infrastructure Study Area.

Land towards the north of the Study Area was judged to be unsuitable for a Sustainable Urban Extension due to floodplain constraints. However, it was decided that land towards the south of the site would be suitable for residential development despite there being general questions over its sustainability and connectivity.

The second part of the study examined a site located towards the west of the Study Area that includes land being considered by Taylor Wimpey for development. The study stated that it would be extremely difficult to justify development on this site on accessibility, transport and Green Belt terms. It was felt that development in this location

would be physically separated from Nottingham with a poor chance of sustainable connectivity. In addition, it was judged that the already severe traffic constraints on the A52 would be exacerbated. On the basis of the information gathered in the report, it was felt that this area of land would be unsuitable for development.

The East of West Bridgford to Bingham area and areas identified in the Appraisal of Sustainable Urban Extensions may have implications for future major housing development schemes, some of which have been discussed in the subsequent sections. Landowners have teamed up with developers to draw up potential development schemes that include both residential and commercial aspects some of which have been promoted through the local plan and some via planning applications. Discussions have taken place with key players that have drawn up proposals within the Study Area which are outlined in subsequent sections.

2.6 Major Proposals

In respect of the emerging Regional Plan housing requirements and Greater Nottingham's status as a 'New Growth Point', discussions have been undertaken with landowners and developers that have drawn up major housing development schemes that fall within the Study Area. Details of these discussions are outlined below. In addition, planning applications that have been submitted to Rushcliffe Borough Council that fall within or immediately adjacent to the study boundary have also been detailed below.

Potentially there is scope for linkages to be established with potential development schemes particularly in order to understand the feasibility of creating a new canal link between the existing canal and the River Trent, to form part of a green infrastructure corridor. The discussions have helped to build an understanding of future interests and aspirations landowners and developers have for their area.

The meetings that have been held with the landowners and their agents have been documented below. The extent of their interest in land has been outlined on **Figure 2.2**.

1. Mosaic Estates Ltd representing land owned by Sidney Hackett Ltd to the north east of the Study Area (Land Ownership Plan D120103/PLA/2.2 – Red A);
2. Nottinghamshire County Council owned land at Holme Pierrepont – National Water Sports Centre located to the north of the Study Area (Land Ownership Plan D120103/PLA/2.2 – Purple B)
3. East Midlands Development Agency (Land Ownership Plan D120103/PLA/2.2 Orange C)
4. Corylus representing land owned by Tarmac located to the west of land owned by the Hackett's (Land Ownership Plan D120103/PLA/2.2 – Yellow D).
5. Sandy Burrell - representing Cotgrave Golf Club (Land Ownership Plan D120103/PLA/2.2 – Grey E).
6. Taylor Wimpey (Land Ownership Plan D120103/PLA/2.2 – Green F).

2.6.1 Mosaic Estates Ltd

A meeting was held between Scott Wilson and Mosaic Estates on 7th July 2008. Mosaic Estates have been working with Hacketts for around five years largely looking at residential development close to the disused railway.

Mosaic Estates have had discussions with Rushcliffe Borough Council regarding proposals for the land. They have also had discussions with British Waterways Marinas regarding the use of existing lakes as a marina looking to create approximately 600 berths.

A planning application for residential housing is likely to be submitted in October 2008 for approximately 700 houses (30% affordable). If permission is granted, Hackett's will provide land for a marina and a contribution of £2.5 million for the construction of this link.

Mosaic Estates are also considering a footbridge crossing the River Trent that would link the residential area to the industrial area to the north of the river.

2.6.2 Taylor Wimpey

Taylor Wimpey holds land under options agreement in the study area. A meeting was held between Scott Wilson and Taylor Wimpey, on 21st July 2008. However, Taylor Wimpey have requested that the discussions be treated as confidential at this stage.

2.6.3 Nottinghamshire County Council – National Water Sports Centre at Holme Pierrepont

A meeting was held between Scott Wilson and Ian Bebbington (IB), Nottinghamshire County Council Project Manager for the Water Sports Centre at Holme Pierrepont (HP) on 25th July 2008.

IB explained that in April 2009 the responsibility for Holme Pierrepont will pass from Sports England to Nottinghamshire County Council. This will provide an opportunity to broaden the mix and appeal of activities at HP away from an entirely sporting function and develop a more community approach to recreation.

The current uses at Holme Pierrepont include the following:

- i. the international rowing course;
- ii. the water ski lake;
- iii. the white water rapids;
- iv. power boat courses;
- v. kayak courses;
- vi. the Zorb;
- vii. the campsite;

- viii. the sailing lake;
- ix. 270 acre Country Park;
- x. 5-side football;
- xi. Table tennis;
- xii. Badminton; and
- xiii. Conference and wedding facilities.

Additional features on the site could include:

- i. the relocation of the water ski pull to the lake adjacent to the rapids (the warm-up lake);
- ii. the development of a marina in the current water ski lake;
- iii. better use and refurbishment the campsite including static caravans;
- iv. development of a play park;
- v. refurbishment of existing buildings;
- vi. incorporation of Cotgrave Canal Link to use 'finger' lake and link to the new marina;
- vii. creation of central hub around current key buildings; and
- viii. development of walking and climbing facilities.

Holme Pierrepont provides a major recreational resource on the fringe of Nottingham. It could be developed to incorporate additional leisure uses. The transfer of management responsibility to NCC could provide a major development/investment opportunity. There could be synergy between the Cotgrave Canal link and improvements to HP. This could be further enhanced by developments beyond HP on adjacent land with the co-operation of adjacent landowners.

2.6.4 East Midlands Development Agency (EMDA)

Correspondence between Kevin Mann and EMDA and their agents White Young Green has been reviewed. EDMA have submitted a planning application for a mixed use development incorporating residential (470-500), employment, a school and green infrastructure scheme at the former Cotgrave Colliery site. Section 106 contribution has been offered towards the management of Cotgrave Country Park. EMDA have not been forthcoming in making any contributions to this link as they do not own or control any land adjacent to the canal to facilitate creation of a boatyard/marina.

2.6.5 Corylus

A meeting was held between Scott Wilson and Corylus who are representing Tarmac for land to the west of land owned by the Hacketts on 1st August 2008.

Corylus in partnership with Tarmac are developing a concept for the former gravel pits adjacent to Holme Pierrepont. Currently with Pad Urban Design and Yoo Design, Corylus is developing a second home village adjacent to the former gravel workings in Gloucestershire. The scheme is currently on site providing second homes at a sales price of £750K - £2.2m.

The Nottingham site provides similar opportunities, although the site is both within the Nottingham-Derby Green Belt and the Trent River floodplain.

Potential development at Nottingham could include:

- i. a new hotel and conference centre adjacent to Adbolton Lane and HP;
- ii. new 'floating' homes (using Dutch/Solvanean technology);
- iii. a marina;
- iv. a route for the canal link through the existing lake (owned partially by Tarmac and Hacketts); and
- v. provide sustainable links to local suppliers.

The design solution for the new 'floating' homes may overcome flood risk objections to development and could further the aspirations of HP and the Grantham Canal link. In hindsight, development is unlikely to be compatible with Green Belt objectives (particularly any hotel development).

2.6.6 Eco-Town proposal at Cotgrave Golf Club

Crown Golf own 300 acres of land on the site of the Cotgrave golf course and applied direct to the government to build an eco-town on the land currently occupied by the golf course. It is understood that the eco-town application was rejected. Nonetheless, at a meeting held with Crown Golf on 20th August 2008, it was confirmed that they are proposing around 5000 dwellings to cover 90ha of land which they hope to promote through the LDF process at Cotgrave Golf Club. The Grantham Canal lies to the south of the site and could provide a significant recreational asset, whilst to the east lies the disused railway line which could be opened up to provide a light railway link/tramway to the city centre.

It is envisaged that a new high quality 18 hole golf course would be provided to the south of the hilltop town and would function as a permanent open space buffer to the northern perimeter of Cotgrave. The proposal would also include improved cycle and public

footpath linkages to Holme Pierrepont National Watersports Centre, the River Trent and Cotgrave Country Park.

2.6.7 Development Applications

As well as the aspirations of landowners/developers and agents that have an interest in the Study Area highlighted above planning applications that have been submitted to the council that fall within or immediately outside the Study Area are listed below. Some of the applications have been determined and some are pending. These applications have been plotted on **Figure 2.1** to show their locations in relation to the Study Area.

Redevelopment of Tollerton Airfield (Application number: 08/00653/OUT)

Proposal: Redevelopment for up to 28,352 sq.m of B1 enterprise park; airport control tower with ancillary facilities, dining and meeting rooms; energy centre; associated access, parking, landscaping and infrastructure works; off site highway improvements.

Address: Tollerton Airport, Tollerton Lane, Tollerton, Nottinghamshire, NG12 4GA

Applicant: Mr P Rech (Agent), Lockington Hall Business Centre, Lockington, Derby DE74 2RH

Decision: Pending

Development of Residential Site (Application number: 08/00567/OUT)

Proposal: Redevelopment of site for 470 - 500 dwellings; employment uses (B1, B2 and B8); combined heat and power generating plant; primary school; open space; landscaping and associated works including roads, cycleways, footpaths and car parking.

Address: Cotgrave Colliery Stragglethorpe Road Stragglethorpe Nottinghamshire NG12 2JW

Applicant: EMDA, White Young Green (Agent) Aqua House 20 Lionel Street Birmingham B3 1AQ

Decision: Pending

Development of Residential Site (Application number: 08/00613/OUT)

Proposal: Development of site to provide residential units (use class C3), a restaurant/public house (use class A3/A4) and ancillary works

Address: Land South And East Of Hollygate Lane Cotgrave Nottinghamshire

Applicant: The Gates Consortium, Capita Lovejoy (Agent) 1 Fore Street Birmingham B2 5ER

Decision: Pending

Erection of Five Dwellings (Application number: 74/00026/EAST)

Proposal: Erect five dwellings

Address: Rear of 40-48, Mill Lane, Cotgrave, Nottingham, Notts

Decision: Granted with conditions

Stables Development (Application number: 08/00610/FUL)

Proposal: Ten stables, menage with floodlights, access road and car parking

Address: West Bridgford Equestrian Centre, Adbolton Lane, Holme Pierrepont, Nottinghamshire, NG2 5AS

Applicant: Miss L Kirkham, Mr Alan Goodwin (Agent), 20, Easthorpe Street, Ruddington Nottingham NG11 6LA

Decision: Pending

Four Dwellings with Vehicular Access (Application number: 07/01360/OUT)

Proposal: Four dwellings with vehicular accesses following demolition of existing bungalow

Address: Bramber 2 Adbolton Lane Holme Pierrepont Nottinghamshire NG2 5AS

Decision: Application withdrawn

Flats Development (Application number: 06/00798/FUL)

Proposal: eleven flats with access and parking following demolition of existing dwelling.

Address: Bramley House 30 Stavely Way Gamston Nottinghamshire NG2 6QR

Decision: Granted with conditions

The above planning applications will have no implications on any of the routes proposed.

2.7 Project Funding

A list of possible funding sources potentially available to the Green Infrastructure Project is provided in **Table 2.1** in **Appendix B**.

2.8 Constraints and opportunities

Planning constraints and opportunities are detailed in **Table 2.2** in **Appendix B**.

2.9 Conclusion

Planning policy as such does not differentiate significantly between the routes proposed for the canal link, nor for the location of additional green infrastructure. Both concepts are supported and detail has been provided of national, regional and sub-regional and local policies that would support the provision of both a link and extended green infrastructure within the Study Area.

However, whilst the reserve line of the suggested new River Trent Crossing provides a constraint to provision towards the east of the site, it is expected that some of the routes could provide additionalities that would be absent from others. Broadly routes in the west of the Study Area provide less opportunity for the provision of any marina facilities, whilst routes to the east could allow for both a marina and offer additional stimulation to the provision of additional leisure resources at Holme Pierrepont. Westerly routes however would make more use of the existing route of the canal.

A number of substantial developments have been proposed within the Study Area which could be used to provide funds to support the canal link and other green infrastructure routes in the Study Area through Section 106 Agreements. However, these would be subject to different timescales.

The masterplan however, could be considered as a planning device to establish a tariff approach to providing funds for green infrastructure and the canal link within the Study Area. All major developments could be subject to a Green Infrastructure Tariff that could be used to provide the canal link and additional related green infrastructure. Such an approach would have the advantage of establishing an equitable contribution from all major developments within the Study Area and would also allow developers to provide additional land and resources such as providing a marina, whilst not making the route subject to a particular land holding.

In order for major housing development to take place within the Study Area, there would need to be amendments to the Green Belt boundary and in some cases a need to demonstrate that the proposed development would not have an adverse effect upon the Trent floodplain.

3.0 ECOLOGY

3.1 Introduction

An Ecology Baseline Report has been produced to inform this ecology section of the Interim Feasibility Report on the River Trent to Cotgrave Green Infrastructure Study. The Ecology Baseline Report is included in **Appendix C**. A summary of the findings is included below, followed by a comparison of canal link route options.

3.2 Methodology

In order to inform the Feasibility Study and Master Plan for the creation of a multi functional green infrastructure corridor between Cotgrave and the River Trent, the following tasks were undertaken in respect of ecology:

- desk study and data collection;
- consultation with data holding bodies and stakeholders;
- field surveys comprising an extended Phase 1 Habitat Survey and River Corridor Survey of selected reaches;
- review of all desk study and field survey data to identify the ecological constraints and opportunities for the proposed green infrastructure corridor; and,
- an objective comparison of the proposed route options.

The objectives and methodologies of each of these tasks are detailed in the Ecology Baseline Report. A number of limitations were encountered, details of which are also provided in the Ecology Baseline Report.

The extended Phase 1 Habitat Survey and River Corridor Surveys were carried out in accordance with standard methodologies (JNCC publication Environmental Audit, (1990); National Rivers Authority (NRA) River Corridor Surveys: Methods and Procedures (Conservation Technical Handbook Series No. 1, 1992)).

A summary of ecological consultation responses is included with other consultation responses in Appendix 1 of the Ecology Baseline Report. Where these relate to specific options, relevant comments are also included in the assessment of options.

The Ecology Baseline Report provides greater detail on the habitats found within the site boundary, including Target Notes of features of interest identified during field survey. This should be read in conjunction with the Extended Phase 1 Habitat Plans (Figures 4.1 to 4.4 of the Ecology Baseline Report).

3.3 Summary of Constraints and Opportunities

3.3.1 Statutory Designated Sites

There are no statutory designated sites within the site area. Statutory designated sites located outside of the site area are detailed in the Ecology Baseline Report (Appendix C).

3.3.2 Non Statutory Designated Sites

There are ten non-statutory designated sites of importance for nature conservation (SINCS) within the site area (non-statutory designated sites located outside of the site area are detailed in the Ecology Baseline Report). The locations of SINCS are indicated in **Figure 3.1**. SINCS are considered to be of county-level importance for their biodiversity. *The Nottinghamshire and Nottingham Draft Guide to Biodiversity and Planning* (2006) state that the protection and enhancement of SINCS is considered vital for sustaining the county's biodiversity where loss or damage to SINCS would result in a decline in the biodiversity of Nottinghamshire.

Whilst these sites do not have statutory protection, in accordance with national planning policy guidance (PPS9), there is a general presumption against any development on a SINCS which is likely to have an adverse impact on the flora and fauna, unless it can be clearly demonstrated that there are reasons for the proposals which outweigh the need to safeguard the nature conservation value of the site (Nottingham Local Plan, 2000). If development is permitted on or close to a designated site, every effort is required to avoid damage and disturbance to important habitats or species. Where detrimental effects cannot be avoided, mitigation measures are required to keep these to a minimum. Indirect detrimental effects may include hydrological changes, noise, dust, and damage from inappropriate public use. If the loss of habitats or species cannot be avoided, the provision of compensatory habitats or features of at least equivalent area and quality is generally required (Nottinghamshire and Nottingham Draft Guidance to Biodiversity and Planning (2006)). This would be determined during subsequent stages of the assessment process.

The SINCS within and immediately adjacent to the site area boundary are therefore a constraint to the construction of a canal link. It would be preferable for the new canal link to avoid SINCS where possible. As the most valuable sites for biodiversity within the site area they also represent an opportunity for enhancement through implementation of green infrastructure (described at the end of this section).

3.3.3 Habitats

There are habitats present within the site area identified in the Nottinghamshire Local BAP (LBAP), which have declined to such an extent that any loss would seriously deplete the remaining resource. These include (UK Priority habitats are in bold):

- canals and associated habitats;
- ditches;

- **eutrophic and mesotrophic standing water;**
- farmland; arable farmland, field margins and improved grassland;
- **fens marshes and swamps;**
- **hedgerows including ancient and/or species-rich hedgerows;**
- mixed ash-dominated woodland*;
- oak-birch woodland*;
- parkland and woods pasture*;
- planted coniferous woodland*
- lowland wet grassland;
- **reedbed;**
- rivers and streams;
- urban and post-industrial habitats; and
- **wet broadleaved woodland*.**

*woodland types have not been confirmed at this stage. It is assumed all above woodland types occur within the site area.

Although most areas of these habitats are designated as SINC, many are not. The *Nottinghamshire and Nottingham Draft Guidance to Biodiversity and Planning* (2006) highlights the importance of recognising the high national and local importance of LBAP habitats in addition to any SINC designation. Any loss of LBAP habitats as part of the development of the canal link would be considered a constraint. If the loss of habitat cannot be avoided, provision would be required for the creation of compensatory habitat of at least equivalent size and quality, including links between the newly created habitat and the surrounding network to allow species to colonise the area.

New habitat may be created through the translocation of soil, turf or other material from the footprint of the link. The *Nottinghamshire and Nottingham Draft Guidance to Biodiversity and Planning* (2006) state that although this may be preferable to creating new habitat from scratch, careful consideration would be required to the methods used and the properties of the receptor site. Generally translocation will not be given substantial weight in planning decisions and should only be considered as a last resort if damage is unavoidable. Translocated habitats are unlikely to be of equivalent quality in terms of species diversity of the habitat lost.

There are opportunities to enhance local BAP habitats as part of the scheme. Provision should be made for the future management of retained and newly created habitats and linking features, and for monitoring the effectiveness of this management and the long

term impact of the development. This would be a consideration in the design of green infrastructure within the site area (described at the end of this section).

3.3.4 Protected and Notable Species

Some species of plant and animals are legally protected because of their vulnerability. Although not all are rare, protected species are under threat in some way, and many would be likely to become rare if protection measures were not in place.

Over 900 plant and animal species are listed in the LBAP as being of conservation concern for reasons of international, national or local rarity, threat or decline (this includes most protected species but also other species that are not legally protected). The conservation of most of these species can be addressed through the conservation of their habitats. However, some species have such specific requirements that habitat action plans are not enough, and individual species action plans have been created.

Consultation and data collection has confirmed that the following protected and/or LBAP species have been previously recorded within the site area (birds are described separately in the next section):

- otter;
- great crested newt (GCN);
- water vole;
- badger;
- bats;
- white clawed crayfish;
- grass snake;
- hedgerows (of significant biodiversity value under Hedgerow Regulations 1997);
- harvest mouse (LBAP only, not protected).

Additionally, whilst there are no records, habitats within the site area boundary provide potential for the following protected species:

- slow worm;
- common lizard;
- adder;
- dormouse;
- plants (listed on Schedule 8 of Wildlife and Countryside Act as amended);

- invertebrates (listed on Schedule 5 of Wildlife and Countryside Act as amended);
- Deptford pink (*Dianthus armeria*) (local BAP only, not protected, often found on disused railways);
- dingy skipper (*Erynnis tages*) and grizzled skipper (*Pyrgus malvae*) (local BAP only, not protected, often found on disused railways); and
- Nottingham autumn crocus (*Crocus nudiflorus*) and Nottingham spring crocus (*Crocus vernus*) (local BAP only, not protected, often found in cemeteries, parks, golf courses, meadows, old gardens and public open space).

A summary of legislation relevant to these species is given in Appendix C (within Appendix 4 of the Ecology Baseline Report).

In addition to SINCS, desk study and consultation has identified areas within the site of particular potential for protected species. Some of these areas are illustrated in Appendix C and comprise:

- water voles on Polser brook, Grantham Canal and River Trent;
- protected hedgerows, particularly on old parish boundaries;
- badger and reptiles (particularly grass snake) on the disused railway;
- great crested newt on ponds within the site area;
- grass snake on Grantham Canal; and
- otters on the lagoons, lakes, Grantham Canal and River Trent.

Whilst these particular areas have been identified, certain habitats and features throughout the site area make it more likely for certain protected species to be present. A summary of the protected species potential for habitats present within the site area boundary is given in Appendix C (Appendix 6 of the Ecology Baseline Report). This includes potentially protected hedgerows and plants. If any of these habitats or features are likely to be directly or indirectly affected by the construction of the canal link, or any other part of the scheme, further species specific surveys will be required to confirm presence or absence, establish approximate distribution and population size, and identify magnitude and significance of potential impacts. Should this be the case particular mitigation measures will need to be developed which will be pertinent to the species and location of site.

As a generic guide, *The Nottinghamshire and Nottingham Draft Guidance to Biodiversity and Planning* (2006) states that the following is generally expected (in order of preference):

- the protection of the species, in its current location, from harm or disturbance, and the maintenance of habitats and features necessary for nesting, roosting, feeding etc;

- where it is not possible to retain the population in its current location, the provision of suitable alternative habitats and features elsewhere on or adjacent to the site to maintain at least the current levels of populations affected;
- as a last resort, exclusion, or removal of the population to a suitable alternative location;
- provision should be made for the future management of retained and newly created features, and for monitoring the effectiveness of the conservation measures on the species concerned.

Mitigation measures may have cost implications, and affect the programme and should therefore be considered a potential constraint.

There is the potential to enhance the value of the site area for protected and local BAP species. Appropriate enhancement measures are dependent on target species, however the general enhancement of habitats listed in Appendix C (Appendix 6 of the Ecology Baseline Report) within the site area is likely to be beneficial to those species described. Such enhancements are described through green infrastructure (described at the end of this section).

3.3.5 Birds

The Holme Pierrepont/Colwick Country Park/Netherfield Lagoons complex is important for both breeding and wintering birds, the complex also supports up to 20 Schedule 1 birds. In particular the A52 pit is one of only one or two sites to support breeding black-necked grebe in the county. This is reflected by the SINC designation, and also through consultation responses (see Appendix C).

The value of these sites for birds is a constraint to the new canal link. Deepening the A52 pit would be detrimental to the black-necked grebes. They prefer shallow warm pond for breeding, which has extensive fringe habitat. Scrub removal may also open out areas, removing cover, which has the potential to increase levels of disturbance.

Scrub habitat against the wetland fringe is important for migrant warblers including grasshopper warbler, whitethroat, sedge and reed warbler. If the new canal link were to avoid the A52 pits and its hinterland, Blotts pit and the Finger Ponds, this would minimize the potential for disturbance and associated impacts on Schedule 1 breeding birds, in particular black-necked grebe, and would ensure that this area would continue to support a wide variety of bird species throughout the year.

It may be possible to accommodate losses in habitat in certain areas of the complex with appropriate mitigation. It should be noted that this would involve habitat loss of a SINC (described above). Further detailed surveys/assessment would be required to determine which areas could accommodate habitat losses and disturbance. Further detailed surveys would be undertaken to inform an accurate baseline and enable areas of the site to be thoroughly evaluated for birds. The magnitude and significance of potential impacts would be assessed, and any mitigation would be discussed and planned in detail through consultation with Natural England, Royal Society for the Protection of Birds (RSPB) and the County Ecologist. Mitigation measures may have cost

implications, and are likely to affect the programme and should therefore be considered a potential constraint.

Disruption of the lagoon complex could also have an adverse impact on its potential as a nature based recreational resource (e.g. perceived impact from local bird watching groups).

For the remainder of the Study Area, further wintering or breeding bird surveys may be required if the new link passes through other wetland areas, trees or scrub. Any vegetation clearance should take place outside of the breeding bird season (taken to be late February to early September depending on seasonal and geographical variations). Should removal of vegetation have to be undertaken within this period, it is recommended that a suitably qualified ecologist undertakes a thorough search for nesting birds before the removal of any vegetation.

There is the potential for the proposed scheme and in particular green infrastructure to enhance the site area for birds. This is considered below.

3.3.6 Green Infrastructure

Green infrastructure assets are elements which make up the green infrastructure in the area, which include areas of ecological value, and features which connect them. The development of green infrastructure as part of this scheme provides opportunities to:

1. Identify, protect and if possible enhance areas of ecological value within the site area; and
2. Provide greater connectivity between areas of ecological value within the site area and to the surrounding landscape.

At this stage areas of ecological value area are considered to be:

- SINCS (refer to Figure 3.1);
- additional LBAP habitats which are not protected as SINC's (refer to Appendix C); and
- additional areas of potential value for protected species (refer to Appendix C).

As part of the green infrastructure proposals these areas of ecological value should be safeguarded. This could be achieved through the creation of buffer zones around e.g. woodland areas, which would have an additional benefit of providing transitional landscape types and ecotones (edge habitats) and therefore greater habitat and structure diversity within the site area.

The quality of habitats within the ecologically valuable areas could be enhanced for particular species. This would be particular to the site and target species but may include re-profiling water body edges to create larger areas of exposed mudflats for enhancement for waders; re-profiling water body embankments to create burrowing

potential for water vole with tall grass/herbs on bank zone to provide varied food source; creation of areas with bankside vegetation (scrub and woodland) along watercourses and around water bodies, to increase areas of suitable otter habitat, allowing otters to pass freely under the cover.

Connectivity between areas of value around the site is provided through corridors and ecological stepping stones. Key corridors within the site area and surrounding landscape are the River Trent, Grantham Canal, and the disused railway. The ditches and hedgerows act as smaller corridors, and the water bodies (ponds, lake, lagoons) and patches of woodland provide ecological stepping stones across the site for a variety of species. Additional corridors and stepping stones within the site include areas of unmanaged grassland, gardens, playing fields, parks and patches of scrub, bridleways and footpaths.

The provision of connectivity at a landscape scale will favour expansion of biodiversity assets and lead to an overall increase in ecotones (edge habitats). This could be achieved through:

- enhancement of ditches throughout the site area (e.g. selective removal of scrub to reduce over-shadowing and leaf litter; slubbing (de-silting) of ditches; water level management; habitat enhancement for water voles e.g. use of seed mix to enhance bankside vegetation where appropriate and fencing to prevent poaching of banks by farm animals);
- enhancement of hedgerows throughout the site area. Where hedgerows are gappy these could be thickened-up through the addition of new stock the opportunity should be taken to increase the length of hedgerows, in particular linking up isolated hedgerows, woodland and areas of scrub. Hedgerows planted should include a diverse range of woody species native to Nottinghamshire and appropriate to the local soil type. The potential ecological value of new hedgerow plantings could be further enhanced by allowing some of the larger tree species (oak, ash, field maple, crab-apple) planted to develop into mature standards. Such trees should be adequately marked so that they are not damaged during routine hedgerow trimming operations. An associated flower-rich, sensitively managed, verge would also enhance the ecological value of a hedgerow;
- the diversification of the green landscape could be achieved through meadow management or species enhancement. Areas of semi improved grassland throughout the site could be targeted for this; and
- the new canal link is an opportunity to create new green infrastructure through the site. This could be achieved through establishing off-line (non operational) sections of the canal, creating new wetland and backwater areas associated with the canal/new canal link, provision of linear vegetation (scrub, trees) adjacent to multi user routes including provision of bat and bird boxes.

3.4 Review of Canal Link Route Options

3.4.1 Constraints and Opportunities

Table 3.1 below summarises the constraints and enhancement opportunities associated with the canal link route options based on existing available data. This table summarises protected species potential, however it should be noted that further surveys are required to confirm presence. All of these options are based predominantly on desk study. Options 1-4 have been supplemented with field survey, however options T1, H and M have not been 'ground-truthed' in the same way. The assessment of options 1-4 identified the types of ecological constraints associated with the canal link. Whilst field survey effort focused on the direct impact zone of options 1-4, the identified constraints are relevant to the whole site area. This has assisted with identifying potential constraints associated with options T1, H and M.

Table 3.1. Summary of the Constraints and Enhancement Opportunities Associated with the Canal Link Route Options based on Existing Available Data.

Option number	Non-Stat Designated Sites (SINCs)	Protected Species Records and Protected Species Habitat Potential	Enhancement Opportunities	Consultation Summary
Option 1 (and variations)	<p><u>Passes through and/or adjoins three SINCs:</u></p> <p>Approx 1km of route passes through a lagoon at Gamston Pits (<i>An extensive area of gravel workings with associated habitats of open water, marsh, scrub and woodland - of particular ornithological interest</i>)</p> <p>Approx 1.5km of route passes through Holme Pierrepont Country Park (<i>A valuable mosaic of carr, scrub, marginal and open-water habitats around a series of old gravel workings</i>). Route passes through eastern edge of Skylarks nature reserve, and western edge of old gravel workings</p> <p>Connection to Grantham Canal at Grantham Canal (Bassingfield to River Trent) (<i>An urban stretch of canal with a good aquatic plant community</i>)</p>	<p>Approx 50% of route passes through waterbodies associated with Gamston Pits and Holme Pierrepont Country Park. This could have implications for waterfowl, and potentially water vole and otter, through direct disturbance and indirectly through changes in hydrology which alter the suitability of the habitat for these species. Desk study indicates that the complex supports up to 20 Schedule 1 birds.</p> <p>Potential loss of breeding bird habitat in scrub along Polser Brook south of Radcliffe Road (see extended Phase 1 habitat plan TN 2, 3, 4, 6, 7, 15)</p> <p>Potential impact on bats through loss of trees with bat roosting potential (see Phase 1 habitat plan TN 3, 6 and 7).</p> <p>Routes 1a and 1b join Grantham Canal at a point where there is a record of otter and water vole. Further survey and potential mitigation would be required for both these species for all Option 1 routes.</p> <p>The route follows a section of Polser Brook known to support water vole with good habitat potential. Additionally a section of Polser brook downstream was found to have habitat potential for white clawed crayfish. Further survey and potential mitigation would be required for both these species</p> <p>The route joins the River Trent at a relatively undisturbed section of the river. There are water vole and otter records within 2km of this connection point. Further survey on the Trent and adjacent water courses would be required for both these species with potential mitigation requirements.</p>	<p>Maintain and enhance area of grassland for butterflies and damselflies through suitable management (see extended Phase 1 habitat plan TN 2)</p> <p>Enhance pond by removing some scrub to allow in more light and deepen to aid water retention (see extended Phase 1 habitat plan TN 3)</p> <p>Clear some growth around overgrown areas of Polser Brook ditches to remove clogging and excessive shade, enhancing ditches for water vole</p> <p>Plant up gaps in hedgerows (see extended Phase 1 habitat plan at TNs16 and 17) to improve connectivity and provide wildlife corridor.</p>	<p><u>Nottinghamshire County Council/ Rushcliffe Borough Council/EA:</u></p> <p>Holme Pierrepont/Colwick Country Park/Netherfield Lagoons complex is extremely important for both breeding and wintering birds, and Schedule 1 birds breed at Holme Pierrepont. Impacts on these areas are likely to be most significant.</p>
Option 2 (and variations)	<u>Passes through and/or adjoins two SINCs:</u>	Majority of route passes through waterbodies	The removal of some of the	<u>Nottinghamshire County</u>

Option number	Non-Stat Designated Sites (SINCs)	Protected Species Records and Protected Species Habitat Potential	Enhancement Opportunities	Consultation Summary
variations)	<p><u>SINC:</u></p> <p>Passes through Gamston Pits (<i>An extensive area of gravel workings with associated habitats of open water, marsh, scrub and woodland - of particular ornithological interest</i>)</p> <p>Passes through 3 undisturbed lagoons to north of designation, and northern edge of large A52 lagoon.</p> <p>Connection to Grantham Canal at Grantham Canal (Bassingfield to River Trent) (<i>An urban stretch of canal with a good aquatic plant community</i>)</p> <p><u>Passes adjacent to three SINCs:</u></p> <p>Passes through drain approximately 50m east (downstream) of Adbolton Marsh (<i>A good mixed habitat association including the scarce Trent-side inundation community type</i>). Potential secondary hydrological constraints.</p> <p>Connection to River Trent is on opposite bank to Colwick Country Park (<i>A good mixed habitat assemblage primarily of vertebrate zoological interest, but also of value for its invertebrate and plant communities</i>)</p>	<p>associated with Gamston Pits. These lagoons are currently undisturbed. This could have implications for waterfowl, and potentially water voles and otter, through direct disturbance and indirectly through changes in hydrology which alter the suitability of the habitat for these species. Desk study indicates that the complex supports up to 20 Schedule 1 birds.</p> <p>Potential loss of breeding bird habitat (see extended Phase 1 habitat plan TN 8, 9, 12)</p> <p>Potential impact on bats through loss of trees with bat roosting potential (see extended Phase 1 habitat plan TNs 8 and 9)</p> <p>Possible disturbance to breeding lapwing during construction of the route (see extended Phase 1 habitat plan TN18).</p> <p>The Option 2 route joins the River Trent at a point where there is a water vole record. Option 2a is also close to this area. Additionally there is an otter record approximately 1km north east of the connection to the River Trent. Additionally the route crosses three unnamed ditches. Further survey at these sections would be required for both these species with potential mitigation requirements.</p> <p>As per Option 1, the route joins Grantham Canal at a point where there is a record of otter and water vole. Also route follows a section of Polser Brook known to support water vole with good habitat potential. Additionally a section of Polser brook downstream was found to have habitat potential for white clawed crayfish. Further survey of Polser Brook and adjacent water courses and potential mitigation would be required for these species.</p>	<p>dense bulrush in the pond to the west of the route at Adbolton Marsh (see Extended Phase 1 Plan TN19), to prevent drying out and maintain areas of open water, would ensure the site supports a good variety of wildlife (however this must be done with minimal impact on existing ecology at this site which offers good invertebrate and bird habitat with records of sedge warbler)</p> <p>The removal of dense scrub to reduce shading of the dry ditch off Polser Brook north of A52 (see extended Phase 1 Habitat Plan TN12) and de silting could enhance aquatic connectivity of Polser Brook with Grantham Canal and River Trent. This could be of benefit to fish, water vole and otter.</p> <p>As per Option 1, clearance of overhanging vegetation around overgrown areas of Polser Brook ditches, to remove clogging and excessive shade, would enhance the ditches for water vole.</p>	<p><u>Council/ Rushcliffe Borough Council:</u></p> <p>Holme Pierrepont/Colwick Country Park/Netherfield Lagoons complex is extremely important for both breeding and wintering birds, and Schedule 1 birds breed at Holme Pierrepont. Impacts on these areas are likely to be most significant.</p>

Option number	Non-Stat Designated Sites (SINCs)	Protected Species Records and Protected Species Habitat Potential	Enhancement Opportunities	Consultation Summary
Option 3	<p><u>Passes through and/or adjoins two SINCs:</u></p> <p>Passes through Adbolton Pond (Ponds, surrounded by mature woodland, that display a locally characteristic hydrophilic plant community and are also of zoological interest. One of these ponds is also a great crested newt pond)</p> <p>Connection to Grantham Canal at Grantham Canal (Bassingfield to River Trent) (An urban stretch of canal with a good aquatic plant community)</p> <p>Connection to River Trent is on opposite bank to Colwick Country Park (A good mixed habitat assemblage primarily of vertebrate zoological interest, but also of value for its invertebrate and plant communities)</p>	<p>The route passes through Adbolton Pond Local Wildlife Site; This may result in a potential loss of</p> <ul style="list-style-type: none"> • great crested newt habitat; • breeding bird habitat; and • unidentified tree with bat roost potential. <p>(see extended Phase 1 Habitat Survey TN13)</p> <p>Further survey would be required to determine actual presence of these species and mitigation measures may be required.</p> <p>Loss of sections of four hedgerows. Further surveys would be required to determine value of these hedgerows, mitigation may be required.</p> <p>There are water vole records at the connection point to Grantham Canal, and within 1km of the connection point to the River Trent. Additionally the route crosses one unnamed ditch north of Gamston Bridge. Further survey on these sections would be required and potential mitigation will be required.</p>	<p>Gap up hedgerows to the north west of the route to improve connectivity (see extended Phase 1 Habitat Plan TN20);</p> <p>Enhance small pond to the west of the route by removing some of the surrounding willow and scrub to reduce shading (see extended Phase 1 Habitat Plan TN14).</p> <p>Removal of some of the vegetation overgrowing the ditch network (south of caravan site) to reduce shading would enhance the ditch network by improving connectivity and its suitability for water vole.</p>	<p><u>British Waterways:</u> This is most favourable in terms of opening up the maximum length of canal to increased water flow, reducing extensive cover by duckweed.</p>
Option 4 (and variations)	<p><u>Passes through and/or adjoins two SINCs:</u></p> <p>Approx 1km of route passes through Cotgrave Colliery (A mosaic of habitats on a former colliery site with unusual plant communities and a notable flora). This route also passes through a large pond.</p> <p>Connection to Grantham Canal is within Grantham Canal Cotgrave (A section of canal with notable emergent and bank-side plant</p>	<p>This route follows the line of a disused railway, a habitat which generally develops into valuable wildlife corridors with potential for a range of protected species. The following potential constraints exist:</p> <ul style="list-style-type: none"> • The disused railway is bordered by dense scrub and lines of trees, all of which could provide nesting opportunities for birds; • Potential loss of unknown bat tree roosts if mature trees need to be removed along the 	<p>It would be possible to provide artificial refugia/hibernacula for reptiles/amphibians in suitable habitats along the route to enhance the habitat for them.</p> <p>The planting up of gaps in hedgerows would improve connectivity and provide wildlife corridors.</p>	

Option number	Non-Stat Designated Sites (SINCs)	Protected Species Records and Protected Species Habitat Potential	Enhancement Opportunities	Consultation Summary
	<p>communities)</p> <p><u>Passes adjacent to three SINCs:</u></p> <p>Approx 200m of the route skirts the eastern boundary of Holme House Grassland (<i>notable neutral grassland</i>). A sliver of this SINC may be lost to this route.</p> <p>Connection to River Trent is on opposite bank to Netherfield Pits (<i>A series of mature lakes in an area of old gravel workings - of faunal and floral interest</i>) and Trent North Bank (<i>Trent-side flood-bank with a characteristic grassland community</i>).</p>	<p>route;</p> <ul style="list-style-type: none"> Railway lines provide good habitat for common reptile species; The banks of the railway may contain badger setts; <p>Option 4b crosses Polser Brook, which is known to support water vole. Additionally a section of Polser brook upstream was found to have habitat potential for white clawed crayfish. Further survey of Polser Brook and adjacent water courses and potential mitigation would be required for these species.</p> <p>Additionally the route passes adjacent to two ponds, which have the potential to support great crested newts, with the railway providing refuge/hibernation opportunities.</p> <p>The route joins Grantham Canal at a point where there are records of a water vole. Additionally there are records of otter within 3km of the connection point to Grantham Canal.</p> <p>Further survey would be required for all these species, and potential mitigation may be required.</p>		
<p>The following additional options are based predominantly on desk study. Field survey did not focus on the direct impact zone of these additional options. Furthermore, the consultation stage did not include these options, so there are no specific comments. However, general comments are applicable to issues related to these options so are included where relevant. The potential constraints and opportunities relevant to these additional options are briefly described.</p>				
Option T1	<p><u>This option does not pass through any SINCs.</u></p> <p><u>This option passes adjacent to three SINCs:</u></p> <p>Approx 300m of this option skirts the western boundary of Gamston Pits (<i>An extensive area of gravel</i></p>	<p>This route passes predominantly through semi improved grassland, species poor semi improved grassland, amenity grassland, and small areas of mixed woodland. The route seeks to follow existing boundary features and topography, including linear vegetation hedgerows and, where possible, retains these features.</p>	<p>As this route follows existing boundary features and topography, the adjacent green infrastructure route could seek to plant up gaps in hedgerows to improve connectivity and provide wildlife corridors.</p>	

Option number	Non-Stat Designated Sites (SINCs)	Protected Species Records and Protected Species Habitat Potential	Enhancement Opportunities	Consultation Summary
	<p><i>workings with associated habitats of open water, marsh, scrub and woodland - of particular ornithological interest)</i></p> <p>The option then passes through</p> <p>Adbolton Ponds (<i>Ponds, surrounded by mature woodland, that display a locally characteristic hydrophilic plant community and are also of zoological interest. One of these ponds is also a great crested newt pond</i>) and</p> <p>Adbolton Marsh (<i>A good mixed habitat association including the scarce Trent-side inundation community type</i>). Potential secondary hydrological constraints</p> <p>Connection to Grantham Canal at Grantham Canal (Bassingfield to River Trent) (<i>An urban stretch of canal with a good aquatic plant community</i>)</p> <p>Connection to River Trent is on opposite bank to Colwick Country Park (<i>A good mixed habitat assemblage primarily of vertebrate zoological interest, but also of value for its invertebrate and plant communities</i>)</p>	<p>There is the potential for badger setts to be located along field boundaries near to hedgerows.</p> <p>Any loss of trees or buildings may result in an impact on bats and birds</p> <p>Any work on field margins may result in loss to rare arable flora.</p> <p>Any loss of hedgerows may result in loss of ecologically significant hedgerows.</p> <p>Losses of grassland may result in impact on reptiles and harvest mice. Additionally there is potential loss of terrestrial GCN habitat.</p> <p>Further surveys for these species and potential mitigation would be required.</p>		
Option H	<p><u>This option passes through three SINCs</u></p> <p>Approx 1km of route passes through a lagoon at Gamston Pits (<i>An extensive area of gravel workings with associated habitats of open water, marsh, scrub and woodland - of particular ornithological interest</i>).</p>	<p>Approximately 1km of this site passes through the A52 lagoon at Gamston Pits, one of only one or two breeding sites in the county for . Deepening the A52 pit would be detrimental to the black-necked grebes. They prefer shallow warm ponds for breeding, with extensive fringe habitat. Scrub removal may also open out areas, removing cover, which has the potential to increase levels of disturbance. Also this species is targeted by egg</p>	<p>Hedgerows could be enhanced (gapped up) and extended to connect to the canal link. This would improve connectivity</p>	<p>Nottinghamshire CC, Natural England, Environment Agency, Rushcliffe Borough Council, County Bird Recorder have all highlighted the value of Gamston pit for birds and in particular breeding</p>

Option number	Non-Stat Designated Sites (SINCs)	Protected Species Records and Protected Species Habitat Potential	Enhancement Opportunities	Consultation Summary
	<p>Approx 0.5km of Option H passes through Holme Pierrepont Country Park (<i>A valuable mosaic of carr, scrub, marginal and open-water habitats around a series of old gravel workings</i>). Route passes through eastern edge of Skylarks nature reserve, and western edge of old gravel workings</p> <p>Connection to Grantham Canal at Grantham Canal (Bassingfield to River Trent) (<i>An urban stretch of canal with a good aquatic plant community</i>)</p> <p><u>This option passes adjacent to one SINC:</u></p> <p>Connection to River Trent is on opposite bank to Colwick Country Park (<i>A good mixed habitat assemblage primarily of vertebrate zoological interest, but also of value for its invertebrate and plant communities</i>)</p>	<p>thieves. Scrub habitat against the wetland fringe is also important for migrant warblers including grasshopper warbler, whitethroat, sedge and reed warbler. Desk study indicates that the complex supports up to 20 Schedule 1 birds.</p> <p>This route could also have implications for waterfowl, and potentially water vole and otter, through direct disturbance and indirectly through changes in hydrology which alter the suitability of the habitat for these species.</p> <p>The southern part of this route passes predominantly through arable fields which may result in following constraints:</p> <p>There is the potential for badger setts to be located along field boundaries near to hedgerows.</p> <p>Any loss of trees or buildings may result in an impact on bats and birds</p> <p>Any work on field margins may result in loss to rare arable flora.</p> <p>Any loss of hedgerows may result in loss of ecologically significant hedgerows.</p> <p>Further surveys for these species and potential mitigation would be required.</p>		<p>black necked grebe.</p> <p>General aspiration from all consultees is for canal link to avoid Holme Pierrepont Complex</p>
Option M	<p><u>Option M passes through two SINCs:</u></p> <p>Passes between two water bodies on the eastern side of Gamston Pits (Blotts Pits) (<i>An extensive area of gravel workings with associated habitats of open water, marsh, scrub</i>)</p>	<p>The majority of this route crosses, follows or runs adjacent to Polser Brook, which is known to support water vole. Additionally the substrate of this section was found to have habitat potential for white clawed crayfish. Further survey and potential mitigation would be required for both these species.</p>	<p>The canal link and parts of the Marina could be designed to include water vole features (e.g. coir rolls, emergent and bank zone planting, penetrable banks for burrowing)</p>	<p>Nottinghamshire CC, Natural England, Environment Agency, County Bird Recorder have all highlighted the value of Holme Pierrepont Complex for a variety of</p>

Option number	Non-Stat Designated Sites (SINCs)	Protected Species Records and Protected Species Habitat Potential	Enhancement Opportunities	Consultation Summary
	<p><i>and woodland - of particular ornithological interest)</i></p> <p>Connection to Grantham Canal at Grantham Canal (Bassingfield to River Trent) (<i>An urban stretch of canal with a good aquatic plant community</i>)</p>	<p>The Marina would result in a large area of arable land being lost. This may result in the following constraints:</p> <p>There is the potential for badger setts to be located along field boundaries.</p> <p>Any loss of trees or buildings may result in an impact on bats and birds</p> <p>Any work on field margins may result in loss to rare arable flora.</p> <p>Any loss of hedgerows may result in loss of ecologically significant hedgerows.</p> <p>Further surveys would be required to confirm actual presence of protected species/habitats and inform mitigation strategies if necessary.</p>	<p>particularly on the off-side. Polser brook could be enhanced for water vole and serve as back water to the new canal link. Enhancement could be achieved through selective vegetation clearance to prevent overshadowing, de-silting and appropriate planting. The land between the canal link and Polser brook could also be enhanced through appropriate planting with species that provide food and shelter for a variety of wildlife.</p> <p>Hedgerows could be planted up around the canal link, and connected to the infrastructure route to enhance connectivity.</p>	<p>birds</p> <p>General aspiration from all these consultees is for the canal link to avoid Holme Pierrepont Complex if possible.</p> <p>Rushcliffe Borough Council highlighted value of Polser Brook for water vole, and aspiration for canal link to avoid water vole habitat.</p>

3.4.2 Summary of Route Options

This section provides a summary of the key constraints and opportunities associated with the options (listed in order of ecological preference). This has been completed as a high level (i.e. broad level) screening based on available information and representative ground truthing:

Canal link route Option T1 is most favorable from an ecology perspective as it avoids SINCS, and follows existing boundary features and topography where possible. The option skirts along the western boundary of Gamston Pits SINC, potentially resulting in some disturbance of the Holme Pierrepont terrestrial vegetation, but is several hundred meters away from the A52 pit (where black necked grebe are known to breed). Protected species potential on field boundaries include badger, rare arable flora, species rich hedgerows, bats. However presence of these species and thus the absolute ecological constraints will require further field survey.

Canal link route Option 3 is the second most favourable from an ecology perspective. This is the shortest route with least land take and habitat loss, and avoids the Holme Pierrepont lagoon complex. The route passes through Abolton Pond SINC which has historic great crested newt records, and mitigation would be required for loss of SINC habitat, and for GCN if still present.

Canal link route Option 4 is the longest route and passes through a disused railway. There are likely to be constraints associated with badger, reptile and potentially other local BAP species. This option connects to Cotgrave Colliery SINC. This option is favoured over the options below as it avoids the Holme Pierrepont lagoon complex, reducing potential ornithological constraints.

Canal link route Option M results in some land take of the eastern extent of Gamston Pits, several hundred metres away from the A52 pit where black necked grebe are known to breed so is unlikely to result in impact to this species, however consultation with the county bird recorders suggests that the lagoons to the east of Gamston Pits have developed into an area of ornithological value for wader passage and summer migrants, providing a contrast to habitats found on the A52 pit. Option M will also affect a large portion of Polser Brook, which is likely to result in impacts on water vole, and potentially white clawed crayfish and otter. It would be preferable to retain the natural channel of Polser Brook, as a canal replacement would differ in its habitat (this has been reiterated through consultation). Where Option M runs adjacent to Polser Brook, there is likely to be disturbance during construction, however there is also potential for enhancement. The canal link (including the new marina) would complement Polser Brook by providing an additional water course for water vole to use, and for otter to disperse along providing appropriate features are incorporated into the design. The new marina would also provide an additional water body adjacent to Holme Pierrepont Complex, which has the potential to benefit wintering bird species providing appropriate features are incorporated into the design. There is potential loss of hedgerows/boundary features, but these could also be enhanced as part of the scheme.

Canal link route Option 1 passes through two SINCS (Gamston Pits, Holme Pierrepont). The main constraints relate to losses of habitats within the SINCS, and potential disturbance to breeding and over wintering birds. The route passes through Blotts Pits and avoids the A52 pit, however consultation with the county bird recorders suggests that Blotts Pits have developed into an area of ornithological value for wader passage and summer migrants, providing a contrast to habitats found on the A52 pit. Whilst this option is unlikely to impact upon breeding black necked grebe, it is likely to be contentious, and constrained by other breeding and over wintering Schedule 1 and Red Data list species. Additional impacts may relate to water vole, otter and GCN. Mitigation is likely to be required for one or more of these species.

Canal link route Option 2 passes through the north of Gamston Pits SINC. The main constraints relate to losses of habitats within the SINC and potential disturbance to breeding and over wintering birds (including Schedule 1 and Red Data list species). The route avoids the A52 pit so is unlikely to affect breeding black necked grebe initially but would open up the Holme Pierrepont complex to future disturbance. Additionally the route would open up three undisturbed lagoons to the north of the SINC, significantly affecting the habitat of these lagoons and potentially disturbing a variety of other Schedule 1 and Red data list birds and other protected species including water vole, otter and GCN. This option is likely to be contentious and require mitigation for one or more of these species.

Canal link Option H is likely to be the most contentious as it will significantly affect the largest number of ecological constraints. The route passes straight through the A52 pit which forms part of the Gamston Pits SINC, and is considered the most valuable of the ornithological sites within the Holme Pierrepont complex area due to breeding black necked grebe, and a regular visiting site and potential breeding ground for other Schedule 1 and Red data list species. The need to avoid the Holme Pierrepont complex, and in particular the A52 pit has been reiterated through consultation. Deepening the A52 pit for recreational boat use would be detrimental to the black-necked grebes. They prefer shallow warm pond for breeding, which has extensive fringe habitat. Scrub removal may also open out areas, removing cover, which has the potential to increase levels of disturbance. Also this species is targeted by egg thieves. Scrub habitat against the wetland fringe is also important for migrant warblers including grasshopper warbler, whitethroat, sedge and reed warbler. Opening up the A52 pit for recreation may also disturb other protected species including water vole, otter and GCN during construction and operation, however connecting the A52 pit to Grantham Canal may also result in future benefit to water vole, otter, bats and some bird species by providing a new wildlife corridor and aiding dispersal through the site area into the A52 pit. The southern part of the option skirts along field boundary features. Protected species potential on field boundaries include badger, rare arable flora, species rich hedgerows, bats. This option is most likely to be subject to objection from statutory bodies. Mitigation is likely to be required for loss of SINC habitat, disturbance to black necked grebe and other Schedule 1/Red data list birds, and potentially other protected species.

4.0 CULTURAL HERITAGE

4.1 Methodology

4.1.1 The Study Area

The Study Area covers an area of c. 17.5km². This report is based on the results of a search of the Nottinghamshire Sites and Monuments Record (NSMR) and National Monuments Record.

4.1.2 Consultation

Ursilla Spence, Senior Archaeologist for Nottinghamshire County Council was consulted during the preparation of this document. Jason Mordan of the Environment Team at Nottinghamshire County Council was also consulted on matters regarding built heritage.

4.1.3 Site Visit

A site visit to assess the current ground conditions and archaeological and historical potential of the proposed River Trent to Cotgrave Green Infrastructure Project area was undertaken. All observations on the present layout of the area are based on the site visit.

4.1.4 Sources

Nottinghamshire County Council Sites and Monuments Record

Records of all known sites and find spots of archaeological/historical significance within the Study Area were obtained from the NSMR at Trent Bridge House, Nottingham. These have been identified in this report by a Scott Wilson Project Number and are represented on **Figure 4.1**; they are referred to in bold in the text and catalogued in **Table 4.1** in **Appendix D**.

National Monuments Record

Records of all known sites and find spots of archaeological/historical interest within the Study Area were also obtained from the National Monuments Record (NMR).

4.2 Desk Studies and Survey Results

4.2.1 Archaeological and Historical Background

Evidence for early prehistoric activity within the Trent Valley spans the Lower Palaeolithic to the Mesolithic; with an apparent hiatus, suggested by an absence of evidence, between the Lower Palaeolithic and the Late Upper Palaeolithic. Lower Palaeolithic flint artefacts have been encountered within river terrace deposits such as the Etwall Sand and Gravel, the Egginton Common and

Balderton Sands and Gravels. Scattered surface finds have been attributed to the Late Upper Palaeolithic and a number of sites suggesting open-air settlement or specialised activity foci from this period are also known.

The increasing frequency of developer funded archaeological investigations since 1990 has identified a significant number of previously unknown activity foci and background artefact scatters attributed to the Mesolithic in the Valley, demonstrating that occupation of the landscape at the time was denser than hitherto thought (Knight and Howard 2004).

An increasing body of palaeo-environmental data suggests that progressive forest clearance was taking place from the early Neolithic to the early Bronze Age. The buried landscapes of tree trunks encountered in the middle and lower reaches of the Trent Valley support this hypothesis. Forest clearance would have made way for the cultivation of crops such as emmer wheat and the grazing of domesticated livestock such as cattle and sheep. This economy would have been complimented by the exploitation of wild resources with a continuation of some hunting and gathering practices. The wetland environments along the river would have provided a rich resource base for the exploitation of fish, wildfowl and building materials; with the river used as a convenient communication route between dispersed communities.

Evidence from archaeological fieldwork suggests a general increase in population density from the early Neolithic to early Bronze Age. Settlement evidence tends to be limited with sites usually comprising dispersed scatters of post-holes, pits and gullies. Funerary practices are represented by barrows and crop-marks from the Valley hint at the presence of large scale 'ritual' monuments such as causewayed enclosures, cursus and henges.

Later pre-history sees a major expansion of settlement and increasing enclosure of the landscape, most pronounced during the late Iron Age. Evidence suggests this was accompanied by renewed and extensive clearance of woodland from the floodplain and river terraces. The establishment of rectilinear enclosures, field systems and major linear boundaries implies a more tightly controlled environment with careful allocation of arable and pasture land. Settlement evidence for the middle and late Iron Ages is extensive. Investigation of many of these sites has also identified earlier middle Bronze Age to early Iron Age activity, which is often more illusive. This suggests continuation of settlement at some locations over a considerable time span.

The expansion of settlement and land clearance continued into the Roman period. The arrival of direct Roman influence appears to initialise a move towards a hierarchical settlement structure including 'small towns', villas, nucleated villages and single farmsteads. There appears to be a gradual retreat from lower lying areas, possibly in response to increased flooding. During the early stages of Roman occupation the Trent Valley formed a strategic barrier and a key location for launching campaigns against the Brigantes tribal area to the northwest. A network of roads linked a series of forts along the Valley, with the Fosse Way forming a major military route-way between the legionary fortresses at Exeter (Isca) and Lincoln (Lindum). Archaeological evidence suggests that the

majority of these forts had fallen out of military use by the end of the first century AD, with several forming foci for later civilian settlements. Throughout the Roman period the Trent Valley continued to form a transitional zone between the settled network of Roman towns, villas and rural settlements of the south and east, and the more militarised zone to the north and west until the Roman abandonment of Britain in the 5th century.

Nottingham originated as a Saxon settlement in the 6th century AD. The place name derived from the Anglo-Saxon Snotingaham meaning the ham of Snot's people (Ekwall 1985). Nottingham's growth into a town was probably due to its location on the first fordable crossing of the River Trent. Cotgrave is listed in the Domesday Book as Godegrave suggesting it was also a settlement of some size at this time and also of Anglo-Saxon origin. As is the case with Holme Pierrepont, which in the Domesday Book is referred to as Holmo; and Gamston, in the Domesday Book called Gamelestune (Ekwall, 1985).

Evidence for an early Anglo-Saxon presence in the Trent Valley is dominated by funerary activity. Cemeteries and isolated burials dating to the 5th to early 7th centuries occur throughout the valley, with an apparent hiatus in burial evidence until around the 10th century when unfurnished churchyard burial practices were established. The limited evidence for settlement activity suggests a dispersed settlement pattern, rarely demonstrating a continuation in use of Roman occupation sites. Conversely, a comparison of early Saxon church sites with Romano-British activity suggests that there may be evidence for the appropriation of Roman structural remains as symbols of authority. The 7th century also saw the establishment of monasteries within the Trent Valley, which held extensive agricultural estates managed from granges within and outside the Valley.

The later medieval period was characterised by settlement on the larger gravel islands and terraces, leaving the floodplain as meadowland. Evidence for this settlement pattern has been largely based on the analysis of historic maps and the current layout of villages, with very few sites excavated. There appears to be an expansion in rural settlements up to about 1300AD, possibly linked to the prosperity suggested by a rise in market charters. With the advent of the plague coupled with climatic deterioration many of the villages then experienced a shrinkage or desertion, as seen at Adbolton.

Little archaeological work in Nottinghamshire has been focused on the period 1500 to 1750 possibly because of the comprehensive wealth of historical documentation which is available. The pattern of settlement during the 16th, 17th, and early 18th centuries continued to be that which was established during the Late Saxon and Early Medieval periods. Until the latter end of the post-medieval period, settlement remained largely based in villages. New farms beyond the village envelopes within or adjacent to, their own discrete, perhaps ring-fenced, land holdings do not appear generally until the 18th century.

With reduced population and social change from the later Middle Ages there was a swing away from arable production towards animal husbandry. Enclosure is the dominant theme in the Nottinghamshire landscape in the period between the late

15th century and the late 19th century. Although commonly associated with the later 18th and 19th centuries, the reality was a steady and gradually increasing trend towards enclosure from 1500 to 1750.

Communications were a serious problem in the period. Water transport was used as far as possible. The Trent had been in extensive use for transport throughout the medieval period, and was navigable as far as Nottingham. The Grantham Canal was constructed between 1793 and 1797 linking Nottingham to Grantham and stimulating an increase in trade, industry and communications.

The canal was primarily constructed to transport coal, but also carried various other bulk materials including stone and lime. It was 33 miles in length and rose 140 feet through 18 locks, the canal prospered in the early 19th century. The rise of the railways, and the construction of the Grantham to Nottingham railway in 1850, led to a decline in water-borne transport. However, the Canal remained in use until the 1930s (<http://www.granthamcanal.com/>).

The modern period brought with it increasing industrialisation, but little of this appears to have impacted on the Study Area, which remained predominantly agricultural. Quarrying is evident on a local level. In the modern era the villages expanded in size and now contain commuter zones for Newark and Nottingham. The agricultural fields in many areas have been rationalised and modernised.

4.3 Baseline information

Locations of Listed Buildings, Archaeological sites and Find spots are shown on Figure 4.1, with details presented in Appendix D of this feasibility report. In the subsequent text these are referred to by a Scott Wilson project number in bold.

4.3.1 Archaeology

There are no statutorily designated archaeological sites and a total of 138 undesignated archaeological sites and find spots are recorded within the Study Area on the NSMR and NMR.

4.3.2 Built Heritage

A number of built heritage receptors have been identified within the Study Area, as outlined in the table in Appendix D. These comprise 14 listed buildings, one registered park and garden, 19 locally listed buildings, and a number of structures and buildings of local and historical importance as identified on the Nottinghamshire SMR. The majority of the listed and locally listed buildings are located within the settlements of Holme Pierrepont, Cotgrave and Gamston. The structures identified on the SMR are associated primarily with Nottingham Airfield, the River Trent and Grantham Canal. There are no conservation areas within the Study Area.

4.3.3 Historic Landscape

The landscape character of the Study Area is predominately one of large modern open fields. Major route-ways are predominantly orientated west to east, with travel north-south probably historically restricted by crossing points of the River Trent. The historic settlements of Holme Pierrepont, Radcliffe-on-Trent, Cotgrave, Bassingfield and Gamston are fairly evenly spaced throughout the landscape, largely respecting their historic distribution. The now disused mineral railway embankment is a visible feature within the landscape and forms a linear boundary within the landscape.

To the north of the A52 a number of lagoons, the result of modern gravel extraction, form a key feature of the landscape. The National Watersports Centre at the northern extent of the Study Area forms a key feature, juxtaposing with the historic park and grounds of Holme Pierrepont Hall. To the south of the A52, a number of small lagoons suggest that although quarrying has taken place it has been of considerably less intensity and extent than that to the north. Nottingham Airport forms a key historic feature within the landscape and although not immediately visible retains many of the component features that made up the World War II airfield.

4.4 **Summary of Constraints and Opportunities**

4.4.1 Archaeology

The feasibility study has identified a number of constraints and opportunities for the green infrastructure corridor. In general terms the Study Area exhibits a relatively high potential for evidence of settlement activity during the Iron Age and Roman periods and settlement sites are known at **(107)**, **(108)**, **(109)**, **(110)**, **(116)** and **(117)**. Where any route traverses undisturbed ground there is likely to be a requirement for further archaeological work in the form of desk-based assessment and field survey.

In addition, previous discoveries have demonstrated the potential that the alluvial deposits along the banks of the River Trent have for preserving organic material. It would be difficult to establish the presence of such archaeological remains without intrusive field investigation prior to construction. If such remains are encountered they are unlikely to have implications for any Masterplan, however if important discoveries are made there may be a significant impact on project costs.

There are a number of important sites that have the potential to impose constraints on the route options. These comprise the site of a Roman villa **(115)** to the west of the National Water Sports Centre; a Neolithic long barrow **(82)** to the north of Holly Farm, Bassingfield; the site of an Anglo-Saxon cemetery to the northeast of Bassingfield **(127)**; the deserted medieval villages of Adbolton **(129)**, Holme Pierrepont **(137)** and a third located immediately to the south of the National Watersports Centre **(131)**; the site of St James' Chapel, Bassingfield **(133)** and possible associated cemetery; and a post-medieval moated enclosure **(146)**. Some of these sites would also provide opportunities for integration of the

area's archaeological resource into the green infrastructure corridor, possibly by utilising interpretation boards.

A number of features of unknown date may be of potentially archaeological nature and so also result in constraints to route options. If the green corridor was to affect them, further archaeological field work would be required to characterise these sites. They include a number of earthworks known to the north of Gamston **(194)**, **(195)** and **(196)**; cropmarks of an enclosure and ring-ditch to the east of Bassingfield **(187)**; the site of a glacial erratic around which was found a large scatter of flints and Neolithic and Roman potsherds **(186)**; and flood defences and a causeway on the banks of the River Trent **(168)** and **(169)**.

Where quarrying has resulted in the formation of lagoons, there is considered to be no potential for encountering archaeological remains. Making use of these features within the green corridor would reduce the potential for encountering as yet unknown archaeological remains.

4.4.2 Built Heritage

With regard to built heritage, the greatest constraints are where the route affects statutorily designated listed buildings and registered parks and gardens. A reduced risk would be involved where the route affects locally listed buildings and those buildings identified on the Nottinghamshire SMR.

This effect can be physical or visual. Any development that physically affects the historic fabric of a building should be avoided. If unavoidable, it would be necessary to prove that there is no alternative to demolition, or that the structure is in such a poor condition that it cannot be retained. Mitigation could involve a recording scheme to preserve by record the historic interest of the structure.

Development in close proximity to a built heritage receptor can affect its setting. Such effects should again be avoided, especially if the route is proposed in the immediate vicinity of the building. It is often possible, however, to reduce the effect through schemes such as planting vegetative screening.

None of the proposed routes physically affect any built heritage receptors. There are, however, a number of visual effects. These are discussed below.

The greatest concentration of statutorily designated structures are located within Holme Pierrepont (nine listed buildings **(1, 2, 4, 5, 6, 16, 18, 19, 24)**, four locally listed buildings **(23, 69, 70, 71)** and a registered park and garden **(3)**). A route at a similar distance from Holme Pierrepont as the proposed Route Options, however, would only affect the receptors slightly. Such route options are screened by present mature vegetation, but, dependent on the design of the development, it may be necessary to provide further screening.

Holme House **(21)**, Cotgrave Place Farmhouse **(17)** and Simkins Farmhouse **(20)** are all important grade II listed structures in the landscape. The setting of Holme House extends primarily to the west. It is degraded by the busy A52 which is set to the immediate north. A route to the north would not affect its

setting; however, one to the south, east or west could. Screening could present an appropriate mitigation strategy at Holme House. Cotgrave Place Farmhouse is set beside modern housing, car parking and a golf course, such that its setting is heavily modernised. The route may have a slight visual effect on the farmhouse, and may require mitigation. Simkins Farmhouse fronts onto Adbolton Lane to the south, and retains associated out-buildings to the north and west. It is presently vacant, and in a very poor structural condition. A route in proximity to this Farmhouse would affect its setting, and would require mitigation.

The setting of Hall Farmhouse **(7)**, the four locally listed buildings **(65, 66, 67, 68)** and the Chapel **(72)** in Gamston have been compromised by the surrounding modern housing development, such that the construction of a green infrastructure route would most likely benefit the setting of the buildings.

A number of structures along Grantham Canal **(8, 9, 10, 11, 12, 14, 15, 27)** and River Trent **(13, 25, 29)**, incorporated on the NSMR, and the grade II listed railway bridge **(22)** may be affected by the route. These structures, however, can all be characterised as transport infrastructure. The construction of a green infrastructure route would therefore maintain their context and would not have an adverse effect on their setting.

The route may slightly affect the setting of the undesignated smithy **(26)** or brick building **(30)**. This is reduced by the low significance of the structures, but may require mitigation through appropriate screening.

The locally listed structures **(54 to 64)** and Smithy identified on the NSMR **(28)** in Cotgrave, as well as the structures identified on the NSMR at the airport **(31 to 53)** are all located to the south of the Grantham Canal. Assuming that construction will not extend to the south of this Canal, these structures will not be affected by the scheme.

4.4.3 Historic Landscape

The nature of the landscape is such that in general terms the green infrastructure corridor is unlikely to be constrained by historic landscape character assets.

4.5 **Review of Canal Link Route Options**

The following provides a summary of the potential cultural heritage constraints and an indication of the type of archaeological and built heritage risk that could be encountered.

4.5.1 Trent Link Option 1 – Polser Brook to Holme Pierrepont Eastern Route – and variations

Archaeology

A large portion of the central section of route Option 1 has been impacted by quarrying, where this has occurred there is considered to be no constraints of an archaeological nature.

The southern third of the route between the Grantham Canal and the A52 passes through an area that has revealed archaeological evidence dating from the prehistoric to the medieval period. Evidence for an Anglo-Saxon cemetery has been encountered in fields to the east of the route, together with flint scatters and pottery of prehistoric and Roman date. To the west of Polser Brook, cropmarks of a circular enclosure/ring-ditch, suggestive of prehistoric activity, have also been identified. In addition the earthwork remains of ridge and furrow cultivation exist to the south of Bassingfield. No archaeological sites are recorded on the immediate route. The presence of archaeological remains in close proximity to the route suggests that there is a relatively high potential for archaeological deposits to be encountered. In particular the known Anglo-Saxon funerary activity, if it extended into the route corridor, could have significant implications for this route option.

The northern section of the route passes to the west and north of Holme Pierrepont. Archaeological evidence for prehistoric and Romano-British settlement has been recorded in this area by work conducted in advance of quarrying and it is likely that similar remains would be encountered in areas that have not previously been disturbed. In addition the route passes the site of Holme Pierrepont deserted medieval village, and the route has the potential to encounter related evidence.

The route would impact on earthworks and flood defences along the River Trent immediately to the east of the National Watersports Centre. This area, formerly a meander of the Trent, has also proven to be productive in producing preserved organic material of prehistoric and Roman date, including three dug-out canoes, a wooden beam and a wheel. Further finds include Bronze Age metal work and Paeolithic artefacts. In view of this recorded evidence and the potential for further as yet unknown archaeological deposits to be present, the northern most section of route Option 1 can be considered to represent a significant risk in archaeological terms that will form a constraint to proposals.

Variations 1c and 1b exhibit no change from an archaeological perspective on route 1. Variation 1d is likely to have a lesser effect on potential archaeological remains associated with and surrounding the historic settlement of Bassingfield. Variation 1a utilises further existing bodies of water and as such reduces the risk of encountering potential archaeological deposits close to the Trent, in particular the likelihood of encountering well preserved organic material.

Built Heritage

Route Option 1 runs to the north and west of the Grade I St Edmund's Church **(1)**, and Holme Pierrepont Hall (Grade I) **(2)**, the associated registered park and garden (Grade II) **(3)**, and the further seven listed **(4, 5, 6, 16, 18, 19, 24)** and four locally listed **(23, 69, 70, 71)** buildings in Holme Pierrepont hamlet. It is therefore possible that the route would slightly affect the receptors, in particular the listed Holme Pierrepont Hall **(2)**, St Edmund's Church **(1)** and Holly Lodge **(16)**, the locally listed Old Rectory **(70)**, and the registered park and garden **(3)**. The area is largely green in character, retaining high levels of mature vegetation. Dependent on the final design of the development, this vegetation may screen

much of the route. The area to the north and west contain a number of water bodies, including both former quarries and the lakes of the national watersports centre. There is therefore already a precedent for water features in this area, which reduces the effect the proposed development would have on the registered park and listed and locally listed buildings. Furthermore, the development may in fact have a beneficial impact on the area by enhancing this water-based character.

The route runs to the west of the Grade II Cotgrave Place Farmhouse **(17)**. Views to the west extend over car parking, some modern housing and a golf course, towards open fields. The landscape is interspersed with hedging and mature vegetation. The immediate setting of the Farmhouse is compromised by the modern housing and car parking. The likely low-level nature of the proposed development also suggests that the existing mature vegetation would adequately screen distant views of the route from the Farmhouse, so that the development would not affect its setting.

The route also runs to the west of the Grade II Holme House **(21)**. Located at the junction between the A52 and Stragglethorpe Road, the main elevation to the house faces west, towards the proposed route. The setting of Holme House is already compromised by the busy A52, located to its immediate north. Views to the west, over agricultural land, are obstructed by high vegetation. This, coupled with the likely low-level nature of the development, suggests that the setting of Holme House would not be affected by this route option.

A smithy **(26)**, identified on the SMR, is situated to the west of the route. Fronting directly on to the A52, the setting of this building has thus already been compromised. The construction of the proposed route would, however, affect the setting of the smithy.

The swing bridge **(13)**, identified on the SMR, is located close to the junction between the proposed route and the Grantham Canal. The route would affect the setting of the bridge. However, the structure is not statutorily protected, and the nature of the proposed development would maintain its context. Therefore, assuming there is no physical affect on the structure during construction, the development would have a limited, if not beneficial, affect on its setting.

A number of minor alternatives have been proposed (a, b, c and d). Alternative (a) is set slightly further from Holme Pierrepont, and therefore will have a lesser effect on the historic structures it contains, listed buildings **(4, 5, 6, 16, 18, 19, 24 and 4)** and locally listed buildings **(23, 69, 70 and 71)**. Alternative (c) brings the route closer to the undesignated smithy **(26)**, and would therefore increase the affect on this structure. Alternative (c) would lessen the affect on the undesignated swing bridge **(13)**. The alternative junction with the Grantham Canal (d) brings the route closer to Cotgrave Place Farmhouse **(17)**, but it is still at such a distance as to not have a great effect on the listed building's setting. The alternative junction is also set to the west of a canal bridge **(12)**. The development, however, is in keeping with the character of this structure, and therefore maintains its setting.

Historic Landscape Character

Route Option 1 incorporates existing water-bodies and follows existing watercourses for much of its length. As such it is considered to have little impact on the local historic landscape character.

4.5.2 Trent Link Option 2 – Polser Brook to Holme Pierrepont Western Route – and variations

Archaeology

As with route Option 1 above, the southern section of the route between the Grantham Canal and the A52 passes through an area that has revealed archaeological evidence dating from the prehistoric to the medieval period, including an Anglo-Saxon cemetery, scatters of prehistoric flints and cropmarks of a ring-ditch suggestive of prehistoric activity.

As the route moves north beyond the A52 it passes through an area that contains evidence for Iron Age and Romano-British settlement activity. It passes close to a Neolithic barrow to the west and a post-medieval moated site to the east. Turning west it utilises a number of lagoons, the result of quarrying, that preclude the potential for archaeological remains. The route then passes over and will impact the site of a well depicted on historic mapping and an area that has demonstrated evidence for Iron Age and Romano-British settlement activity.

As it turns north to join the River Trent, route 2 passes through the known site of a Roman villa. The presence of the villa suggests that the route has a high potential to encounter remains of Roman date. In addition the possibility of water-logged archaeological deposits along the bank of the River Trent, similar to that of route 1 must also be considered possible.

Variation 2a will affect the same archaeological resource as 2, but will avoid the Roman villa site **(115)**. The variations 2b and 2c are the same as those for route 1 discussed above.

Built Heritage

The southern portion of this route is identical to that of Route Option 1. As such, it would display the same relationships with the Grade II Cotgrave Place Farmhouse **(17)**, Grade II Holme House **(21)**, the smithy **(26)** and swing bridge **(13)** (identified on the NSMR) as described above.

To the north, the route continues north, before turning west to pass to the south of the National Water Sports Centre. No built heritage receptors will be affected in this area.

A number of minor alternatives have been proposed (a, b and c). Alternative (a) has no greater effect on any built heritage receptors. Alternative (b) brings the route closer to the undesignated smithy **(26)**, and would therefore have an increased affect on this structure. Alternative (c) would lessen the effect on the

undesigned swing bridge **(13)**. Although the junction with the Grantham Canal would bring the route 1c closer to Cotgrave Place Farmhouse **(17)**, it would still be at such a distance as to not have a great effect on the listed building's setting. The alternative junction is also set to the west of a canal bridge **(12)**. Assuming that the development would not physically affect the bridge, it is in keeping with the character of this structure, and therefore maintains its setting.

Historic Landscape Character

Route Option 2 would have little impact on the local historic landscape character. It utilises existing water bodies and watercourses for much of its route and does not impact on any historic landscape features.

4.5.3 Trent Link Option 3 – Gamston Bridge to Adbolton Route

Archaeology

Route Option 3 passes close to the known remains of Adbolton deserted medieval village and in particular the site of the medieval church. It is not known at present if the church had an associated graveyard. The route also passes through earthwork remains of medieval ridge and furrow to the northwest of Adbolton. In addition a number of linear earthworks of unknown date exist to the north of Gamston, and artefact scatters of worked flint, and medieval and post-medieval material have been found to the north of Gamston. The presence of these features and material suggest that route 3 may encounter as yet unknown archaeological deposits to the north of Gamston.

Built Heritage

The junction between the Grantham Canal and Route Option 3 is located to the north west of the historic core of Gamston. This area contains the grade II listed Hall Farmhouse **(7)**, four locally listed structures **(65, 66, 67, 68)** and a Chapel **(72)** (identified on the NSMR). However, this area is surrounded by modern housing development, so that there is no visual relationship between the route and these receptors.

A brick building **(30)**, identified on the Nottinghamshire SMR as of probable 20th century date is set to the north of Gamston. This fronts directly on to a main road, close to the roundabout of the A52, such that its setting is already compromised by modern road infrastructure and high levels of traffic. Route Option 3 is situated at some distance to the west of the building. The visual relationship between the structure and proposed route is further degraded by the junction between the A52 and Adbolton Lane, and the modern housing of Gamston, such that the route is unlikely to affect the setting of this building.

Simkins Farmhouse **(20)**, is listed at Grade II, and located on Adbolton Lane, to the east of proposed route option 3. The building is currently in a very poor condition. It is surrounded by a number of associated out-buildings to the north and west. The route runs in close proximity to the listed structure, and would alter its setting. The development is likely to be low-level in nature, however, and

would therefore only slightly affect the setting of the Farmhouse. It is also possible that the construction of a green infrastructure route would benefit the setting of the structure, and even form an economic driver for the repair and re-use of the building.

Historic Landscape Character

Route Option 3 runs through the outskirts of what is predominantly a landscape of urban character, as such the introduction of a green corridor is likely to alter the local character of the area. At present there is a gradual transition from urban to rural landscape moving west to east from Nottingham. Route Option 3 may create a clearly defined boundary altering the perception of the change from what is an historically urban area to that of a rural nature.

4.5.4 Trent Link Option 4 – Cotgrave to Radcliffe-on-Trent (Former mineral railway track)

Archaeology

Route Option 4 is not constrained by any known archaeological assets. The baseline research has demonstrated that the banks of the River Trent have the potential to preserve archaeological remains; particularly organic material of prehistoric and Roman date, for example the dug-out canoes, recorded to the north of Holme Pierrepont. In view of this, the northern most section of route 4 between the river and the disused railway is considered to have the potential to encounter archaeological remains, these are unlikely to constrain design options. If important organic materials are encountered these would have implications for project cost in mitigating the impact of the proposals on them.

The disused railway is not listed as an archaeological site on the NSMR and so its removal is unlikely to form a constraint in archaeological terms. There is currently no information on the extent to which the construction of the embankment for the railway has precluded the potential for as yet unknown archaeological remains to exist below it.

If the embankment was to be re-used for the construction of a canal then this construction would not impact on deposits with the potential to contain archaeological remains. If the embankment was to be removed prior to the construction of a canal, this may disturb deposits with the potential to contain archaeological remains.

Variations 4a and 4b divert from the existing railway embankment and as such traverse undisturbed ground. As such they have the possibility of encountering as yet unknown archaeological remains.

Built Heritage

This route runs to the east of the Grade II Cotgrave Place Farmhouse **(17)**, Holme House (Grade II) **(21)**, as well as Cotgrave Bridge **(11)** and two canal locks **(14 and 15)**, which are identified on the NSMR. Views between the

proposed route and Cotgrave Bridge and the canal locks are screened to a degree by mature vegetation and hedging. Furthermore, as the bridge and locks are canal structures, the development is in-keeping with their character. The development would therefore not affect their setting.

The Grade II Cotgrave Place Farmhouse **(17)** is located on higher ground, at a substantial distance to the west of the proposed route. The ground level falls away as it approaches the route location, such that it is not visible from the Farmhouse. There is therefore no visual relationship between the two.

Holme House **(21)** is listed at Grade II, and located at the junction between the A52 and Stragglethorpe Road, facing west onto Stragglethorpe Road. Thus its outlook is to the west, rather than towards the route. A number of buildings are located to the east and south of Holme House, alongside mature vegetation, which further blocks views between the House and route. Dependent on the design details, a visual relationship with Holme House is therefore unlikely.

The route runs to the southeast of the Grade I St Edmund's Church **(1)**, the Grade I Holme Pierrepont Hall **(2)**, the associated registered park and garden (Grade II) **(3)**, and the further seven listed **(4, 5, 6, 16, 18, 19, 24)** and four locally listed **(23, 69, 70, 71)** buildings in Holme Pierrepont hamlet. The area is largely green in character, retaining high levels of mature vegetation. Dependent on the final design of the development, this vegetation may screen much of the route. However, as the route utilises the route of a former embanked railway line, and is therefore likely to be at a raised level, it is possible that the route would have a slight effect on the setting of these receptors, in particular the listed Hall Cottage **(19)**, and the locally listed The Firs **(71)** and Beaton Cottages **(23)**.

A Grade II listed railway bridge **(22)** is located to the northwest of the route towards its northern terminus. The bridge is at a distance from the proposed route, and thus is unlikely to be physically affected by the development. This area already incorporates three railway routes (used and disused), and a navigable river, and is thus characterised by transport infrastructure. As such, the construction of a canal would add to the present character of the setting of the listed bridge, and, assuming there will be no physical effect, would have no adverse effect on its setting.

Two minor alternatives to route 4 have been proposed (a and b). Neither has any greater effect on the built heritage receptors.

Historic Landscape Character

The railway embankment forms a characteristic feature within the local landscape, and represents an historic route-way. If the embankment is to be retained and re-used as a canal this would re-establish this historic route-way. The removal of the embankment would represent a major impact on a locally important historic landscape asset. The removal of the embankment is unlikely to form a significant constraint due to its low asset value.

Ursilla Spence, Archaeologist for Nottinghamshire County Council, stated her preference for route Option 4 as it has the least effect on the known and potential archaeological resource.

4.5.5 Route Option H

Archaeology

This route passes through fields to the west of Holme Farm and, before crossing the A52, traverses a site of known Iron Age and Romano-British settlement activity **(117)**. Variation H will also affect the Iron Age/Romano-British settlement site **(117)**. It will pass to the east of the Roman villa site **(115)**.

Built Heritage

This route runs to the east of Canal Bridge **(27)**. However, the nature of the proposed development would maintain the context of the Canal Bridge, and would therefore not have an adverse effect on its setting.

The route also runs to the east of the historic village core of Gamston. Any visual relationship between the historic structures in Gamston (listed Hall Farmhouse **(7)**, and four locally listed buildings **(65, 66, 67, 68)** and the Chapel **(72)**) and the route is compromised by the surrounding modern housing and by the busy A52, which bisects the landscape between the route and Gamston.

Historic Landscape Character

Route Option H would have little effect on the historic landscape character of the area.

4.5.6 Route Option T1

Archaeology

This route option represents a variation on route options H and 3. It would affect the known Iron Age/Romano-British settlement site **(117)** and the site of a Second World War heavy anti-aircraft battery **(156)**. As the route joins the Trent it passes between the remains of Adbolton deserted medieval village **(129)** and the site of a Roman villa **(115)**. It does pass close enough however, to enable the sites to be incorporated as features along the route. This could be achieved through the use of interpretation boards.

Route option T1a represents a variant on option T1. T1a passes to the west of the National Water Sports centre and through an area that contains the known remains of a Roman villa **(115)**. This site represents one of the more important archaeological remains within the Study Area and as such is likely to be a constraint on route option T1a.

Built Heritage

Route Option T1 retains the same route to the south as H, but branches off to the north, running further to the west, and joining the River Trent at the same location as Route Option 1. In addition to those affects described above for the Canal Bridge and for Gamston, this route runs closer to the listed Simkins Farmhouse **(20)**. Any visual relationship between the farmhouse and route is reduced by the presence of modern houses in this area, such that the route would not adversely affect the setting of this building.

Historic Landscape Character

This route option is likely to have a minimal impact on the historic landscape character of the area.

4.5.7 Route Option M

Archaeology

This route option comprises that part of the link which would lie to the north of the A52 and which is based on a proposal by Mosaic Estates.

The site of the marina suggested on the Mosaic route covers an area to the south of Holme Pierrepont that has the potential to contain evidence of Iron Age and Romano-British settlement activity. If such archaeological remains were to be present the marina would have a considerable effect on these deposits. The link between the potential marina site and the River Trent contains find spots suggestive of the potential for Bronze Age and Neolithic activity to exist along its route. In addition the possibility of water-logged archaeological deposits along the bank of the River Trent, similar to that of route 1, must also be considered possible.

Built Heritage

This route runs to the east of the historic Holme Pierrepont, and proposes the construction of a Marina to its south. This route would have a slight effect on the setting of listed structure Hall Cottage **(19)**, and the locally listed The Firs **(71)** and Beaton Cottages **(23)**. This area retains high levels of mature vegetation which would act to screen the route. However, more screening may be required to adequately mitigate any adverse effect on the setting of these receptors.

Historic Landscape Character

The marina associated with the Mosaic option would introduce a new relatively large body of water that is likely to affect the landscape setting of the historic settlement of Holme Pierrepont.

4.5.8 References

Ekwall, E. 1985, *The Concise Oxford Dictionary of English Place-names*. Oxford at the Clarendon Press

Knight, D. and Howard, A. J. 2004, *Trent Valley Landscapes: The Archaeology of 500,000 Years of Change*. Heritage

Williams, A. and Martin, G. H. 2002, *Domesday Book: A Complete Translation*. Penguin Books

Electronic Resouces

<http://www.granthamcanal.com>

5.0 LANDSCAPE

5.1 Methodology

5.1.1 Guidance

The approach to this assessment is in part based upon the principles of Landscape and Visual Impact Assessment methodologies. As such, this study has been undertaken in accordance with the following published guidance:

- Guidelines for Landscape and Visual Impact Assessment, 2nd Edition (2002) Landscape Institute and the Institute for Environmental Management and Assessment.
- Guidelines for Landscape Character Assessment, (2002) Countryside Agency
- Guidelines for Environmental Impact Assessment (2004) Institute for Environmental Management and Assessment.

For the purposes of the assessment, a clear distinction is drawn between landscape and visual impacts as follows:

- **Landscape impacts:** These relate to the impacts of the proposals upon the physical structure of the area, the sequence of spaces and built forms, harmonious compositions of spaces and built forms, either accidental or designed, and taking into account the effects of planned future development.
- **Visual impacts:** These relate to the changes arising from the proposals to individual receptors' views of that landscape (e.g. local residents or passing motorists).

5.2 Desk Studies and Survey Results

5.2.1 Desktop Study

The baseline landscape and visual assessment comprised a desktop study of the following data sources:

- Ordnance Survey digital map data;
- The Google Earth website at www.earth.google.com;
- The Multi-Agency Geographical Information for the Countryside website at www.magic.gov.uk;
- Nottinghamshire County Council Countryside Appraisal;

- Landscape Character Assessment Guidance for England and Scotland.

5.2.2 Field Survey

A site appraisal was undertaken on 24 July 2008 to corroborate the findings from the desktop study in terms of landscape character and topography, and to mark the location of landscape elements and features of particular importance. Photographs were taken at these points in order to provide an indication of the potential magnitude of change the proposed canal route would bring (Refer to **Appendix E** and **Figure 5.1**).

5.2.3 Study area

The Study Area for the assessment is shown on Figure 5.1.

Visual envelope

The visual envelope is the area within which views of the development may be achieved. The extent of the visual envelope is determined by many factors, including topography and intermediate visual intrusions such as hedges, buildings and blocks of woodland that create areas of visual “dead ground”.

5.2.4 Context

Countryside Agency Character Areas of England

The site is located within two landscape character areas as defined by the former Countryside Agency in the Character Map of England: Trent and Belvoir Vales (48) and Leicestershire and Nottinghamshire Wolds (74). The majority of the Study Area lies within the Trent and Belvoir Vales character area.

The key characteristics of Trent and Belvoir Vales are described as:

- Gently undulating landform, with shallow ridges dropping down gently to broad river valleys.
- Open, arable or mixed farmed landscape, strongly rural in feel, with timed hedges and few hedgerow trees; woodlands only locally significant.
- Frequent nucleated villages with red brick houses, roofed with pantiles, and spired churches prominent in long views.
- Large market towns with historic centres and substantial churches visible from afar.
- Subtle variations within the area from the remote and pastoral landscape of the Vale of Belvoir, to the more undulating and wooded farmland north-east of Nottingham and the open arable lands to the north and east.

- Urban development closely confined major centres, in particular the outskirts of Nottingham.
- Elsewhere the open, undeveloped and rural character strongly influenced locally by power stations, pylons and sand and gravel extraction on the Trent floodplain.

The key characteristics of Leicestershire and Nottinghamshire Wolds are described as:

- Rolling, glacial till ridges with small narrow valleys.
- Exposed, open, rather bleak ridge tops, often in arable use.
- Sheltered valleys and lower slopes with pasture and frequent hedge cover.
- Scattered small villages of red brick and pantiles.
- Ironstone and Lincolnshire Limestone churches.
- Isolated farms but few cottages and houses: an empty landscape.
- Fox coverts and strong associations with hunting.
- Deserted settlements, ridge and furrow and shrunken settlements.
- Prominent and wooded northern and western scarps.
- Many deeply rural, remote area with long, straight enclosure roads, wide verges and narrow sunken lanes.

Nottinghamshire County Council Countryside Appraisal

The local landscape within the Study Area is identified in the Nottinghamshire County Council Countryside Appraisal as two landscape types:

Trent Washlands:

- A low lying agricultural region associated with the broad valleys of the Trent and Soar, characterised by productive arable farming, meadowlands, small nucleated villages, market towns and cities, power stations and quarries.

South Nottinghamshire Farmlands:

- A prosperous lowland agricultural region with a simple rural character of large arable fields, village settlements and broad alluvial levels.

Within these areas are four landscape distinct characters: Terrace Farmlands, River Meadowlands, River Valley Wetlands and Village Farmlands. The features of each character type are:

Terrace Farmlands

- Broad flat river terraces
- Regular pattern of medium-to large-sized fields, breaking down and becoming open in many areas
- Hedgerow trees main component of tree cover, ash the principle species
- Willow pollards
- Predominantly arable with permanent pasture around settlements and roads
- Nucleated villages with traditional red brick and pantile roofed buildings
- Large power stations
- Sand and gravel quarries

River Meadowlands

- Meandering river channels, often defined by flood banks
- Sparsely populated with few buildings
- Permanent pasture and flood meadow
- Steep wooded bluffs
- Willow holts
- Long sinuous hedges
- Pollarded willows
- Regular pattern of medium to large size arable fields, breaking down and becoming open in many areas
- Hedgerow trees main component of tree cover

River Valley Wetlands:

- Actively worked areas with disturbed ground and dry voids
- Flooded workings with large areas of open water

- Wetland habitats at different stages of maturity
- Recreational developments for water sports, country parks etc
- Areas of restored agricultural land, often poorly landscape

Village Farmlands:

- Gently rolling topography
- Simple pattern of large arable fields
- Neatly trimmed hawthorn hedges
- Nucleated villages with traditional red brick and pantile roofed buildings
- Suburbanised commuter villages and small towns
- Small-scale pastoral landscapes along village edges

5.2.5 Local Landscape Description

The character of the Study Area is neatly divided by the A52 running east to west through the site. The area to the south of the A52 is dominated by farm settlements, simple pattern arable fields and predominantly hawthorn hedgerows with hedgerow trees whilst the area to the north of the route is dominated by river terraces, recreational developments for water sports and areas of wetland. Field sizes typically vary from 4.4 ha to 40 ha, and are an average 6 ha. The existing Grantham Canal network meanders through the farmland east to west to the south of the A52 and has established associated vegetation. Nottingham Airport lies within the Study Area to the south of the disused canal.

The Study Area is bounded to the north by the River Trent and Colwick Country Park, to the west by the town of West Bridgford and Gamston, to the east by the town of Radcliffe-on Trent and to the south by the village of Cotgrave.

5.2.6 Topography

The majority of the Study Area lies between 20-25m Above Ordnance Datum (AOD) and is characteristically flat with little change in grade. The only appreciable variation in level is found to the south of the site where the land peaks to 35m AOD in places.

The topography rises sharply to the north west of the Study Area, to 85m AOD at the location of Three Hills.

5.2.7 Land Use

The majority of the Study Area is made up of clusters of farm settlements and fields, recreational areas (e.g. golf course, sailing club, playing fields, National

Water Sports Centre), river wetlands, former gravel workings and Nottingham Airport to the south. Overall it is a landscape of intervention to the north of the A52 with farmed arable land to the south.

5.2.8 Local Wildlife Sites

There are a number of local wildlife sites within the Study Area. Further information regarding their value can be found in Appendix B of this Feasibility Study:

- Adbolton Marsh
- Cotgrave Colliery
- Gamston Marsh
- Gamston Pits
- Grantham Canal, Cotgrave
- Hedgerows, Cotgrave
- Holme Pierrepont

The location of these local wildlife sites are indicated in Figure 3.1.

5.3 **Summary of Constraints and Opportunities**

5.3.1 Assessment criteria

Following the baseline studies, each option has been assessed on site for their landscape and visual impact.

It is accepted that all options and their associated green infrastructure will link to the Trent Valley Way to Radcliffe on Trent.

Details of landscape constraints and opportunities are provided in the **Table 5.1** in **Appendix E**.

5.4 **Review of Canal Line Route Options**

5.4.1 Trent Link Option 1

Options 1, 1a and 1b have greater potential than Options 1c and 1d in terms of advantages offered.

Options 1 and 1a would follow existing field boundary vegetation and hedgerows thus minimising its visual impact on the landscape.

Of the three preferred routes, Option 1b offers additional benefit by creating a link into Option M. In addition, the line of the canal route would generally follow field boundaries, tying into the existing green infrastructure.

5.4.2 Trent Link Option 2

Options 2, 2a and 2b would result in a loss of existing vegetation, severance of agricultural land and field boundaries, and would not sit comfortably in the landscape structure of the area. This route and its variation of options would not be recommended.

5.4.3 Trent Link Option 3

This route would bring into use the greatest proportion of the existing canal network, and therefore would tie into the existing green infrastructure.

This is one of two routes which connects to both the existing green infrastructure of the Trent Valley Way to Nottingham and the Trent Valley Way to Radcliffe on Trent.

However, this route cuts across existing field boundaries for the entire length of the route and therefore would not be recommended unless the line of the route was refined to reduce severance and rationalise field shape and size.

5.4.4 Trent Link Option 4

Options 4 and 4b would have greater potential than Options 4a in terms of benefits offered.

Both options would bring a new function to a disused railway line through the landscape, making use of the existing green infrastructure.

Of these preferred routes, Option 4b offers additional potential created by the link into Option M.

5.4.5 Option T1

Option T1 and T1a would bring into use a significant proportion of the existing canal network and utilises the existing green infrastructure.

This is one of two routes which would connect to both the Trent Valley Way to Nottingham and the Trent Valley Way to Radcliffe on Trent.

The route would also allow for the potential expansion of Gamston and West Bridgford, with the opportunity for waterfront development.

5.4.6 Option H

Due to the potential need to remove mature vegetation north of Adbolton, option H is preferred over option Ha.

However, the construction of the inclined plane over the A52 would increase the visual envelope of the proposed route significantly.

5.4.7 Option M

Option M would provide a waterfront setting for properties through the expansion of Radcliffe on Trent.

The route would generally follow field boundaries, integrating with an existing green infrastructure.

6.0 RECREATION

6.1 Recreation Amenity

6.1.1 Access Routes

The Study Area comprises:

- i. a typical urban fringe countryside disrupted by roads, railway lines, gravel extraction and airport development, leading to a fragmented pattern of land use and a range of recreational activities such as a golf course, riding stables and a nature reserve;
- ii. an area of Green Belt split between the floodplain north of the A52, to surviving farmland south of the A52, all determining the nature of any development that will take place; and is
- iii. bordered in three directions by settlement:
 - o Nottingham to the north, but separated by the River Trent;
 - o West Bridgford to the west, separated by the A52;
 - o Radcliffe and Cotgrave, linked by the former Cotgrave colliery railway line.

Footpaths

The situation resulting from the above three factors has typically led to a fractured network of paths.

The main elements are:

- i. The Grantham Canal towpath, running east-west across the centre of the Study Area from Cotgrave to West Bridgford
- ii. The Trent Valley Way, running east-west just south of the River Trent along Adbolton Lane
- iii. 'Cotgrave Canal and Country Park' – one of a number of recreational routes promoted by Nottinghamshire County Council on their website
- iv. Circular Walk No. 1 Trent Lock to Bassingfield promoted by the Grantham Canal Trust

The other non-designated routes are footpaths running: east from Bassingfield; south east from the canal by the Golf Course to Cotgrave; north from the A52 to Holme Pierrepont, disrupted by the gravel workings; and routes from the A52 to Holme Farm

Bridleways

Although there are a substantial number of paddocks and stables in the area, there is only one designated bridleway running just east of the Golf Course, across the

former Colliery railway line. However there is regular use of other minor roads and even the canal towpath.

Cycle paths

Although there are no designated recreational cycle routes within the Study Area there is cycling within the Holme Pierrepont Country Park and further east along the Grantham Canal a Cycle Route is promoted between the villages of Copton Bassett and Hickling.

Car Parks

The current car parking provision in the vicinity of the Grantham Canal is limited to three small sites along the canal at Gamston, Sanders Lock and east of Cotgrave. The first are limited to less than ten cars, the last about twenty, and all have security problems. There are also existing car parks for use by visitors to the National Water Sports centre at Holme Pierrepont in the north of the Study Area.

Public Transport

Bus Service 11C runs from Nottingham to the National Water Sports Centre on Sundays and Bank Holiday Mondays. **Appendix F** provides detail on the development of Multi-User Leisure Routes within Green Infrastructure.

6.1.2 Recreational Facilities

In addition to the public rights of way mentioned above, features of a Green Infrastructure network comprise:

- allotments;
- amenity space, inc, communal green space within housing areas;
- green corridors inc. hedgerows, ditches, disused railways;
- brownfield and greenfield sites;
- urban parks and gardens;
- registered commons and village and town greens;
- children's play spaces;
- natural and semi-natural habitats for wildlife;
- playing fields;
- cemeteries;
- country parks;
- woodlands;
- historic parks and gardens;

- nature reserves;
- SSSIs and Scheduled monuments;
- waterways and waterbodies;
- developed sites with potential for open space and links; and
- land in agricultural and environmental management.

In the Study Area the main sites that fall into these categories are:

- Holme Pierrepont Country Park – 270 ha, around the 2000m rowing course, with walking, cycling and fishing being the main activities
- Cotgrave Country Park – Recently planted woodland, canal and fishing lake on site of former colliery
- Skylarks Nature Reserve – 10 ha site of former Tarmac Gravel workings, just south of the rowing course
- Former gravel workings between A52 and Holme Pierrepont, known locally as A52 Lake, Blotts Pit and the Finger Ponds.
- The Grantham Canal itself and its features such as locks and bridges.
- Playing fields on Armada Way
- The disused colliery line, as a natural corridor or a potential recreational route.

Refer to **Figure 6.1** for location of these facilities.

6.1.3 Tourist Facilities

The Study Area also has a number of visitor facilities that bring people to the area, and some of which offer overnight accommodation. These include:

- Holme Pierrepont National Water Sports Centre – Full length rowing/canoeing course (but only seven lanes) with artificial canoe slalom course, and water skiing lake. Spectator facilities and catering.; accommodation for 60 people in hotel style accommodation.
- Nottingham Sailing Club – Located at entrance to the National Water Sports Centre (NWSC), using the River Trent.
- Holme Pierrepont Hall – Privately owned Tudor House that in addition to its main use as a function venue opens to the public on a very limited basis in February and March.
- Blotts Country Club – Caters for functions of up to 450 people.
- Bassingfield Riding School Livery and Stables – Established in the 1950s with 40 acres available for teaching and leisure riding.

- West Bridgford Equestrian Centre – A riding centre with both teaching and casual hire; hacking available on a day basis; cafeteria on site.
- Cotgrave Place Golf Club – Located on high ground in the centre of the Study Area, the Club offers two 18 hole courses, a driving range and a putting green.
- Public Houses – No canal side pubs, but nearby are The Shepherd, Holton Heath and the Rose and Crown, Cotgrave.
- Thornton Holt Caravan Park – 14 acre site, with 155 pitches for caravans or tents, and swimming pool; holiday cottage also available.
- Holme Pierrepont Caravan Park – 28 acre site with 300 pitches, attached to the National Water Sports Centre.
- Holme Grange Cottage – three room B&B in Holme Pierrepont.
- Holly Lodge, Holme Pierrepont – four room Guest House in 15 acres of land

Refer to Figure. 6.1 for location of these facilities.

6.2 Summary of Constraints and Opportunities

6.2.1 Constraints

The main constraints that face the development of a Green Infrastructure in the Study area are:

- i. The fragmented nature of the existing recreational routes, particularly for cycling and riding, and around the former gravel workings north of the A52.
- ii. The lack of good quality open space, even within the existing Country Parks.
- iii. Poor access by foot or public transport into the area.
- iv. Limited and insecure car parking.
- v. Lack of overall management.

6.2.2 Opportunities

The main positive factors facing the development of a Green Infrastructure are:

- i. A large resident population in close proximity.
- ii. The presence of:
 - the canal as a recreational and heritage feature;
 - the former gravel workings south of the NWSC;
 - the presence of two Country Parks; and

- the water sports profile of the NWSC.

The main opportunities arising from these factors are:

- the integration of the canal into a co-ordinated green infrastructure network spreading throughout the area;
- greater recreational use of the wildlife sites between the A52 and the NWSC;
- further enhancement of the two Country Parks, with
 - the Holme Pierrepont Country Park currently under review due to the change in status of the NWSC;
 - Cotgrave Country Park requiring further investment to improve access, parking, and visitor facilities Scope to play a role as in interpretive centre for the Grantham Canal;
 - Improved car parking and public transport services; and
 - Improved multi-user leisure route between Cotgrave and Radcliffe, using the line of the former railway.

Appendix F sets out the background research that has been undertaken to provide the data on the economic impact of the relevant outdoor recreation activities that will be involved in the emerging Green Infrastructure.

6.3 Review of Canal Line Route Options

The implication of the key route options for the Grantham Canal, on the development of such a Green Infrastructure are as follows:

6.3.1 Trent Link Option 1

This would assist in opening up the recreational use and potential of the ponds/lakes to the south and east of the NWSC, and provide additional attractions within a Green Infrastructure Network.

- 1a Little recreational difference to the original option 1
- 1b Less recreational appeal of the route
- 1d Little recreational difference to the original option

6.3.2 Trent Link Option 2

This option would assist in opening up the recreational use of the A52 lake (if compatible with nature conservation interests), but may have a deleterious impact on Nottingham Sailing Club activities.

- 2a Issue of least impact on Sailing Club

2b Issue of least impact on Sailing Club

2d Little recreational difference to the main Option 2

6.3.3 Trent Link Option 3

This option fails to contribute to opening up the A52 barrier across the study area, which would be one of the main challenges to the Green Infrastructure proposals.

6.3.4 Trent Link Option 4

Prevents use of the former railway line as a multi-user leisure route between Cotgrave and Radcliffe, a distinct recreational disadvantage.

4a as above

4b as above

4c as above

6.3.5 Option T1

As with Option 3 this would bring few recreational benefits in terms of breaking down the barrier of the A52 or utilising the existing ponds.

T1a As above

6.3.6 Option H

This option has benefits if it would open up the large gravel pit to recreational use, but may be unlikely to be compatible with nature conservation (refer to Chapter 3).

6.3.7 Option M

This option would make a positive contribution to recreation issues if it involves access from Radcliffe and the new residential development, and from the lakes to the west.

7.0 ENGINEERING COMPARISON OF ROUTE OPTIONS

7.1 Background

7.1.1 Location

The study area for the canal link lies within the overall Green Infrastructure Study area to the south east of Nottingham.

The area is bounded by the original line of the Grantham Canal (between the A6011 Radcliffe Road at Gamston and Hollygate Lane near Cotgrave) to the south, by the route of the Cotgrave Colliery mineral railway to the east, by the River Trent to the north and by West Bridgford to the west.

7.1.2 Topography

On the southern / western boundary of the canal link study area, the land falls nearly 15m from east to west; the water level in the canal at Hollygate Bridge is 35.5m Above Ordnance Datum (AOD) and 20.85m AOD on the River Trent in the west, i.e. above Holme Sluice.

Along the northern boundary, the River Trent falls nearly 3.5m from 20.85m AOD in the west to 17.5m AOD in the east. This difference is created by the Holme Sluice and, under dry weather conditions, the river both upstream and downstream of the sluice is effectively level. The original flood plain between the Trent and the A52 Radcliffe Road would have had a more gradual gradient. Aggregate extraction and the subsequent formation of lakes in the worked out gravel pits as well as other engineering and landscaping means that the topography of this area is somewhat disjointed, albeit within an essentially flat plain.

On the eastern boundary, there is a fall of 18m from south to north; the water level in the canal at Hollygate Bridge is 35.5m AOD and 17.5m AOD on the River Trent in the east, i.e. below Holme Sluice.

7.1.3 Previous Study

A British Waterways (BW) – Technical Services report entitled “Grantham Canal – Trent Link Feasibility Study” was prepared by R J Broad, Principal Civil Engineer in May 1995. This report considered four alternative routes:

- Restore the canal on or near to its original line to the River Trent.
- The “West Route” using the Polser Brook channel to connect to the existing gravel pit lake, cross Adbolton Lane and connect to the River Trent via a new flood lock west of the sailing club premises.
- The “East Route” again using the Polser Brook channel, skirting to the south of the National Water Sports Centre and connecting the “Finger Lakes” to the River Trent via a new flood lock.
- An alternative “East Route” proposed by Nottinghamshire County Council.

In May 1995, the costs of these four alternatives were estimated to be:

- The original line - £12,928,000
- The “West Route” - £10,014,000
- The “East Route” - £11,986,000
- The “Alternative East Route” – £12,786,000

A detailed breakdown of the estimates for the “West Route” and “East Route” is given in the BW report.

The BW report states that:

“Restoration is considered to full broad beam standard i.e.:

length 75ft	22.85m
width 14ft	4.26m
depth 5ft	1.52m
air draft 8ft	2.44m”

It also states:

“For the purposes of this study it has been assumed that the existing A52 culvert can be underpinned to provide a limited passage under the road. The additional cost of a new highway bridge to provide full standards would be around £2.0m”

The detailed costing of the “West Route” and “East Route” and (presumably) the “Alternative East Route” only allow £500,000 for “Works underpinning Radcliffe Road Bridge A52”. As the gauge of the existing bridge could only possibly accommodate narrow boats, it would appear that an additional £1,500,000 would need to be added to the costs of these three options to bring them up to full broad beam standard.

The costs in the BW report do not make any allowance for any restoration of the existing canal.

A general construction price index suggests that the costs are likely to have risen by 65% since May 1995.

This BW report made reference to a BW water resources study that concluded that pumping of water from the River Trent to the summit would be required to meet the BW 1 in 10 year standard.

7.2 Primary Route Options

Eight basic route options have been considered (to a greater or lesser extent) as part of this report. A tabulation giving details of the engineering works that would be required for each route as well as a commentary on the advantages and disadvantages from the point of view of engineering, landscape, ecology, etc, is

included as the Route Option Matrix, which follows immediately after Chapter 8.0 of this report.

These eight basic routes are illustrated in **Figure 1.2**. Long sections of the different route options are illustrated in **Figures 7.1.1 to 7.1.3**. The works involved in the restoration of the existing canal to complement each of these options is dealt with in Section 7.4.

7.2.1 Trent Link Route Option 1

This is similar to the “East Route” considered in the 1995 BW study.

It would commence at the canal bend just south of Bassingfield and follow a new cut close to the line of an existing ditch and then turn through 90° and run just to the west of Polser Brook as far as Polser Bridge beneath the A52. There would be a fall of around 5.6m along this length. Although this could possibly be accommodated in two rather deep (2.8m) locks, there is initially a steep slope from the canal followed by ground levels that slope quite gently. The need for excessive embankments and / or cuttings could be reduced by constructing three locks each approximately 1.85m deep. The first two locks would form a flight where the downstream gate of the upper lock is the upstream gate of the lower lock and the third lock would be just south of Polser Bridge.

This route would then pass beneath the A52 using the existing Polser Bridge. The bridge appears to have sufficient clearance for narrow boat gauge but will probably require some engineering work to underpin the original brick arch in the centre of the crossing. From the available drawings of the bridge, it appears that it will not be possible to include a towpath. Initial consultations suggest that a signalised pedestrian crossing would also not be feasible at this location and it has been assumed that a footpath / cycleway will be constructed in a subway adjacent to the bridge.

Just north of Polser Bridge, a new cut would take the canal via a new lock to the southern end of a large lake that has resulted from gravel extraction and traverse it northwards along a defined and marked channel, dredged as necessary.

A new cut would continue northwards beneath a new bridge carrying Adbolton Lane / Holme Lane (it may be necessary to incorporate a flood defence measure at this point) and enter a finger lake east of the track leading to the water ski lake. The surveyed level of this lake is 0.5m lower than the large lake described above and the preference would be to find an equilibrium level for these two lakes and the intervening cut. If this is not feasible, a shallow lock, possibly incorporating the flood defence, would be required. This narrow lake would also be dredged and marked as necessary.

Finally a new cut would connect from the northern end of the finger lake to the River Trent via a further lock.

7.2.2 Trent Link Route Option 2

This is similar to the “West Route” considered in the 1995 BW study.

It would commence at the canal bend just south of Bassingfield and follow a new cut close to the line of an existing ditch and then turn through 90° and run just to the

west of Polser Brook as far as Polser Bridge beneath the A52. There would be a fall of around 5.6m along this length. Although this could possibly be accommodated in two rather deep (2.8m) locks, there is initially a steep slope from the canal followed by ground levels that slope quite gently. The need for excessive embankments and / or cuttings could be reduced by constructing three locks each approximately 1.85m deep. The first two locks would form a flight where the downstream gate of the upper lock is the upstream gate of the lower lock and the third lock would be just south of Polser Bridge.

This route would then pass beneath the A52 using the existing Polser Bridge. The bridge appears to have sufficient clearance for narrow boat gauge but will probably require some engineering work to underpin the original brick arch in the centre of the crossing. From the available drawings of the bridge, it appears that it will not be possible to include a towpath. Initial consultations suggest that a signalised pedestrian crossing would also not be feasible at this location and it has been assumed that a footpath / cycleway will be constructed in a subway adjacent to the bridge.

North of Polser Bridge, a new cut would continue north-northwest before turning 90° to west-southwest before entering a lake that has resulted from previous gravel extraction. A shallow lock, about 1m deep, would be required at some point along this cut to bring the canal down to the level of this lake. The route would continue in a generally westerly direction via a short new cut and then through the next gravel pit lake. These two lakes are shallow and significant dredging will be required to make them navigable.

On leaving the lake, the route turns gradually north, traverses the National Water Sports Centre Caravan & Camping Park, crosses beneath Adbolton Lane and steps up through a flood lock to join the River Trent just west of the sailing club.

7.2.3 Trent Link Route Option 3

This route leaves the Grantham Canal just north of Gamston Bridge where the A6011 Radcliffe Road crosses the canal. A new cut with the same water level as the existing canal would run in a northerly direction to the River Trent. A new lock would be required just before Adbolton Lane to lower the level to that of the River Trent. This lock would be required to fulfil an additional flood defence function and the general structure would probably incorporate the new bridge that would be required to take Adbolton Lane over the new canal cut.

7.2.4 Trent Link Route Option 4

This route would commence close to the site of the former Cotgrave Colliery. It would leave the Grantham Canal just upstream of Cotgrave Lock (Lock 6) and a new cut would follow the line of the abandoned former Cotgrave Colliery railway line, crossing Stragglethorpe Road, Radcliffe Road and Holme Lane before connecting into the River Trent.

From the existing canal, this route would be more or less at existing ground level until the vicinity of the track between Main Road and Stragglethorpe Road after which it would be on the embankment of the old railway before descending to the River Trent floodplain after the Holme Lane railway bridge.

The existing railway embankment has a steady gradient as it descends towards the River Trent apart from a stretch south of the A52 where it is effectively level.

For the majority of its length, the railway is only single track and the width at the top of the embankment is consequently only between 5m and 6m wide. There are two sections where the railway was twin track and the width at those sections is probably between 9m and 10m. The first section of twin track began where the line of the railway leaves the canal northwest of Lock 6 and ended just before Stragglethorpe Nursery, a distance of about 540m. The other twin track section began North of the A52 Radcliffe Road bridge and ended before the Holme Lane bridge, also a distance of about 540m. The intervening length of single track embankment is approximately 1,760m.

A total of seven new locks would be necessary to lower the level from the pound between Locks 6 and 7 down to the River Trent. There would be a flight of two immediately downstream of the Stragglethorpe Road bridge, a single lock downstream of the A52 Radcliffe Road bridge, a flight of three locks to bring the canal down to the flood plain after Holme Lane bridge and a final lock to connect down to the level of the River Trent.

The expense and engineering problems that would be involved in creating a canal along this route would be considerable and the creation of a broad beam canal would be virtually out of the question. Even a narrow beam canal would have a substandard width channel for much of its length, with long sections where it would not be possible for two boats to pass each other. A significant proportion of the tow path would also be sub-standard and multi-use by pedestrians, cyclists and horse riders would not be feasible.

7.2.5 Route Option O

The implications of restoring the canal along its original course from the vicinity of Bassingfield down to the River Trent at Lock 1 (Trent Lock), together with a possible alternative connection to the river that would mitigate the problems at Lady Bay Road to some extent, were considered in some detail in the May 1995 BW study. Although a detailed breakdown of the cost estimate was not included in that report, the estimated cost was nearly 30% greater than the cheapest option considered at that time.

This route was walked in 2008 as part of the current study and the condition of the canal and the nature of the obstructions were found to be substantially unchanged since the previous study.

Although many of the engineering problems such as constructing new bridges and restoring the locks would be relatively straightforward to overcome (even if at considerable expense), there are three locations where the optimal solution is not obvious, i.e. Lady Bay Road, the Rutland Road link to Radcliffe Road and the outbound A6011 Radcliffe Road. No detailed engineering proposals have been developed for these three locations as part of this study and, as far as can be determined, none were done for the 1995 BW study. Therefore, any costing relating to the significant structural aspects of this option must be questionable.

7.2.6 Route Option T1

This alternative has been put forward with the intention of minimising the impact on the existing landscape.

A new cut would be made commencing at the Grantham Canal about 200m east of Tollerton Lane. It would follow existing field boundaries in a north-northwest direction and cross beneath Bassingfield Lane to the west of Holme Farm and the A52 about 250m east of the roundabout. The route would then continue across the floodplain to the west of the large gravel pit lake as far as the Green Acres mobile home park. It would then follow the Green Acres boundary in a northwest direction, cross beneath Adbolton Lane, and continue northwest across the floodplain before turning north to join the River Trent at the same location as Option 3.

The first section, as far as Bassingfield Lane, would have the same water level as the existing canal. A lock just before Bassingfield Lane that would drop the water level by about 2m and a new bridge would be required to take Bassingfield Lane over the canal.

Either two 3.3m deep locks or three 2.2m deep locks would lower the new cut so that it could pass below the A52 through a new bridge or wide culvert. Immediately after the A52 crossing, a lock would be required to raise the level of the new cut about 2.4m up to the level of the River Trent above Holme Sluice. This arrangement would create a sump in the new cut beneath the A52 that would need to be isolated from groundwater and also to have a pumping facility to return water to a higher level after each passage through the culvert.

A new flood lock would be required to prevent excessive flows entering the new cut and flowing towards the sump at the A52. This structure of this flood lock may be combined with the new bridge that will be required to carry Adbolton Lane over the new canal cut and it would probably be necessary to carry out additional works on the flood defences in this area.

7.2.7 Route Option H

This route has been proposed by Havenwood Construction Ltd and is known as **Scheme 1**. It would leave the Grantham Canal at the same place as Route T1 and follow a similar north-northwest line beneath Bassingfield Lane. As this option does not propose a lock to lower the canal level at this location, a new bridge will be required to raise the carriageway approximately 2m. A traditional humpbacked bridge would not conform to modern design standards for vertical alignment and the new structure will need to extend a significant distance in both directions.

After passing to the west of Holme Farm, this new cut would turn almost due north and terminate at a widened "holding pond".

A unique inclined plane bridge structure would be constructed to carry boats in a watertight tank over the A52 between the holding pond and the large gravel pit lake north of the A52.

The large lake would be divided into two similar size portions and a navigable route would be created through the western part. A marina would also be created in this western section.

Finally, this route would connect into the River Trent through the western end of the rowing lake.

The potential for private funding is outside the scope of this consideration of the engineering aspects of the various route options.

7.2.8 Route Option M

Mosaic Estates have proposed a route towards the east of the study area that would follow a similar line to that described under Route Option 1, Variation 1b. This line turns northeast immediately after Polser Bridge in a cut alongside the southern branch of the Polser Brook, crosses beneath Sandy Lane and Holme Lane and joins the River Trent to the west of the railway bridge over the river. The principal variation to the layout would be the construction of a marina approximately midway between the A52 at Polser Bridge and the River Trent junction.

The potential for private funding is outside the scope of this consideration of the engineering aspects of the various route options.

7.3 **Variations**

A number of small to moderately sized variations to the eight main route options have been identified and these are all indicated on Figure 1.2.

7.3.1 Route Variation 1a

This variation is based on the final link from the finger lake to the River Trent passing through the water ski lake. It would enable the construction of a marina in that lake and also a possible connection into the rowing lake and even a connection to the River Trent above Holme Sluice (avoiding the large Trent Lock) at some point in the future.

This variation would require an additional shallow lock to account for the 0.5m difference in level between the finger lake and the water ski lake.

7.3.2 Route Variation 1b

Variation 1b would take the new cut from the north of the A52 Polser Bridge crossing out to the River Trent along a route close to Polser Brook and would follow a similar course to Route Option M but without the construction of a marina.

This route would be in undefended flood plain and could be constructed with only two locks between the north of Polser Bridge and the River Trent and it would probably not require an expensive flood lock where the cut would join the Trent.

7.3.3 Route Variation 1c

This variation is for the construction of a new bridge under the A52 to the west of Polser Bridge that would be suitable for broad beam craft and incorporating a tow path.

It could be used in conjunction with Route Option 1 and also the other Route 1 variations.

It would not need to be constructed initially because Polser Bridge could be used for narrow beam craft at first and it may be that this variation would become more attractive in the future as the canal is restored for navigation right through to Grantham. However, there would be a significant expense involved initially with works necessary to secure Polser Bridge for navigation and this money could be used to offset part of the costs of a new, wider bridge as described in this variation.

7.3.4 Route Variation 1d

Variation 1d sees the new cut leaving the existing canal just west of the aqueduct that carries the canal over Thurlbeck Dyke.

It could be used in conjunction with Route Option 1 and also the other Route 1 variations.

Although it would require a slightly longer route than the basic Route Option 1, it has a number of advantages, i.e. it avoids connection where the existing canal is on a significant embankment, it would fit better into the general landscape as it runs alongside the existing watercourse for a greater distance, it would minimise the disruption to the operation of the local farm and it would create a possible opportunity for a small nature reserve in the land between the new cut and the stream just north of the aqueduct.

7.3.5 Route Variation 2a

This variation on Route Option 2 has the outfall to the River Trent to the east of the sailing club rather than to the west.

Instead of cutting through the National Water Sports Centre Caravan & Camping Park, a new cut would be created along the eastern edge and then along the line of Adbolton Lane. A new road layout would be created to combine Adbolton Lane and the access road to the facilities north of the rowing lake this would include a new bridge over the canal cut. This is effectively the same as the final part of Route Option H.

7.3.6 Route Variation 2b

This variation is for the construction of a new bridge under the A52 to the west of Polser Bridge that would be suitable for broad beam craft and incorporating a tow path.

It could be used in conjunction with Route Option 2 and also the other Route 2 variations.

It would not need to be constructed initially because Polser Bridge could be used for narrow beam craft at first and it may be that this variation would become more attractive in the future as the canal is restored for navigation right through to Grantham. However, there would be a significant expense involved initially with works necessary to secure Polser Bridge for navigation and this money could be used to offset part of the costs of a new, wider bridge as described in this variation.

7.3.7 Route Variation 2c

Variation 2c has the new cut leaving the existing canal just west of the aqueduct that carries the canal over Thurlbeck Dyke.

It could be used in conjunction with Route Option 2 and also the other Route 2 variations.

Although it would require a slightly longer route than the basic Route Option 2, it has a number of advantages, i.e. it avoids connection where the existing canal is on a significant embankment, it would fit better into the general landscape as it runs alongside the existing watercourse for a greater distance, it would minimise the disruption to the operation of the local farm and it would create a possible opportunity for a small nature reserve in the land between the new cut and the stream just north of the aqueduct.

7.3.8 Route Variation 4a

For variation 4a, the new canal would descend from the railway embankment before the Holme Lane railway bridge and a new road bridge would be needed to carry Holme Lane over the new cut.

7.3.9 Route Variation 4b

Variation 4b could be adopted if the general railway route was preferred and if the Mosaic Marina proposal was also constructed. It would descend from the railway embankment before the Holme Lane railway bridge but, after reaching the level of the floodplain, it would run west to join the line of the new cut forming the link from the marina to the River Trent.

7.3.10 Route Variation 4c

Variation 4c is more of an “optional extra” than an actual route variation. It comprises the restoration of the original canal route from the point where Route Option 4 leaves the line of the canal between Locks 6 and 7 down as far as Tollerton Road.

Although the restoration of this length would not be strictly required to comply with a brief to link new facilities, such as a marina, in the vicinity of the Cotgrave Country Park, it could be seen as a valuable part of the overall green infrastructure of the area. This may become less of an issue in the future if the onward canal to Grantham is restored.

7.3.11 Route Variation Ha

A new cut would be created along the eastern edge of the National Water Sports Centre Caravan & Camping Park and then along the line of Adbolton Lane. A new road layout would be created to combine Adbolton Lane and the access road to the facilities north of the rowing lake and this would include a new bridge over the canal cut. This route would then connect into the River Trent, via a flood lock, to the east of the sailing club.

7.3.12 Route Variation T1a

Variation T1a takes a direct line to the River Trent across the National Water Sports Centre Caravan & Camping Park, beneath Adbolton Lane and joining the river just west of the sailing club.

7.4 **Grantham Canal Restoration**

All of the proposals require restoration of the existing canal to some extent downstream from Hollygate Bridge. Apart from dredging and general restoration of the main channel, the main structural issues between Hollygate Bridge and Tollerton Lane are:

- A new winding hole would be required as close as possible to Hollygate Bridge.
- The low-level concrete Cotgrave Colliery access bridge with the canal piped through it would need to be removed. It may be necessary to replace this with a new bridge with appropriate clearance.
- Lock 7 (Hollygate Lock). This lock has been restored in recent years although it is understood that some further work may be necessary to allow navigation.
- It may be desirable to reinstate the bridge immediately downstream of Lock 7 and this could possibly create an alternative route to replace the low-level colliery access culvert crossing.
- Lock 6 (Cotgrave Lock). This lock has been restored in recent years although it is understood that some further work may be necessary to allow navigation.
- Cotgrave Bridge. This has been flattened with the canal passing beneath the road in culvert. A new bridge will be required with the carriageway being raised approximately 2m. A traditional humpbacked bridge would not conform to modern design standards for vertical alignment and the new structure will need to extend a significant distance in both directions along Main Road.
- Lock 5 (Sander's Lock). The lock structure is thought to be in generally fair condition but its gates have been removed. A concrete weir has been constructed over the cill to maintain the water level upstream. The presence and condition of ground paddles is unknown.
- Lock 4 (Skinner's Lock). The lock structure is thought to be in generally fair condition but its gates have been removed. A concrete weir has been constructed over the cill to maintain the water level upstream. The presence and condition of ground paddles is unknown. There is a pedestrian bridge across the tail of the lock.
- Hallam's Swing Bridge. The original bridge has been replaced by a low-level concrete-decked culvert and it is on a farm access route that will need to be maintained. The canal is on a significant embankment at this point due to mining subsidence and it could be difficult to construct a new bridge on the existing alignment. Alternatives would be to build a new swing bridge, a lifting bridge or a new fixed overbridge on a new alignment with ramps on either side of the canal.

- A new winding hole would be required as close as possible to Tollerton Lane.

The works upstream of Lock 6 would be required for all of the route options. The works downstream of and including Lock 6 would be required for Route Options 1, 2, 3, H, M, T1 and their variations. The works downstream of and including Lock 6 could be carried out as an optional variation to Route Option 4.

In addition to the foregoing list, the following minimum works would be necessary for Route Option 3.

- A new bridge will be needed to take Tollerton Lane over the canal. The road will probably need to be raised by about 1m with the consequent implications for design standards.
- A significant new bridge structure or long culvert would be required to take the canal beneath the A52 Gamston Lings Bar Road dual-carriageway and Ambleside, the adjacent local feeder road.
- A timber pedestrian bridge linking the housing on the north bank to the superstore on the south side would need to be reconstructed to give the appropriate headroom.
- Lock 3 (Gamston Lock). The lock structure is thought to be in generally fair condition but its gates have been removed. A concrete weir has been constructed over the cill to maintain the water level upstream. The presence and condition of ground paddles is unknown.
- A timber pedestrian bridge just downstream of Lock 3 would need to be raised to give sufficient clearance for navigation.
- A pedestrian bridge linking allotments on the west bank to housing on the east would need to be raised to give sufficient clearance for navigation.
- Lock 2 (Bridgford Lock). The lock structure is thought to be in generally fair condition but its gates have been removed. A concrete weir has been constructed over the cill to maintain the water level upstream. The presence and condition of ground paddles is unknown. A relatively new timber pedestrian bridge across the lock may need to be relocated further downstream.
- The original Radcliffe Road Bridge remains and carries the City-bound carriageway of the A6011. It appears that little work would be necessary to this structure. However, a large diameter water main has been constructed across the canal at water level and this will need diversion either beneath or over the canal.
- The outbound carriageway of Radcliffe Road has been built as a low level culvert and this would require a significant new structure to permit the necessary clearance for navigation. Once again, the vertical alignment would require an extensive structure and it is thought that the presence of a horizontal bend would complicate the design.

7.5 Costing

The 1995 BW study included cost estimations for four options with a breakdown of the costs of the major elements for two of them. Based on these BW costs and by applying a construction price inflation index of 165 to give a Q2 2008 rate based on Q2 1995, it has been possible to develop notional costs for the main route options and the variations.

These cannot be taken as either detailed or accurate prices but, as they have been developed from a common basis, the total values for the various route options should be a reasonable indication of the relative cost of each option.

At this stage, it has not been considered necessary to put a value to each variation on the main routes as it is not thought that the overall cost ranking would be changed.

Where there have been early indications that a particular variation may be more likely to be adopted, for example the 1d / 2c variation where the new cut leaves the canal near the aqueduct rather than at the bend near Bassingfield, this variation has been used for the cost comparison.

It has not been possible to obtain full information about all of the utility services and other pipelines, etc that could be affected by the various route options and their variations during the preparation of this report. Although it is known that there are some significant installations that will need strengthening, protecting or diversion, it is not thought that these works would create a cost differential large enough to make a difference to the overall cost ranking.

SUMMARY

Route Option	Sub-Option	Total Including 15% Preliminary Costs and 10% Contingency	Additional Cost or Saving
1		£24,100,000	
	1a	£24,500,000	£400,000
	1b	£20,600,000	-£3,500,000
	1c	£25,500,000	£1,400,000
	1d	£24,300,000	£200,000
2		£23,400,000	
	2a	£23,900,000	£500,000
	2b	£24,800,000	£1,400,000
	2c	£23,600,000	£200,000
3		£21,900,000	
4		£29,700,000	
	4a	£29,900,000	£200,000
	4b	£26,600,000	-£3,100,000
	4c	£32,700,000	£3,000,000
T1		£22,300,000	
	T1a	£21,100,000	-£1,200,000

The least expensive option is likely to be Route Option 1 with variation 1b - £20,600. If variation 1d is added to this route the cost is £20,800. Route Option T1a would rank second on price. While variation T1a is shorter and would probably be cheaper purely in terms of construction than Route T1, there are archaeological risks that could potentially make a significant increase to the cost. The cost of the T1 option without variation 1a is £22,300,000.

Route Option 3 is likely to be the ranked third on the basis of cost. It has the shortest length of new canal and includes the greatest length of restored canal. However, four new main road crossings would be required or three if the Ambleside and A52 Gamston Lings Bar Road dual-carriageway crossing is dealt with as one structure.

The basic Route Options 2 and 1 (both with the canal connection at the aqueduct) follow as 4th and 5th ranking on cost. Issues that may affect the longer term “value” of these options, such as point of connection to the River Trent (above or below Holme Sluice), ecology, opportunity for commercial development, etc could have an influence on the ranking of these options that outweigh the original capital cost.

Route Option 4, following the old railway line has been assessed to be the most expensive by a considerable margin. If the cost of restoring the existing canal between Cotgrave and Tollerton Lane is added, the cost would be around 50% greater than that of the cheapest option.

7.6 Flooding Issues

The majority of the study area bounded by the A52 and A6011 to the south, the railway embankment to the east, the River Trent to the north and the West Bridgford built up area in the west is in the floodplain of the River Trent.

The Greater Nottingham Strategic Flood Risk Assessment (SFRA) shows that the majority of this area (maybe 65%) is within the 1 in 20 annual chance flood outline and this includes most of the existing bodies of water. A further 25% or so is within the 1 in 100 annual chance flood outline. Approximately 3% is within the 1 in 100 +20% annual chance flood outline (this allows for climate change). There is a very small proportion that is within the 1 in 1,000 annual chance flood outline. The remaining area is not at risk of flooding.

The routes considered all cross the area most at risk of flooding, i.e. the 1 in 20 annual chance flood outline (sometimes referred to as the “functional floodplain” or Flood Zone 3b) to some extent. From the point of view of planning, Planning Policy Statement 25 (PPS25) states that only “water compatible” uses or development and essential infrastructure should be permitted in Flood Zone 3b.

Canals and marinas would be considered to be “water compatible” development and should be acceptable in principle. However, PPS25 states that such development:-

“should be designed and constructed to:

- remain operational and safe for users in times of flood;*
- result in no net loss of floodplain storage;*
- not impede water flows; and*

– *not increase flood risk elsewhere.*”

Taking these in turn, it appears that the first requirement “remain operational and safe for users in times of flood” is aimed at essential infrastructure rather than “water compatible” development and would not necessarily be relevant in relation to the proposed canal link.

The second requirement “result in no net loss of floodplain storage” will need to be addressed at the detailed design stage as there will be places where ground levels that are at present below flood level in the functional floodplain will need to be raised above the flood level, e.g. where new road bridges, and (possibly) canal embankments are constructed. If such losses of potential flood storage are deemed to be significant, then it will be necessary to mitigate this by providing additional storage in the vicinity at the same level. The matter of any marina infrastructure is considered to be outside the scope of this study.

The third requirement “not impede water flows” means that careful consideration will be necessary at the detailed design stage to ensure that any raising of the existing ground level to form new canal banks will not adversely affect the overland flow route taken when the River Trent comes over the floodplain.

Finally, the development will “not increase flood risk elsewhere”. It would be necessary to construct special flood locks on some of the options where the routes pass through existing flood defences. Also, it will be necessary to check that the proposed route will not create new flood paths that would increase the risk or severity of flooding at any location.

Apart from the first element, it will be necessary to give the remaining three careful consideration at the design stage and it may be necessary to create a detailed hydraulic model of the floodplain with the proposed changes to the ground elevation included to assess the impact on flooding and enable mitigation measures to be designed where necessary.

7.7 Water Supply

The original Grantham Canal did not have a particularly plentiful supply of water to operate the numerous locks from Grantham down to the River Trent. When it was in use, the canal was fed mainly from two purpose-built reservoirs at Denton and Knipton. These are both located towards the Grantham end of the canal and it would require considerable additional works to reinstate flows from these reservoirs to Cotgrave in order to provide an adequate source of water for the Trent Link project. There were also a number of minor feeds from local streams but it seems unlikely that these could provide the volumes that would be necessary to operate the locks.

A report entitled “Grantham Canal – Water Resources Feasibility Study” was produced by British Waterways in connection with the “Grantham Canal – Trent Link Feasibility Study, May 1995”. This report provides a comprehensive review of the situation at the time and it does not appear that there have been any significant changes since that time.

This report concluded:

- *“The water resources of the canal are inadequate to meet the projected lockage demand with the reliability of Waterway Standard 2. In order to*

restore the waterway as envisaged additional water resources will be required.

- *A review of all potential surface water feeders has shown that they have limited dry weather flow when demand on the waterways is greatest. The deployment of reservoirs should be managed in accordance with operational control curves which would protect the water environment and ensure they re-filled each winter. It is recommended to meet the shortfall in supply by back-pumping will be required from the River Trent with a capacity of 90 Mlw.*
- *The water losses of the canal represent the largest single demand on the system and have been assessed from site tests where adequate knowledge of the flow regime exists. The design of the canal channel for the re-routed section is unknown, although it has been assumed the loss rate will be comparable to the overall loss rate for the canal. A sensitivity analysis of the loss rate suggested that a variation in loss from 0.66 Ml/km/week to 1.75 Ml/km/week resulted in an equivalent increase in resources from 450 Mla to 3,315 Mla. In order to minimise water losses, the design of all water channel improvements should be undertaken to ensure the loss rate does not exceed 1.75 Ml/km/week which is equivalent to a clay-lined channel in good condition. Even at this rate of loss, additional water resources will be required during periods of peak demand.*
- *It has been assumed that surface water supplies will be obtained by re-instating the feeders from the River Smite, Hollygate Lane and Cotgrave.*
- *Back-pumping from the River Trent to the canal summit will be required to meet the traffic demand after the canal is restored. A pumping capacity of 90 Mlw is anticipated. Additional capacity may be required to give an operating margin during periods of peak demand."*

There are two main approaches that could be used for back-pumping.

The first would be a single installation that would pump water back from the lowest level to the highest, i.e. from the level of the River Trent or one of the lakes in the flood plain up to the pound above Lock 7. The actual point of abstraction would be determined at the detailed design stage. There are ponds or lakes in the Country Park at the head of the system being considered that could be used for balancing supply and demand.

The other back-pumping approach would be to have a number of pumps and rising mains that would return water at each lock or combination of two or three locks. Such an arrangement would need smaller pumps and far less rising main construction.

Another theoretical source of water supply would be ground water. It is understood that a major aquifer, the Sherwood Sandstone, lies beneath the Cotgrave area and it would probably be feasible to abstract a sufficient supply from a new borehole. However, initial enquiries with the Environment Agency suggest that permission for such abstraction would not be forthcoming.

It seems, therefore, that back-pumping in some form will be required. The demand for, and hence the future costs, of pumping could be reduced in the longer term if the length of the canal between Cotgrave and Grantham is restored, together with the original canal feeders from reservoirs and local streams.

The option to create a single back-pumping operation from the lowest level to Cotgrave could utilise an existing pumping station and rising main that was installed to supply water to the former Cotgrave Colliery. The diameter and condition of the rising main have yet to be verified. Initial investigations suggest that, although the brick-built pump house still exists with the triangle formed where the colliery railway joins the main line, the pumps and other fittings may have been removed and there may have been some sealing of the gravity pipe from the river. The condition of the rising main has not been investigated.

The requirement for a supply of water to the pound above Lock 7 is common to all of the Route Options. Therefore, the cost implications would be the same for each Option and it is not considered necessary to investigate this aspect in more detail in order to select the preferred Route Option.

8.0 COMPARISON OF ROUTE OPTIONS

8.1 Routes Considered

As described in Section 1.4, for the purposes of the study reported herein, initial investigations were based around four main route options which had been considered during previous studies as possible routes for a canal link within the Study Area. During the course of the study, a number of variations on these routes, together with two routes previously proposed by developers and one route suggested by the project team, have been considered (refer to Figure 1.2).

It is noted that the Study Area lies between Cotgrave and the River Trent to the east of Gamston and West Bridgford and therefore does not include that part of the existing Grantham Canal that continues westwards from Gamston to the River Trent (refer to Figure 1.1).

The May 1995 BW Study estimated that the cost of restoring the canal along its original course to the River Trent was nearly 30% greater than the cheapest option considered at that time. A walkover of this section of the canal identified three locations where solutions would be problematic, and likely to incur considerable expense: Lady Bay Road, the Rutland Road link to Radcliffe Road the outbound A6011 Radcliffe Road. This option is not considered further below.

8.2 Comparison of Route Options

The following Matrix 8.1 provides comparable environmental, planning engineering and financial information for each of the route options and sub-options considered. Each of the options and sub-options has its own advantages and disadvantages, the relative importance of which will depend on the specific requirements and aspirations of the Grantham Canal Partnership. Key issues for each of the three least expensive options are summarised below.

8.2.1 Option 1 (incorporating variations 1b and 1d)

Cost - £20.8 million

Engineering requirements –

- total number of locks = 9
- number of new locks = 5
- number of new or refurbished road / track crossings = 6
- length of new cut = 3880m
- total length = 7030m

Key issues

- minimises impact on Gamston Pits and Holme Pierrepont SINCS

- passes close to site of Holme Pierrepont deserted medieval village
- alignment may be affected by the “Radcliffe Crossing” highway safeguarded zone of interest
- could provide integrated link with Mosaic Estates proposed Marina
- would reduce severance caused by A52
- reduced opportunities to support the development of Holme Pierrepont compared to Option 1a

Significant risks/opportunities

- funding opportunities associated with integration with Mosaic Estates Marina
- a new broad gauge crossing of the A52 (variation 1c) could be incorporated for an additional cost of approximately £1.4 million

8.2.2 Option T1/T1a

Cost - £22.3 million (T1) / £21.1 million (T1a)

Engineering requirements

- total number of locks = 9 or 10
- number of new locks = 5 or 6
- number of new or refurbished road / track crossings = 6
- length of new cut = 2400m (T1) / 1900m (T1a)
- total length = 7700m (T1) / 7200m (T1a)

Key issues

- avoids SINC
- follows existing boundary features where possible
- affects known Iron Age Romano-British Settlement and passes between the remains of Adbolton deserted medieval village and a Roman villa site (T1a affects the Roman villa site).
- utilises significant length of existing canal
- would create circular recreational route incorporating Gamston, Cotgrave and the River Trent
- would reduce severance caused by A52
- reduced opportunities to support the development of Holme Pierrepont compared to other options

Significant risks / opportunities

- risk of discovery of important archaeological assets. Potential to incorporate these features along the route through, for example, interpretation boards

8.2.3 Option 3

Cost - £21.9 million

Engineering requirements:

- total number of locks = 7
- number of new locks = 1
- number of new or refurbished road / track crossings = 8
- length of new cut = 1350m
- total length = 8300m

Key issues

- avoids Holme Pierrepont and Gamston Pits SINC's but passes through Adbolton Pond SINC
- passes close to known remains of Adbolton deserted medieval village
- field severance along length of route
- utilises greatest length of existing canal
- would create circular recreational route incorporating Gamston, Cotgrave and the River Trent
- would not reduce severance caused by A52
- reduced opportunities to support the development of Holme Pierrepont compared to other options

Significant risk / opportunities:

- high risk of discovery of important archaeological assets. Potential to incorporate these features along the route through, for example, interpretation boards
- risk of cost increases and disruption due to construction associated with the new road crossings on the A52 South of Gamston roundabout at the A6011 west of Gamston roundabout.

8.3 Recommendation

The decision of the preferred route will be made by the Grantham Canal Partnership taking into account both the findings of this report and the specific requirements and aspirations of each of the bodies making up the Partnership. On the basis of simply the information provided in this report it is recommended that either Option 1, incorporating variations 1b, 1d and possibly 1c, or Option T1/T1a be progressed to the more detailed investigation and masterplanning stage.

ROUTE OPTION MATRIX

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Option	Option 1	Option 1a	Option 1b	Option 1c	Option 1d
Description	Restore the existing Grantham Canal from Hollygate Bridge down to the bend just south of Bassingfield. Construct a new cut in a generally northerly direction, crossing beneath the A52 using the existing Polser Bridge, continue in a generally northerly direction, crossing beneath Holme Lane and incorporating two existing bodies of water, before turning northeast in a new cut to join the River Trent near the downstream end of the rowing course at Holme Pierrepont.	As Option 1 but incorporating the existing water ski lake as part of the first section.	As Option 1 but turning northeast immediately after Polser Bridge in a cut alongside the southern branch of the Polser Brook, crossing beneath Sandy Lane and Holme Lane and joining the River Trent to the west of the railway bridge over the River Trent.	As Option 1 and other sub-options but with a new bridge to the west of the existing Polser Bridge to permit the passage of broad boats in accordance with the original canal gauge.	As Option 1 and other sub-options but with the new cut leaving the existing canal just west of the Thurbek Dyke aqueduct, approximately 350m to the southeast of the bend at Bassingfield.
Engineering Issues					
Approximate Total Length (m)	7370	7370	7200	7370	7200 (with Option 1 / 1a / 1c) or 7030 (with Option 1b / 1c)
Approximate Length Refurbished (to Hollygate Bridge) (m)	4000	4000	4000	4000	3650
Approximate Length of New Cut (m)	3370	3370	3200	3370	3550 (with Option 1 / 1a / 1c) or 3380 (with Option 1b / 1c)
Number of locks between Hollygate Bridge and River Trent	9	10	9	9 (10 with Option 1a)	9 (10 with Option 1a)
Number of New Locks	5	6	5	5 (6 with Option 1a)	5 (6 with Option 1a)
Description of new locks required	Assuming that the fishing finger lake can be connected directly to the River Trent, the first lock would be between the that lake and the long lake just north of the Holme Lane crossing - rise approximately 1.5m. Assuming that the lakes either side of Holme Lane can be rationalised to the same level, the second lock would raise the level to that of the Polser Brook at the A52 crossing. Three further new locks would be required to the south of the A52 as for Option 2.	As Option 1 but with a new shallow lock (0.5m) between the long lake just north of the Holme Lane crossing and the water ski lake and another shallow lock (0.8m) between the water ski lake and the River Trent instead of the 1.3m lock between the long lake and the fishing finger lake.	Two locks would be required at suitable locations between the junction with the River Trent and the north of the A52 crossing. One of these would probably be just south of the Holme Lane crossing with the other approxiamted half way between Holme Lane and the A52 crossing. However, if the first lock is moved so that it would be south of any future marina in this vicinity, a marina could be constructed at the same level as the river and this would reduce the need for a back-pumped water supply. Three further new locks would be required to the south of the A52.	As Option 1 / 1a	As Option 1 / 1a
Number of Refurbished Locks	4	As Option 1	As Option 1	As Option 1	As Option 1
Description of refurbished locks	Existing Locks 4 and 5 to be extensively refurbished. Locks 6 and 7 may need further attention to become fully operational.	As Option 1	As Option 1	As Option 1	As Option 1
Number of New Road and Track Crossings - ignoring footpath crossings.	4	As Option 1	As Option 1	As Option 1	As Option 1
Description of new road and track crossings	1) The new cut will need to cross the track that is south of the water ski lake at some point. The exact location will depend on the route of the cut. It may be at the location of the first lock. 2) A new overbridge will be required at the Adbolton Lane / Holme Lane crossing. 3) New road crossing will be required at A52. Probably possible to use the existing Polser Bridge for narrowboats. - See Sub-option 1c. 4) New track crossing will be required east of Bassingfield.	As Option 1	As Option 1	As Option 1 apart from the new bridge beneath the A52 that would be built to broad beam standard with the additional benefit of a continuous towpath.	As Option 1
Number of Refurbished Road and Track Crossings - ignoring footpath crossings	2	As Option 1	As Option 1	As Option 1	As Option 1
Description of refurbished road and track crossings	1) Cotgrave Bridge. New overbridge required. Road would need raising by a minimum of 2m. 2) Cotgrave Colliery site. New overbridge required, concrete slab / pipe culvert to be replaced.	As Option 1	As Option 1	As Option 1	As Option 1
Water supply	To be confirmed	As Option 1	As Option 1	As Option 1	As Option 1
Additional engineering issues		If the supply to the water ski lake is via the rowing course which is in turn supplied by the large lake and minor watercourses / groundwater, then there could be issues regarding the supply necessary to allow a significant number of movements in and out of the water ski marina, especially as a broad gauge lock would be needed. It could be necessary to back pump from the River Trent and isolate the rowing course from the water ski lake marina.		The A52 bridge would be a major structure on a very busy dual-carriageway trunk road. The planning, design and construction could have an impact on the overall programme.	This option would be preferable as it wout avoid the need to construct the substantial embankment embodying two locks that would be necessary for Option 1
Environmental Issues					
Ecology	As Option 1a, but Option 1 results in a greater loss of scrub habitat adjacent to finger ponds, and additional risk of disturbance to birds within this finger ponds	Passes through two SINCS (Gamston Pits, Holme Pierrepont). The main constraints relate to losses of habitats within the SINCS, and potential disturbance to breeding and over wintering birds. The route passes through Blotts Pits and avoids the A52 pit, however consultation with the county bird recorders suggests that Blotts Pits have developed into an area of ornithological value for wader passage and summer migrants, providing a contrast to habitats found on the A52 pit. Whilst this option is unlikely to impact upon breeding black necked grebe, it is likely to be contentious, and constrained by other breeding and over wintering Schedule 1 and Red Data list species. Additional impacts may relate to water vole, otter and GCN. Mitigation is likely to be required for one or more of these species.	Option 1b affect a large portion of Polser Brook, which is likely to result in impacts on water vole, and potentially white clawed crayfish and otter. It would be preferable to retain the natural channel of Polser Brook, as a canal replacement would differ in its habitat (this has been reiterated through consultation). Where Option 1b runs adjacent to Polser Brook, there is likely to be disturbance during construction. Option 1b results in some land take of the eastern extent of Gamston Pits SINCS. This is several hundred of meters away from the A52 pit where black necked grebe are known to breed so is unlikely to result in impact to this species, but may disturb other species within the lagoons to the east of Gamston Pits within the Holme Pierrepong complex.	Option 1c avoids a section of Polser Brook under A52, allowing Polser Brook to remain as a natural channel. Less likely to be constraints associated water vole, potentially otter, crayfish, loss of BAP habitat.	As per option 1, except Option 1d will affect an additional section of Polser Brook, potential additional constraints associated water vole, potentially otter, crayfish, loss of BAP habitat.
Cultural Heritage	Relatively high potential for encountering archaeological deposits both north and south of the A52. Potential for route to be affected by known Anglo-Saxon funerary activity south of the A52 near Bassingfield. To north of A52, route passes close to a the site of Holme Pierrepont deserted medieval village. Route also passes close to number of extant listed buildings and historic structures, however it should not have a significant impact on the setting of any of these.	Slightly reduced risk of encountering archaeological deposits as passes through lagoon. Reduced potential effect on historic structures/buildings due to greater distance form Holme Pierrepont	Potential impacts on archaeology as for Trent Link Option 1.	Potential impacts on archaeology as for Trent Link Option 1. Slightly increased impact on a historic smithy (undesigned).	Slightly reduced impact on potential archaeological remains associated with Bassingfield. Slightly reduced impact on a historic swing bridge.
Landscape	Landscape impacts Minimal disruption to existing agricultural land; vegetation would be in place to locate the canal within the landscape; creates opportunities for canal users to experience a variety of waterscapes; appears canal-like in form; close to settlement at Bassingfield, which would increase potential usage and act as a catalyst for development; potential disruption to the setting of existing water courses and associated vegetation during construction; loss of vegetation; existing field pattern between Bassingfield and the existing Grantham Canal would be severed; footpaths and bridges would be required in order to continue an existing Public Right of Way [PROW] over Polser Brook and to cross the A52 respectively. Visual impacts: Instant screening along certain parts of the route; follows existing field boundary vegetation and hedgerow receptors in Bassingfield would not have any significant views of this option; screening vegetation would potentially be lost in order to integrate the canal into Holme Pierrepont Pits water body.	Landscape impacts Integrate into the water ski lake creating opportunities for canal users to experience a variety of waterscapes; integrates into the setting of Colwick Country Park; potential disruption to the setting of existing water courses during construction; severance of land from the end of the ski lake and River Trent may need a footbridge for pedestrian access. Visual impacts Instant vegetation along certain parts of the route, due to the use of existing water bodies; Recreational receptors using Holmes Pierrepont Pit would have a direct view of the proposed route, during construction and operation; some screening vegetation would potentially be lost in order to connect the route into the ski lake.	Landscape impacts Links into the development at Option M [600 berth marina] which would create greater connectivity for potential users; generally follows field boundary vegetation which will provide a setting for the canal and integrate into the landscape; minimal disruption to the setting of adjacent water bodies; Sandy Lane would be severed by the route, requiring bridge access. The Trent Valley Way/Holme Lane would be severed by the route, requiring bridge access. Visual impacts Dense mature vegetation in place to screen the route from vehicle users of the A52, thus minimising visual intrusion; screened views for receptors in Holme Farm and The Firs; potential open views of the route from receptors using Sandy Lane although vegetation along field boundaries would offer a visual barrier in parts.	Landscape impacts Existing field pattern would be severed by the route where it cuts across the field boundaries; an element of existing woodland to the north of the A52 would need to be removed to accommodate the route, the A52 would require bridge access creating an impact on the landscape. Visual impacts An opportunity exists to improve appearance of storage area (north of A52) through screen planting; receptors from a local school on Radcliffe Road in close proximity to the proposed route would have a direct view of the development; the removal of existing woodland north of the A52 would open up the visual envelope of the route significantly.	Landscape impacts Utilises more of the existing Polser Brook watercourse and as such, vegetation would be in place to locate the canal within the landscape; generally minimises the disruption to existing agricultural land; potential disruption to the setting of existing water courses during construction; vegetation on the western side of Polser Brook would be lost with the widening of the watercourse to a canal route. Visual impacts Instant screening along certain parts of the route, due to the use of existing water bodies; vegetation on the western side of Polser Brook would be lost with the widening of the watercourse to a canal route; distant views from Hill Farm experienced due to the topography of the area to the south west.
Recreation					
Potential for marina links		Would be possible to link to a marina development at the existing water ski lake (via a new lock)	Could provide an integrated link with marina provided by other development (e.g. Mosaic Estates Marina).		
Recreational routes	Could assist in opening up the recreational use and potential of the ponds/lakes to the south and east of the National water Sports Centre				
Planning Issues					
Safeguarded zones, e.g. for Highway development			Alignment may be affected by the "Radcliffe Crossing" highway safeguarded zone of interest		
Other developer's proposals		Would not provide a direct connection between the Mosaic Marina and the canal, i.e. connection would need to be via the River Trent.	Would not be compatible with a marina development at the water ski lake.	Repeat comment from 2b	
Funding Issues					
Funding opportunities					
Costs (includes 15% preliminaries and 10% contingency)	£24,100,000	£24,500,000	£20,600,000	£25,500,000	£24,300,000
Construction Costs	£19,000,000	£19,300,000	£16,300,000	£20,200,000	£19,200,000
Costs associated with option	n/a	£400,000	-£3,500,000	£1,400,000	£200,000
Canal refurbishment element included in the totals above	£3,900,000	£3,900,000	£3,900,000	£3,900,000	£3,900,000
Operational and Maintenance Costs	t.b.a.	t.b.a.	t.b.a.	t.b.a.	t.b.a.

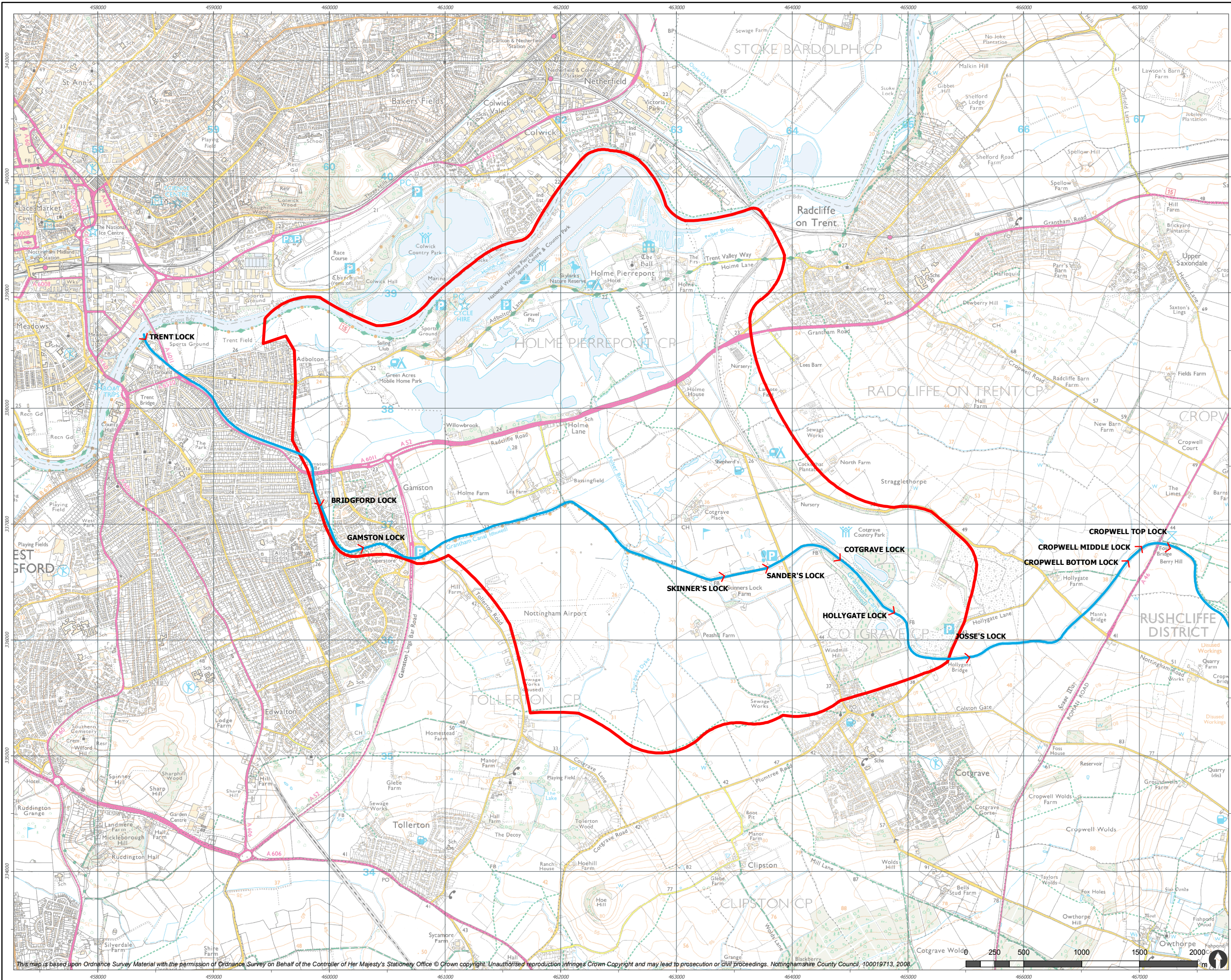
Option	Option 2	Option 2a	Option 2b	Option 2c	Option 3
Description	Restore existing Grantham Canal from Hollygate Bridge down to the bend just south of Bassingfield. Construct a new cut in a generally northerly direction, crossing beneath the A52, using the existing Polser Bridge. Continue north-northwest before turning west-southwest through existing bodies of water south of Adbolton Lane. Finally turn north across the National Water Sports centre Caravan and Camping Park before passing beneath Adbolton Lane and joining the River Trent to the west of the Sailing Club.	As Option 2 and other sub-options but with River Trent connection to the east of the Sailing Club.	As Option 2 and other sub-options but with a new bridge to the west of the existing Polser Bridge to permit the passage of broad boats in accordance with the original canal gauge.	As Option 2 and other sub-options but with the new cut leaving the existing canal just west of the Thurlbeck Dyke aqueduct approximately 350m to the southeast of the bend at Bassingfield.	Restore the existing Grantham Canal to just north of Gamston Bridge at Radcliffe Road (A6011). Construct a new cut in a generally northerly direction, passing beneath Adbolton Lane before joining the River Trent.
Engineering Issues					
Approximate Total Length (m)	7530	7510	7530	7360	8300
Approximate Length Refurbished (to Hollygate Bridge) (m)	4000	4000	4000	3650	6950
Approximate Length of New Cut (m)	3530	3510	3530	3710	1350
Number of locks between Hollygate Bridge and River Trent	9	9	9	9	7
Number of New Locks	5	5	5	5	1
Description of new locks required	A new flood lock would be required to be incorporated into the flood defences between Adbolton Lane and the sailing club. This would also serve to lower the level from the River Trent by approximately 1m to the level of the lakes south of Adbolton Lane. The second lock would be required to raise the level by about 1m to the level of Polser Brook at the A52 crossing. Three further new locks would be required to the south of the A52.	As Option 2	As Option 2	As Option 2	Equivalent to the original Lock 1. The new lock would be part of the flood defence line between Adbolton Lane and the River Trent. Fall approximately 2.2m.
Number of Refurbished Locks	4	As Option 2	As Option 2	As Option 2	6
Description of refurbished locks	Existing Locks 4 and 5 to be extensively refurbished. Locks 6 and 7 may need further attention to become fully operational.	As Option 2	As Option 2	As Option 2	Existing Locks 2, 3, 4 and 5 to be extensively refurbished. Locks 6 and 7 may need further attention to become fully operational.
Number of New Road and Track Crossings - ignoring footpath crossings.	3	As Option 2	As Option 2	As Option 2	1
Description of new road and track crossings	1) New single carriageway overbridge will be required at Adbolton Lane south of the sailing club. 2) New road crossing will be required at A52. Probably possible to use the existing Polser Bridge for narrowboats. - See Sub-option 2b. 3) New track crossing will be required east of Bassingfield.	As Option 2	As Option 2	As Option 2	New single carriageway overbridge will be required at Adbolton Lane.
Number of Refurbished Road and Track Crossings - ignoring footpath crossings	2	As Option 2	As Option 2	As Option 2	7
Description of refurbished road and track crossings	1) Cotgrave Bridge. New overbridge required. Road would need raising by a minimum of 2m. 2) Cotgrave Colliery site. New overbridge required. concrete slab / pipe culvert to be replaced.	As Option 2	As Option 2	As Option 2	1) Gamston Bridge. Original arch remains carrying one carriageway of A6011 Radcliffe Road. New overbridge required for the eastbound carriageway. 2) Ambleside (local distributor road) adjacent to A52 dual carriageway. New overbridge required. Possibly could be combined with a new A52 bridge. 3) A52 dual carriageway. New overbridge required. Sufficient headroom to allow construction of a new canal bridge in-situ or precast culvert. Open cut or (possibly) jacked. 4) Tollerton Road. New overbridge required. Tollerton Road would need raising by a minimum of 1m, possibly 1.5m. 5) Farm Track south of Bassingfield. New overbridge required. 6) Cotgrave Bridge. New overbridge required. Road would need raising by a minimum of 2m. 7) Cotgrave Colliery site. New overbridge required. concrete slab / pipe culvert to be replaced.
Water supply	To be confirmed	As Option 2	As Option 2	As Option 2	To be confirmed
Additional engineering issues	Maintaining the apparent connectivity (to be confirmed / investigated) between the large lake and the rowing course. i.e. it may be necessary to construct an inverted siphon beneath the new canal cut.	As Option 2	As Option 2	This option would be preferable as it would avoid the need to construct the substantial embankment embodying two locks that would be necessary for Option 2	The A52 and A6011 bridges would be a major structures on very busy dual-carriageway roads. The planning, design and construction could have an impact on the overall programme.
Environmental Issues					
Ecology	Passes through the north of Gamston Pits SINC. The main constraints relate to losses of habitats within the SINC and potential disturbance to breeding and over wintering birds (including Schedule 1 and Red Data list species). The route avoids the A52 pit so is unlikely to affect breeding black-necked grebe initially but would open up the Holme Pierrepont complex to future disturbance. Additionally the route would open up three undisturbed lagoons to the north of the SINC, significantly affecting the habitat of these lagoons and potentially disturbing a variety of other Schedule 1 and Red data list birds and other protected species including water vole, otter and GCN. This option is likely to be contentious and require mitigation for one or more of these species.	As per option 2, but Option 2a connection point to River Trent avoids a ditch. Less likely to be constraints associated with water vole, loss of BAP habitat.	As per option 2, but Option 2b avoids a section of Polser Brook under the A52. Less likely to be constraints associated with water vole, loss of BAP habitat.	As per Option 2, but Option 2c affects a greater section of Polser Brook, potential additional constraints associated with water vole, loss of BAP habitat.	Less land-take than Trent Link Route options 1, 2 and 4 and hence less habitat loss. Avoid disturbance of Holme Pierrepont lagoon complex. The route passes through Adbolton Port SINC which has historic great crested newt records, and mitigation would be required for loss of SINC habitat, and for GCN if still present
Cultural Heritage	As for Trent Link Option 1, potential to encounter archaeological remains both north and south of the A52. Passes through the site of a Roman villa where route turns north to join the River Trent. Potential impacts on historic structures/buildings similar to Trent Link Option 1.	Potential impacts on archaeology and on built heritage similar to Trent Link option 2, but avoids the Roman villa site.	Potential impacts on archaeology similar to Trent Link Option 2. Slightly increased potential impact on historic smithy (undesignated)	Potential impacts on archaeology similar to Trent Link Option 2. Slightly reduced potential effect on historic swing bridge.	Route passes close to known remains of Adbolton deserted medieval village, in particular the medieval church. Presence of these and other known archaeological features suggests that route would be likely to encounter as yet unknown archaeological deposits to the north of Gamston. Potential to slightly affect setting of Simkins Farmhouse (Grade II listed) on Adbolton Lane, however potential for green infrastructure route to benefit setting of this structure.
Landscape	Landscape impacts Brings into use a significant proportion of the existing Grantham Canal; generally minimises the disruption to existing agricultural land; vegetation would be in place to locate the canal within the landscape; creates opportunities for canal users to experience a variety of waterscapes; integrates into the Sailing Club; linear in form and goes against the grain of the existing character of the landscape and the existing Grantham Canal; existing field boundary vegetation and woodland would need to be removed; existing scrubland would be dissected around the A52 pit; potential disruption to the setting of Green Acres Mobile Home Park (GAMHP) and the Sailing Club. Visual impacts Existing vegetation along field boundaries north of GAMHP would be in place to reduce visual intrusion from the south; generally follow existing field boundary vegetation and hedgerows thus minimising its visual impact on the landscape; broken views would be obtainable where there are breaks in the trees lining Polser Brook; loss of vegetation around Adbolton Lane would open up the visual envelope of the proposal.	Landscape impacts Integrates into the Sailing Club creating opportunities for canal users to experience a variety of waterscapes; an element of existing woodland to the north of Adbolton would need to be removed; severance of playing fields to the east of the Sailing Club. Visual impacts Existing vegetation along field boundaries north of GAMHP is in place to reduce visual intrusion; a loss of vegetation around Adbolton Lane would open up the visual envelope of the proposal.	Landscape impacts Meander across the A52, thus appearing more canal-like in form, the existing field pattern would be severed by the route where it cuts across the field boundaries; an element of existing woodland to the north of the A52 would need to be removed; crossing the A52 would require a bridge access, opening up the visual envelope. Visual impacts An opportunity exists to improve appearance of storage area north of the A52 through screen planting; receptors from a local school on Radcliffe Road in close proximity to the proposed route would have a direct view.	Landscape impacts Utilises more of the existing Polser Brook watercourse and as such, vegetation would be in place to locate the canal within the landscape; generally minimise the disruption to existing agricultural land; potential disruption to the setting of existing water courses during construction; vegetation on the western side of Polser Brook would be lost with the widening of the watercourse to a canal route. Visual impacts Instant screening along certain parts of the route, due to the use of existing water bodies; vegetation on the western side of Polser Brook would be lost with the widening of the watercourse to a canal route; distant views experienced from Hill Farm due to the topography of the area to the south west.	Landscape impacts Brings into use the greatest proportion of the existing Grantham Canal; links to both the Trent Valley Way to Nottingham and to Radcliffe, close to West Bridgford, which would increase potential usage and act as a catalyst for development; an element of existing woodland to the north of Adbolton would need to be removed; the existing field pattern would be severed across nine field boundaries – the entire length of the route; disruption to site of ecological interest north of Adbolton. Visual impacts Views from key receptors generally limited due to existing topography, existing roadside vegetation and existing field boundary vegetation; receptors living on the outskirts of West Bridgford and receptors using the Trent Valley Way would have a reduced visual impact; receptors travelling along Adbolton Lane to West Bridgford would have views of the route
Recreation					
Potential for marina links					
Recreational routes	Could assist in opening up the recreational use of the area around the A52 lake		No room for a tow path on Polser Brook. At-grade crossing of A52 for pedestrians may raise opposition from Highways Agency		Would create a circular route from Gamston. However, tow path only (no equestrians). Would not open up the A52 barrier across the study area.
Planning Issues					
Safeguarded zones, e.g. for Highway development					
Other developer's proposals					
Funding Issues					
Funding opportunities					
Costs (includes 15% preliminaries and 10% contingency)	£23,400,000	£23,900,000	£24,800,000	£23,600,000	£21,900,000
Construction Costs	£18,500,000	£18,900,000	£19,600,000	£18,700,000	£17,300,000
Costs associated with option	n/a	£500,000	£1,400,000	£200,000	n/a
Canal refurbishment element included in the totals above	£3,900,000	£3,900,000	£3,900,000	£3,900,000	£14,100,000
Operational and Maintenance Costs	t.b.a.	t.b.a.	t.b.a.	t.b.a.	t.b.a.

Option	Option 4	Option 4a	Option 4b	Option 4c
Description	A new cut following the line of the abandoned former Cotgrave Colliery railway line commencing in the vicinity of Lock 6, crossing Stragglethorpe Road, Radcliffe Road and Holme Lane before connecting into the River Trent. This route would be at more or less existing ground level until the vicinity of the track between Main Road and Stragglethorpe Road, after which it would be on the embankment of the old railway before descending to the River Trent after the Holme Lane bridge.	As Option 4 but with the new cut descending to the flood plain to the south of Holme Lane using four locks with the cut the passing beneath Holme Lane at river level.	As Option 4 but descending from the embankment between Radcliffe Road and Holme Lane before turning north west to link into the cut between the possible Mosaic Marina and the River Trent.	As Option 4, 4a or 4b but with the existing canal being made navigable between Hollygate Bridge and Tollerton Road.
Engineering Issues				
Approximate Total Length (m)	4950	4950	4500	9000
Approximate Length Refurbished (to Hollygate Bridge) (m)	1320	1320	1320	5370
Approximate Length of New Cut (m)	3630	3630	3180	3630
Number of locks between Hollygate Bridge and River Trent	8	As Option 4	As Option 4	As Option 4
Number of New Locks	7	As Option 4	As Option 4	As Option 4
Description of new locks required	Initial assessment is for this link to join the existing canal just upstream of Lock 6. The water level between Locks 7 and 6 could be maintained over the Stargglethorpe Road Bridge, after which there would be a flight of two locks. The next level would be maintained over the Radcliffe Road bridge, after which there would be another lock. It should be possible to maintain this level over the Holme Lane bridge, after which a flight of three locks would bring the level down to the general flood plain. A final lock would bring the canal down to the River Trent.	As Option 4	As Option 4	As Option 4
Number of Refurbished Locks	1	As Option 4	As Option 4	3
Description of refurbished locks	Lock 7 may need further attention to become fully operational.	As Option 4	As Option 4	Existing Locks 4 and 5 to be extensively refurbished. Lock 6 may need further attention to become fully operational.
Number of New Road and Track Crossings - ignoring footpath crossings.	1	2	As Option 4	As Option 4, 4a or 4b
Description of new road and track crossings	The track that crosses the railway more or less at grade south of the Stragglethorpe Road bridge would need to be taken over the canal.	As Option 4 plus a new bridge that would be required to take the canal beneath Holme Lane.	As Option 4	As Option 4, 4a or 4b
Number of Refurbished Road and Track Crossings - ignoring footpath crossings	3	2	2	3
Description of refurbished road and track crossings	This option requires that the existing railway bridges would be refurbished and modified to carry the canal over Stragglethorpe Road, Radcliffe Road and Holme Lane.	This option requires that the existing railway bridges would be refurbished and modified to carry the canal over Stragglethorpe Road and Radcliffe Road.	This option requires that the existing railway bridges would be refurbished and modified to carry the canal over Stragglethorpe Road and Radcliffe Road.	Track from Cotgrave Road to Stragglethorpe Road Cotgrave Road Track south of Bassingfield
Water supply	To be confirmed	As Option 4	To be confirmed	As Option 4
Additional engineering issues	The topographic survey of this route comprised a string of levels along the line of the railway and cross sections of the embankment either side of the three over bridges. At these points, the railway was single track and the bridges were therefore relatively narrow and there could well be quite significant engineering problems in the creation of an adequate channel and towpath at these points. However, the OS plans and aerial photography show that there are significant lengths between the bridges where the embankment supported two railway tracks and was, therefore considerably wider than adjacent to the bridges. This additional width would make this option more viable.	As Option 4	As Option 4	As Option 4
Environmental Issues				
Ecology	Potential for badger, reptile and other local BAP species. Would provide link to Cotgrave Country Park. Avoids disturbance of Holme Pierrepont lagoon complex.	As Option 4 but with the new cut descending to the flood plain to the south of Holme Lane using four locks with the cut the passing beneath Holme Lane at river level.	As per option 4 and 4a. This would connection to Options 1b and M	
Cultural Heritage	Northern section between railway and River Trent may encounter archaeological remain; reuse of railway embankment unlikely to impact any underlying deposits. Potential for slight effect on setting of some of the listed buildings in vicinity of Holme Pierrepont Hall, due to elevation on railway embankment.	Increased potential to encounter archaeological remains as diverts from existing railway embankment on to undisturbed ground.	Increased potential to encounter archaeological remains as diverts from existing railway embankment on to undisturbed ground.	
Landscape	Landscape impacts Vegetation at the base of the embankment would be retained to locate the canal within the landscape setting; a canal setting would improve the visitor attraction to this underused part of the study area; close proximity to Radcliffe-on-Trent, increasing the number of potential users and acting as a catalyst for development; limited space and encroachment into adjacent field boundaries and loss of vegetation; field severance north of route; two bridges would be required to cross the A52 and Holme Lane, although existing railway bridges may be used. Visual impacts Existing vegetation has the potential to screen receptors to the west of the study area; a canal network will improve the visual aesthetic of the existing route; passengers using railway line to the north would have direct views of the route, enhancing the richness of the landscape; screening vegetation may be lost in certain areas due to potential widening of the route; there may be an increased number of highly sensitive receptors in Radcliffe-on-Trent who may be negatively impacted.	Landscape impacts The existing field pattern is severed by the route where it cuts across the field boundaries; severance of Holme Way would require a bridge. Visual impacts Existing vegetation in place has the potential to screen receptors within the study area and in Radcliffe-on-Trent partial loss of screening vegetation north of Holme Lane	Landscape impacts Existing vegetation in place along the closest field boundary would have the potential to provide a setting; link into the development at Option M [600 berth marina which would create greater connectivity for potential users; existing field pattern would be severed by the route where it cuts across the field boundaries; conflicts with proposed Trent Crossing Corridor. Visual impacts Vehicle receptors using Holme Lane would be screened by existing vegetation.	
Recreation				
Potential for marina links				
Recreational routes	Would prevent the use of the disused railway line as a multi-user leisure route between Cotgrave and Radcliffe. The railway corridor may also be too narrow to accommodate a towpath in places.			
Planning Issues				
Safeguarded zones, e.g. for Highway development		Alignment may be affected by the "Radcliffe Crossing" highway safeguarded zone of interest	More likely to impinge on the possible new highway link over the river, especially if the new cut terminated at the Mosaic Marina.	Possible new highway link would need to cross the canal link. (Somebody else's problem?)
Other developer's proposals		Potentially to incorporate this sub-option with the Mosaic Marina proposal.		
Funding Issues				
Funding opportunities				
Costs (includes 15% preliminaries and 10% contingency)	£29,700,000	£29,900,000	26600000	£32,700,000
Construction Costs	£23,500,000	£23,600,000	21000000	£25,800,000
Costs associated with option	n/a	£200,000	-£3,100,000	£3,000,000
Canal refurbishment element included in the totals above	£900,000	£900,000	£900,000	£3,900,000
Operational and Maintenance Costs	t.b.a.	t.b.a.	t.b.a.	t.b.a.

Option	Option T1	Option T1a	Option H	Option M
Description	Restore the existing Grantham Canal from Hollygate Bridge down to a point just east of Tollerton Road. Create a new cut northwards from a point approximately 150m east of Tollerton Road, generally following field boundaries, passing under the A52, crossing open ground to the west of the large lake, passing to east of Greenfields Mobile Park, crossing beneath Adbolton Lane and joining the River Trent at a similar point to Option 3.	As Option T1 but with a more direct route being followed from the Greenfields Mobile Home Park to join the River Trent just to the west of the sailing club.	The "Havenwood" option. This option is based on a new cut from the River Trent upstream of Holme Sluice that connects to the south western end of the rowing lake. A second cut in a southerly direction would pass beneath Adbolton Lane and enter the large lake in a former gravel pit. A further connection would be made southwards to join the Grantham Canal just east of Tollerton Road with a high profile double inclined plane that would transport boats across the A52 Radcliffe Road. A sub-option would be to connect to the River Trent to the east of the Sailing Club instead of passing through the rowing lake. A marina would be constructed in the large gravel pit lake and also (Possibly) in the rowing lake. If this development took place the all that would remain would be the restoration of the existing canal between Tollerton Road and Hollygate bridge.	The "Mosaic Marina" option. This option is based upon the construction of a marina in conjunction with a housing development between the railway embankment and Radcliffe. It would be situated to the west of the railway embankment and north of the A52 with a connection to the River Trent and a new canal cut to Polser Bridge. This would form a route that is essentially the same as Option 1b. If this development took place, then a link could be made to the canal as described in the upstream parts of Options 1 or 2 (and the relevant sub-options) with the existing canal being restored between the Tollerton Road and Hollygate Bridge.
Engineering Issues				
Approximate Total Length (m)	7700	7200	7400	7200
Approximate Length Refurbished (to Hollygate Bridge) (m)	5300	5300	5300	4000
Approximate Length of New Cut (m)	2400	1900	2100	3200
Number of locks between Hollygate Bridge and River Trent.	9 or 10	As Option T1	5	9
Number of New Locks	5 or 6	As Option T1	1	5
Description of new locks required	A flood lock would be required as the new cut crosses the existing flood defence just north of Adbolton Lane. There would be no change in the normal level at this lock. A new lock would be needed just north of the A52 to drop the level so that the canal could cross beneath the road. Either three average depth locks or two deep locks would be required to raise the level to average ground level south of the A52 and a further average depth lock would be necessary to bring the level up to the existing Grantham Canal.	As Option T1	A new flood lock would be required to be incorporated into the flood defences between Adbolton Lane and the sailing club. This would also serve to lower the level from the River Trent by approximately 0.7m to the level of the large lake south of Adbolton Lane.	Two locks would be required at suitable locations between the junction with the River Trent and the north of the A52 crossing. One of these would probably be just south of the Holme Lane crossing with the other approxiamted half way between Holme Lane and the A52 crossing. However, if the first lock is moved so that it would be south of any future marina in this vicinity, a marina could be constructed at the same level as the river and this would reduce the need for a back-pumped water supply. Three further new locks would be required to the south of the A52.
Number of Refurbished Locks	4	As Option T1	4	As Option 1b and Options 1c and / or 1d
Description of refurbished locks	Existing Locks 4 and 5 to be extensively refurbished. Locks 6 and 7 may need further attention to become fully operational.	As Option T1	Existing Locks 4 and 5 to be extensively refurbished. Locks 6 and 7 may need further attention to become fully operational.	As Option 1b and Options 1c and / or 1d
Number of New Road and Track Crossings - ignoring footpath crossings.	3	As Option T1	3	As Option 1b and Options 1c and / or 1d
Description of new road and track crossings	A new road bridge would be required at Adbolton Lane, the A52 dual-carriageway and at Bassingfield Lane	As Option T1	A new road bridge would be required at Adbolton Lane, the A52 dual-carriageway and at Bassingfield Lane. The Adbolton lane bridge would involve local realignment of the road and also the canoe slalom acces road. The proposed A52 crossing would be by means of a unique inclined plane bridge structure taht would be constructed to carry boats in a watertight tank over the A52 between a holding pond and the large gravel pit lake north of the A52.	As Option 1b and Options 1c and / or 1d
Number of Refurbished Road and Track Crossings - ignoring footpath crossings	3	As Option T1	3	As Option 1b and Options 1c and / or 1d
Description of refurbished road and track crossings	1) Track south of Bassingfield - replace culverts with swing or lifting bridge. 2) Cotgrave Bridge. New overbridge required. Road would need raising by a minimum of 2m. 3) Cotgrave Colliery site. New overbridge required. concrete slab / pipe culvert to be replaced.	As Option T1	1) Track south of Bassingfield - replace culverts with swing or lifting bridge. 2) Cotgrave Bridge. New overbridge required. Road would need raising by a minimum of 2m. 3) Cotgrave Colliery site. New overbridge required. concrete slab / pipe culvert to be replaced.	As Option 1b and Options 1c and / or 1d
Water supply	To be confirmed	As Option T1	To be confirmed	As Option 1b and Options 1c and / or 1d
Additional engineering issues	The A52 bridge would be a major structure on a very busy dual-carriageway trunk road. The planning, design and construction could have an impact on the overall programme. In addition, this crossing beneath th A52 would create a sump the would require a local pump instalation to maintain the necessary headroom.	As Option T1	The Gondola Transporter Bridge over the A52 would be a unique structure and the associated financial, planning, construction and operational risks are therefore likely to be greater than the options that use conventional engineering solutions.	
Environmental Issues				
Ecology	The option skirts along the western boundary of Gamston Pits SINC, potentially resulting in some disturbance of the Holme Pierrepont terrestrial vegetation, but is several hundred meters away from the A52 pit (where black necked grebe are known to breed). Protected species potential on field boundaries include badger, rare arable flora, species rich hedgerows, bats. However presence of these species and thus the absolute ecological constraints will require further field survey. Option T1a connects to the Trent at a ditch with emergent vegetation which may result in constraaints associated with loss of BAP habitat, and water vole habitat	As per Option T1, but less land take, however connection at River Trent is at a ditch. Potential additional constraints associated with loss of BAP habitat and water vole.	Is likely to be the most contentious as it will significantly affect the largest number of ecological constraints. The route passes straight through the A52 pit which forms part of the Gamston Pits SINC, and is considered the most valuable of the ornithological sites within the Holme Pierpoint complex area due to breeding black necked grebe, and a regular visiting site and potential breeding ground for other Schedule 1 and Red data list species. The need to avoid the Holme Pierrepoint complex, and in particular the A52 pit has been reiterated through consultation. Deepening the A52 pit for recreational boat use would be detrimental to the black-necked grebes. They prefer shallow warm pond for breeding, which has extensive fringe habitat. Scrub removal may also open out areas, removing cover, which has the potential to increase levels of disturbance. Also this species is targeted by egg thieves. Scrub habitat against the wetland fringe is also important for migrant warblers including grasshopper warbler, whitethroat, sedge and reed warbler. Opening up the A52 pit for recreation may also disturb other protected species including water vole, otter and GCN during construction and operation. The southern part of the option skirts along field boundary features. Protected species potential on field boundaries include badger, rare arable flora, species rich hedgerows, bats. This option is most likely to be subject to objection from statutory bodies. Mitigation is likely to be required for loss of SINC habitat, disturbance to black necked grebe and other Schedule 1/Red data list birds, and potentially other protected species	Results in some land take of the eastern extent of Gamston Pits, several hundred of meters away from the A52 pit where black necked grebe are known to breed so is unlikely to result in impact to this species, however consultation with the county bird recorders suggests that the lagoons to the east of Gamston Pits have developed into an area of ornithological valuefor wader passage and summer migrants, providing a contrast to habitats found on the A52 pit. Option M will also affect a large portion of Polser Brook, which is likely to result in impacts on water vole, and potentially white clawed crayfish and otter. It would be preferable to retain the natural channel of Polser Brook, as a canal replacement would differ in its habitat (this has been reiterated through consultation). Where option M runs adjacent to Polser Brook, there is likely to be disturbance during construction. Where option M runs adjacent to Polser Brook, there is also potential for enhancement. The canal link (including the new marina) would complement Polser Brook by providing an additional water course for water vole to use, and for otter to disperse along providing appropriate features are incorporated into the design. The new marina would also provide an additional water body adjacent to Holme Pierrepont Complex, which has the potential to benefit wintering bird species providing appropriate features are incorporated into the design. There is potential loss of hedgerows/boundary features, but these could also be enhanced as part of the scheme.
Cultural Heritage	Route represents a variation on options 3 and H. Affects a known Iron-Age Romano-British settlement and the site of a second World War heavy anti aircraft battery and passes between the remains of Adbolton deserted medieval village and the site of a Roman villa. Potential for these features to be incorporated as features along the route (e.g. through the use of interpretation boards). Route option T1a passes through/very close to the Roman villa site. This represents an important archaeological site and so could be a significant constraint to this route option.	This route would pass close to the site of the Roman villa.	Route traverse an area of known Iron Age and Romano-British settlement activity and could affect an Iron Age/Romano-British settlement site. It would, however, pass to the east of the Roman Villa site.	Potential marina site and link from marina to the River Trent has potential to encounter archaeological remains. Potential slight effect of route on setting of a number of listed buildings.
Landscape	Landscape impacts Brings into use a significant proportion of the existing Grantham Canal; avoids disruption to areas of ecological interest; links to both the Trent Valley Way to Nottingham and Radcliffe-on-Trent; provides an attractive waterside edge of any future expansion of Gamston and West Bridgford; GAMHP would have a canal frontage on two sides; more linear than the meandering form of the existing canal, and goes against the grain of the landscape; crossing the A52 and Adbolton Lane would requiring bridges which would create an impact on the character of the landscape; GAMHP would be severed by the route; severance of five fields within a landscape already altered by gravel workings. Visual impacts Generally follows the existing hedgerows and vegetation; open views across fields for vehicle receptors traveling along Adbolton Lane; receptors in GAMHP would experience a visual impact as route dissects site; there would be a visual impact for receptors in Holme Farm; the route would sever a PROW requiring a footbridge.	Generally minimises the disruption to existing agricultural land; connects into the Sailing club development which will add to the waterside setting; GAMHP would have a canal frontage on two sides; more linear in form than the Option T1, which bears little character resemblance to the form of the existing canal route; some existing field boundary vegetation would need to be removed; potential distrupction to the setting of GAMHP; Adbolton Lane would be severed, requiring a bridge; GAMHP would be severed by the route. Visual impacts Follows the line of existing hedge-lined field boundaries in order to minimise visual intrusion; moves away from settlements south of Adbolton Lane which will reduce the number of highly sensitive receptors; screening vegetation would be lost in certain areas due to clearance for the route.	Landscape impacts Utilises a significant stretch of the existing Grantham Canal route; forms part of a wider scheme which would create a marina development at Pierrepont, thereby increasing offering a variety of attractive waterside settings to users; vegetation would be in place to locate the canal within the landscape; existing field pattern south of the A52 would be severed by the route; dissection of a large area identified as having ecological interest: Gamston Pits; potential disruption to the setting of existing water courses during construction; severance of Adbolton Lane, requiring a bridge; severance of the playing fields to the east of the Sailing Club. Visual impacts Instant screening along certain parts of the route, due to the use of existing water bodies; construction of the inclined plane over the A52 will increase the visual envelope significantly; severance a PROW, requiring a footbridge for pedestrian access.	Landscape impacts Forms part of a wider scheme which would create a marina development, thereby increasing offering a variety of attractive waterside settings to users; in close proximity to Radcliffe on Trent, which will increase the number of potential users and to act as a catalyst for development; broadly follows the line of existing field patterns; an element of existing woodland to the north of the A52 would need to be removed; severance of Polser Brook and Holme Lane and fields to the north of Holme Lane. Visual impacts Dense mature vegetation in place to screen the development; existing vegetation along field boundaries south of Adbolton Lane would be in place to reduce visual intrusion from the north; due to the close proximity to settlements, there would be an increased number of highly sensitive receptors who may be negatively impacted by the construction process; potential open views of the development from receptors using Sandy Lane although vegetation along field boundaries should offer a visual barrier in parts; views of the route by vehicle receptors using the A52 and Sandy Lane.
Recreation				
Potential for marina links				
Recreational routes				
Planning Issues				
Safeguarded zones, e.g. for Highway development				
Other developer's proposals				
Funding Issues				
Funding opportunities				
Costs (includes 15% preliminaries and 10% contingency)	£22,300,000	£21,100,000	Not costed on the same basis as the other options and variations	Not costed but probably similar to Option 1b plus a marina
Construction Costs	£17,600,000	£16,700,000	Not costed on the same basis as the other options and variations	Not costed but probably similar to Option 1b plus a marina
Costs associated with option	n/a	-£1,200,000	n/a	n/a
Canal refurbishment element included in the totals above	£3,900,000	£3,900,000	Not costed on the same basis as the other options and variations	Not costed but probably similar to Option 1b plus a marina
Operational and Maintenance Costs	t.b.a.	t.b.a.	Not costed on the same basis as the other options and variations	Not costed but probably similar to Option 1b plus a marina

FIGURES

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- KEY:**
- Grantham Canal Lock
 - Grantham Canal
 - Study Area

Revision Details	By	Check	Date	Suffix
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DRAWING STATUS				
Code	Description	Current Status	Appd	Date
P	Preliminary			
A	Submitted for Review	X	SBB	08/08/08
C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title

RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

FIGURE 1.1

STUDY AREA

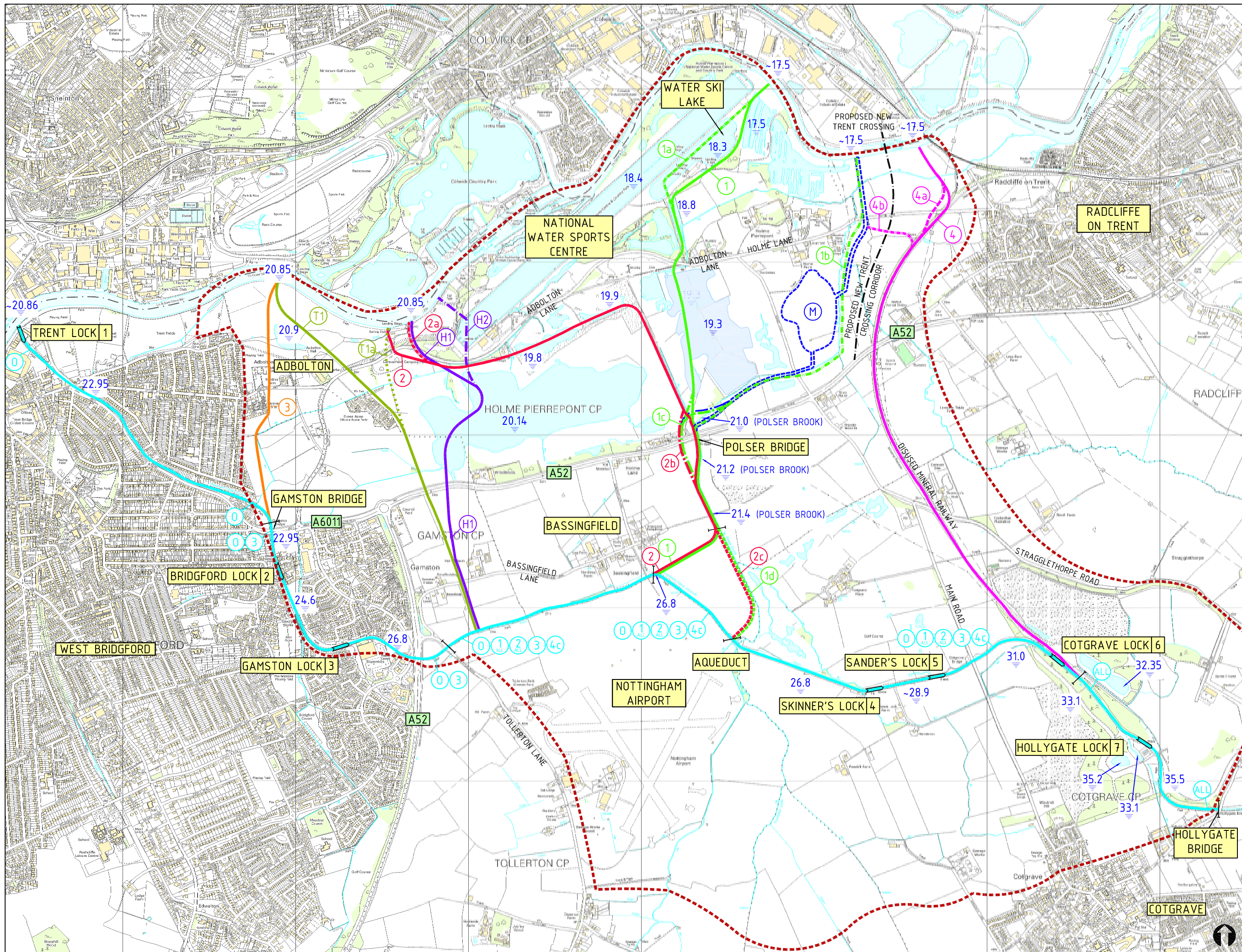
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Stage 1 check SBB	Stage 2 check	Originated CH_ENV	Date 08/08/08



Drawing Number

D120103/PM/1.1

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KEY:

- TRENT LINK OPTION 1
- TRENT LINK OPTION 1a
- TRENT LINK OPTION 1b
- TRENT LINK OPTION 1c
- TRENT LINK OPTION 1d
- TRENT LINK OPTION 2
- TRENT LINK OPTION 2a
- TRENT LINK OPTION 2b
- TRENT LINK OPTION 2c
- TRENT LINK OPTION 3
- TRENT LINK OPTION 4
- TRENT LINK OPTION 4a
- TRENT LINK OPTION 4b
- TRENT LINK OPTION H1
- TRENT LINK OPTION H2
- TRENT LINK OPTION M
- TRENT LINK OPTION T1
- TRENT LINK OPTION T1a
- GRANTHAM CANAL

Ⓢ TRENT LINK OPTIONS NUMBERING

Ⓢ TRENT LINK OPTIONS USING SECTIONS OF EXISTING CANAL

Ⓢ EXISTING LOCK LOCATION & NUMBER

??? EXISTING WATER LEVEL

— BREAK IN ROUTE OPTIONS

--- STUDY AREA BOUNDARY

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RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

**FIGURE 1.2
CANAL ROUTE OPTIONS**

Scale @ A3
1:20,000 (1:10,000 @ A1)

Drawn
SKP




Approved

Stage 1 check
RJM


Stage 2 check

Originated
MANSFIELD

Date
30.07.08

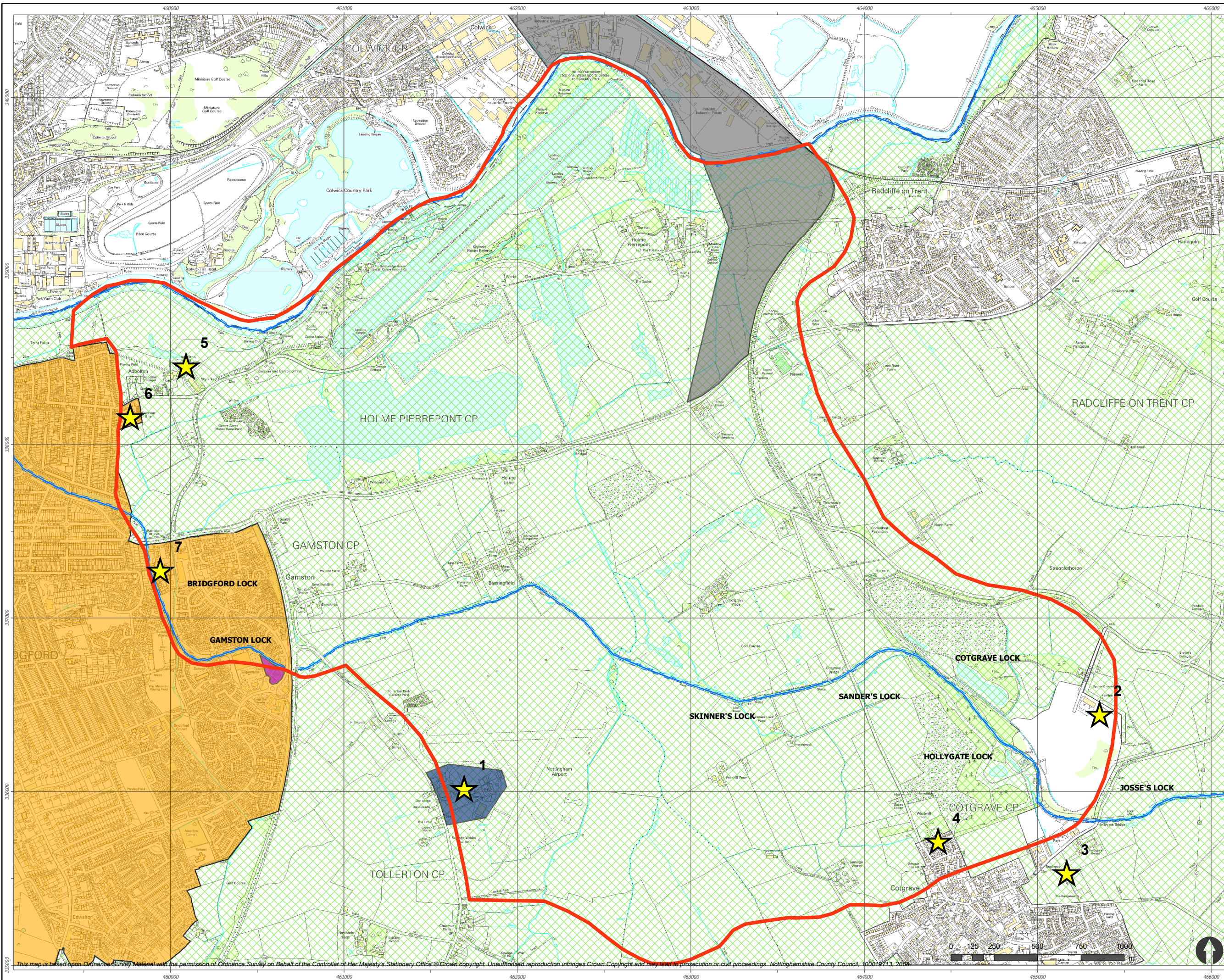


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Drawing Number
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KEY:



Planning Applications

Study Area

COM11 - Protection of Recreational Facilities

Shop 2b - Local Shopping

EMP3 - Tollerton Airfield

HOU9 - Conversion to Flats and Bedsits

5.10 - Local Authority road scheme

EN14 - Greenbelt

Revision Details	By	Check	Date	Suffix
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P	Preliminary			
A	Submitted for Review	x	SS	15/08/08
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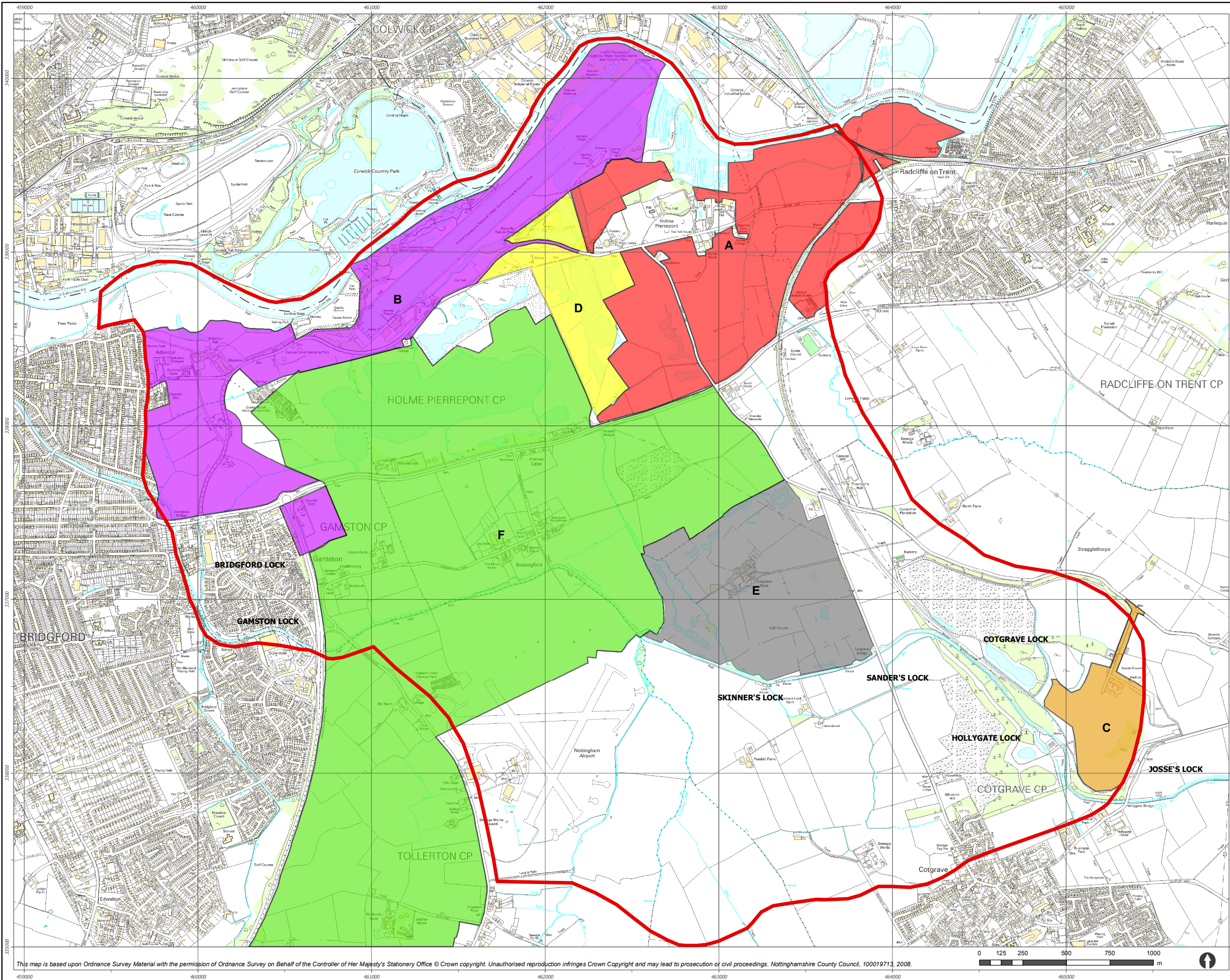
Job Title
RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title
**FIGURE 2.1
PLANNING
POLICY DESIGNATIONS
AND PLANNING
APPLICATIONS
(SHEET 1 OF 2)**

Scale @ A3 1:20,000			
Drawn RC	Approved SS		
Stage 1 check SS	Stage 2 check	Originated CH_ENV	Date 08/08/08



Drawing Number D120103/PLA/2.1	Revision
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- KEY:**
- Study Area
 - Mosaic Estates
 - Notts CC Land Ownership
 - EMDA Land Ownership
 - Tarmac
 - Cotgrave Golf Club
 - Taylor Wimpey

Revision Details		By	Check	Date	Suffix

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P	Preliminary			
A	Submitted for Review	x	SS	15/08/08
C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title

**RIVER TRENT TO
COTGRAVE
GREEN INFRASTRUCTURE
STUDY**

Drawing Title

**FIGURE 2.2
LAND OWNERSHIP
PLAN
(SHEET 2 OF 2)**

Scale @ A3 1:20,000			
Drawn RC/JV	Approved SS		
Stage 1 check SS	Stage 2 check 	Originated CH_ENV	Date 08/08/08



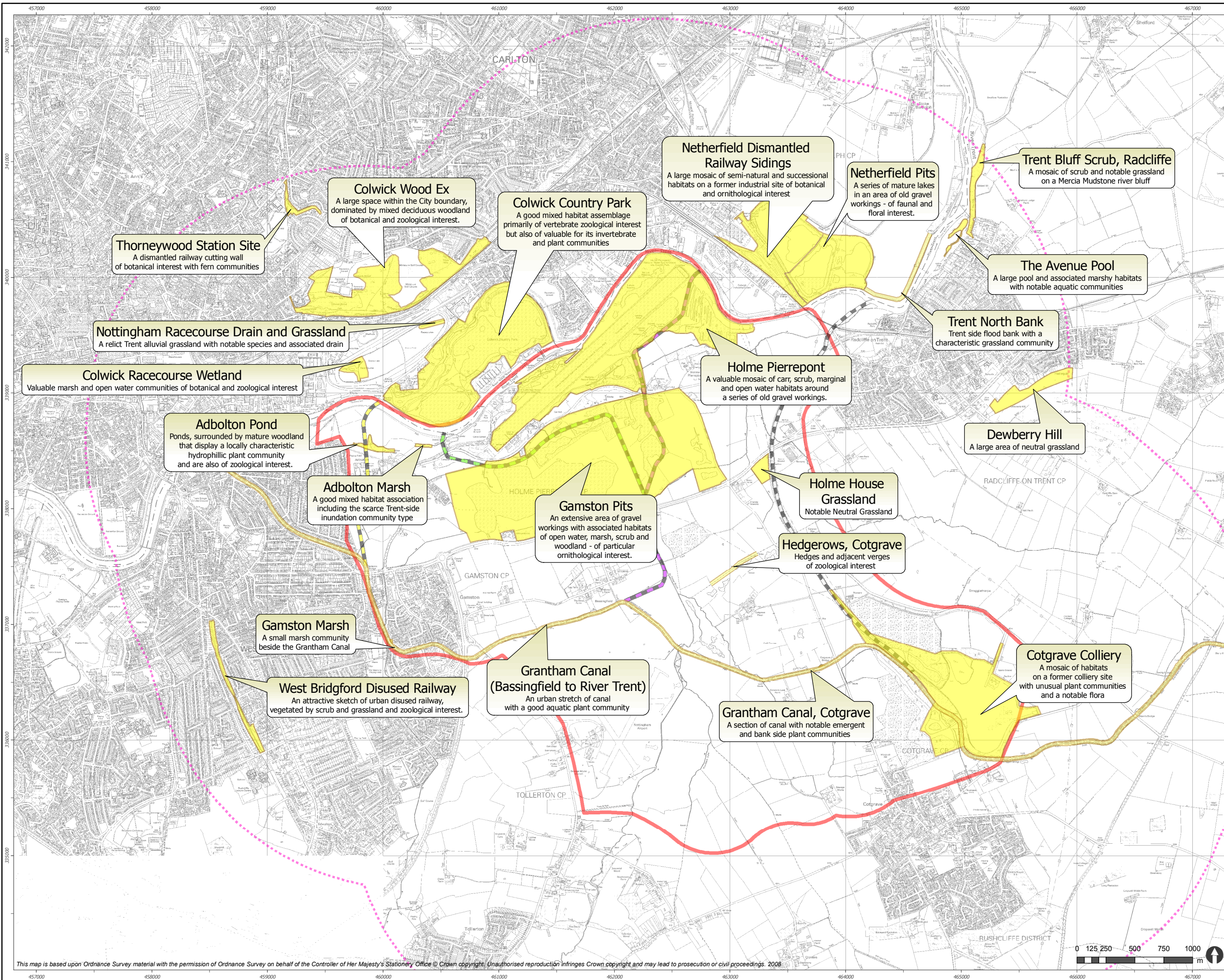
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KEY:

- SINC
- Study Area
- 2 km Consultation area
- Trent Link Option 1
- Trent Link Option 2
- Trent Link Option 3
- Trent Link Option 4

NOTE:
Source Nottinghamshire Biological and Geological Records Centre and Local Wildlife Site Citations.

Revision Details				
By	Check	Date	Suffix	

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Code	Description	Current Status	Appd	Date
P	Preliminary			
A	Submitted for Review	x	LP	06/08/08
C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title







RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

**FIGURE 3.1
SITES OF IMPORTANCE FOR NATURE CONSERVATION (SINCS)
(SHEET 1 OF 1)**

Scale @ A3
1:30,000

Drawn	Approved
JV	SBB
Stage 1 check LP	Stage 2 check TA
Originated CH_ENV	Date 06/08/08



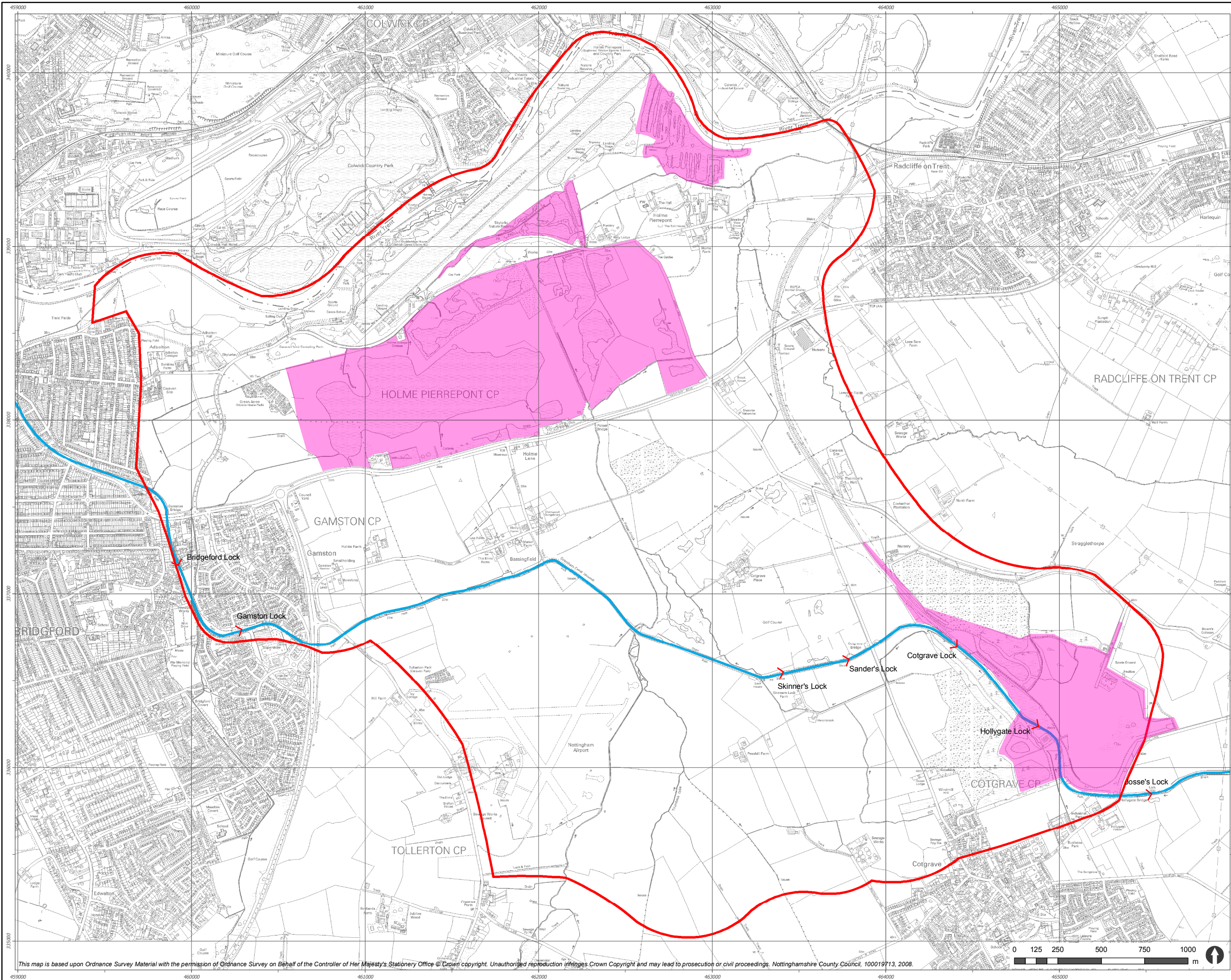
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D120103/SINC/3.1

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- KEY:**
- Grantham Canal Lock
 - Sites of Ornithological Value Based on Consultation Data
 - Grantham Canal
 - Study Area

Revision Details		By	Check	Date	Suffix

DRAWING STATUS				
Code	Description	Current Status	Appd	Date
P	Preliminary			
A	Submitted for Review	X	SBB	08/08/08
C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title

**RIVER TRENT TO
COTGRAVE
GREEN INFRASTRUCTURE
STUDY**

Drawing Title

**FIGURE 3.2
SITES OF ORNITHOLOGICAL
VALUE BASED ON
CONSULTATION DATA
(SHEET 1 OF 1)**

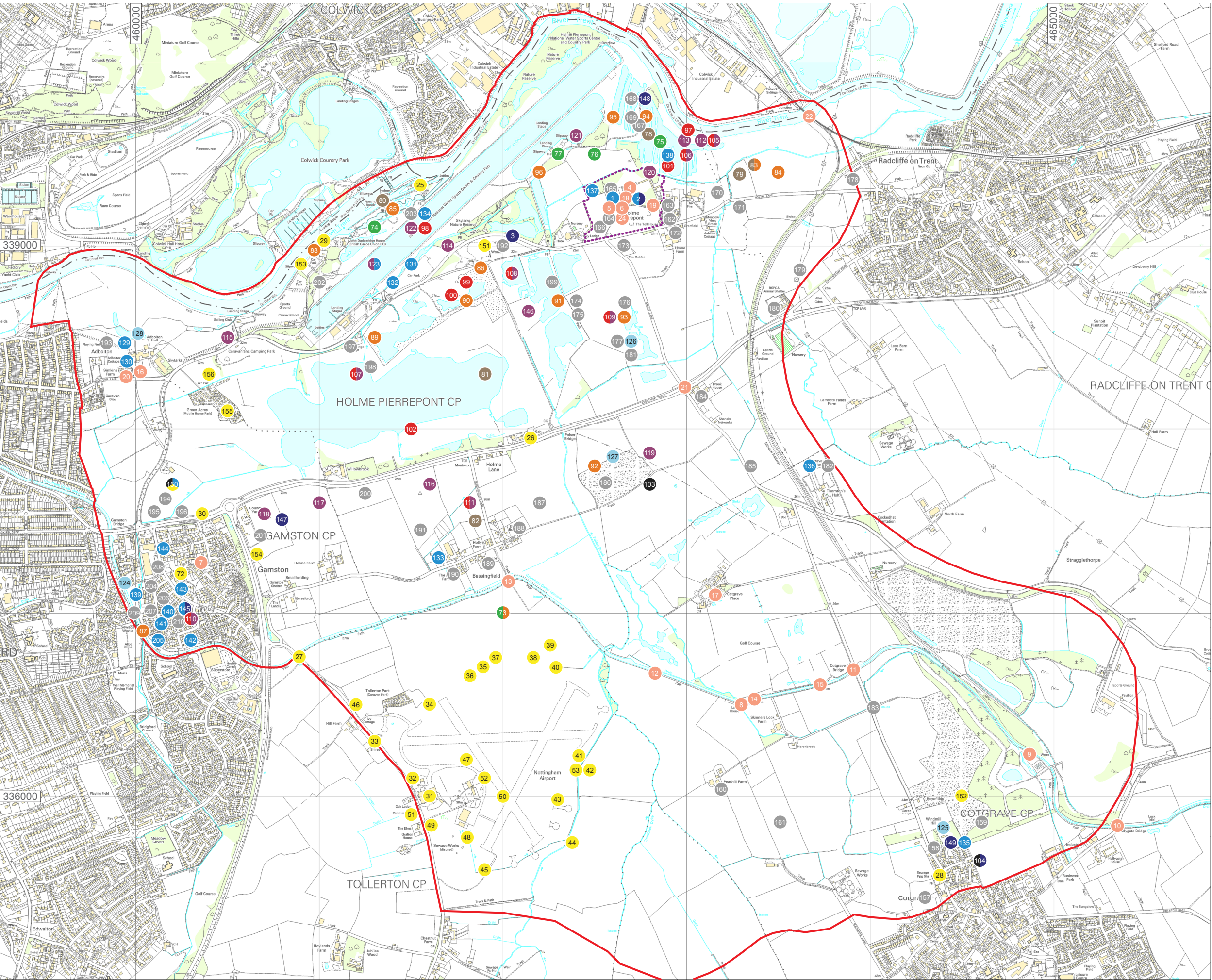
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Drawn JV	Stage 1 check JAW	Stage 2 check CH_ENV	Date 08/08/08



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KEY:

- STUDY AREA
- HOLME PIERREPORT REGISTERED PARK AND GARDEN

ARCHAEOLOGICAL SITES, FIND SPOTS AND LISTED BUILDINGS

- PREHISTORIC
- PALEOLITHIC
- NEOLITHIC
- BRONZE AGE
- IRON AGE
- ROMAN
- EARLY MEDIEVAL
- MEDIEVAL
- POST-MEDIEVAL
- EARLY MODERN
- MODERN
- UNDATED

NOTE:

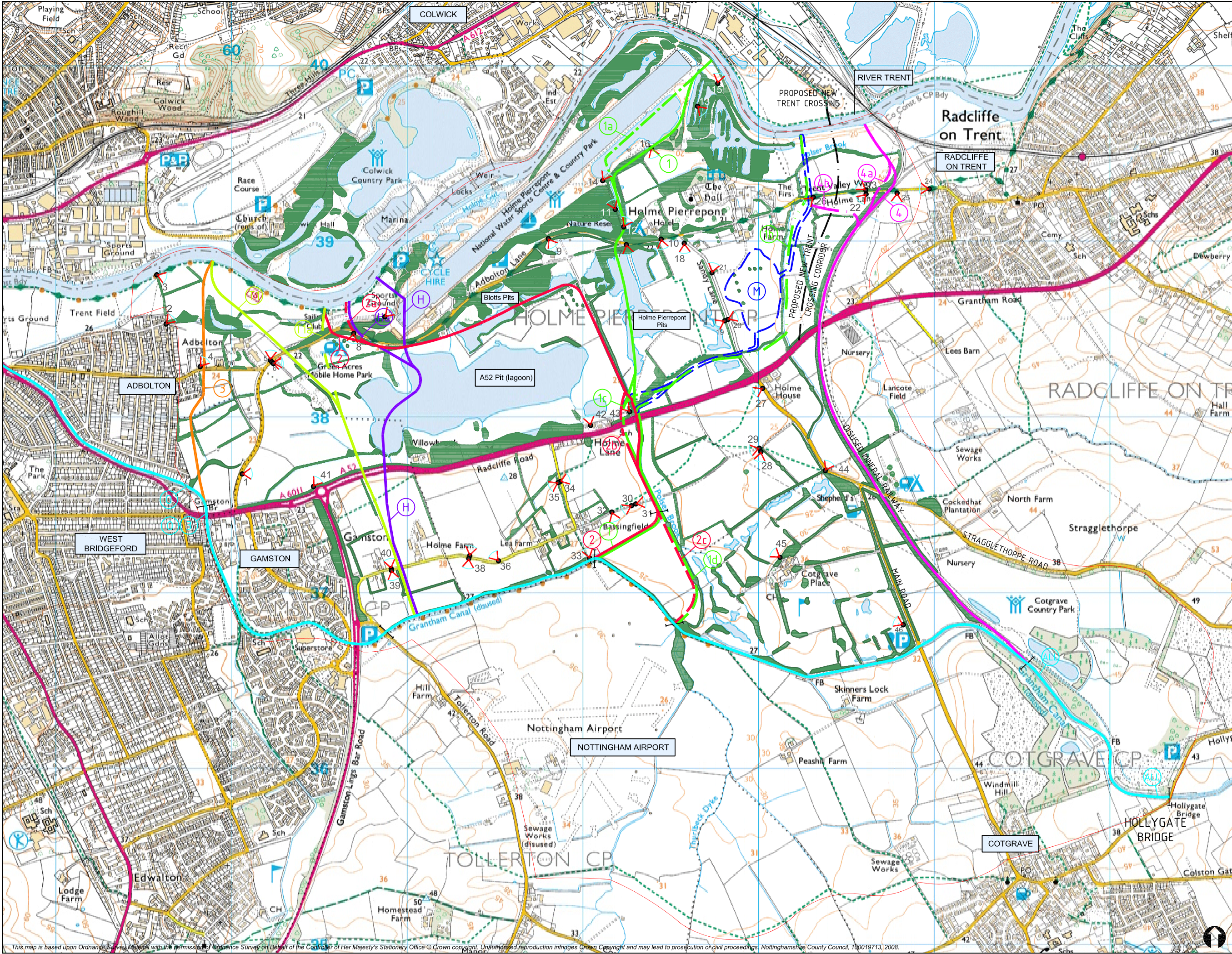
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Code	Description	Current Status	Apprs	Date		
P	Preliminary					
A	Submitted for Review					
C	For Construction					
I	For Information	X	NM	01/08/08		
E	Cost Estimate					
AB	As Built					

**RIVER TRENT TO
COTGRAVE GREEN
INFRASTRUCTURE
STUDY**

Drawing Title **FIGURE 4.1
LOCATION OF
ARCHAEOLOGICAL SITES
FIND SPOTS AND
LISTED BUILDINGS
(SHEET 1 OF 1)**

Scale @ A3 1:20,000			
Drawn AC	Approved NM		
Stage 1 check DA	Stage 2 check NM	Originated L. CULT	Date 01/08/08

Drawing Number **D120103/CH/4.1** Rev



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- KEY:**
- STUDY AREA
 - PROPOSED CANAL ROUTES:
 - TRENT LINK OPTION 1
 - TRENT LINK OPTION 1a
 - TRENT LINK OPTION 1b
 - TRENT LINK OPTION 1c
 - TRENT LINK OPTION 1d
 - TRENT LINK OPTION 2
 - TRENT LINK OPTION 2a
 - TRENT LINK OPTION 2b
 - TRENT LINK OPTION 2c
 - TRENT LINK OPTION 3
 - TRENT LINK OPTION 4
 - TRENT LINK OPTION 4a
 - TRENT LINK OPTION 4b
 - TRENT LINK OPTION H
 - TRENT LINK OPTION Ha
 - TRENT LINK OPTION M
 - TRENT LINK OPTION T1
 - TRENT LINK OPTION T1a
 - GRANTHAM CANAL
 - EXISTING VEGETATION
(Source: site photographs)
 - Viewpoints
(Refer to Appendix 4.1.1)

Revision Details		By	Date	Suffix
		Check		
DRAWING STATUS				
Code	Description	Current Status	Appd	Date
P	Preliminary			
A	Submitted for Review	X	SBB	15/08/08
C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

RIVER TRENT TO COTGRAVE
GREEN INFRASTRUCTURE
STUDY

FIGURE 5.1
LOCATION OF VIEWPOINTS
AND EXISTING VEGETATION
(SHEET 1 OF 1)

Scale @ A3 1:20,000	
Drawn JW/JV	Approved SBB
Stage 1 check MC	Stage 2 check CH_ENV
Date 15/08/08	

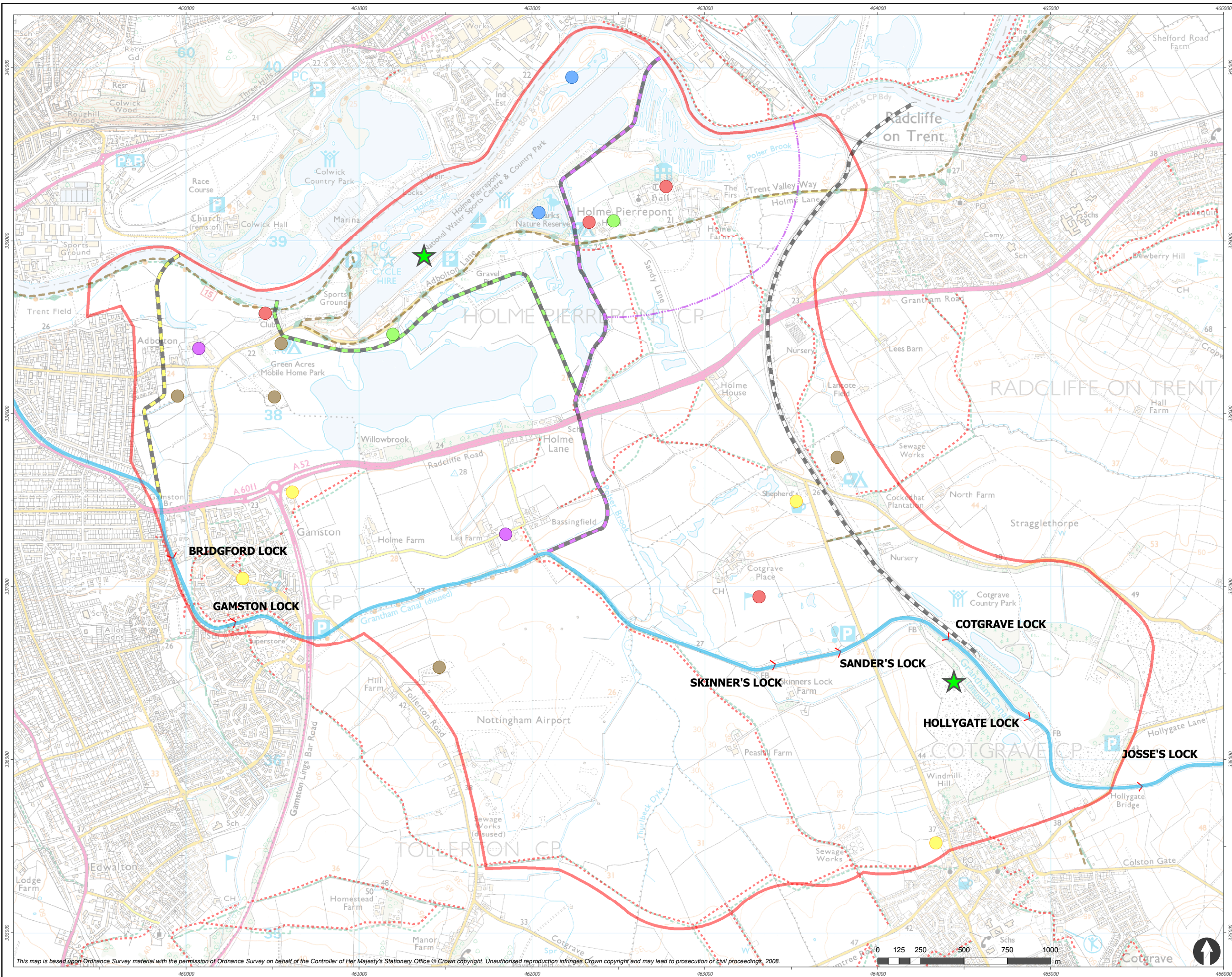


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- KEY:**
- Country Park
 - Nature Reserve
 - Equestrian Centre
 - Caravan Park
 - Public House
 - Place of Interest
 - Accommodation
 - Grantham Canal Lock
 - Bridleway
 - Foothpath
 - Polster Brook Through Hacket's Land
 - Trent Link Option 1
 - Trent Link Option 2
 - Trent Link Option 3
 - Trent Link Option 4
 - Grantham Canal
 - Study Area

Revision Details	By	Check	Date	Suffix
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DRAWING STATUS				
Code	Description	Current Status	Appd	Date
P	Preliminary			
A	Submitted for Review	X	SBB	13/08/08
C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title

**RIVER TRENT TO
COTGRAVE
GREEN INFRASTRUCTURE
STUDY**

Drawing Title

**FIGURE 6.1
RECREATIONAL
AMENITY
(SHEET 1 OF 1)**

Scale @ A3 1:20,000			
Drawn JV	Approved SBB		
Stage 1 check MC	Stage 2 check	Originated CH_ENV	Date 13/08/08



GRANTHAM CANAL PARTNERSHIP



NATURAL ENGLAND



British Waterways



Rushcliffe
Borough Council



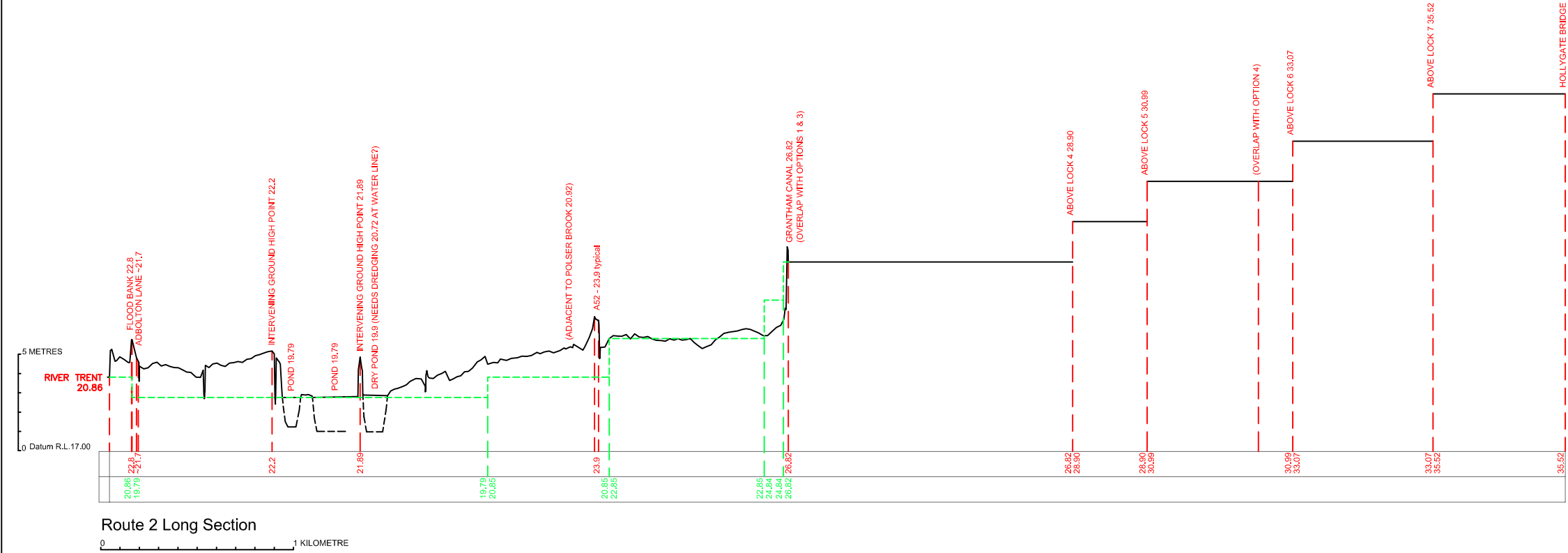
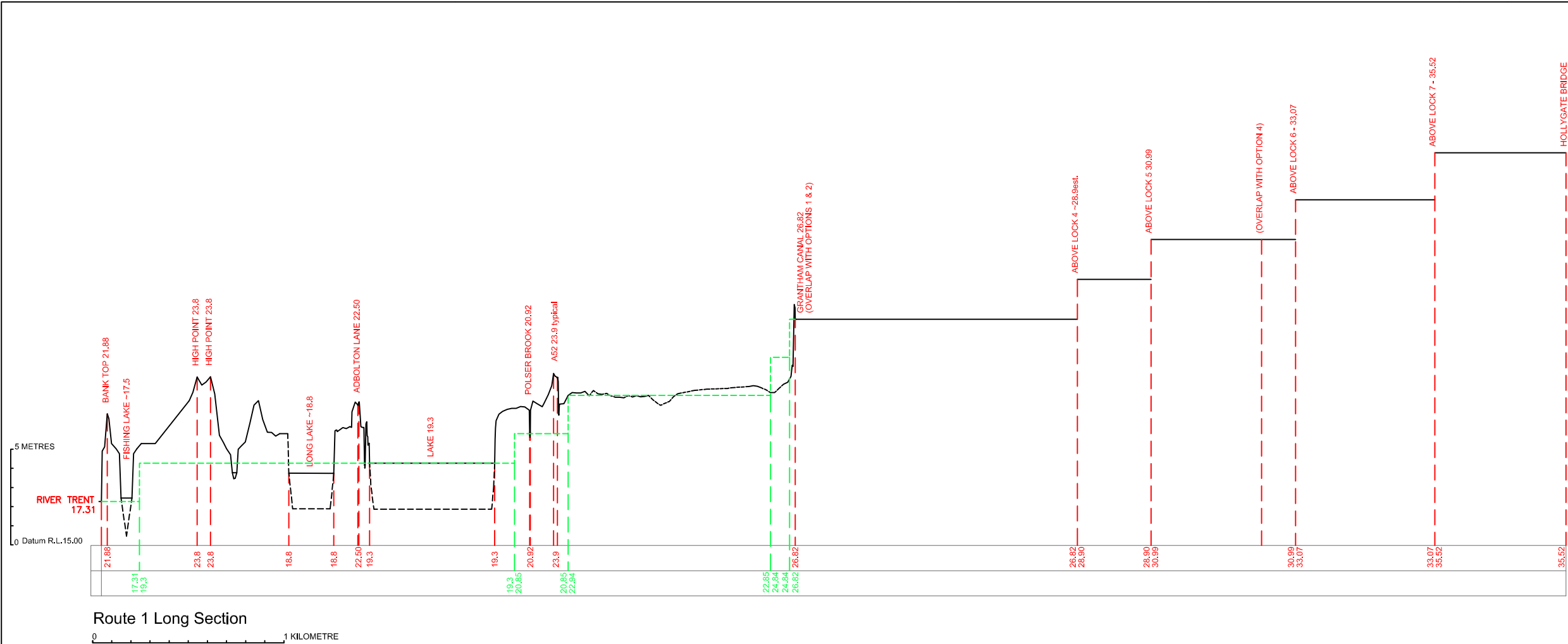
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KEY:

- Existing Levels
- Assumed Existing Levels
- Proposed Canal Levels

Revision Details		By	Check	Date	Suffix
DRAWING STATUS					
Code	Description	Current Status	Appd	Date	
P	Preliminary	X			
A	Submitted for Review				
C	For Construction				
I	For Information				
E	Cost Estimate				
AB	As Built				

Job Title

RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

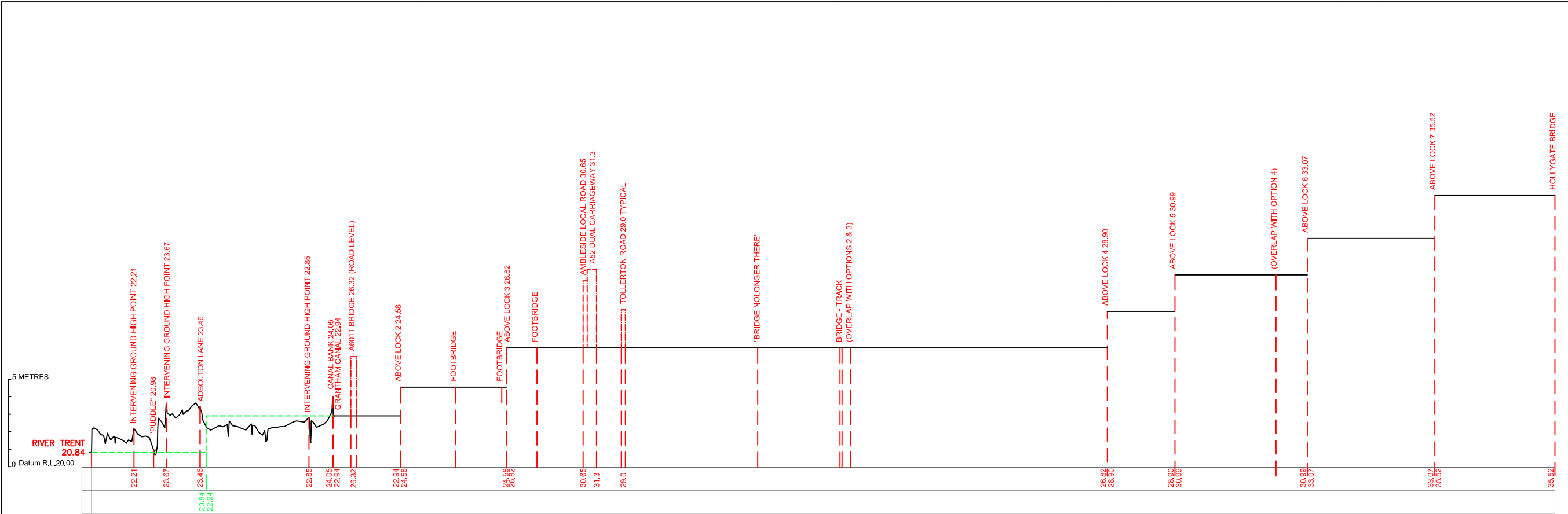
FIGURE 7.1.1
OPTIONS 1 & 2
LONG SECTIONS
(SHEET 1 OF 3)

Scale @ A3
H: 1:25,000 V: 1:250

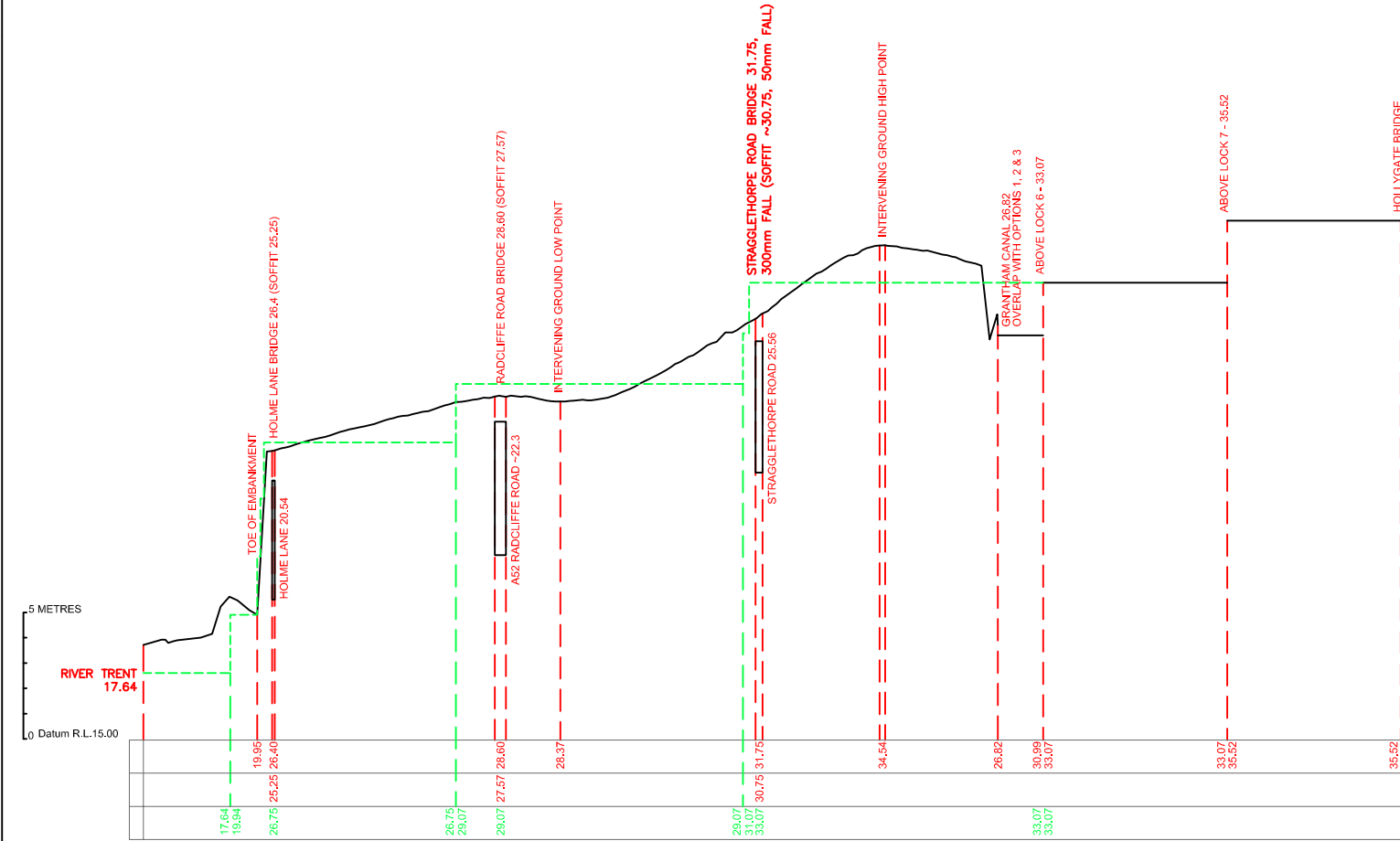
Drawn SKP		Approved	
Stage 1 check RJM	Stage 2 check	Originated MANSFIELD	Date 25.07.08

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Route 3 Long Section



Route 4 Long Section

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KEY:

- Existing Levels
- Assumed Existing Levels
- Proposed Canal Levels

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A	Submitted for Review			
C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title
RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title
**FIGURE 7.1.2
OPTIONS 3 & 4
LONG SECTIONS
(SHEET 2 OF 3)**

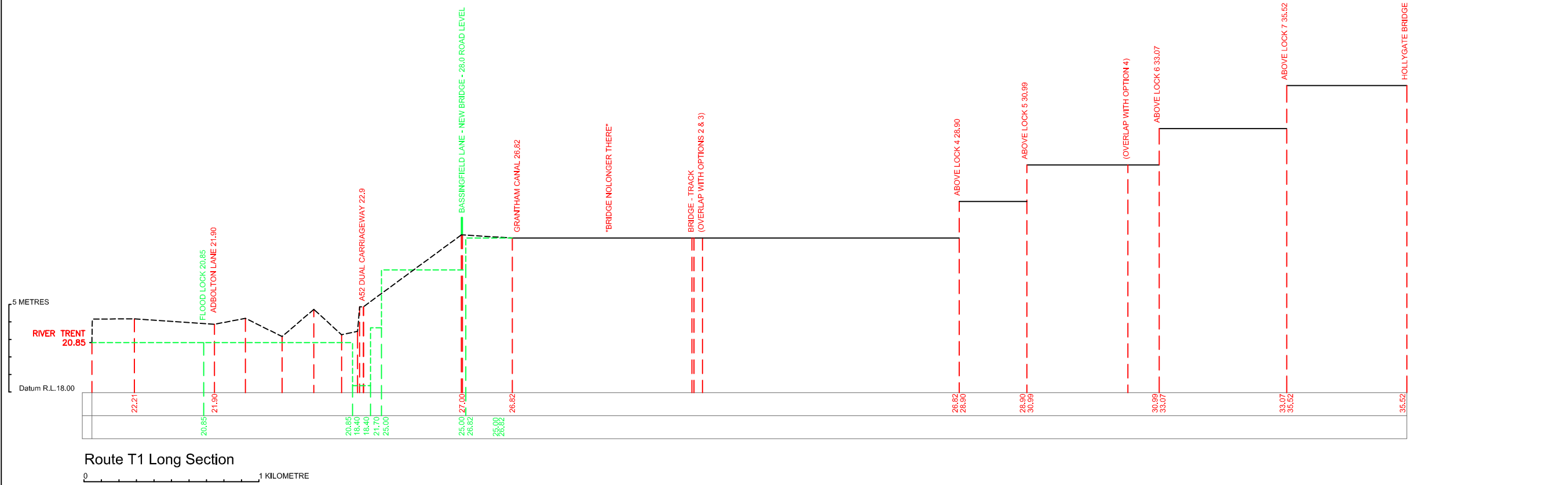
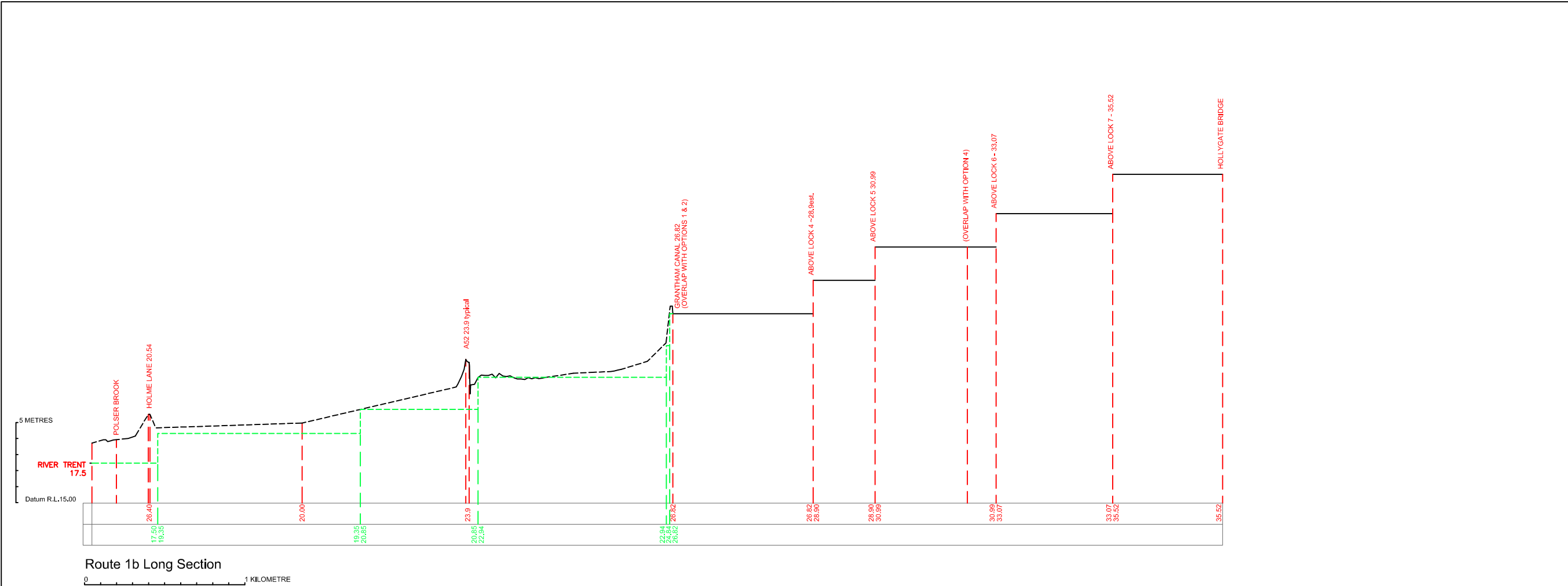
Scale @ A3 H: 1:25,000, V: 1:250			
Drawn SKP		Approved	
Stage 1 check RJM	Stage 2 check	Originated MANSFIELD	Date 25.07.08



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Drawing Number
D120103/ECA/7.2.2

Rev



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED AND ONLY WRITTEN DIMENSIONS SHALL BE USED

KEY:

- Existing Levels
- Assumed Existing Levels
- Proposed Canal Levels

Revision Details		By	Check	Date	Suffix

DRAWING STATUS				
Code	Description	Current Status	Appd	Date
P	Preliminary	X		
A	Submitted for Review			
C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title

RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

FIGURE 7.1.3
OPTIONS 1b & T1
LONG SECTIONS
(SHEET 3 OF 3)

Scale @ A3
H: 1:25,000, V: 1:250

Drawn SKP		Approved	
Stage 1 check RJM	Stage 2 check	Originated MANSFIELD	Date 25.07.08

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Rev

APPENDICES

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APPENDIX A

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LIST OF CONSULTEES

The following provides a list of those consulted with during the course of the study, excluding consultees/stakeholders consulted with during the public event.

Name	Role	Organisation
Local Authority		
Nick Crouch	Senior Nature Conservation Officer	Nottinghamshire County Council
Paul Phillips	Environmental Sustainability Officer	Rushcliffe Borough Council
Ursilla Spence	County Archaeologist	Nottinghamshire County Council
Jason Mordan	Environment Team (Cultural Heritage)	Nottinghamshire County Council
Wayne Allum	Communities (info on mineral extractions)	Nottinghamshire County Council
Environment Agency		
Anja Nonnenmacher	Technical Officer Biodiversity	EA, Nottingham
Joel Rawlinson	Fisheries Officer	EA, Nottingham
British Waterways		
Richard Bennett		
Natural England		
Anna Collins		
Nottinghamshire Wildlife Trust		
Mark Speck, Gaynor Jones Jenkins, John Ellis	(awaiting response(s))	
Others		
Andy Hall	County Bird Recorder (Notts)	Nottinghamshire Birders
Neil Calbrade	Wetland Bird Survey (WeBS)	British Trust for Ornithology (BTO)
Kate Risley	Breeding Bird Survey	BTO
John Ellis	County Mammal Recorder (Notts) (data purchase)	
		Nottingham Biological and Geological Records Centre (data purchase)
John Osborne	County Amphibian Recorder (discussion)	
Landowners/landowners agents		
Stephen Coult	Acting for Havenwood Construction and Taylor Wimpey	Browne Jacobsen and Partners
Ian Bebbington	Holme Pierrepont Project Manager, for Notts County Council	Notts County Council

Name	Role	Organisation
Developers		
Eric Wood, Alan Pole and Graham Day	Working with Hacketts	Mosaic Estates
Gary Tucker	Strategic Project Manager	Taylor Wimpey
Philip Duncan	Working with Tarmac	Corylus
Sandy Burrell	Representing Cotgrave Golf Club	Cotgrave Golf Club
AmScott (Highways Agency's Maintenance Area Contractors for Area 7)		
Jeremy Dixon	Route Manager	AmScott

PUBLIC INFORMATION AND CONSULTATION EVENT 24 JULY 2008

List of Attendees

Contact Name	Company/Organisation
David Lynham Brown, Executive	The Grantham Canal Partnership
Jeremy Dixon	AMScott
Terrance Bauhin	Association of Waterways Cruising Clubs
Angela Cooke	British Horse Society
Ann Ellis - Cotgrave Town Clerk	Cotgrave Town Council
Councillor Ian Shaw	Cotgrave Town Council
Councillor Richard Butler	Cotgrave Town Council
Drew Willkie - Cotgrave Town Chairman	Cotgrave Town Council
Eric Woolsey	Cotgrave Town Council
Carol Collins	Council for the Protection of Rural England (Rushcliffe Group)
Roger Codling	CTC
Melissa Jordan	EMDA
John Brydon	Grantham Canal Society, Deputy Chairman
Ian Wakefield	Grantham Canal Society
Martin Day	Grantham Canal Society
Martin Wakeling	Grantham Canal Society
Mike Stone	Grantham Canal Society
Tony Petman	Grantham Canal Society
Sarah Hill	Greater Nottingham Partnership
Councillor Diane Kidger	Holme Pierrepont & Gamston Parish Council
Councillor Frank Thomas	Holme Pierrepont and Gamston Parish Council.
Nancy Johnson	Inland Waterways Association
Kevin Cotton	Jackson Civil Engineering
Alan Pole	Mosaic Estates **
Graham Day	Mosaic Estates **
David Turner	Nottingham Anglers Association
Adrian Jones	Nottingham Development Enterprise
John McMeeking	Nottinghamshire Wildlife Trust

Contact Name	Company/Organisation
Martin Suthers	Chair of Nottinghamshire Wildlife Trust, County Councillor for Bingham
Valerie Holt	Nottinghamshire Wildlife Trust
Dave Kallows	Parkside Fishing Club
Martin Smith	Chair Notts. Area Ramblers Association Footpath Committee
Councillor Bryan Tansley	Rushcliffe Borough Council, Cotgrave Town Council
Margaret Parrey	Rushcliffe Ramblers
Richard Parrey	Rushcliffe Ramblers
Paul Geary	Self-employed (marinas)
Keith Burton	
James Parker,	Sherwood Farm
D. Martin	Sustrans
Vicky Allen	The British Horse Society
Barry Core	
James Thomas	
Miss E.M (Mary) Mackie	

** separate meeting also held

Additional stakeholders invited to attend	
Stuart Briggs	British Canoe Union
Nick Leuty	Cotgrave Golf Club
Debra Rolfe	CTC National Office *
Mike Oliver	Grantham Canal Partnership
Darren Wilmott	East Midlands Development Agency *
Morgan Wray	Environment Agency, Asset Systems Management
John Croft Jnr	Havenwood Construction Ltd
Cyril Day	Highways Agency
David Kent	National Federation of Anglers
Mike Staniclicke	Network Rail
Ian Bebbington	Nottinghamshire County Council – Holme Pierrepont Project Manager **
Councillor Kay Cutts	Nottinghamshire County Council **
Keith Stevens	Nottinghamshire County Council **
Neil Horsley	Nottingham Development Enterprise *
Martin Gawith	Nottingham Regeneration
Mike Elliot	Radcliffe on Trent Parish Council (Clerk)
Councillor David Bell	Rushcliffe Borough Council
Simon Ricketts	Sport England, Holme Pierrepont Centre Manager
Nicola Jones	Sustrans *
Neil Blaquiére	Tarmac ** (meeting with Philip Duncan, Corylus)
Gary Tucker	Taylor Wimpey **

* alternative attendee attended

** separate meeting held

Public Information and Consultation Event - Comments Received

Company/Organisation	Individual	Comments
AMScott	Jeremy Dixon	Explained that Cyril Day (HA) deals with all planning applications, Jane Wilkins is the A52 Route Performance Manager for the HA (based in Birmingham). Cyril Day is looking at the planning application for the Cotgrave developments. Amon Harrison is the County Council's Area Manager for County Roads in Rushcliffe and Gamston. He is based at the Gamston depot and could provide comment on crossing of Main Road (eg suitability or otherwise of having a lift bridge at this road). Reason for the A52 crossing being placed where it is (by Bassingfield Lane) was cost. He is currently applying to have Sandy Lane closed to vehicular traffic but will keep it open to NMUs. The A52 Gamston to Saxondale roundabout is one of the most congested stretches in the Area 7 network. Having a signalised NMU crossing at Polser Bridge could have an adverse effect on journey time and reliability. He made reference to the A52 Multi-modal study which was produced by Hyder for GOEM about 2-3 years ago. This identifies protected route corridors including the 4th River Trent crossing and also a route for a grade-separated junction at Gamston (SBB note: Martin Day also referred to this - we need to check the status of this). Requested that we put the display sheets on a CD and send them to him so that he can forward them to the HA.
Anglers Group		The representatives regularly fish in the area and have concerns regarding the potential impacts that the new route would have on drying out the Grantham canal section heading towards Lady Bay Bridge. Kevin Mann helped by explaining the possibility of pumping water from the River Trent up to the Canal where it passes through the Cotgrave Country Park to remedy this.
Angling Society		Issues over how to provide water to the canal route to ensure that their stretch does not run dry.
British Horse Society	Vicky Allen	British Waterways does not like horses on towpaths. Need a separate bridleway and towpath. Also the fishermen need platforms/quiet place to fish as they don't mix too well with horses. A good 'short' ride, perhaps for weekdays would be circular about 5 miles along which will taken an hour. 20 miles is a longer walk. Ideal would be Olympic rings shape with choice of longer/shorter routes. Horses are a big industry locally with snowball effect on economy. Issues over the long term funding for the maintenance of the proposed route. Capital/revenue funding. What materials are proposed for use on the route? Gravel route

Company/Organisation	Individual	Comments
		would suit the horses but tarmac would be more suitable for cyclists (sustrans). Suggested should speak to Tim Hart - Definitive Rights of Way Officer at Notts CC. Also should contact Countryside Access Team.
Cotgrave Town Council	Ian Shaw	Queried where funding would come from. See also additional comments sent in to GranthamCanalLink@scottwilson.com
Council for the Protection of Rural England (Rushcliffe Group)	Carol Collins	Will email comments back. She was prepared for a formal presentation because of the different sessions, but thinks it works well anyway. There has been a last minute application for an eco-town near Cotgrave, not very much publicity at all, it has been submitted to the government for 6,000 dwellings. CPRE have done a study which could be of benefit to the final route. Had issues over the impact that the new route could have over areas external to the site. Concerned with the impacts that the new route would have on habitats surrounding the study area. See also additional comments sent in to GranthamCanalLink@scottwilson.com
Gamston and Holmepierrepont Parish Council	Diane Kidger	Would like to see circular route for pedestrians, cyclists, from Gamston, along canal and back, along Bassingfield Lane. Crossing of A52 should preferably be opposite Tollerton Lane - not where it currently is. Walkers and cyclists coming from canal tend to climb over safety barriers rather than go up to signalised crossing at Bassingfield Lane. Footway for pedestrians needed at start of Tollerton Lane. Similarly - footway is needed along Bassingfield Lane. She also suggested that a water taxi could be run between Cotgrave and Trent Bridge, via a canal link and with a Park and Ride in the Cotgrave area. Also requested information on what the archaeology finds numbers 133 and 189 are. (SBB subsequently emailed this information to her).
Grantham Canal Society		A good route would provide a circular route where people could take their boats for a run out in the evenings.
Grantham Canal Society	Martin Day	Requested a copy of archaeology map and list of key points for use in GCS newsletter. 12 The Paddock, Bingham, Nottingham, NG12 8HQ. The route needs to enter the river upstream of Holme Lock because

Company/Organisation	Individual	Comments
		fewer boats use the downstream side because it is purely river, all canals being to the west. The 'abandoned' section should not be filled in but dredged out to return it to its former beauty.
Grantham Canal Society	Tony Pitman	Are there sufficient funds for the next stage of the appraisal? How many marinas are under consideration? How, or does, the 'ECO' town initiatives have any impact or integration with the Infrastructure survey.
Grantham Canal Society	Ian Wakefield	The route entering the Trent above Holme Lock would make it much easier for boating.
Grantham Canal Society, Chairman	Mike Stone	Contact details: 0115 9313375. 1) Minimise disturbance to archaeological site and listed buildings. 2) Avoid as far as possible site importance to natural environment. 3) Do not breach the flood banks. 4) The option of a canal route east of Holme Pierrepont to Polser Brooke Bridge and Bassingfield meets many of above criteria. 5) Do not overlook water supply for a canal which can be met in ways that do not appear to the considered a) using the existing pipeline from the Trent to the old colliery site. b) Taking water from the existing reservoirs via the length of the canal. Leaks at Cropwell are not a major issue in the overall scheme and can be repaired by modern lining methods. 6) Seven foot wide limit for boats may be acceptable. 7) Towpath not required through A52 bridge. 8) Water levels are important a are run-off to limit silting of canal and remove flood water.
Greater Nottingham Partnership	Sarah Hill	sarah.hill@gnpartnership.org.uk Have the team made links with EDAW who are undertaking a refreshed master plan for the Trent River Park area currently? How will each option link with existing network of G1, esp cycle tracks - GNP generally very supportive of multi-user path creation to provide a sub-regional network of pathways. Concerned at potential cost/realism of reinstating the canal given that most (all?) the options require bridging of major trunk roads but pleased to see that at least this exercise should give us a cost estimate for this. Not clear how the various options were selected, would have been useful to see a preliminary analysis of the advantages and disadvantages of each.
Holme Pierrepont and	Councillor Frank	He will write in, but would like feedback. Tel 0115 981 6806. Helpful with local information. Rejection of

Company/Organisation	Individual	Comments
Gamston Parish Council and resident of Bassingfield (runs horse-based business)	Thomas	development in Gamston (east of A52, North of Nottingham Airport, south of A52 East of Polster Brook) see June 2008 Tribal report option E and secretary of state ruling. Nottingham Airport may plan to extend airport runway in easterly direction. Brian Wells is contact at airport. Westly section owned by Notts CC, easterly by farmers Hackett's. A bridleway proposal has been made Cotgrave to Basset Hill. Inquiry has/is being conducted (NCC) will know about this. This has been proposed for 200 years. Land mainly arable with main livery stables in area (approximately 400 horses in area). Mr Thomas' concerns include Polser Brook: damage to environment esp riverbank trees. Mr Thomas would like to see gravel pits used for sailing.
Inland Waterways Association	Nancy Johnson	A definite no to horses on the towpath, due to conflict with pedestrians, cyclists and fishermen, and also conflicts with boat users who may not be aware of horses approaching whilst busy mooring up boats etc. Considers that horses would need a separate route. Thinks that a marina at Cotgrave would be used and that it would be a good base for weekend boaters. Thinks that if the Trent Link is created it would help to get funding for further restoration of the canal especially if have a visitors centre at Cotgrave. Likes "route 1" best (as on previously routes map). What about some sort of boat lift at Holme Pierrepont as a tourist attraction? Flagged up the study that was done by Atkins in the 1970s into the Polser Brook. This could potentially be relevant to Scott Wilson's study.
Rambling Association		Mentioned the possibility of linking the new route into the existing footpath in the area.
Rushcliffe BC, Cotgrave TC, Friends of Cotgrave Country Park and a boater	Councillor Bryan Thomas	Queried whether link with end point at Cotgrave would actually be used.
SUSTRANS	D Martin	Tarmac path would be the most suitable for cyclists.
	James Thomas	James Thomas is son of Frank Thomas. His sister runs a riding school in Bassingfield. James Thomas

Company/Organisation	Individual	Comments
		<p>stated that part of a route shown as a bridleway on the SW constraints and opportunities plan is actually only a footpath. He marked on our plan a bridleway currently awaiting a planning decision / about to be put on the Definitive Rights of Way map. Described route along the canal which would utilise towpath part of way (marked on plan). A circular route from Bassingfield, along the canal along the disused railway and back to Bassingfield was discussed. the Thomas' felt that the signalised crossing at Sandy Lane was safe to use by horses. Ideally would like horses and cyclists on the towpath on part of canal east of Bassingfield - with pedestrians using the off bank. Didn't like the idea of having bridleway on the other side of the hedge along towpath as the ground there is boggy due to drainage direction. See also additional comments sent in to GranthamCanalLink@scottwilson.com</p>
	<p>Paul Geary and Keith Buxton (brothers)</p>	<p>Raised suggestion of inclined plane over A52. Said already had funding for this agreed through discussion with John Croft.</p>
	<p>Miss E. Mary Mackie</p>	<p>Requested we give a copy of her address to Kevin Mann. Address: Rectory Bungalow, Elton, Nottinghamshire, NG13 9LF. Please keep me informed of developments and consultation events relating to this area. Particularly interested in multi-user (walkers, cyclists, equestrians and the HSS Mobile) routes and their facilities.</p>
<p>Nottinghamshire Wildlife Trust</p>	<p>Martin Suthers</p>	<p>In an ideal world my first preference both as County Councillor for Bingham and Chair of Nottinghamshire Wildlife Trust, would be for Trent Link Option 3 on the grounds that it follows most closely the historic route of the Grantham Canal. However, I recognise that the cost of crossing the A52 (twice) would be likely to be prohibition. This makes the Polser Brook Bridge the most practical option for crossing the A52, but both Trent Link Options 1 and 2 would be severely disruptive of the area of major wildlife interest north of the A52 and I could not support either. If the extreme westerly route (Option 3) is not a viable proposition, the route between the Polser Brook Bridge and the River Trent should be as far to the east as possible for the benefit of which housing development east of the mineral railway and a marina close to the canal at Sandy Lane (accessed from the A52) could be an acceptable price to pay.</p>

Company/Organisation	Individual	Comments
Nottinghamshire Wildlife Trust	Valerie Holt	<p>Thank you for the opportunity to discuss issues with you. You will be aware that a baseline ecological survey has been carried out from A52 to Grantham and I hope your ecologist will be using this for assessment of the conservation value of the canal from A52 to Cotgrave, using the information & recommendations given for any new cut of canal, particularly in-line and off-line reserves.</p> <p>In relation to the route options it would seem only 1 & 2 have any future but both cut through sites of importance for NC. The NWT would prefer the @purple@ route, the off-shoot from option 1, that would see the creation of a marina and development between the railway line and Radcliffe on Trent.</p> <p>As chair of the Grantham Canal Partnership Environmental Sub-Committee I would hope that we, as a group, will be able to have dialogue with you on all conservation issues.</p>

Additional comments received to GranthamCanalLink@scott wilson.com

1. James Thomas

I write further to your e mail message of 7 July. As I may not be in a position to attend the meeting at Cotgrave Futures in the morning of 24 July I make the following comments in writing for you to take into account in your study:

1a The meadows lying to the east of the Polser Brook between the Golf Course and the A52 are in the occupation of Bassingfield Riding School which is run by my sister and my parents. Those Meadows rely on the Polser brook as a source of water any development including a new cut would have to ensure that water supply remains available and of the quality. Water drawn from a canal would be still and possibly polluted by boat traffic alternative arrangements would be required if the brook were to be canalised. Access to those meadows for vehicles, machinery, livestock including horses and from Bassingfield would have to be maintained.

1b The meadows themselves are a rare survival in the parish of a landscape that has been mostly destroyed by modern farming methods. Any development should avoid damage to those meadows including damage to the hedgerows and trees. Of particular note in this regard are the pollarded willows which line the east bank of the brook, these should not be damaged.

2a Any plans for public access for pedestrians, cyclists and horse riders need to take account of existing provision (or lack of it) and the desirability of linking routes to create a network. Plans also need to take account of the needs of local businesses and the impact on road safety. Where it is possible paths should be multi use in character to get best value for money and to get the biggest network for all user groups. This should mean new paths should be built of sufficient dimensions to accommodate cyclists and horse riders as well as pedestrians. Where for any reason one of those categories can not be accommodated horse riders should not automatically be considered as the user group whose needs can not be met. In this area there is a massive and obvious demand for of road horse riding routes which in terms of need must take precedence over the claims of other user types. There is, taking into account the cycle tracks on the canal towing path, The A52 and the Holme House to Cotgrave Road already a network of cycle routes. There is no network for horse riders just a series of disconnected cul de sacs which can only be linked by trespass or taking serious risks on the roads. There would be obvious road safety advantages to creating a network of routes available to horse riders. Account needs to taken of the outcome of two local public Inquires into Byways and Bridleways in the study area.

2b The village of Bassingfield needs to be connected to a network for horses given that the largest concentration of horses in the area are kept in Bassingfield (at least 80). This should be the single biggest priority when considering routes for horses. The most sensible way this could be achieved would be by making the existing towing path the basis of a route to Cotgrave Country Park from Bassingfield. This would save the cost of constructing three bridges over the canal and the Polser brook which will be required as a result of the outcome of the recent local public Inquiry into the bridleway from Cotgrave to Bassingfield. Whilst I am aware that BW have a rigid policy of not permitting horse riders on towing paths they have never been able to offer any evidence that horses present a hazard to other users and they should be challenged to justify their policy which threatens public safety and local businesses. Other public bodies including the Environment Agency and Councils permit horses on suitable sections of towing path and riverside paths. In any event so long as the Cotgrave to Bassingfield bridleway remains obstructed because BW have not built the necessary bridges horses will continue to lawfully use the towing path.

2c BW have in 2002 and 2003 agreed that they would make available their land on the off bank of the canal to allow a route for horses from Bassingfield to Cotgrave Country Park this would be a more expensive alternative to what I have discussed in the preceding paragraph

because it would not obviate the need to build bridges over the canal to serve the bridleway past Peas hill farm to the Golf Course. A sensible compromise would be to have a pedestrian route on the off bank with the towing path used by cyclists and horses and those walkers who do not mind sharing a route with horses and cyclists.

2d It should be borne in mind that horse riding can, and at Bassingfield, does provide a method of access to the countryside for the disabled.

2e Bassingfield would also benefit from a genuinely multi user route to Holme House so as to utilise the traffic lights over the A52 at that point to the Byway leading to Home Pierrepont. If the existing road bridge over the Polser Brook is to be used for the new cut it would be hard to make a crossing at that point for walkers, cyclists and horses, it may be better to divert the path via the existing traffic lights at Holme House.

2f Until the recent past the concrete road from Holme Lane to the site of the gravel extraction works at Holme Pierrepont was used by horses as was the road that used to go past Holme Grange to the A52 a new cut could revive those routes.

2g Finally the disused railway to the former Cotgrave Colliery has obvious potential as a multi use route providing a safe crossing over the A52. It is to be hoped that the talk of horse trails is not to be restricted to this as a single token gesture.

If you want me to provide further information on any of the issues I have raised in this message please ask. I look forward to seeing the finished report.

James Thomas

2. Councillor Ian Shaw

Having attended your display last Thursday I have given much thought to what was explained in reply to my questions. The hope that the green corridor can be created from West Bridgford to Grantham is, I fear, just a hope. If the canal were to be 'in water' for all its length, there are a great number of flattened out bridges that would need to be raised and the cost and maintenance of such a project is so immense that it seems improbable that it will ever be undertaken let alone completed.

It was suggested that among other sources, section 106 money would be used to fund part of the Trent to Cotgrave phase. Virtually the whole of the canal runs through rural countryside and 106 sourced money implies that building and development would be undertaken up to the canal which is not in keeping with the open countryside aspect the canal currently enjoys.

Were a marina to be created at Cotgrave it does not seem feasible that users would sail from the Trent to Cotgrave to visit the marina and then have to turn round and return to the main waterway. Currently it is not possible to navigate beyond a flat bridge leading to the old pit site.

In your letter of invitation, paragraph 3 mentions 'potential future development in the area'. This is of great concern as most of the area is greenbelt and any 'potential development' is likely to be strongly resisted.

As a member of the Grantham canal Restoration Society I would be strongly opposed to any plans that entailed developing up to the existing canal or indeed up to its new link with the Trent if it is ever created.

Ian J Shaw,
Cotgrave Cllr.

3. Carol Collins (CPRE)

Thank you for putting on this event and for inviting CPRE to attend the morning session which was useful.

One comment we would make is that there seemed to be no mention of the effects which the creation of a link between the existing Canal and the Trent would have on the rest of the Canal across the Vale of Belvoir - or indeed on the countryside and villages through which it passes. Whilst we understand that the Green Infrastructure Study has to be limited to a specific area, and that most of the Canal is beyond that area, we feel that the study should take account of the fact that there may be constraints imposed by the necessity to conserve the existing biodiversity of the Canal corridor and the desire of residents of villages along the corridor to preserve the tranquillity of their countryside. In planning for a marina at Cotgrave, for instance, the fact that the amount of boat traffic up a restored Grantham Canal may have to be limited to prevent damage to the ecosystem of the more sensitive stretches is a relevant piece of information, but there seemed at the exhibition to be no awareness of the recently completed Ecological Study which made recommendations on this?

Carol Collins, Hon.Secretary, Rushcliffe Group of CPRE (Campaign to Protect Rural England)

4. Martin Smith (Ramblers Association)

Dear Sirs. May I first express my concerns that although the scheme will probably involve rights of way issues that the Ramblers Association were not considered as a stakeholder. Hopefully as the consultations move on we can be involved in the process. We do support the scheme as from talking to your representatives at p.m. the event provisions are being made for multi user towpaths at the side of the canal link. It would be great if the r.o.w. network could be worked into the scheme to maybe create some circular walks using the towpath and wherever possible bridges included to connect existing paths and any additions to the canal path. LINK 1 would be our preferred route using the polser bridge, hopefully this will allow sufficient width and height for land and water users. We also hope that there will be a suitable width to allow the various types of users such as walkers,cyclists and horses to be able to safely use the towpath without hinderance or conflict. LINK 2 would be another excellent route with the same benefits as L1.LINK 3 must be a little more challenging with the floodplain status and would involve many expensive road alterations. LINK 4 may be a little narrow for a canal and path but would make a wonderful multi user route across the busy A52 which could tie in with a path along the Trent or Holme Lane. My address isand on behalf of the Ramblers Association would look forward to being involved in the future.

Yours Sincerely

Martin Smith (Chair Notts.Area Ramblers Association Footpath Committee)

Scott Wilson comment: The Ramblers Association were invited; Richard and Margaret Parrey of Rushcliffe Ramblers attended.

5. David Ward (Radcliffe on Trent Cricket Club)

Unfortunately we were unable to attend the consultation evening as we only belatedly find out about this event. Should we have been notified directly?

Radcliffe on Trent Cricket Club have a direct interest in this scheme as one of your route options proposes using the old railway line that forms one boundary of our ground and our initial view is that this could severely impact upon our use of the ground. At this stage we would need to see more detail of what the scheme entails to assess the impact more specifically.

Can you please tell me if any firm views have arisen from the consultancy event as to your preferred option? I would ask that any contact that you wish to make with the cricket club is directed for my attention either by email or to my home address

David Ward, Secretary, Radcliffe on Trent Cricket Club

6. Terence Balchin (IWA, AWCC, NABO and DMBC)

In my view having seen the consultation document and commenting both from a boat owners, Industrial Archaeological and Heritage point of view, I make the following points.

- My preferred route is the original route from the river Trent at Lady Bay. Now that option three is so close to the original route it seems penny pinching not to explore the original route in the consultation. This route would involve some major road realignment, but only for short stretch, but the benefit of seeing boats travelling along the canal in West Bridgford would be an enormous boost to the community. I urge you to consider this route in your feasibility study.
- My next choice is option three as this takes in much of the original route, and is the shortest and it seems to me the easiest for the engineering work. It also takes the link from the River Trent above Holme Pierrepont Lock. From a boating point of view this is of significant importance psychologically, by not having to go through a big Trent Lock.
- The financial benefits to the community in West Bridgford would be lost if any of the other options; two, one and four were chosen.

I would like to be kept informed of the progress of the study.

I am a member of the Inland Waterways Association (IWA), The Association of Waterways Cruising Clubs (AWCC), National Association of Boat Owners (NABO) and Derby Motor Boat Club (DMBC) as well as other boating organisations, and have been travelling the waterways for over thirty years.

I wish every success for the restoration of the Grantham Canal, and look forward to travelling on it in my lifetime.

Terence Balchin

APPENDIX B

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Planning Policy

National Planning Policies

Planning Policy Statement 1 – Delivering Sustainable Development

PPS1 sets out the Government's objectives for the Planning System, focusing on the key theme of sustainable development. PPS1 replaces Planning Policy Guidance Note 1, General Policies and Principles, published in February 1997. For the purpose of Government policy and guidance, sustainable development is consistently defined as: 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Our Common Future: 1987, United Nations).

Through sustainable development, the Government seeks to deliver, both now and in the future:

- economic development to secure higher living standards;
- social benefits and strong communities; and
- protection and enhancement of the environment.

These are the key principles, which any development should adhere to and be supported by a range of mitigation strategies where relevant.

PPS1 also identifies the key principles for compliance in terms of development plans and decisions taken on planning applications to ensure the delivery of sustainable development. The guidance makes reference to how the planning system should help to enhance and protect the environment. Para 17 states that the Government is committed to protecting and enhancing the quality of the natural and historic environment, in both rural and urban areas. Planning policies should seek to protect and enhance the quality, character and amenity value of the countryside and urban areas as a whole. A high level of protection should be given to most valued townscapes and landscapes, wildlife habitats and natural resources. Those with national and international designations should receive the highest level of protection.

Planning Policy Guidance 2 – Green Belts

The study area is located within the Nottingham/Derby Green Belt. PPG2 provides guidance on the general intentions of Green Belt policy, the purpose of including land within the Green Belt and the protection that Green Belts are required to provide.

According to PPG2 Green Belts have five specific purposes. These include the need to: check the unrestricted sprawl of large built-up areas; assist in safeguarding the countryside from encroachment; and preserve the setting and special character of historic towns. The use of land within the Green Belt can provide opportunities for outdoor sport and recreation near to urban areas and the green infrastructure proposals would help to deliver this.

Strict guidance is provided in PPG2 on the types of buildings that are allowed within the Green Belt. These include buildings for the following purposes: agriculture and forestry; essential facilities for outdoor sport and recreation; limited extension, alteration or replacement of existing dwellings; and limited infilling in existing villages. PPG2 also emphasises the importance of avoiding proposals for development that would be detrimental to the visual amenity of the Green Belt. This could have implications for the

development proposed by the stakeholders interviewed in the previous month unless the Green Belt boundaries are re-designated.

PPG2 mentions that during the process of revising and updating existing local plans, Green Belt boundaries should not be changed unless alterations to the structure plan have been approved. The current status of the Nottingham/Derby Green Belt is as follows. The Nottingham/Derby Green Belt review (2006) has taken place and has recommended that the area between Nottingham and Derby is the most important part to retain and areas towards the south and east of Nottingham are of lesser importance. This has implications for the study area as it is located towards the south east of Nottingham and could lead to the re-drawing of the Green Belt boundary in the area. This is dealt with in more depth when looking at the Regional Spatial Strategy review.

Paragraph 1.4

“Green Belts have five specific purposes:

- to check the unrestricted sprawl of large built-up areas;
- to prevent neighbouring towns from merging into one another;
- to assist in safeguarding the countryside from encroachment;
- to preserve the setting and special character of historic towns; and
- to assist in urban regeneration, by encouraging the recycling of derelict and other urban land”.

Paragraph 1.6

“The use of the land within the green belt has a positive role to play in fulfilling the following objectives:

- to provide opportunities for access to the open countryside for the urban population;
- to provide opportunities for outdoor sport and outdoor recreation near urban areas;
- to retain attractive landscapes, and enhance landscapes, near to where people live;
- to improve damaged and derelict land around towns;
- to secure nature conservation interest; and
- to retain land in agricultural, forestry and related uses”.

Paragraph 2.7

With regards to alterations to Green Belt boundaries:

“Where existing local plans are being revised and updated, existing Green Belt boundaries should not be changed unless alterations to the structure plan have been approved, or other exceptional circumstances exist, which necessitate such revision”.

Paragraph 3.4

Provides guidance on which new buildings are appropriate development within the Green Belt. Buildings used for the following purposes are allowed:

- “agriculture and forestry;

- essential facilities for outdoor sport and recreation, for cemeteries, and for other uses of land which preserve the openness of the Green Belt and which do not conflict with the purposes of including land in it;
- limited extension, alteration or replacement of existing dwellings;
- limited infilling in existing villages and limited affordable housing for local community needs under development plan policies according with PPG3; and
- limited infilling or redevelopment of major existing developed sites identified in adopted local plans.”

Paragraph 3.15

With regards to the visual amenity of the Green Belt:

“The visual amenities of the Green Belt should not be injured by proposals for development within or conspicuous of the Green Belt which, although they would not prejudice the purposes of including land in Green Belts, might be visually detrimental by reason of siting, materials or design.”

Planning Policy Statement 9: Biodiversity and Geological Conservation

PPS9 is relevant to the proposals as there are large water bodies located towards the north of the A52 which are developing into an area as a valuable wildlife resource and have currently been designated as Sites of Importance for Nature Conservation (SINC).

The Government’s objectives

The PPS includes a number of Government objectives for planning in relation to biodiversity and geological conservation. These include:

- To promote sustainable development
- To conserve, enhance and restore the diversity of England’s wildlife and geology.
- To contribute to rural renewal and urban renaissance.

PPS 9 states that development proposals where the principal objective is to conserve or enhance biodiversity and geological conservation interests should be permitted. Paragraph 12 of PPS 9 emphasises the need to protect the networks of habitats that are present on sites.

“Networks of natural habitats provide a valuable resource. They can link sites of biodiversity importance and provide routes or stepping stones for the migration, dispersal and genetic exchange of species in the wider environment. Local authorities should aim to maintain networks by avoiding or repairing the fragmentation and isolation of natural habitats through policies in plans. Such networks should be protected from development, and, where possible, strengthened by or integrated within it. This may be done as part of a wider strategy for the protection and extension of open space and access routes such as canals and rivers, including those within urban areas.”

Paragraph 12 of PPS9 would support the proposed routes as the existing network of natural habitats present on the site would be extended through the extension of the canal this would help enhance biodiversity and geological conservation interests of the study area.

PPG17: Planning for Open Space, Sport and Recreation

Well designed and implemented planning policies for open space, sport and recreation are fundamental to delivering broader Government objectives. “These include:

- supporting an urban renaissance;
- supporting an rural renewal;
- promotion of social inclusion and community cohesion;
- health and well-being; and
- promoting more sustainable development.”

Foreword

Well designed and implemented planning policies for open space, sport and recreation are fundamental to delivering broader Government objectives. “These include:

- supporting an urban renaissance;
- supporting an rural renewal;
- promotion of social inclusion and community cohesion;
- health and well-being; and
- promoting more sustainable development.”

Paragraph 20

“In identifying where to locate new areas of open space, sports and recreational facilities, local authorities should:

- i. Promote accessibility by walking, cycling and public transport, and ensure that facilities are accessible for people with disabilities;
- ii. Locate more intensive recreational uses in sites where they can contribute to town centre vitality and viability;
- iii. Avoid any significant loss of amenity to residents, neighbouring uses or biodiversity;
- iv. Improve the quality of the public realm through good design;
- v. Look to provide areas of open space in commercial and industrial areas;
- vi. Add to and enhance the range and quality of existing facilities;
- vii. Carefully consider security, especially for children;
- viii. Meet regeneration needs of areas, using brownfield in preference to greenfield sites;
- ix. Consider the scope for using any surplus land for open space, sport or recreational use, weighing this against alternative uses;
- x. Assess the impact of new facilities on social inclusion; and
- xi. Consider the recreational needs of visitors and tourists.”

Paragraph 25

With regards to the development of open spaces and land for sport and recreational use:

“The countryside around towns provides a valuable resource for the provision of sport and recreation; particularly in situations where there is an absence of land in urban areas...local authorities should encourage the creation of sports and recreational facilities in such areas and the development of areas of managed countryside, such as country parks, community forest, and agricultural showgrounds. Where planning permission is to be granted for such land uses, local planning authorities should ensure that facilities are accessible by walking, cycling and public transport as alternatives to the use of the car.”

Paragraph 30

As the study area is located in the Nottingham/Derby Green Belt, paragraph 30 is relevant:

“Planning permission should be granted in Green Belts for proposals to establish or to modernize essential facilities for outdoor sport and recreation where the openness of the Green Belt is maintained. Development should be the minimum necessary and nonessential facilities (e.g. additional function rooms or indoor leisure) should be treated as inappropriate development. Very special circumstances which outweigh the harm to the Green Belt will need to be demonstrated if such inappropriate development is to be permitted.”

Paragraph 31

PPG17 also provides a section on sport and recreation requiring natural features and water:

“Some activities (eg climbing, potholing) rely on particular natural features. Where these features exist, local authorities should recognise their actual and potential recreational value, possibly to more than the local population. Planning permission should be granted but only where the impact of sports and recreational activities on natural features can be minimised. Facilities should be planned carefully to ensure that conflicts between sport and recreational activities and other interests do not arise. In considering planning applications for development near water, local authorities should ensure that access for sport and recreation purposes is not restricted and should, where possible, be enhanced. The visual amenity, heritage and nature conservation value of water resources should also be protected.”

Planning Policy Statement 25: Development and Flood Risk

The northern area of the study area (north of the A52) poses a flood risk as well as some areas surrounding Tollerton and Cotgrave. However, some areas of Gamston benefit from the flood defences surrounding the River Trent. Policy related to flood risk has been reviewed.

One of the key planning objectives in PPS25 includes:

“The aims of planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk everywhere and where possible, reducing flood risk overall.”

In managing flood risk, RPBs and LPAs are required to only permit development in areas of flood risk when there are no reasonably available sites in areas of lower flood risk and benefits of the development outweigh the risks from flooding.

Regional Planning Policies

Regional Spatial Strategy for the East Midlands RSS8 (2005)

Policy 4 - Promoting Better Design

Local Authorities, regional bodies, utility providers and developers should work together to ensure standards of design and construction are constantly improved. This should be achieved by promoting:

- the use of design led approaches which take account of local natural and historic character, for example landscape character assessments, urban design frameworks, town and village design statements, local concept statements, countryside design summaries, and masterplanning exercises;
- design and construction that minimises energy use, improves water efficiency, reduces waste and pollution, incorporates renewable energy technologies and sustainably sourced materials wherever possible. and considers building orientation at the start of the design process;
- architectural design which is functional, yet which respects local natural and built character;
- increased densities for new housing in line with national guidance;
- access from new development to local facilities on foot, by cycle or by public transport;
- highway and parking design that improves both safety and the quality of public space;
- design which helps to reduce crime, supports community safety and vitality, and benefits the quality of life of local people; and
- approaches to design, layout and construction which takes account of, and where appropriate provide for increases in biodiversity

Policy 14 - The Nottingham-Derby Green Belt

The principle of the Nottingham Derby Green Belt is well established and should be maintained. A strategic review of the Nottingham-Derby Green Belt will be undertaken in relation to development requirements arising in this part of the Three Cities Sub- Area up to 2026. The review will take into account:

- the sequential approach to development outlined in Policies 2 and 3;
- the wider principles and purpose of existing Green Belt designations as set out in PPG2; and
- the case for adding land to or removing land from the Green Belt.

Policy 15 - Development in the Three Cities Sub-Area

Development Plans, Local Development Frameworks, Local Transport Plans and economic development strategies should support the continued regeneration of Derby,

Leicester and Nottingham, and maintain and strengthen the economic, commercial and cultural roles of all three cities. This will be achieved by ensuring that provision is made:

- for a mix of housing types;
- for employment land to meet the expansion needs of indigenous manufacturing and distribution uses and to encourage new investment;
- to regenerate deprived inner urban areas and outer estates;
- to enhance the transport links and accessibility both within and between the cities; and
- for retailing, office, residential, entertainment and service uses within central areas, to provide for a mix of uses to support the vitality and viability of the city centres.

Outside Nottingham, Leicester and Derby, employment and housing development should be located within and adjoining settlements. Such development should be in scale with the size of those settlements, in locations that respect environmental constraints and the surrounding countryside, and where there are good public transport linkages.

Development associated with Nottingham East Midlands Airport should be focussed where possible, in surrounding urban areas, in particular the Principal Urban Areas of Derby, Leicester and Nottingham and the Sub-Regional Centre of Loughborough.

Policy 16 - A Sub-Regional Spatial Strategy for the Three Cities Sub-area

The Regional Planning Body, working with the relevant local authorities, emda and other interested bodies should develop a Sub Regional Spatial Strategy for the Three Cities Sub-area as part of the next RSS Review. The Strategy should contain long term policies and proposals that will promote:

- sustainable patterns of development and movement within and between the three Principal Urban Areas and other settlements within the Sub-area and beyond;
- the use of public transport for both local and interurban movements;
- an improvement to the quality of the environment, including the provision of semi-natural green space in urban areas;
- an improvement to the collective economic performance of the sub-area and a reduction in deprivation;
- an approach to optimising the economic benefits of Nottingham East Midlands Airport consistent with sustainable patterns of development and movement; and
- a consideration of the extent of Green Belt designations consistent with PPG2 and Policies 2 and 3.

Policy 30 - Priorities for the Management and Enhancement of the Region's Landscape

Development Plans, future Local Development Frameworks, and other strategies of local authorities and agencies should:

- continue to promote the highest level of landscape character protection for the region's nationally
- designated landscapes of the Peak District National Park and the Lincolnshire Wolds Area of Outstanding Natural Beauty;
- promote initiatives to protect and enhance the natural and heritage landscape assets, in particular the
- Sherwood, Charnwood and Rockingham Forests; and
- be informed by landscape character assessments to underpin and act as key components of criteria-based policies for the consideration of development proposals in rural or urban fringe areas. Where not already in place, local authorities should work towards preparing comprehensive assessments of the character of their landscapes to coincide with the review of their local development documents. This should assess whether there are exceptional local circumstances that would require the retention of any local landscape designations and associated policies in local development frameworks.

Policy 31 - Regional Priorities for the Historic Environment

Development Plans, future Local Development Frameworks, and other strategies should seek to understand, conserve and enhance the historic environment of the East Midlands, in recognition of its own intrinsic value, and its contribution to the region's quality of life.

Across the region and particularly in areas where growth or regeneration is a priority, Development Plans, Local Development Frameworks and economic development strategies should pay particular attention to promoting the sensitive change of the historic environment, retaining local distinctiveness, by:

- identifying and assessing the significance of specific historic and cultural assets (including their settings);
- using characterisation to understand their contribution to the landscape or townscape in areas of change;
- encouraging the refurbishment and re-use of disused or under-used buildings of some historic or architectural merit and incorporating them sensitively into the regeneration scheme;
- promoting the use of local building materials; and
- recognising the opportunities for enhancing existing tourism attractions and for developing the potential of other areas and sites of historic interest.

Policy 32 - Regional Priorities for Sports and Recreational facilities

Local Authorities should work with County based Sport Partnerships, the East Midlands Regional Sports Board, Sport England and other relevant bodies to ensure that there is adequate provision of sports and recreational facilities consistent with the priorities for urban and rural areas outlined in Policies 5 and 6, and the relevant subarea policies under section 3.5.

Where appropriate, local authorities should also work across administrative borders to ensure that identified need is met in the most effective manner.

Policy 33 - A Regional Approach to the Water Environment

Development Plans, future Local Development Frameworks, and policies of the Environment Agency and other agencies should be co-ordinated to:

- take water related issues into account at an early stage in the process of identifying land for development;
- protect and improve water quality and reduce the risk of pollution especially to vulnerable groundwater;
- manage supply and demand, require sustainable drainage where practicable and promote the efficient use of water;
- reduce unsustainable abstraction from watercourses and aquifers to sustainable levels;
- locate and phase development to take account of constraints on water resources; and
- plan rural areas to include winter storage reservoirs and lessen the impact of abstraction from rivers.

Policy 34 - Regional Priorities for Strategic River Corridors

Development Plans, future Local Development Frameworks, and other strategies of local authorities and other agencies should seek to protect and enhance the natural and cultural environment of the region's strategic river corridors of the Nene, Trent, Soar, Welland, Witham, Derwent and Dove, along with their tributaries, and rivers which contribute to river corridors of a strategic nature in adjoining regions.

Actions of agencies and other bodies including those of adjoining regions should be co-ordinated to maintain and enhance the multi-functional importance of strategic river corridors for wildlife, landscape and townscape, regeneration and economic diversification, education, recreation, the historic environment, including archaeology, and managing flood risk.

Policy 36 - A Regional Approach to Managing Flood Risk

Development Plans, future Local Development Frameworks, and strategies of relevant agencies should:

- be informed by the use of appropriate Strategic Flood Risk Assessments in order to evaluate actual flood risk and should include policies which prevent inappropriate development either in, or where there would be an adverse impact on, the coastal and fluvial floodplain areas;
- deliver a programme of flood management schemes that also maximise biodiversity and other regeneration benefits; and
- require sustainable drainage in all new developments where practicable.

Development should not be permitted if, alone or in conjunction with other new development, it would:

- be at unacceptable risk from flooding or create such an unacceptable risk elsewhere;
- inhibit the capacity of the floodplain to store water;
- impede the flow of floodwater;
- have a detrimental impact upon ground water storage capacity;
- otherwise unacceptably increase flood risk; and
- interfere with coastal processes.

However, such development may be acceptable on the basis of conditions or agreements for adequate measures to mitigate the effects on the overall flooding regime, including provision for the maintenance and enhancement (where appropriate) of biodiversity. Any such measures must accord with the flood management regime for that location.

Strategic flood risk assessments should be carried out where appropriate to inform the implementation of this policy.

Draft Regional Plan for the East Midlands (2006)

Policy 27 - Regional Priorities for Environmental and Green Infrastructure

Local Authorities, statutory environmental bodies and developers should work with the voluntary sector, landowners and local communities to ensure the delivery, protection and enhancement of Environmental Infrastructure across the Region. Such infrastructure should contribute to a high quality natural and built environment and to the delivery of sustainable communities.

Local Authorities and those responsible for the planning and delivery of growth and environmental management across the Region should work together to: assess the capacity of existing Environment Infrastructure to accommodate change in order to inform decisions on the scale, location and phasing of new development.

Account should be taken of current deficits and likely future demands, including those likely to result from climate change, to identify any further needs or constraints; select appropriate indicators and targets to monitor the condition of Environmental Infrastructure and to ensure that its capacity to accommodate change is not breached;

- ensure that the provision and design of new Environmental Infrastructure is considered and its delivery planned through environmental capacity analysis at the same time as other infrastructure requirements;
- develop 'green infrastructure plans' based on character assessments of existing natural, cultural and landscape assets and the identification of new assets required to meet the needs of existing and expanding communities;
- increase access to green space that can be used for formal and informal recreation, educational purposes and to promote healthy lifestyles; and
- identify delivery and funding mechanisms for the creation and future management of Green Infrastructure, including from the planning system and other funding sources such as EU funded Environmental Stewardship Schemes.

Regional Economic Strategy (2006)

Sections of the Regional Economic Strategy

The fundamental purpose of the RES is to improve economic performance and enhance the region's competitiveness. It will do this by addressing the market failures that prevent or limit sustainable economic development, and supporting regeneration and business growth.

Development Principles – Annex B

1. Through regional and local action and policy, the East Midlands will maintain a sustainable supply of quality land and premises for new business, residential development and mixed uses.
 - A range of opportunities will be promoted to secure the renaissance of urban areas; the development of sustainable communities in rural areas and the regeneration of priority sites, with the development of previously developed land a strong policy objective.
2. The region will ensure that development contributes to wider economic objectives and regeneration to improve the overall economic performance.
 - Development policies and plans should work to reduce intra-regional economic disparities, and address those physical and spatial issues which support 'Productivity' and 'Equality' objectives, as well as 'Sustainability' objectives.

The Nottinghamshire and Nottingham Joint Structure Plan (2006)

Policy 1/1 Sustainable Development

All new development must work towards the principles of sustainability. The County and City Councils will promote sustainable development through adopting the sequential approach to the location of development set out in RSS8 and by encouraging:

- i. a range of quality employment land to promote economic growth and appropriate employment opportunities (Policy 4/1); residential development of a type and in locations which meet the needs of the community (Policy 3/1);
- ii. an integrated transport network to support new development whilst reducing the need to travel, especially by private car (Policy 5/1);
- iii. a range of services and facilities to support business and to meet the needs of communities;
- iv. as a priority, development to improve the economy, services and environment in disadvantaged areas and those with high levels of social need;
- v. the protection and enhancement of the distinctive landscape character, built environment and cultural heritage of the Plan Area (Policies 2/7, 2/10, 2/11 and 2/12);
- vi. the protection and enhancement of the Plan Area's biodiversity to ensure no net loss of Biodiversity Action Plan habitats, and opportunities sought to achieve a net gain (Policy 2/1); and

- vii. all development to be of a high standard of design and energy efficient.

Policy 1/2 The Nottingham Derby Green Belt

Planning permission will only be granted for appropriate development which is located and designed so as not to adversely affect the Green Belt, in particular its open character. Appropriate development will include:

- a) uses appropriate to rural areas including agriculture, forestry and mineral extraction;
- b) essential facilities for outdoor sport and recreation;
- c) cemeteries;
- d) limited extension, alteration or replacement of existing dwellings, limited infilling in existing villages, limited infilling or redevelopment of major existing sites as identified in local plans;
- e) change of use of agricultural and other buildings, with priority being given to employment and tourism uses, which help to diversify the rural economy.

Local plans/development plan documents for areas covered by the Green Belt will review its boundaries to meet the development land requirements of the Joint Structure Plan to 2021. In this review of Green Belt boundaries local planning authorities will have regard to:

- i. sustainable development principles and the sequential approach to development;
- ii. the principles and purposes of existing Green Belt land, in particular the need to maintain openness and prevent coalescence;
- iii. the retention of existing, or definition of new, defensible boundaries.

Policy 2/1 Sustaining Biodiversity

Planning permission will not be granted for development which will adversely affect the integrity or continuity of landscape features which are of major importance for wild flora and fauna and habitats and species identified in the UK and Nottinghamshire Local Biodiversity Action Plans, unless an overriding need for the development is demonstrated which clearly outweighs the nature conservation value of the habitat or species. Appropriate management of these features will be encouraged through the use of conditions, planning obligations and management agreements.

An assessment of sites with the potential for nature conservation interest will be required prior to the determination of applications. Where planning permission is granted and harm cannot be avoided or mitigated, conditions will be used and/or planning obligations will be sought for the creation of an equivalent (or greater) feature that would make a positive contribution towards the targets of the Biodiversity Action Plan.

Policy 2/13 River Corridors

Local planning authorities will seek to maintain and enhance the multi-functional importance of the River Trent and its tributaries (including the Idle, Leen, Maun and Meden). The consideration of development proposals will have regard to the contribution that they would make to the improvement of biodiversity, landscape character, recreational opportunities and regeneration.

Policy 2/16 Flood Protection and Flood Risk Reduction

Local planning authorities will apply the risk based approach of Planning Policy Guidance Note 25 'Development and Flood Risk' (PPG25) in allocating sites for development and in the consideration of planning applications.

Adequate measures will be put in place to mitigate the effects of any development activity in areas at direct risk from flooding, or which would be likely, individually or cumulatively, to increase the number or extent, of people, land or properties at risk of flooding elsewhere. In addition local planning authorities will seek to negotiate with developers, wherever possible, in order to achieve developments which provide for an overall reduction in existing levels of flood risk.

In all areas proposals will, where appropriate, incorporate sustainable drainage systems and provision for their maintenance.

Policy 5/10 Local Authority Road Schemes

Land will be safeguarded for the following local authority major road-based schemes;

- a) A6096 Ilkeston/Awsworth Link;
- b) A617 Pleasley Bypass Extension;
- c) A6211 Gedling Relief Road;
- d) New Crossing over River Trent to west of Radcliffe-on-Trent;
- e) A1133 Collingham Bypass;
- f) A617 Kelham Bypass;
- g) Nottingham City Centre Major Scheme (under construction);
- h) A612 Gedling major Integrated Transport Scheme;
- i) A6514 Nottingham Ring Road Major Scheme.

Policy 6/1 Location of Recreation and Tourism Facilities

Facilities for recreation and tourism will be located within, or on the edge of, town centres (as defined in Policy 7/1), or at other accessible locations within or on the edge of urban areas. Such facilities will only be permitted in other locations where they cannot be sited either within, or on the edge of, urban areas or are to meet purely local needs. Facilities will only be permitted in the countryside where they require a rural location or are required under the provisions of Policy 4/5.

All such development will;

- a) be acceptable in terms of its impact upon the environment or local amenity; and
- b) incorporate a high standard of design.

Major Development, meeting more than local needs, should be accessible by a choice of means of transport.

Policy 6/3 Recreational Routes

Public rights of way and other recreational routes will be provided, maintained and wherever possible improved. Where such facilities are provided as a result of development the developers will be required to make provision for their ongoing

maintenance. Where development results in the loss of a public right of way, an alternative route of an appropriate character will be required. Priority will be given to developing routes linking urban areas to the countryside and the reuse of former railway lines and other transport features such as canals.

Sections of the Nottinghamshire and Nottingham Joint Structure Plan that address regeneration - Paragraph 1.6

The policies of the JSP have been framed with this vision in mind. In order to realise this vision the following objectives have been set:

- to further social inclusion through the regeneration of disadvantaged areas by ensuring that all members of the community have improved access to a wide range of employment, housing, services, education, training, cultural and leisure opportunities

Local Planning Policies

The Rushcliffe Borough Non-Statutory Replacement Local Plan (2006)

GP1 Delivering Sustainable Development

All development proposals must take account of the principles of sustainable development. In particular the borough council will encourage developments that:

- a) promote a positive framework for sustainable economic growth to support efficient, competitive and innovative business, commercial and industrial sectors.
- b) Promote urban and rural regeneration to improve the well being of communities, improve facilities, promote high quality and safe development and create new opportunities for the people living in those communities.
- c) promote communities which are inclusive, healthy, safe and crime free, whilst respecting the diverse needs of communities and the special needs of particular sectors of the community.
- d) provide improved access to jobs, health, education, shops, leisure and community facilities, open space, sport and recreation, by ensuring that new development is located where everyone can access services or facilities on foot, bicycle or public transport rather than having to rely on access by car.
- e) focus developments that attract a large number of people, especially retail, leisure and office development, in existing centres to promote their vitality and viability, social inclusion and more sustainable patterns of development.
- f) reduce the need to travel and encourage accessible public transport provision to secure more sustainable patterns of transport development.
- g) promote the more efficient use of land through higher density, mixed use development and the use of suitably located previously developed land and buildings.
- h) enhance as well as protect biodiversity, natural habitats, the historic environment and landscape and townscape character.
- i) address the causes and impacts of climate change, the management of pollution and natural hazards, the safeguarding of natural resources, and the minimisation of impacts from the management and use of resources.

GP2 Design and Amenity Criteria

Planning permission for new development, changes of use, conversions or extensions will be granted provided that, where relevant, the following criteria are met:

- a) there is no significant adverse effect upon the amenity, particularly residential amenity, of adjoining properties or the surrounding area, by reason of the type and levels of activity on the site, or traffic generated;

- b) a suitable means of access can be provided to the development without detriment to the amenity of adjacent properties or highway safety, the provision of parking is in accordance with the guidance in the county council's parking provisions for new developments and the design of the proposal accords with guidance produced by the highway authority.
- c) sufficient space is provided within the site to accommodate the proposal together with ancillary amenity and circulation space;
- d) the scale, density, height, massing, design, layout and materials of the proposals are sympathetic to the character and appearance of the neighbouring buildings and the surrounding area. They should not lead to an overintensive form of development, be overbearing in relation to neighbouring properties, nor lead to undue overshadowing or loss of privacy and should ensure that occupants of new and existing dwellings have a satisfactory degree of privacy.
- e) noise attenuation is achieved and light pollution is minimised;
- f) wherever possible there is no significant adverse effect on wildlife habitats;
- g) the amenity of occupiers or users of the proposed development would not be detrimentally affected by existing nearby uses
- h) there is no significant adverse effect on any historic sites and their settings including listed buildings, conservation areas, scheduled ancient monuments, historic parks and gardens and historic battlefields,
- i) it can be demonstrated that, wherever possible , the development is designed to minimise the opportunities for criminal activities, and
- j) the use of appropriate renewable energy technologies will be encouraged within new development and the design, layout and materials of a proposal should promote a high degree of energy efficiency.

EMP3 Tollerton Airfield

At Tollerton airfield planning permission for new buildings will be granted for airport related uses only. Proposals must not significantly change the character or increase the size and impact of the existing complex and should not lead to an increase in the duration of operations or frequency of flights. Proposals for change of use of buildings to employment uses or their redevelopment for employment purposes, subject to the following criteria, will be granted:

- a) there will be no materially greater impact than the present use on the openness of the green belt;
- b) the proposals involve buildings of permanent construction, the form, bulk and general design of which are appropriate to the location and in keeping with the surroundings;
- c) no open storage of materials will be involved.

HOU9 Conversion to Flats and Bedsits

Within West Bridgford, in the area shown on the proposals map, planning permission will not be granted for the conversion of houses into flats or bedsitting accommodation. Elsewhere in the plan area such proposals will be approved provided all the following criteria are satisfied:

- a) the property is suitable for the accommodation proposed by reason of its size and associated private amenity space;
- b) the property is unsuitable for single family accommodation;
- c) the proposal does not have an adverse effect upon the amenity of adjacent residential properties;
- d) the proposal provides adequate car and cycle parking in accordance with the guidance in the county council's parking provision for new developments
- e) adequate arrangements for privacy and reduction of noise disturbance can be made;
- f) adequate fire safety arrangements may be made which have no detrimental effect upon neighbouring properties or visual amenity;
- g) the proposal does not lead to an over intensive use of the building or site and any conversion can be undertaken with minimal external alterations; and
- h) the conversion has no adverse effect upon the character of the street scene, particularly through loss of boundary walls or use of front gardens for car parking.

SHOP2 Local Shopping

In the areas defined on the proposals map planning permission will be granted in ground floor frontage locations where:

1. The proposal is for an A1, A2, A3, A4 or A5 (retail services) use and the proportion of A2, A3, A4 and A5 uses would not exceed 35% of the total A1, A2, A3, A4 and A5 units in the defined centres as a result of approving the proposal; or
2. The proposal is for an A1, A2, A3, A4 or A5 use in the shopping parades in west Bridgford as defined on the proposals map

Outside these areas permission will be granted for small-scale A1, A2, A3, A4 and A5 uses which comply with the county council's car and cycle parking guidance.

EN4 Listed Buildings

Planning permission for extensions and alterations to, and conversions of listed buildings, will only be granted where:

- a) it can be shown that the features of architectural or historic interest will be preserved;
- b) the proposals respect the character of the building by virtue of their design, scale, siting and materials and that additions do not detract from its architectural or historic character.

Proposals for development affecting the setting of a listed building, will only be permitted where they are acceptable in terms of scale, massing, form, siting, design and materials

Proposals for changes of use of a listed building will be treated sympathetically where this would result in the preservation of the architectural or historic interest of the building and its setting.

EN5 Demolition and Listed Buildings

Planning permission for development which includes the total or substantial demolition of a listed building will not be granted unless:

- a) there is clear and convincing evidence that all reasonable efforts have been made to sustain the existing use or find a viable new use; or
- b) the building is beyond reasonable repair in relation to its importance; or
- c) it can be shown that there would be substantial benefits for the community

EN7 Sites of Archaeological Importance

Development affecting sites of known or suspected archaeological importance will only be permitted where:

- a) there is a need for development which outweighs the importance of the archaeological site or its setting;
- b) the proposal is supported by an archaeological field evaluation of the site; and
- c) the proposed development would not damage the archaeological remains where these can be preserved in situ.

Where preservation in situ is not feasible or justified, a programme of preservation by surveying, excavation and recording of the archaeological remains will be required (through the use of planning conditions).

EN11 Features of Nature Conservation Interest

Development proposals likely to have an adverse impact on sites of importance for nature conservation (SINCs), local nature reserves (LNRS), and regionally important geological and geomorphological sites will not be permitted unless the reasons for the proposal clearly outweigh the need to safeguard the nature conservation value of the site. Where development is permitted, planning conditions may be used, or a legal agreement sought to ensure that, if unavoidable loss or damage to the site or feature or its setting is likely, measures of mitigation will be required to ensure features are retained or incorporated into an agreed landscape scheme.

EN14 Protecting the Green Belt

Within the green belt as defined on the proposals map planning permission will only be granted for appropriate development for the following purposes:

- a) agriculture, and forestry;
- b) for other uses which preserve the openness of the green belt, including essential facilities for outdoor sport and recreation and for cemeteries;
- c) alteration and limited extension or replacement of existing dwellings; and

- d) limited residential infilling in existing settlements within the green belt.

Planning permission will not be granted for inappropriate development, including the construction of new buildings other than those set out in the criteria, unless very special circumstances can be shown to outweigh the resulting harm to the green belt.

EN19 Impact on the Green Belt and Open Countryside

In the green belt and open countryside where a proposal is in accordance with other policies of the plan, it must be demonstrated,

- a) there will be no significant adverse impact upon the open nature of the green belt or open countryside, or upon important buildings, landscape features or views;
- b) an appropriate landscape scheme is proposed as an integral part of the development; and
- c) as far as possible existing buildings on the site have been used to accommodate indoor facilities and where new buildings or extensions are proposed they respect the general character of the area through siting, design and materials.
- d) any ancillary lighting, including street lighting, is designed and located to minimise its impact beyond the necessary area.

COM11 Protection of Recreational Facilities

The following areas will be safeguarded from development which would prejudice their recreational, tourist and commercial potential with particular protection given to environmental and wildlife features which contribute to the character of the areas:

- a) River Trent
- b) River Soar
- c) Grantham Canal
- d) Great Central Railway

WET 2 Flooding

Development will not be permitted in areas where a risk of flooding or problems of surface water disposal exist unless:

- a) the location is essential for a particular development and there are no alternative locations in a lower risk area; or
- b) the proposal is in an existing developed area and can be adequately protected against potential flood risk and includes compensatory measures; and
- c) it can be demonstrated that the proposal would have no adverse effects on the management of flood risk; and
- d) adequate provision is made for access to watercourses for maintenance purposes; and
- e) suitable on or off-site measures are included to deal with any increase in surface water run-off.

Proposals for some recreational, sport or open space use, amenity and conservation uses may be acceptable in areas of high flood risk.

Supplementary Planning Guidance – Developer Requirements (December 2003)

Rushcliffe's prefer for developer contributions "to ensure that provision is made on site for the appropriate facilities associated with developments" (Para 3.1), however, if this is not appropriate then other contributions are a viable alternative.

The guiding principles on which Developer Contributions are requested include:

- Developers may reasonably be expected to pay for, or contribute the appropriate proportion to the cost of infrastructure which would not have been necessary but for their development.
- Developers will not be expected to make contributions where the impact of their development does not generate a need for addition to or improvement of services or infrastructure.
- Developers will not be requested to pay for facilities which are needed solely in order to resolve deficiencies which exist regardless of their development, nor will attempts be made to extract excessive contributions to infrastructure costs from developers.

Rushcliffe BC also uses the threshold from PPG3 for developer contributions, which is a housing development of 25 or more dwellings or a residential site of 1 hectare or more. Any alterations to this threshold as a result of consultation at a national level will be reflected in Rushcliffe BC's threshold. This will be described as "the threshold" for the remainder of this document.

The requirements for different types of development include:

- *Affordable Housing:*
Any housing developments over the threshold will require a 15% affordable housing provision. In exceptional circumstances this can be provided off-site.
- *Education:*
The contribution for any housing developments over the threshold is dependant on the scale and type of development, as well as the capacity of existing schools.
A development of 100 dwellings is estimated to generate 22 primary school children and 16 secondary school children at a cost of £7500 per primary school child and £10900 per secondary school child.
- *Health:*
The contribution for any housing developments over the threshold is dependant on the scale of development, as well as the capacity of existing health facilities.
The cost for a new health centre is estimated at £920 per dwelling.
- *Integrated transport measures:*
The minimum threshold is given in the ITPS and is based on PPG13; for residential development that is of 50 bedrooms or more. The type, scale and location of development needs to be considered.

- *Leisure / Recreation:*

This is applicable to residential development over the threshold and is dependant on the Leisure Facilities Manager's opinion or the facilities assessment should it be complete.

- *Commuted sums for open space:*

This can apply to any development where the developer does not wish to carry out maintenance and the Rushcliffe BC agrees to carry out the maintenance. The commuted sum is over a period of 15 years, the total cost was £4.56 per m² for 15 years but the cost is reviewed on an annual basis. The cost is also dependant on the type of area to be maintained.

Nottingham Core Strategic Housing Market Assessment (May 2007)

The Nottingham Core SHMA covers the whole borough of Rushcliffe. Map 2 shows that Rushcliffe is a relatively affluent area, however, the most deprived area of Rushcliffe is within the study area. Map 6 shows that the house prices in our study area are some of the highest in the Nottingham area with no average house prices of less than £136,000 in 2005/06.

Key findings:

- As a result of this the report recommends that 66% of housing provision in Rushcliffe needs to be 'smaller and medium sized units'.
- Table 17 suggests a net annual need of 334 dwellings.
- There is a lack of basic facilities (doctors, post office, primary school etc) in the eastern areas of Rushcliffe.
- Shared ownership is most prominent in Rushcliffe due to high house prices.
- 46.6% of dwellings in Rushcliffe are detached and only 17.3% are terraced or flats.
- House prices increased by 123% between 2001 and 2006 in Rushcliffe.
- Rushcliffe has the most severe under-provision of housing in comparison to policy targets.
- Renting is slightly more affordable than buying, 47% can not afford to rent and 60% can not afford to buy at prices in 2005/06.
- 1736 empty homes in Rushcliffe in 2006, 1201 had been vacant for more than 6 months.

Nottingham Principal Urban Area Strategic Land Availability Assessment (April '07)

The urban areas of Rushcliffe BC considered in this SHLAA are Gamston and West Bridgford. Gamston is located partially within the study area, whilst West Bridgford is located immediately adjacent to the study area. Both Gamston and West Bridgford are located to the western side of the study area.

The high level of congestion on the A453 and A52 has led, historically, to the Highways Agency lodging an objection to any residential proposals which use the A52 for direct

access. This led to the withdrawal of the 'Edwalton Site' from the revised Local Plan (which was subsequently withdrawn).

The dualling of the A453 is scheduled to take place in 2009 and until this has been completed any large scale development south of Clifton is considered untenable.

Key facts and figures for Rushcliffe principal urban areas (PUA):

- 1,576 residential completions 1996-2006, average of 158 per annum.
- 956 completions (1996-2001) and 620 completions (2001-2006) which is a drop of 35%.
- The RSS is targeting 525 completions per annum in the Rushcliffe PUA.
- The level of development between 2001 and 2006 is 24% of the required amount.
- It is estimated that 158 completions per year will be made up of conversions, windfall site and the completion of allocated sites.

Supplementary Planning Guidance – Affordable Housing (April 2003)

The Supplementary Planning Guidance was adopted by Rushcliffe Borough Council to assist in negotiations with house builders and others in determining planning applications. The guidance sets out the policy context focussing on national, regional and local policy. The Borough has been involved in two studies to assess the requirement for affordable housing: the South Notts Affordable Housing Study (1998, updated 2001); and the Rushcliffe Borough Council Housing Needs Assessment (2000).

The South Notts Affordable Housing Study concluded that to meet the base and future need for affordable housing, 24% of dwellings built before 2011 would need to be affordable. The study did not identify how to distribute this between the authorities. In light of the two studies,

Indications from waiting lists and Rushcliffe Borough Council Housing Needs Assessment are that: there is a predominant need for 2 bedroom flats/maisonettes, 2 and 3 bedroom houses and 2 bedroom bungalows; and for housing that is for rent. The assessment showed strong waiting list demand of need for housing in West Bridgford and the six major villages (Bingham, Cotgrave, East Leake, Keyworth, Radcliffe on Trent and Ruddington).

The need to provide balanced mixed communities and promote social cohesion will mean that only in exceptional circumstances will off site provision or commuted sums be appropriate in place of on site provision. On all sites, providing affordable housing delivery will be secured through a planning condition/planning obligation.

Rushcliffe Borough Council originally considered that provisions of approximately 15% affordable housing should be sought. However, the current threshold for affordable housing is at a rate of 30% for schemes of 15 dwellings or more or sites 0.5 of a hectare or more in area.

East Midlands Inland Waterways Study: A Report to the East Midlands Development Agency

ECOTEC research and consulting limited was appointed by EMDA in January 2007 to undertake a study exploring the potential of inland waterways as a driver for economic development and urban and rural renaissance in the East Midlands. The policy drivers

section identifies the key national, regional, sub regional and local policy drivers with specific reference to the potential of inland waterways to contribute to economic development and rural and urban renaissance in the region. In relation to planning policy, the study refers to the Regional Spatial Strategy for the East Midlands and particularly policy 34: Regional Priorities for Strategic River Corridors. It mentions how the policy supports waterway regeneration within the region. The main conclusion of the section is that there is no holistic regional waterways strategy that underpins the approach that the region has to addressing and maximising waterway regeneration.

Grantham Canal Strategy

The canal strategy (published in 2001) has been prepared by British Waterways in consultation with the Grantham Canal Partnership and the Officers Working Group. The aims of the strategy are to: ensure a sustainable and strategic approach to regeneration and management of the Grantham canal in the short, medium and long term; provide an agreed vision as a basis for the Grantham canal partnership; facilitate the engagement and support of local authorities, other agencies, local communities, organisations and individuals with interest in the canal corridor; and provide a framework for investment in the corridor.

The strategy includes a section on the planning context. It highlights how the Grantham Canal passes through the local authority areas of Nottinghamshire, Lincolnshire and Leicestershire County Councils and Rushcliffe, Melton and South Kevesten District Councils and that there are a range of national, regional and local planning policies and proposals that provide the planning framework for the strategy. The strategy mentions how all of the local plans recognise the high quality and distinctive environment of the wider canal corridor and contain policies that seek to protect the natural and built heritage.

Inland Waterways Investment Guide

The 'Inland Waterways Investment Guide' has been prepared by British Waterways (released March 2006). The purpose of the guide is to: provide analysis of the market conditions for developing inland waterway marinas; present some indicative investment cases and scenarios; and to explain how British Waterways can provide support through the planning and development processes.

The guide explains how British Waterways involve themselves in the planning process. British Waterways' local planning staff engage with all local planning authorities in England and Wales that have a British Waterways' owned or managed waterway within their administrative area. The aim is to raise the profile of waterways, highlight policy issues and lobby for positive waterway related policies in Local Development Frameworks. The British Waterways planners are currently promoting the development of mooring strategies in consultation with Local Planning Authorities (LPA), which will identify shortfalls and future mooring provisions required in an area. As a statutory consultee for planning applications, British Waterways is consulted by the LPA on third party planning applications that have a bearing on waterways and also responds to government consultation papers on national planning policy.

Table 2.1. Possible Green Infrastructure Funding Opportunities

Funding Name	Funding Body	Description of funding	Amount	Website	Contact	Phone
Access to Nature	Bid Lottery Fund	Aims to encourage more people to enjoy the outdoors. Funding available to statutory bodies, including councils.	Total allocation: £25 million. Grants range from £50,000 to £500,000	www.naturalengland.org.uk/leisure/grants-funding/	Kristina Gould	0115 900 5402
ASDA foundation	ASDA foundation	Will support schemes within the vicinity of a local store. Funding types include environmental.	None specified	www.asda.co.uk	West Bridgford Asda – paul Dennis Manager (contact the most local store)	0115 9694200
Biffaward	Landfill Communities Fund	Funding is directed to projects which provide funding and improve public amenities for communities within 10 miles of a Biffa operation.	£250-£500000	www.biffaward.org	Newark office	01636 6700
Single programme (Regional Development Agencies) (EMDA)	DTI, DCLG, DfES, DEFRA and DCMS	Work with people in communities and partner organisations to regenerate unused or run-down sites, and improve the quality and attractiveness of public spaces.	None specified	www.englandrdas.com	None given (local office)	None Given (local office)
Big Lottery Fund	Big Lottery Fund	Supports a wide range of programmes and will need to phone them to see which might support the Green Infrastructure project	£360 million per year	www.biglotteryfund.org.uk	Office	0115 8722950
Nottinghamshire Community Foundation		Funds projects that are located within the Nottinghamshire county boundary	Varies	www.nottscf.org.uk	Grants Team	01623 636365
Viridor Credits Environmental Company		Funding available to provide provisions for the maintenance or improvement of public amenities and parks, which is open and accessible to the public.	Varies	www.viridor-credits.co.uk	office	01823 327 221
Inland Waterways Association		Funding available for projects that promote inland waterway restoration schemes. Applications from bodies promoting new waterway routes will also be considered.	£20,000	http://www.waterways.org.uk/Restoration/UsefulInformation/FundingUpdate	Chesham office	01494 783453
Waterways fund	EMDA	Funding aimed at restoring disused waterways for the benefit of tourism with proven economic impact. In order to secure funding, the project has to fall under one of the five schemes. GI study falls under: Large scale project development – work required to help unlock the potential of large scale waterway projects.	£50,000 - £500,000	www.emda.org.uk/waterwayfund/	Georgina Walters Mcleod	0115 988 8484
WREN		Projects that demonstrate self help, viability, sustainability and offer		www.wren.org.uk		01953 717 165

Awards for all		Funding for projects that enable people to take part in art, sport, heritage and community activities, as well as projects that promote education, the environment and health.	£300-£1000	www.awardsforall.org.uk/england/		0845 600 20 40
Jephcott Charitable Trust		Grants are made to charities under the following themes: population control; the natural environment; education and health	£2,000 - £10,000	www.jephcottcharitabletrust.org.uk		Contact only by address
East Midlands Airport Community Fund		Prioritises funding to projects that have a community or environmental benefit that is long lasting and offer environmental improvement and/or heritage conservation.		www.eastmidlands.com/cmc/142/community-fund.html	Gay Evans	0871 919 9000 ext. 3834
Ernest Cook Trust		Aimed at charitable organisations working through education or training to conserve the natural environment, architecture of distinction and traditional skills and to create opportunities for employment, particularly in rural areas.	£50-£25,000	www.ernestcooktrust.org.uk	Ros Leigh	01285 712492
Kelloggs Active Living Fund		Gives small grants to fund projects and activities which lead to people taking part in sustained physical activity.	£1,000	www.communityfoundation.co.uk		0161 214 0940
Greater Nottingham Partnership		The GNP identifies projects that it wishes to fund and advertises opportunities on its website.	Not specified	www.gnpartnership.org.uk		0115 950 2608
Sport England		Funding prioritized towards projects that increase the number of people that play sport, coach sport or volunteer in sport; projects that are about people rather than places; and projects that meet local needs.	£10,001	www.sportengland.org/eastmidlands		08458 508 508
Sports & Arts Grants		Foundations aim is to enhance the quality of life for the communities to encourage and fund sports and arts at every level.	£75,000	www.grantsnet.co.uk		0151 259 5505
Keepmoat Fund		Funding intended to support communities facing disadvantage and hardship through assisting local voluntary and community group projects that will benefit the area and residents of Rushcliffe and Clifton.	£500 - £1,500	www.nottscf.org.uk	Sam Wright	0115 945 5236
Charity bank		Provides funding for regeneration and sustainable development.	£5,000 - £500,000 Loan	www.charitybank.org	Peter Hughes	0791 954 3237
Esmee Fairbairn Foundation		Funding priorities include environment.	Not Specified	www.esmeefairbairn.org.uk		020 7297 4700
Sita Trust		Enriching Nature Programme: Enriching nature is the name of SITA Trust's funding programme for wildlife projects. We can support projects within ten miles of landfill sites in England. Not for profit organisations, charities and local authorities can apply.	Not specified	www.sitatrust.org.uk		01454 269090
Waterways Trust		Prioritises projects that improve the waterways e.g. Canals and Rivers. Emphasis should be placed on improving the environment and ensuring that projects have a positive impact on wildlife.	£1,000	www.thewaterwaystrust.org.uk	Jenny Rogers	01452 318 220

Table 2.2. Planning Constraints and Opportunities Matrix.

Planning Constraints & Opportunities Matrix	Option 1, 1a, 1c and 1d	Option 1b	Option 2, 2a and 2b	Option 3	Option 4	Option H and Ha	Option T1 and Ta
Planning Policy: The Rushcliffe Borough Non-Statutory Replacement Local Plan (2006)	EN14 Protecting the Green Belt COM11 Protection of Recreational Facilities	EN14 Protecting the Green Belt COM11 Protection of Recreational Facilities	EN14 Protecting the Green Belt COM11 Protection of Recreational Facilities	EN14 Protecting the Green Belt COM11 Protection of Recreational Facilities	EN14 Protecting the Green Belt COM11 Protection of Recreational Facilities	EN14 Protecting the Green Belt COM11 Protection of Recreational Facilities	EN14 Protecting the Green Belt COM11 Protection of Recreational Facilities
Other Environmental Constraints	<p><i>Risk of Flooding</i></p> <p>Passes through two SINC's (Gamston Pits and Holme Pierrepont) and adjoins Grantham Canal SINC. (Option 1).</p> <p>Relatively high potential for encountering archaeological deposits and route passes close to a number of extant listed buildings and historic structures. (Option 1 and 1c).</p> <p>Slightly reduced risk of encountering archaeological deposits as passes through lagoon (Option 1a).</p> <p>Slightly reduced impact on potential archaeological remains associated with Bassingfield (Option 1d).</p>	<p><i>Risk of Flooding</i></p> <p>Potential impacts on archaeology as for Option 1.</p> <p>Possibility to incorporate marina development into this route.</p>	<p><i>Risk of Flooding</i></p> <p>Passes through Gamston Pits SINC, affecting three undistributed lagoons to north of site, and adjoins Grantham Canal SINC (Option 2).</p> <p>Has the potential to encounter archeological remains both north and south of the A52 (Option 2).</p> <p>Passes through site of a Roman Villa where route turns north to join the Trent (Option 2).</p> <p>Potential impacts on historic structures/buildings similar to option 1 (Option 2).</p> <p>Potential impacts on archeology and on built heritage similar to option2, but avoids the Roman villa site (Option 2a).</p> <p>Potential impacts on archaeology similar to Trent link Option 2 (Option 2c).</p> <p>Slightly reduced potential effect on historic swing bridge (Option 2c).</p>	<p><i>Risk of Flooding</i></p> <p>Less land take than routes 1, 2 and 4 so less habitat loss. Avoids disturbance of Holme Pierrepont lagoon complex.</p> <p>Route passes close to known remains of Adbolton deserted medieval village, in particular the medieval church.</p> <p>Site likely to encounter as yet unknown archaeological deposits. Potential to affect setting of Simkins Farmhouse (Grade 2 listed) on Adbolton Lane.</p>	<p><i>Risk of Flooding</i></p> <p>Potential for badger, reptile and other local BAP species.</p> <p>Northern section between railway and Trent may encounter archaeological remain; reuse of railway embankment unlikely to impact on underlying deposits.</p> <p>Potential for slight effect on listed building sin vicinity of Holme Pierrepont Hall.</p>	<p><i>Risk of Flooding</i></p> <p>Potential considerable disturbance of Water Fowl, including back-necked grebe, where route passes through the A52 lagoon.</p> <p>Route traverses an area of known Iron Age and Romano-British settlement activity and could affect an Iron Age/Romano-British settlement site.</p> <p>Route would pass to east of Roman Villa site.</p>	<p><i>Risk of Flooding</i></p> <p>Route affects a known Iron-Age Romano-British settlement and site of a second World War heavy anti aircraft battery.</p> <p>Route passes between remains of Adbolton deserted medieval village and site of a Roman Villa.</p>
Land Owners and Development Proposals	<p>Nottinghamshire County Council (Holme Pierrepont)</p> <p>Responsibility for Holme Pierrepont will be passed from Sport England to Notts County Council in April 2009.</p> <p>Wide range of activities available on the site currently.</p> <p>Additional features could be developed on the site: that would add to the activities available.</p> <p>Change of management may provide major development/investment opportunity.</p> <p>Potential for cooperation between Cotgrave Canal Link and improvements to Holme Pierrepont.</p> <p>Tarmac/Corylus</p>	<p>Mosaic</p> <p>Planning application for residential housing likely to be submitted in October 2008.</p> <p>Approximately 700 houses (30% affordable)</p> <p>Will provide land for a marina and a contribution of £2.5 million for construction of a link.</p> <p>Compatible with the proposed fourth River Trent crossing (see policy 5/10)</p> <p>Housing to be visually</p>	<p>Nottinghamshire County Council (Holme Pierrepont)</p> <p>See option 1, 1a, 1c and 1d</p> <p>Tarmac/Corylus</p> <p>See option 1, 1a, 1c and 1d</p>	<p>Nottinghamshire County Council (Holme Pierrepont)</p> <p>See option 1, 1a, 1c and 1d</p>	<p>EMDA</p> <p>EMDA have not been forthcoming in making any contributions to this link as they do not own or control any land adjacent to the canal to facilitate creation of a boatyard/marina.</p> <p>Cotgrave Golf Club (When we have phoned Ian Shaw)</p> <p>Mosaic</p> <p>See option 1 b.</p>	<p>Nottinghamshire County Council (Holme Pierrepont)</p> <p>See option 1, 1a, 1c and 1d</p>	<p>Nottinghamshire County Council (Holme Pierrepont)</p> <p>See option 1, 1a, 1c and 1d</p>

Planning Constraints & Opportunities Matrix	Option 1, 1a, 1c and 1d	Option 1b	Option 2, 2a and 2b	Option 3	Option 4	Option H and Ha	Option T1 and Ta
	<p><i>Developing a concept for the former gravel pits adjacent to Holme Pierrepont.</i></p> <p><i>Potential development includes: a new hotel and conference centre; new 'floating' homes; a marina; and a route for the canal link through existing lake</i></p> <p><i>Development unlikely to be compatible with Green Belt policy.</i></p>	<p><i>well contained</i></p> <p><i>Would help to create a tourist destination linked to the National Watersports Centre complex.</i></p> <p><i>Development to be phased from the north</i></p>					
Planning Applications	<p>Stables Development (Application number: 08/00610/FUL)</p> <p><i>Proposal for 10 stables, a meneage with floodlights, access road and car parking at the West Bridgford Equestrian centre on Adbolton Lane. The decision is pending.</i></p> <p>Four dwellings with vehicular access (Application number: 07/01360/OUT)</p> <p><i>Proposal for Four dwellings with vehicular accesses following demolition of existing bungalow on Adbolton Lane. This application was withdrawn.</i></p>				<p>Development of residential site (Application number: 08/00567/OUT)</p> <p><i>Proposal for a mixed use development submitted by EMDA on site of former Cotgrave Colliery. The decision is pending.</i></p>		<p>Four dwellings with vehicular access (Application number: 07/01360/OUT)</p> <p><i>Proposal: Four dwellings with vehicular accesses following demolition of existing bungalow</i></p> <p><i>Address: Bramber 2 Adbolton Lane Holme Pierrepont Nottinghamshire NG2 5AS</i></p> <p><i>Decision: Application withdrawn</i></p>

Planning Policy Review

Planning Designations

The following planning designations affect the Study Area:

- i.Green Belt designated under Policy EN14
- ii.Protection of Recreational Facilities designated under - Policy COM11
- iii.Tollerton Airport designated under - Policy EMP3
- iv.Conversion to Flats and Bedsits - Policy HOU9
- v.Local Authority Road Schemes - Safeguarded Zone of Interest - new crossing of the River Trent designated under Policy 5.10 of the Nottinghamshire and Nottingham Joint Structure Plan

The following policies have been reviewed

- i.The area north of the A42 has been identified is at risk of flood although this area has not been identified in the Local Plan
- ii.Two SINC have been identified at Gamston Pits and Holme Pierrepont although these have not been identified in the Local Plan
- iii.Archaeological deposits, listed buildings and historic structure have been identified although not identified in the Local Plan
- iv.Landscape character policies have been identified
- v.Regeneration policies

Green Belt designated under Policy EN14

National Planning Policy – Planning Policy Guidance 2 (1995)

The Study Area is located within the Nottingham/Derby Green Belt. *Planning Policy Guidance 2* provides guidance on the general intentions of Green Belt policy, the purpose of including land within the Green Belt and the protection that Green Belts are required to provide.

Paragraph 1.4 of PPG 2 states that:

“Green Belts have five specific purposes:

- i.to check the unrestricted sprawl of large built-up areas;
- ii.to prevent neighbouring towns from merging into one another;
- iii.to assist in safeguarding the countryside from encroachment;
- iv.to preserve the setting and special character of historic towns; and
- v.to assist in urban regeneration, by encouraging the recycling of derelict and other urban land”.

Paragraph 1.6 of PPG 2 states that:

“The use of the land within the Green Belt has a positive role to play in fulfilling the following objectives:

- i.to provide opportunities for access to the open countryside for the urban population;
- ii.to provide opportunities for outdoor sport and outdoor recreation near urban areas;
- iii.to retain attractive landscapes, and enhance landscapes, near to where people live;
- iv.to improve damaged and derelict land around towns;

- v.to secure nature conservation interest; and
- vi.to retain land in agricultural, forestry and related uses”.

Paragraph 3.4 of PPG2:

Provides guidance on which new buildings are appropriate development within the Green Belt. Buildings used for the following purposes are allowed:

- i. “agriculture and forestry;*
- ii.essential facilities for outdoor sport and recreation, for cemeteries, and for other uses of land which preserve the openness of the Green Belt and which do not conflict with the purposes of including land in it;*
- iii.limited extension, alteration or replacement of existing dwellings;*
- iv.limited infilling in existing villages and limited affordable housing for local community needs under development plan policies according with PPG3; and*
- v.limited infilling or redevelopment of major existing developed sites identified in adopted local plans.”*

Regional Planning Policy - Regional Spatial Strategy for the East Midlands (RSS8) (2005)

RSS8 highlights the need to undertake a strategic Green Belt review in relation to development requirements up to 2026 which has been addressed in subsequent sections. The Study Area is designated under Policy 14 and 16 of RSS8. The policies state the following:

Policy 14 – *The Nottingham-Derby Green Belt states that ‘the principle of the Nottingham Derby Green Belt is well established and should be maintained.*

A strategic review of the Nottingham-Derby Green Belt will be undertaken in relation to development requirements arising in this part of the Three Cities Sub- Area up to 2026. The review will take into account:

- i.the sequential approach to development outlined in Policies 2 and 3;*
- ii.the wider principles and purpose of existing Green Belt designations as set out in PPG2; and;*
- iii.the case for adding land to or removing land from the Green Belt’.*

Policy 16 – *a Sub-Regional Spatial Strategy for the Three Cities Sub-area states that the Regional Planning Body, working with the relevant local authorities, EMDA and other interested bodies should develop a Sub Regional Spatial Strategy for the Three Cities Sub-area as part of the next RSS Review.*

The Nottingham/Derby Green Belt review (2006) has taken place and has recommended that the area between Nottingham and Derby is the most important part to retain and areas towards the south and east of Nottingham are of lesser importance. This has implications for the Study Area as it is located towards the south east of Nottingham and could lead to the re-drawing of the Green Belt boundary in the area.

Nottinghamshire and Nottingham Joint Structure Plan (2006)

The Study Area is located within the boundaries of the Nottingham/Derby Green Belt. Therefore policy 1/2 is applicable:

“Planning permission will only be granted for appropriate development which is located and designed so as not to adversely affect the Green Belt, in particular its open character. Appropriate development will include:

- a) uses appropriate to rural areas including agriculture, forestry and mineral extraction;

- b) essential facilities for outdoor sport and recreation;
- c) cemeteries;
- d) limited extension, alteration or replacement of existing dwellings, limited infilling in existing villages, limited infilling or redevelopment of major existing sites as identified in local plans;
- e) change of use of agricultural and other buildings, with priority being given to employment and tourism uses, which help to diversify the rural economy.

Local Planning Policy - Rushcliffe Borough Non-Statutory Replacement Local Plan (2006)

The Study Area is designated under Policy EN14 – Protecting the Green Belt which provides guidance on the exact forms of development that would be appropriate within the Green Belt in Rushcliffe. These include:

- a) agriculture, and forestry
- b) for other uses which preserve the openness of the Green Belt, including essential facilities for outdoor sport and recreation and for cemeteries;
- c) alteration and limited extension or replacement of existing dwellings;
- d) limited residential infilling in existing settlements within the Green Belt.

The Non-Statutory Replacement Local Plan recognises that an over restrictive Green Belt may stifle economic development and exacerbate traffic problems across and beyond the Green Belt (paragraph 2.39). It highlights the need to ensure that regard is had to principles of sustainable development, the need to restrict road traffic growth and to support the services of existing communities when amending the Green Belt.

Policy EN19 - Impact on the Green Belt and open countryside is also applicable to this Green Belt designation. In any development on Green Belt the following must be demonstrated:

- a) there will be no significant adverse impact upon the open nature of the Green Belt or open countryside, or upon important buildings, landscape features or views;
- b) an appropriate landscape scheme is proposed as an integral part of the development; and
- c) as far as possible existing buildings on the site have been used to accommodate indoor facilities and where new buildings or extensions are proposed they respect the general character of the area through siting, design and materials.”

Protection of Recreational Facilities designated under Policy COM11

National Planning Policy - PPG17 Planning for Open Space, Sport and Recreation (2002)

Grantham Canal and The River Trent is designated under Policy COM11 – Protection of Recreational Facilities. Relevant national, regional and local policy is reviewed particularly as this link would also be a recreational facility.

Paragraph 20 of PPG17 states that:

“In identifying where to locate new areas of open space, sports and recreational facilities, local authorities should:

- i. Promote accessibility by walking, cycling and public transport, and ensure that facilities are accessible for people with disabilities;
- ii. Locate more intensive recreational uses in sites where they can contribute to town centre vitality and viability;
- iii. Avoid any significant loss of amenity to residents, neighbouring uses or biodiversity;

- iv. Improve the quality of the public realm through good design;
- v. Look to provide areas of open space in commercial and industrial areas;
- vi. Add to and enhance the range and quality of existing facilities;
- vii. Carefully consider security, especially for children;
- viii. Meet regeneration needs of areas, using brownfield in preference to greenfield sites;
- ix. Consider the scope for using any surplus land for open space, sport or recreational use, weighing this against alternative uses;
- x. Assess the impact of new facilities on social inclusion; and
- xi. Consider the recreational needs of visitors and tourists.”

All of the proposed routes will contribute to the promotion of accessibility by walking and cycling and the routes will be accessible for people with disabilities. In addition, they will add and enhance to the range and quality of existing facilities in the area.

Paragraph 25 of PPG17 states that:

“The countryside around towns provides a valuable resource for the provision of sport and recreation; particularly in situations where there is an absence of land in urban areas...local authorities should encourage the creation of sports and recreational facilities in such areas and the development of areas of managed countryside, such as country parks, community forest, and agricultural show grounds. Where planning permission is to be granted for such land uses, local planning authorities should ensure that facilities are accessible by walking, cycling and public transport as alternatives to the use of the car.”

As the Study Area is located on the fringe of the City of Nottingham, paragraph 25 is relevant. In accordance with this policy, the proposals will encourage recreational use of the area and will be accessible by walking and cycling.

Paragraph 30 of PPG17 states that:

“Planning permission should be granted in Green Belts for proposals to establish or to modernize essential facilities for outdoor sport and recreation where the openness of the Green Belt is maintained. Development should be the minimum necessary and nonessential facilities (e.g. additional function rooms or indoor leisure) should be treated as inappropriate development. Very special circumstances which outweigh the harm to the Green Belt will need to be demonstrated if such inappropriate development is to be permitted.”

Regional Planning Policy - Regional Spatial Strategy (RSS8) (2005)

Policy 32 on Regional Priorities for Sports and Recreational Facilities is relevant to this study, which states, “local Authorities should work with County based Sport Partnerships, the East Midlands Regional Sports Board, Sport England and other relevant bodies to ensure that there is adequate provision of sports and recreational facilities consistent with the priorities for urban and rural area...Where appropriate, local authorities should work across administrative borders to ensure that identified need is met in the most effective manner.”

Nottinghamshire and Nottingham Joint Structure Plan (2006)

Policy 6/3 Recreational Routes from the Nottinghamshire and Nottingham Joint Structure Plan is relevant to this study as the link will promote recreational uses which states:

“Public rights of way and other recreational routes will be provided, maintained and wherever possible improved. Where such facilities are provided as a result of development the developers will be required to make provision for their ongoing maintenance. Where development results in the loss of a public right of way, an alternative route of an appropriate character will be provided. Priority will be given to developing routes linking urban areas to

the countryside and the reuse of former railway lines and other transport features such as canals.”

Local Planning Policy - Rushcliffe Borough Non-Statutory Replacement Local Plan (2006)

Grantham Canal and the River Trent is designated under Policy COM11 – Protection for Recreational Facilities which states they will be safeguarded from development which would prejudice their recreational, tourist and commercial potential with particular protection given to environmental and wildlife features which contribute to the character of the areas.

Paragraph 7.23 of the above Local Plan provides further details relating to Grantham Canal which states that:

“In the case of the Grantham Canal, improvements have already been undertaken to improve its recreational value, including the construction of car parking and picnic sites. There are also long-term proposals by the Grantham Canal Partnership to reconnect the canal to the River Trent. The Borough Council supports the principle of these proposals and will seek to encourage the provision of a link along an acceptable route.”

A number of recreational facilities are protected within the Study Area. These include the River Trent and the Grantham Canal. Within policy COM11, the new link provided between the River Trent and the Grantham Canal will be protected.

Tollerton Airport designated under Policy EMP3

Tollerton Airport is located towards the south west of the site which is designated under Policy EMP3. The which states that:

“At Tollerton airfield planning permission for new buildings will be granted for airport related uses only. Proposals must not significantly change the character or increase the size and impact of the existing complex and should not lead to an increase in the duration of operations or frequency of flights. Proposals for change of use of buildings to employment uses or their redevelopment for employment purposes, subject to the following criteria, will be granted:

- a) there will be no materially greater impact than the present use on the openness of the Green Belt;
- b) the proposals involve buildings of permanent construction, the form, bulk and general design of which are appropriate to the location and in keeping with the surroundings;
- c) no open storage of materials will be involved.”

Conversion to Flats and Bedsits designated under Policy HOU9

The residential area to the west of the Study Area is designated under Policy HOU9 - Conversion to Flats and Bedsits covers. This Policy will have no direct implications for the any of the proposed routes.

Local Authority Road Schemes designated under Policy 5/10 in the Nottinghamshire and Nottingham Joint Structure Plan (February 2006)

Road Schemes

Land to the north east of the Study Area has been designated under Policy 5/10 Local Authority Road Schemes which states that land towards the north east of the Study Area will be safeguarded for a new crossing over the River Trent to the west of Radcliffe-on-Trent.

The previous structure plan identified land for the crossing at Colwick, but the proposal was reconsidered in more detail as part of the A52 Multi Modal Study. The East Midlands Regional Assembly has endorsed this recommendation, subject to further detailed investigation.

Flood Risk

National Planning Policy - Planning Policy Statement 25 - Development and Flood Risk (2006)

The northern area of the Study Area (north of the A52) poses a flood risk as well as some areas surrounding Tollerton and Cotgrave. However, some areas of Gamston benefit from the flood defences surrounding the River Trent. Policy related to flood risk has been reviewed.

One of the key planning objectives in PPS25 includes:

“The aims of planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk everywhere and where possible, reducing flood risk overall.”

Regional Planning Policy - Regional Spatial Strategy for the East Midlands (RSS8) (2005)

RSS8 states that development should not be permitted if, alone or in conjunction with other new development, it would:

- i. be at unacceptable risk from flooding or create such an unacceptable risk elsewhere;
- ii. inhibit the capacity of the floodplain to store water;
- iii. impede the flow of floodwater;
- iv. have a detrimental impact upon ground water storage capacity;
- v. otherwise unacceptably increase flood risk; and
- vi. interfere with coastal processes.

However, such development may be acceptable on the basis of conditions or agreements for adequate measures to mitigate the effects on the overall flooding regime, including provision for the maintenance and enhancement (where appropriate) of biodiversity. Any such measures must accord with the flood management regime for that location.

Nottinghamshire and Nottingham Joint Structure Plan (2006)

Policy 2/16 - Flood Protection and Flood Risk Reduction from the Structure Plan is applicable as some of the Study Area is subject to flood risk. Policy 2/16 states that:

“Local planning authorities will apply the risk based approach of Planning Policy Guidance Note 25 ‘Development and Flood Risk’ (PPG25) in allocating sites for development and in the consideration of planning applications.

Adequate measures will be put in place to mitigate the effects of any development activity in areas at direct risk from flooding, or which would be likely, individually or cumulatively, to increase the number or extent, of people, land or properties at risk of flooding elsewhere. In addition local planning authorities will seek to negotiate with developers, wherever possible, in order to achieve developments which provide for an overall reduction in existing levels of flood risk.

In all areas proposals will, where appropriate, incorporate sustainable drainage systems and provision for their maintenance.”

Local Planning Policy - Rushcliffe Borough Non-Statutory Replacement Local Plan (2006)

Policy WET 2 from the Local Plan is applicable as some of the Study Area is subject to flooding. Policy WET2 states that:

“Development will not be permitted in areas where a risk of flooding or problems of surface water disposal exist unless:

- a) the location is essential for a particular development and there are no alternative locations in a lower risk area; or
- b) the proposal is in an existing developed area and can be adequately protected against potential flood risk and includes compensatory measures; and
- c) it can be demonstrated that the proposal would have no adverse effects on the management of flood risk; and
- d) adequate provision is made for access to watercourses for maintenance purposes; and
- e) suitable on or off-site measures are included to deal with any increase in surface water run-off.

Proposals for some recreational, sport or open space use, amenity and conservation uses may be acceptable in areas of high flood risk.”

Sites of Importance for Nature Conservation

National Planning Policy - Planning Policy Statement 9 - Biodiversity and Geological Conservation (2005)

PPS9 is relevant to the proposals as there are large water bodies located towards the north of the A52 which are developing into an area as a valuable wildlife resource and have currently been designated as Sites of Importance for Nature Conservation (SINC). These include Gamston Pits and Holme Pierrepont.

PPS 9 states that development proposals where the principal objective is to conserve or enhance biodiversity and geological conservation interests should be permitted. Paragraph 12 of PPS 9 emphasises the need to protect the networks of habitats that are present on sites.

“Networks of natural habitats provide a valuable resource. They can link sites of biodiversity importance and provide routes or stepping stones for the migration, dispersal and genetic exchange of species in the wider environment. Local authorities should aim to maintain networks by avoiding or repairing the fragmentation and isolation of natural habitats through policies in plans. Such networks should be protected from development, and, where possible, strengthened by or integrated within it. This may be done as part of a wider strategy for the protection and extension of open space and access routes such as canals and rivers, including those within urban areas.”

Regional Planning Policy - Regional Spatial Strategy for the East Midlands (RSS8) (2005)

The RSS highlights how the protection and enhancement of the region’s environment is important when attempting to achieve sustainable development and ensuring a better quality of life for everyone. Policy 27: Protecting and Enhancing the Region’s Natural and Cultural Assets states that:

“Protecting and Enhancing the Region’s Natural and Cultural Assets Sustainable development should ensure the protection, appropriate management and enhancement of the region’s natural and cultural assets (and their settings). In the development and implementation of strategies and programmes in the region, local authorities and other bodies should apply the following principles:

- i. the promotion of the highest level of protection for the region’s nationally and internationally designated natural and cultural assets;
- ii. damage to natural or cultural assets (and their settings) should be avoided wherever and as far as possible, recognising that such assets are usually irreplaceable;

- iii.unavoidable damage must be clearly justified by a need for development in that location which outweighs the damage that would result and should be reduced to a minimum through mitigation measures;
- iv.unavoidable damage which cannot be mitigated should be compensated for, preferably in a relevant local context and where possible in ways which also
- v.contribute to social and economic objectives;
- vi.overall there should be no net loss of natural and cultural assets, and opportunities should be sought to
- vii.achieve a net gain across the region; and
- viii.protection of the region's best and most versatile land."

It is important to consider Policy 27 when considering the potential damage that could be caused by the routes and the development that could take place in the future. Policy 28: Priorities for Enhancing the Region's Biodiversity relates to the enhancement of the region's biodiversity which states:

"Local authorities, environmental agencies, developers and businesses should work together to promote a major step change increase in the level of the region's biodiversity. This should be done by the:

- i.achievement of the East Midlands regional contribution towards the UK Biodiversity Action Plan targets as set out in Appendix 5;
- ii.establishment of large scale habitat creation projects in the priority areas of Lincolnshire, the region's Strategic River Corridors and heathland areas;
- iii.establishment of a regional project to promote the recreation of key wildlife habitats in each Natural Area in the East Midlands;
- iv.establishment of a network of semi-natural green spaces in urban areas;
- v.management of features of the landscape which act as corridors and "stepping stones", essential for the migration and dispersal of wildlife; and
- vi.development and implementation of mechanisms to ensure that development results in no net loss of BAP habitats and species and that net gain is achieved."

Nottinghamshire and Nottingham Joint Structure Plan (2006)

Policy 2/1 Sustaining Biodiversity of the above plan states:

"Planning permission will not be granted for development which will adversely affect the integrity or continuity of landscape features which are of major importance for wild flora and fauna and habitats and species identified in the UK and Nottinghamshire Local Biodiversity Action Plans, unless an overriding need for the development is demonstrated which clearly outweighs the nature conservation value of the habitat or species. Appropriate management of these features will be encouraged through the use of conditions, planning obligations and management agreements.

An assessment of sites with the potential for nature conservation interest will be required to the determination of applications. Where planning permission is granted and harm cannot be avoided or mitigated, conditions will be used and/or planning obligations will be sought for the creation of an equivalent (or greater) feature that would make a positive contribution towards the targets of the Biodiversity Action Plan."

Local Planning Policy - Rushcliffe Borough Non-Statutory Replacement Local Plan (2006)

Policy EN11 is applicable when development affects a SINCE. Development proposals likely to have an adverse impact on sites of importance for nature conservation (SINCEs), local nature reserves (LNRs), and regionally important geological and geomorphological sites will

not be permitted unless the reasons for the proposal clearly outweigh the need to safeguard the nature conservation value of the site. Where development is permitted, planning conditions may be used, or a legal agreement sought to ensure that, if unavoidable loss or damage to the site or feature or its setting is likely, measures of mitigation will be required to ensure features are retained or incorporated into an agreed landscape scheme.

Archaeology and Heritage

Local Planning Policy - Rushcliffe Borough Non-Statutory Replacement Local Plan (2006)

Listed buildings and areas of archaeological importance have been identified in the Study Area therefore policies EN7, EN4 and EN5 will be applicable.

EN7 - Sites of Archaeological Importance

Development affecting sites of known or suspected archaeological importance will only be permitted where:

- i. there is a need for development which outweighs the importance of the archaeological site or its setting;
- ii. the proposal is supported by an archaeological field evaluation of the site; and
- iii. the proposed development would not damage the archaeological remains where these can be preserved in situ.

Where preservation in situ is not feasible or justified, a programme of preservation by surveying, excavation and recording of the archaeological remains will be required (through the use of planning conditions).

EN4 – Listed Buildings

Planning permission for extensions and alterations to, and conversions of listed buildings, will only be granted where:

- i. it can be shown that the features of architectural or historic interest will be preserved;
- ii. the proposals respect the character of the building by virtue of their design, scale, siting and materials and that additions do not detract from its architectural or historic character.

Proposals for development affecting the setting of a listed building, will only be permitted where they are acceptable in terms of scale, massing, form, siting, design and materials

Proposals for changes of use of a listed building will be treated sympathetically where this would result in the preservation of the architectural or historic interest of the building and its setting.

EN5 – Demolition and listed buildings

Planning permission for development which includes the total or substantial demolition of a listed building will not be granted unless:

- i. there is clear and convincing evidence that all reasonable efforts have been made to sustain the existing use or find a viable new use; or
- ii. the building is beyond reasonable repair in relation to its importance; or
- iii. it can be shown that there would be substantial benefits for the community to outweigh the loss resulting from demolition.

Green Infrastructure and Landscape

Regional Planning Policy - Draft Regional Plan for the East Midlands (2006)

Policy 27 on Regional Priorities for Environmental and Green Infrastructure defines the role of a 'Green Infrastructure' as the following: "Green Infrastructure comprises the networks of

multi-functional greenspace which sit within, and contribute to, the type of high quality natural and built environment required to deliver 'sustainable communities'."

Policy 27 also states: "Local Authorities, statutory environmental bodies and developers should work with the voluntary sector, landowners and local communities to ensure the delivery, protection and enhancement of Environmental Infrastructure across the Region. Such infrastructure should contribute to a high quality natural and built environment and to the delivery of sustainable communities.

Local Authorities and those responsible for the planning and delivery of growth and environmental management across the Region should work together to:

- i. develop 'green infrastructure plans' based on character assessments of existing natural, cultural and landscape assets and the identification of new assets required to meet the needs of existing and
- ii. expanding communities; and
- iii. increase access to green space that can be used for formal and informal recreation, educational purposes and to promote healthy lifestyles."

The proposed route will contribute to the achievement of Policy 27 and Three Cities SRS Policy 6 which states:

"In considering major development proposals, especially those associated with the New Growth Point proposals, Local Authorities and implementing agencies will coordinate the provision of enhanced and new green infrastructure."

Regeneration

Regional Planning Policy – Regional Economic Strategy (2005)

The Regional Economic Strategy states that the fundamental purpose of the RES is to improve economic performance and enhance the region's competitiveness. It will do this by addressing the market failures that prevent or limit sustainable economic development, and supporting regeneration and business growth" (p. 12, RES).

The RES states that through regional and local action and policy, the East Midlands will maintain a sustainable supply of quality land and premises for new business, residential development and mixed uses. A range of opportunities will be promoted to secure the renaissance of urban areas; the development of sustainable communities in rural areas and the regeneration of priority sites, with the development of previously developed land a strong policy objective.

The RES also states that the region will ensure that development contributes to wider economic objectives and regeneration to improve the overall economic performance. Development policies and plans should work to reduce intra-regional economic disparities, and address those physical and spatial issues which support 'Productivity' and 'Equality' objectives, as well as 'Sustainability' objectives.

Nottinghamshire and Nottingham Joint Structure Plan (2006)

The Nottinghamshire and Nottingham Joint Structure Plan maintains that all members of the community have improved access to a wide range of employment, housing, services, education, training, cultural and leisure opportunities;" (Para 1.6).

APPENDIX C

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River Trent to Cotgrave Green Infrastructure Study

Ecology Baseline Report

Report No:D120103/02

August 2008

River Trent to Cotgrave Green Infrastructure Study

Ecology Baseline Report

Report No: D120103/02

August 2008

Issue No	Current Status	Date	Prepared By	Reviewed By	Approved By
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1.0 INTRODUCTION

1.1 Background to Project

This Ecology Survey Report has been produced to inform the Feasibility Study and Master Plan for the creation of a multi functional green infrastructure corridor between Cotgrave and the River Trent. This Report forms Appendix A to the Interim Feasibility Study Report. All Figures referenced in this Report are located within the Figures section of Interim Feasibility Study Report.

In order to inform the Feasibility Study and Master Plan, the following tasks were undertaken in respect of ecology:

- desk study and data collection;
- consultation with data holding bodies and stakeholders;
- field surveys comprising an extended Phase 1 Habitat Survey and River Corridor Survey of selected reaches;
- review of all desk study and field survey data to identify the ecological constraints and opportunities for the proposed green infrastructure corridor; and
- an objective comparison of the proposed route options.

This Report describes the objectives and methodologies of the tasks undertaken, followed by a description of the baseline conditions of the site area (desk study and field survey results), and a summary of ecological constraints and opportunities. An objective comparison of the proposed route options for ecology and other environmental topic areas are discussed in the Section 2.1 of the Interim Feasibility Study Report.

1.1 Objectives

1.1.1 Desk Study and Consultation Objectives

The objectives of the study were to:

- establish an ecological baseline by mapping using the Extended Phase 1 Habitat Survey and River Corridor Survey methodologies, and in so doing;
- assist in the identification of potential areas of protected habitat and species interest;
- gather sufficient data in order to zone the ornithological value of the study area, with particular emphasis on Schedule 1 Species, Red List Birds of Conservation Concern and wetland birds (breeding and over-wintering);
- identification of designated sites of nature conservation value (statutory and non statutory);

- provide additional ecological baseline data that would assist in identifying potential ecological constraints and opportunities relating to the scheme; and,
- canvas preliminary opinions of the proposals from statutory bodies and key stakeholders, with particular reference to their concerns and aspirations relating to the scheme.

1.1.2 Extended Phase 1 Habitat Survey Objectives

The objectives of carrying out an Extended Phase 1 Habitat Survey for this study were to:

- identify broad habitat types present in the site area through a high level habitat assessment method that can rapidly assign broad habitat type;
- identify habitat composition and dominant species within the direct impact zone of the four previously identified canal link route options; and,
- identify features of ecological interest/value within the site area including:
 - habitats which have the potential to support species of conservation significance (legally protected or included in the UK/Local Biodiversity Action Plan or listed as a Species of Principal Importance: Section 41 NERC 2006); and
 - habitats of conservation significance (legally protected or included in the UK/Local Biodiversity Action Plan or listed as a Habitat of Principal Importance: Section 41 NERC 2006).

1.1.3 River Corridor Survey Objectives

The objectives of carrying out the River Corridor Survey were to:

- record data on the major riparian habitats, vegetation and physical features within the aquatic, marginal, bank and adjacent land zones of the sections of Grantham Canal, Polser Brook and the River Trent likely to be affected by the four previously identified canal link route options within the site area;
- use field survey results in combination with data collected during desk study and consultation to identify the potential ecological value (and therefore its' constraint posed to the proposed route options) of sections of Grantham Canal, Polser Brook and River Trent likely to be affected by the four previously identified canal link route options including:
- the potential of the riparian corridor to support species of conservation significance (legally protected or included in the Biodiversity Action Plan and/or listed as a Species of Principal Importance: Section 41 NERC 2006); and,
- habitats within the riparian corridor of conservation significance (legally protected or included in the Biodiversity Action Plan and/or listed as a Species of Principal Importance: Section 41 NERC 2006)

- Identify potential ecological constraints and enhancement opportunities associated with sections of Grantham Canal, Polser Brook and River Trent likely to be affected by the four canal link route options in order to aid a comparison.

2.0 Methodology

2.1 Desk Study and Consultation

The desk study involved database searches for statutory and non statutory designated sites, legally protected species/habitats including bird records and features of ecological interest/value within and immediately surrounding the study area, up to 2km from the site boundary. This 2km buffer zone around the site area is referred to as the *consultation area*. The central grid reference for the site used in data collection was SK 625 375.

A review of websites and existing, available information was carried out including:

- MAGIC (Multi-Agency Geographic Information for the Countryside) website;
- Nottinghamshire Local Biodiversity Action Plan (LBAP);
- Natural England Area Profile Trent Valley and Rises (33) (Eastern Area Team);
- data received from county specialist groups and records office (see below);
- aerial photographs (available on the internet from Google Maps and Microsoft Life Search);
- Ordinance Survey (OS) 1:10,000 mapping;
- existing (historic) extended phase 1 habitat mapping (1991)
- Nottinghamshire annual bird reports;
- Ornithological websites [Accessed July 2008]:
 - www.birdlife.org
 - www.nottsbirders.net
 - www.woolstoneyes.co.uk/survey.php
 - www.bto.org/bbs
- British Trust for Ornithology Breeding Bird Survey Annual Report 2007
- A review of previous reports produced for the site area including:
 - Grantham Canal Restoration Habitat Impacts Study (ECUS, August 2007);

- Grantham Canal Strategy;
- Land to the west of Radcliffe-On-Trent: The Trent Link: The Beginning (leaflet produced for mosaic estates to inform local stakeholders);
- The Trent River Park Stage One Stakeholder & Baseline Report (June 2008).

Where particular desk based information has been used in consolidating baseline conditions recorded during the field surveys (Extended Phase 1 Habitat Survey and the River Corridor Survey) these are described in more detail in the relevant methodology sections 2.2 and 2.3 below.

Data collection and consultation with stakeholders was undertaken via letter, email and follow up telephone call to obtain copies of relevant data, identify key ecological constraints and potential ecological enhancement opportunities. Consultees included:

- Nottinghamshire County Council;
 - Senior Nature Conservation Officer (Nick Crouch);
 - Head of Country Parks and Conservation (Nick Broomhead); and
 - Biodiversity Action Group (Chris Jackson);
- Nottinghamshire Biological and Geological Records Centre (NBGRC),
- Rushcliffe Borough Council Environmental Sustainability Officer (Paul Phillips);
- Environment Agency Biodiversity Officer (Anja.Nonnenmacher)
- Environment Agency Fisheries Officer (Joel Rawlinson);
- Natural England (Anna Collins);
- British Waterways Ecologists (Richard Bennet, Deanne Gow);
- Nottinghamshire Wildlife Trust (Gaynor Jones Jenkins);
- Nottinghamshire County Mammal Recorder (John Ellis);
- British Trust for Ornithology; and
- Nottinghamshire County Bird Recorder (Andy Hall).

With respect to wetland birds, data has been received from the Nottinghamshire County Bird Recorder for 2007, which covers the Holme Pierrepont Complex (Including A52 Pits, Blotts Pits, Finger Ponds and the Skylarks Nature Reserve). Figure 1.1 illustrates the Holme Pierrepont Complex. Additional data and context was provided through consultation. Contact was made with the County Bird Recorder to discuss the Holme Pierrepont Complex in terms its value for both wetlands and breeding birds. It is considered that existing local knowledge will

provide a clear steer on the importance of this complex for bird interest and that the outstanding information will affirm this. Contact was also made the British Trust for Ornithology (BTO) with regards to additional data. Wetland Bird data is available for this "Complex", and counts undertaken for the last five years (*Pers.com N. Calbrade, BTO and J. Walker, Scott Wilson, 22/7/08*). However, the Holme Pierrepont area has not been covered by the BTO's breeding bird surveys (*Pers.com K. Risely, BTO and J. Walker, Scott Wilson, 22/7/08*).

A summary of consultation responses is included in Appendix 1. .

2.2 Extended Phase 1 Survey Methodology

In accordance with the standard Phase 1 Habitat Survey Methodology (JNCC publication Environmental Audit, 1990), the approach towards carrying out large-scale Phase 1 Habitat Survey recommends the review of aerial photographs and OS 1:10,000 mapping in the preliminary stage of the Phase 1 habitat mapping. In particular the aerial photographs were used to map extensive and obvious habitats within the site area (e.g. amenity grassland, arable, urban built up), to confirm the presence of hedgerows or fences on field boundaries, and to identify where water bodies and field boundaries had changed since the OS mapping was produced. Historic phase 1 habitat mapping (1991) was received from Nottinghamshire County Council in PDF format on CD. Reference was made to this mapping to assist in classifying areas of grassland/arable based on historic land use.

OS mapping (1:10,000) was used to identify the location of ponds and linear vegetation within the site area.

Supplementary field surveys were carried out by two Scott Wilson ecologists on 1st and 2nd July 2008. These field surveys focused on the direct impact zone of the four proposed route options with as much 'ground truthing' as necessary within the remainder of the site area.

The supplementary field survey was completed in accordance with the standard Phase 1 Habitat Survey methodology (JNCC publication Environmental Audit, 1990 and further developed in Guidelines for Baseline Ecological Assessment (Institute of Environmental Assessment, 1995). Plant names were noted in accordance with New Flora of the British Isles (2nd edition, Stace 1997). Habitats were mapped on an OS 1:10,000 scale plan. Each site/feature was mapped using the standard Phase 1 habitat codes, in accordance with JNCC methodology, including dominant species for each habitat.

Additionally target notes were made of features of particular significance, including UK/Nottinghamshire Priority Habitats and actual presence or potential to support UK/LBAP or protected species.

2.3 River Corridor Survey Methodology

Two Scott Wilson ecologists carried out the River Corridor Surveys between 1st and 2nd July 2008. This falls within the appropriate survey period (between May and October) when vegetation is readily identifiable. Weather conditions were warm and clear (20-25 ° C) with patchy cloud cover and intermittent showers on the afternoon of 2nd July whilst surveying sections of Grantham Canal, Polser Brook and its tributaries. Figure 2.2.1 illustrates the areas of the River Trent, Grantham Canal and Polser Brook that were surveyed. These are described below.

Five sections of the River Trent were surveyed. This included 500m upstream and downstream of the areas of potential direct impact associated with previously identified options 1, 2, and 3. The area of potential direct impact associated with option 4 was not surveyed as this is outside of the site area (see limitations below).

Two sections of Polser Brook (immediately north and south of A52) were surveyed where they fell within and immediately downstream of option 1. Additionally two tributaries of Polser Brook were surveyed where they fell within the direct impact zones of options 1 and 2.

The Grantham Canal Restoration Habitat Impact Study (2007) includes detailed ecological surveys for the majority of Grantham Canal within the site area including the area of potential direct impact associated with option 1. This data was verified in the field. The more urban section of Grantham Canal to the west of the site area (including the direct impact zone of option 1) was not included in the Grantham Canal Restoration Habitat Impact Study. The River Corridor Survey included the option 1 connection point but did not cover the remainder of this section. The ecological value of this section was verified through consultation with British Waterways.

Table 1 summarises the water courses surveyed. Figure 2.1 identifies their location.

Table 1: Inventory of Water Courses

Watercourse Section	Comment
River Trent Section 1 (West)	Upstream of Option 3
River Trent Section 2 (West)	Option 3 Direct Impact Zone
River Trent Section 3 (West)	Option 2 Direct Impact Zone
River Trent Section 4 (East)	Upstream of Option 1
River Trent Section 5 (East)	Option 1 Direct Impact Zone
Polser Brook (South A52)	Option 1 Direct Impact Zone
Polser Brook (North A52)	Downstream Option 1
Drain off Polser Brook (North A52)	Option 2 Direct Impact Zone
Drain off Polser Brook (South A52)	Option 1 Direct Impact Zone (found to be dry during survey)
Grantham Canal at Bassingfield	Option 1 Direct Impact Zone
Grantham Canal at Gamston Bridge	Option 3 Direct Impact Zone (not surveyed see limitations)

Surveys were carried out from one bank only; this is illustrated in the River Corridor Drawings (2.1 to 2.11).

Information on the river habitats (aquatic, marginal, bank and adjacent land zones) along with physical features of the river corridor were recorded. This included specific habitat features for otter (*Lutra lutra*), water vole (*Arvicola terrestris*) and white-clawed crayfish (*Austropotamobius pallipes*).

The survey and the assessment of the results were undertaken in accordance with current best practice guidelines (National Rivers Authority (NRA) River Corridor Surveys: Methods and Procedures (Conservation Technical Handbook Series No. 1, 1992); IEEM (2005).

2.4 Survey Limitations

2.4.1 Desk study and Consultation Limitations

Ecological records within the Nottingham County are not stored comprehensively in one central database. The NBGRC provided the majority of records of protected species within the site area. However, the county mammal recorder provided additional badger, water vole and harvest mouse records. Further records of protected species within non statutory designated sites were taken from the citations, also provided by NBGRC.

Bird records were provided by the County Bird Recorder, however, records were provided in 1km tetrad squares providing a coarse overview. The bird records received from the County Recorder did not include information on the local brooks or canal. At the time of drafting this version of the Report, we have not received a copy of the Nottinghamshire Annual bird report. Additionally, Wetland Birds Survey data (WeBs) data was also not available during this feasibility stage. It is considered that the Holme Pierrepont complex is noted amongst the bird watching community for producing rarities and bird watchers more likely to report notable species or large flocks of over wintering birds etc rather than species they may view as “common” species (Red List Species e.g. Yellowhammer and Bullfinch). Additionally, as the A52 pits are on private land, bird watchers have been restricted to a limited number of public viewing points (roadside areas). Therefore, it is considered that the bird species may be under-recorded within this area due to limited access.

The data supplied by the County Bird Recorder covering the 2007 period, alongside consultation responses (listed in Appendix 1) was sufficient to provide an initial overview of the bird interest of the area, identify key areas of ornithological interest and meet the objectives of this stage. It is recommended that WeBs data be obtained should a preferred canal link option affect wetland areas to inform mitigation.

Some citations received from the NBGRC for the non statutory designated sites were over ten years old. The two largest sites within the survey area, Holme Pierrepont and Gamston Pits, were both written in 1995 and have not been updated since. The ecological value of these sites was verified through consultation.

2.4.2 Extended Phase 1 Habitat Survey Limitations

The Extended Phase 1 Habitat Survey is based on coarse habitat mapping using aerial photographs and OS mapping, combined with elements of ‘ground-thruthing’ in the field. This is an acceptable method for carrying out large scale habitat mapping, however, it was not possible to ‘ground-truth’ all areas of the site. Field survey focused on the direct impact zones of the canal link route options. In particular the following areas were not surveyed in the field:

- access was denied to the disused railway which forms the canal link route option 4;
- there was no access to Nottingham (Tollerton) Airport which is a live airport;
- access to the northern lagoons in the Gamston Pit lagoons was restricted due to dense, impenetrable scrub;

- the southern part of the site area (south of Gamston Canal) and the urban built up area to the west of the site area (around Gamston) was excluded from field surveys in order to focus survey effort on areas of direct impact

In these areas that were not directly accessed, the Extended Phase 1 Habitat Survey is based on aerial photographs and other consultation data. In some cases it was possible to place the area of land within the broad category (e.g. woodland) through aerial photographs, OS mapping and distance verification through binoculars, however, it was not possible to confirm whether this area of land was a local BAP habitat (e.g. ash dominated woodland). A precautionary approach has been adopted in cases where there was doubt.

The location of ponds is predominantly based on OS 1:10,000 mapping, and where possible these were confirmed during the field survey. As field surveys did not cover the full site area, it is likely that additional un-mapped ponds (ephemeral and perennial) exist within the site area.

2.4.3 River Corridor Survey: Limitations

A 5m strip of tall grassland containing tall herbs including nettles is present on the bank zone of the River Trent between the footpath and the river. Where possible (e.g. at fishing platforms) it was possible to access the water edge and check for marginal/aquatic vegetation. In some cases, it was not possible to access the water edge for up to 100m sections. It is therefore likely that marginal/aquatic vegetation has been under-recorded in the River Corridor Survey.

The area of potential direct impact on River Trent associated with canal link route option 4 was outside of the site area and therefore not surveyed.

At this early feasibility stage the River Corridor Survey focused on relevant sections of River Trent, Grantham Canal and Polser Brook likely to be affected by the canal link route options, however the full stretches of these water courses were not surveyed. Additionally, there are a number of other drains and brooks that may be affected by the scheme. It is assumed that all drains on the OS plan are present, contain both water, and protected species potential. Where possible the presence of drains was verified during the field survey.

The section of Grantham Canal around Gamston Bridge was not included in the River Corridor Survey. A photograph of the section is included in River Corridor Descriptions in Appendix 2 with a list of emergent and aquatic species present. As a man-made structure the physical dimensions of the canal are consistent. Consultation with British Waterways has confirmed the ecological value of this area.

Ecological surveys are limited by factors, which affect the presence of plants and animals such as time of year, migration patterns and behaviour. Although the ecological survey of this site has not produced a complete list of plants and animals present within the survey area, the objectives of the River Corridor Survey have been met.

3.0 Results

3.1 Desk Study and Consultation Results

3.1.1 Statutory and Non-statutory Designated Sites for Nature Conservation

There are no statutory designated sites within the site area (statutory designated sites include SSSIs, Natura 2000 sites {see below}, Local Nature Reserves).

There are no Natura 2000 sites within 5km of the site area (Special Areas of Conservation (SAC), candidate SACs (cSAC), Special Protection Areas (SPAs) potential SPAs (pSPA), Ramsar sites, or potential Ramsar sites (pRamsar).

Colwick Cutting Site of Special Scientific Interest (SSSI) is located approximately 750m northeast of the site area sharing habitat connections through Colwick County Park which is a Site of Importance for Nature Conservation (SINC) (see below).

Normanton Pastures SSSI is situated approximately 1750m south of the site area. There are no direct habitat connections to the site area from Normanton Pastures.

Colwick Woods Local Nature Reserve (LNR) is situated approximately 720m north of the site area sharing habitat connections through Colwick Wetland SINC and Colwick County Park SINC.

There are ten non statutory designated sites within the site area and a further eight within 800m of the site area. There are a total of twenty three sites within the 2km consultation area. Within Nottinghamshire these are called Sites of Importance for Nature Conservation (SINC). Sites of Importance for Nature Conservation are determined by the NBGRC using criteria set by an independent panel of experts (the SINC Panel). Data is collected from museum field surveyors and local and national expert naturalists. Figure 3.1 shows the locations of the SINC's with their distance and direction from the site boundary along with a summary site description. This is also summarised in Table 2 below:

SINC Name	Distance and direction from site boundary	Summary Description
Adbolton Marsh	Within the site boundary	A good mixed habitat association including the scarce Trent-side inundation community type
Adbolton Pond	Within the site boundary	Ponds, surrounded by mature woodland, that display a locally characteristic hydrophilic plant community and are also of zoological interest.
Cotgrave Colliery	Within the site boundary	A mosaic of habitats on a former colliery site with unusual plant communities and a notable flora
Gamston Marsh	Within site boundary	A small marsh community beside the Grantham Canal
Gamston Pits	Within the site boundary	An extensive area of gravel workings with associated habitats of open water, marsh, scrub and woodland - of particular ornithological interest.
Grantham Canal, Bassingfield to River Trent	Within the site boundary	An urban stretch of canal with a good aquatic plant community

SINC Name	Distance and direction from site boundary	Summary Description
Grantham Canal, Cotgrave	Within the site boundary	A section of canal with notable emergent and bank side plant communities
Holme House Grassland	Within the site boundary	Notable Neutral Grassland
Holme Pierrepont	Within the site boundary	A valuable mosaic of carr, scrub, marginal and open water habitats around a series of old gravel workings.
Hedgerows, Cotgrave	Within the site boundary	Hedges and adjacent verges of zoological interest
Colwick Country Park	Adjacent to the northern site boundary	A good mixed habitat assemblage primarily of vertebrate zoological interest but also of valuable for its invertebrate and plant communities
Netherfield Pits	30m northeast	A series of mature lakes in an area of old gravel workings - of faunal and floral interest.
Netherfield Dismantled Railway Sidings	33m northeast	A large mosaic of semi-natural and successional habitats on a former industrial site of botanical and ornithological interest.
Colwick Racecourse Wetland	137m north of the site boundary	Valuable marsh and open water communities of botanical and zoological interest
Trent North Bank	500 north east	Trent side flood bank with a characteristic grassland Community
Colwick Wood Ex	700m north west	A large space within the City boundary, dominated by mixed deciduous woodland of botanical and zoological interest
Nottingham Racecourse Drain and Grassland	750m north west	A relict Trent alluvial grassland with notable species and associated drain
Nottingham Racecourse Drain and Grassland	800m drain northwest	A relict Trent alluvial grassland with notable species and associated drain
The Avenue Pool	1.25km northeast	A large pool and associated marshy habitats with notable aquatic communities
Dewberry Hill	1.5km east	A large area of neutral grassland
Trent Bluff Scrub, Radcliffe	1.5km north east	A mosaic of scrub and notable grassland on a Mercia Mudstone river bluff
West Bridgford Disused Railway	1.5km south west	An attractive stretch of urban disused railway, vegetated by scrub and grassland, and of zoological

SINC Name	Distance and direction from site boundary	Summary Description
		interest
Thorneywood Station Site	1.75km north west	A dismantled railway cutting wall of botanical interest with fern communities

Table 2: SINCS within and up to 2km from the site area

3.1.2 Natural Area Profile

This section of the River Trent is within Natural England's Trent Valley and Rises Natural Area Profile (33) (Eastern Area Team). The Trent Valley and Rises Natural Area covers a large lowland plain in Central England and comprises a number of River valleys of differing sizes, including the River Trent. Most of the Natural Area comprises a mudstone that produces fertile soil ideal for farming, thus the dominant land use is agriculture. A number of important habitats are encompassed within the natural area including unimproved neutral grassland, semi-improved woodland, hedgerows, standing water, canals and running water. Species of particular note within the Natural Area include farmland birds and white claw crayfish.

3.1.3 Legally Protected and Otherwise Notable Habitats

A review of the Nottinghamshire Local Biodiversity Action Plan (LBAP) highlighted the following Habitat Action Plans which may be relevant to the site area (UK Priority Habitat are in bold). These are considered to be of conservation concern to the County:

- canals and associated habitats;
- ditches;
- **eutrophic and mesotrophic standing water;**
- farmland; arable farmland, field margins and improved grassland;
- fens marshes and swamps;
- **hedgerows including ancient and/or species-rich hedgerows;**
- mixed ash-dominated woodland;
- oak-birch woodland;
- parkland and woods pasture;
- planted coniferous woodland;
- lowland wet grassland;
- reedbed;

- rivers and streams;
- urban and post-industrial habitats; and
- wet broadleaved woodland.

The Extended Phase 1 Habitat Survey and River Corridor Surveys describe the habitats present on site in greater detail.

3.2 Extended Phase 1 Habitat Survey Results

This section includes a high level overview, with more detailed information within the direct impact zone of the Trent Link Options.

This section should be read in conjunction with the Extended Phase 1 Habitat Plans (Figure 4.1 to 4.4). The location of Target Notes (TNs) described in the text below is illustrated on these plans. Target Notes are described by JNCC (1993) as

- supplementary information on sites of interest (for example species composition, structure and management);
- information on sites too small to map on sites where habitat mapping is found to be difficult or doubtful (for example transitional and mixed habitats); and
- information on sites previously surveyed and sites requiring further survey.

3.2.1 Site area Overview

The study site covers an area of 17km² and comprises a mix of semi improved grassland, wetland areas, arable fields, small pockets of woodland, amenity areas and numerous drains and ditches. It is dominated by semi improved grassland and wetland areas in the north, with the River Trent forming the northern boundary, and arable areas dominating the southern section. The Grantham Canal runs through the site from west to east and a disused railway runs just inside the eastern boundary, for the majority of its length. Nottingham Airport forms the south western corner of the site.

The following habitats and land uses occur within the site area (in approximate order of dominance).

- arable (LBAP);
- standing water (UK/LBAP);
- running water (LBAP);
- neutral semi improved grassland (LBAP);
- poor semi improved grassland (LBAP);
- improved grassland (LBAP);
- amenity grassland (LBAP);

- neutral unimproved grassland (LBAP);
- broadleaved semi natural woodland (LBAP);
- broadleaved plantation woodland (LBAP);
- mixed plantation woodland (LBAP);
- dense continuous scrub;
- tall ruderal (LBAP – post industrial areas);
- built up (residential, caravan site and roads);
- bare ground (LBAP- post industrial areas);
- in tact hedgerow (LBAP);
- defunct hedgerow (LBAP); and
- dry ditch (LBAP).

3.2.2 Description of Habitat within Direct Impact Zone of Option 1

Please refer to Figures 4.1 and 4.3.

A large part of this route passes through two SINC's along its northern section, Holme Pierrepont Country Park and Gamston Pits. The northernmost site includes the Nature Reserve at Holme Pierrepont Country Park, although the route itself does not pass through the Nature Reserve, but lies within approximately 150m. The Wildlife Site is designated for its variety of habitats which lie within the floodplain. The Nature Reserve comprises a mix of broadleaf woodland, a large pond and amenity grassland. The woodland appears semi mature with hawthorn (*Crataegus monogyna*), alder (*Alnus glutinosa*), cherry (*Prunus sp*), ash (*Fraxinus excelsior*) and areas of blackthorn (*Prunus spinosa*). There is virtually no understorey, although a couple of red campion (*Silene dioica*) were noted during survey along with bramble (*Rubus fruticosus* agg.) and Himalayan balsam (*Impatiens glandulifera*) along the margins.

The reserve (TN1) is formed by a mosaic of woodland and open areas with tall, semi improved grassland containing false oat-grass (*Arrhenatherum elatius*), tufted hair grass (*Deschampsia cespitosa*), Yorkshire fog (*Holcus lanatus*), great willowherb (*Epilobium hirsutum*) and creeping thistle (*Cirsium arvense*). The woodland is not botanically diverse and has a fitness trail running through it. The large pond is surrounded by dense scrub comprising hawthorn, alder and willows (*Salix* spp).

There are a number of pathways running through the reserve with tall ruderal vegetation on either side which is dominated by a mix of docks (*Rumex* spp), common nettle (*Urtica dioica*) and Himalayan balsam, with some mugwort (*Artemisia vulgaris*) and rosebay willowherb (*Chamerion angustifolium*). The grassland is mown around the edges of the woodland, scrub and pathways, but where it is not mown between the main pathway and the large rectangular waterbody, it contains abundant bird's-foot trefoil (*Lotus corniculatus*), selfheal (*Prunella vulgaris*) and silverweed (*Potentilla anserina*).

The route itself passes directly through a mown area of amenity grassland, at its northern point, and directly adjacent to a long waterbody. The waterbody contains a number of pools separated by a line of hawthorn, the nearest water contains virtually no aquatic vegetation and appears murky. There is tall ruderal vegetation comprising common nettle, great willowherb, rosebay willowherb, Yorkshire fog and cow parsley (*Anthriscus sylvestris*), with a line of scrub along the top of the banks dominated by hawthorn and bramble with some sycamore (*Acer pseudoplatanus*) saplings, and a mown grassy path directly adjacent.

The route then passes through a small area of semi mature broadleaf woodland (TN2) dominated by silver birch (*Betula pendula*) but also containing abundant field maple (*Acer campestre*) as well as willows and hawthorn. Open areas within the woodland are dominated by grassland with Yorkshire fog, common bent (*Agrostis capillaris*), yarrow (*Achillea millefolium*) and some creeping thistle. The grassland areas supported a large number of butterflies and damselflies, with evidence of birds nesting in the woodland and scrub. There were no mature trees suitable for roosting bats.

An old pond, now dry, is located directly adjacent to the route. This is now filled with leaf litter and is surrounded by willow trees, including goat willow (*Salix caprea*). There are some large pollarded willows on the edge of the pond which may have some potential for roosting bats (TN3).

The route passes through a number of arable fields, with defunct hedgerows at this point, before turning sharply to the south, where it has waterbodies on either side surrounded by dense scrub.

The pond to the east side of the route contains a large amount of open water with branched bur-reed (*Sparganium erectum*), common reedmace (*Typha latifolia*), soft rush (*Juncus effusus*) and great willowherb in the margins, with surrounding hawthorn and willow scrub. There is abundant aquatic vegetation beneath the surface with a covering of algae, but it was not possible to positively identify this from the banks. At least one dilapidated fishing platform was visible along the western bank (TN4). The pathway leading down to Holme Lane is bordered by trees and scrub on both sides, with Skylark Nature Reserve lying on the western boundary.

Skylark Nature Reserve (TN5), which forms part of Holme Pierrepont Country Park SINC comprises a mix of open water, broadleaf woodland, scrub and semi improved neutral grassland. The large waterbody is surrounded by willows with numerous orchids in the semi improved neutral grassland immediately to the west, as well as patches of common reed (*Phragmites australis*) and purple loosestrife (*Lythrum salicaria*).

Immediately to the south of Holme Lane, the route enters Gamston Pits SINC, which is an important ornithological site, and crosses a drain containing very shallow water with no aquatic vegetation, but supporting some large fish. The drain is totally shaded by surrounding willows, hawthorn and sycamore and has steep, high banks covered in ivy (*Hedera helix*). The lower banks contain no other vegetation although there are nettles and bramble towards the top. Immediately to the east of the proposed route is an area of mature broadleaf woodland with elm (*Ulmus sp*) and lime (*Tilia sp*), and a number of mature trees with a dense covering of ivy. The understorey is dominated by sycamore with common nettle, wood avens (*Geum urbanum*), red campion and garlic mustard (*Alliaria petiolata*) in the understorey (TN6). The western edge of the proposed route then passes through dense scrub

comprising sycamore, bramble and common nettle before crossing a large area of open water, which has recently been enlarged to the south and east.

The proposed route then bears south west and passes through a defunct hedgerow and across a grassland field, which had recently been mown so it was not possible to determine the diversity of the grassland. There is an unmown margin, approximately 10m wide, which contains tall rank grasses dominated by Yorkshire fog, with some curled dock (*Rumex crispus*) and some scattered scrub composed of hawthorn, field maple, oak (*Quercus sp.*), willows, blackthorn and hawthorn, forming a boundary between the field and a narrow pathway. There is a small area of broadleaf woodland just to the south of the route. On passing a dry ditch the route then turns to the south towards Radcliffe Road. Scrub and tall ruderal line the path, with one mature silver birch on the western side of the path which contains some dead wood with gaps between the bark and the inner wood. This tree lies directly on the route and has potential as a bat roost (TN7).

South of Radcliffe Road the proposed route crosses through two arable fields and largely follows the line of Polser Brook (described in more detail in the River Corridor section of this report) before joining into the Grantham Canal.

3.2.3 Description of Habitat Within Direct Impact Zone of Option 2

Refer to Figures 4.1 and 4.3.

Almost the entire route passes through Gamston Pits SINC, which is designated for its ornithological interest.

Where this route option joins the River Trent, Himalayan Balsam occurs along all the margins of the rivers, with some reed sweet grass (*Glyceria maxima*) in places. Tall ruderal vegetation covers the top of the banks, with common nettle dominating and abundant false oat grass. Other species include willowherbs, particularly great willowherb, hogweed, mugwort, cleavers (*Galium aparine*) and tansy (*Tanacetum vulgare*). There are also patches of willow scrub scattered along the banks.

The route passes through an area of rank, unmanaged semi improved neutral grassland, dominated by false oat grass with abundant common nettle and then crosses a drain surrounded by dense elder (*Sambucus nigra*) and sycamore scrub with abundant nettle. There is a large ash tree on the north west corner of the boat storage yard which has a number of holes which may be suitable for roosting bats (TN8). The route then passes through a small band of mixed woodland adjacent to Adbolton Lane, which contains a number of trees with a dense covering of ivy, which have some potential for roosting bats (TN9).

On the south side of Adbolton Lane, the route then crosses an area of amenity grassland, used as a caravan park, before crossing two narrow, overgrown ditches surrounded by dense willows, hawthorn and common nettle, with some white poplar (*Populus alba*). It crosses large areas of semi improved neutral grassland in the north of Gamston Pits SINC, as well as crossing a number of waterbodies. A large section of this area could not be fully accessed, although where access was possible the grassland was relatively diverse, particularly where the route turns sharply to the south east.

Along the northern banks of one of the pools, the route crosses through an area of broadleaf trees on sandy banks covered by a rabbit warren and then across an area of short semi improved neutral grassland which contains a number of orchids and a mix of species including crested dog's-tail (*Cynosurus cristatus*), selfheal (*Prunella vulgaris*), bird's-foot-trefoil (*Lotus corniculatus*), oxeye daisy (*Leucanthemum vulgare*), common knapweed (*Centaurea nigra*) and creeping cinquefoil (*Potentilla reptans*) as well as some white clover (*Trifolium repens*) and daisy (*Bellis perennis*) (TN10). A similar area also occurs just to the east of the proposed route (TN11).

The habitat within this SINC also contains ideal reptile and amphibian habitat, particularly along the southern side of the lakes where there is dense scrub and piles of rubble and rocks, which could provide ideal refuge or hibernation habitat for a variety of wildlife.

The proposed route then follows the line of an existing footpath, although this is extremely overgrown, with tall ruderal vegetation either side and hawthorn scrub behind. There are a number of mature trees, including willows and elm, along the route of Polser Brook (which is dry at this point) which may have some potential for roosting bats. Butterflies and birds were abundant in this area (TN12). Beyond the scrub and brook lining the footpath are large areas of semi improved neutral grassland, which had been recently mown, so it was not possible to assess their biodiversity value. However, four lapwing were noted in the mown area on the west side of the track. The route then combines with option 1.

3.2.4 Description of Habitat Within Direct Impact Zone of Option 3

Please refer to Figures 4.1 and 4.3.

A small section of this route passes through Adbolton Pond SINC, which has two fishing ponds and an area of marsh which support a variety of bird species and has been noted as a great crested newt site.

The northern section of this route passes through an area of rank, tussocky, semi improved neutral grassland dominated by tufted hair grass with abundant Yorkshire fog, some meadow buttercup (*Ranunculus acris*) and red fescue (*Festuca rubra*), with a number of sedges in the eastern section, while false oat grass and cock's-foot (*Dactylis glomerata*) become more dominant in the western section. The route then clips a small hedgerow composed of hawthorn and elder before continuing through tall semi improved grassland.

The route then enters Adbolton Pond SINC. The northern pond is totally surrounded by tall willows and the water is very murky with no aquatic vegetation visible. Common nettle is abundant beneath the surrounding willows. The larger, southern pond has open water with abundant hornwort (*Ceratophyllum sp*) and green algae beneath and some common duckweed (*Lemna minor*) and white water lily (*Nymphaea alba*). The surrounding trees and scrub may have some potential for roosting bats and other protected species and the trees and scrub provide good nesting habitat for a variety of birds and would also provide good terrestrial habitat for amphibians (TN13). Still within the SINC, but just to the west of the proposed route, is a dry pond overgrown with willows and nettles. There is some reed sweet grass around the edges with abundant Yorkshire fog and silverweed in the surrounding grassland, as well as occasional redshank (*Polygonum persicaria*) (TN14).

To the south of Adbolton Pond, the route follows a hedgerow boundary between a playing field and an area of poor semi improved grassland, passes adjacent to Adbolton Cottages and crosses Adbolton Lane into a field of poor semi improved grassland. It then crosses a hedgerow into another poor semi improved field before skirting around a stream surrounded by dense willow scrub and heading south through more grassland fields and crossing the stream again, with surrounding scrub and trees into a field of semi improved neutral grassland before joining the Grantham Canal.

Not all of this route was fully accessed in the field, with two grassland areas identified from aerial photographs only, due to access restrictions.

3.2.5 Description of Habitat Within Direct Impact Zone of Option 4

Please refer to options 4.2 and 4.3.

The northern point of route option 4 was outside the survey boundary, and there was no access to the disused railway, which makes up the majority of the route. Therefore, this baseline description is based on aerial photographs only.

The southern section of this route passes through Cotgrave Colliery SINC, which is designated for its good range of habitats and a small section passes along the boundary of a small SINC 'Holme House Grassland' designated for its notable neutral grassland. No citation was available at time of writing, but it is assumed that this grassland is species rich.

The northern section of option 4 starts just to the west of Polser Brook and passes through semi improved grassland on the north side of the Brook, crossing the Brook and passing beneath an active railway line, to join a dismantled mineral railway line, which is built up on banks.

The old mineral railway now appears well covered with scrub and scattered trees along its length. The proposed route passes through a small block of broadleaf woodland just before crossing Holme Lane. It continues through areas of semi improved and improved grassland, crossing one drain with a defunct hedgerow either side of the railway, and a small brook which flows north and is surrounded by dense scrub and trees. On the east side of the route, adjacent to Radcliffe Road, is a small industrial site. The railway then passes over Radcliffe Road.

The route continues south, with sports fields on the eastern side and semi improved grassland to the west, crossing a defunct hedgerow (TN15) and a second hedgerow with trees, with mostly arable land to the east and semi improved grassland to the west.

The route then passes over Stragglethorpe Road, continuing with dense trees and scrub along both sides, with arable land adjacent, until it enters Cotgrave Colliery SINC. At this point, the route is bordered by strips of woodland, with two ponds and a large arable field with a wide semi improved grassland margin to the east, and the Grantham Canal directly to the west. The route then joins the Grantham Canal on its eastern bank.

3.3 Results for River Corridor Survey

Detailed results for the River Corridor Survey are found in Appendix 2 and illustrated in River Corridor Figures 2.1 to 2.11. A summary of ecological features of interest is given below for each water course. All water courses are described from downstream to upstream.

3.3.1 River Trent Overview

Figures 2.1 to 2.6 illustrate the River Corridor for sections of the Trent surveyed.

The River Trent is one of the major rivers in England. Its source is in Staffordshire, it flows through the Midlands until it joins the River Ouse at Trent Falls to form the Humber Estuary which empties into the North Sea at Hull. The Trent is 298km in length with an average discharge rate (at Colwick, Nottingham in the centre of the site area) of 85 m³/second.

The River Corridor Survey was carried out from the footpath on the southern side of the river which is referred to as the Right Hand Side (RHS) of the river bank in accordance with River Corridor Drawings (Figures 2.2 to 2.6). The four options would connect to the River on the RHS. The northern bank of the Trent is referred to as the Left Hand Side (LHS) for consistency with the River Corridor Drawings.

The Trent meanders its way from west to east across the northern boundary of the site area. The river is characterised by a wide channel (approx 30m), and as a large river is likely to be deep (1.5-5m, however this was not verified during survey). The channel is largely symmetrical with a shallow sloping bank zone (comprising a 5m swathe of tall herb/grassland), which becomes steeper (up to 60°) at the waters edge. The substrate is silt.

The section of the Trent within the site area is 5km. The river meanders its way past two SINCS (Holme Pierrepont Country Park and Colwick Country Park) with three SINCS located immediately outside the eastern extent of the site area on the north bank (Netherfield Dismantled Railway, Netherfield Pits, Trent North Bank). The adjacent land use of the Trent within the site area also includes Colwick Industrial Estate, grassland, a sports ground, a yacht club, a sailing club and a marina. The far eastern extent of the site area includes a live railway. Footpaths and cycle tracks are present on both sides of the river separating the bankzone from adjacent land use. There is greater recreational use on the western half of the site area associated with the two Country Parks.

Colwick Country Park SINC is present on the LHS of the river corridor. The Nottingham Site Alert List describes the site as having '*a good mixed habitat assemblage primarily of vertebrate zoological interest, but also of value for its invertebrate and plant communities*'. The Holme Pierrepont Country Park SINC is present on the RHS of the river corridor including potential connection points for options 1. The Nottinghamshire Site Alert List describes the site as '*A valuable mosaic of carr, scrub, marginal and open-water habitats around a series of old gravel workings*'. This SINC is considered to be valuable for birds.

The bank zone on both sides of the river generally comprises a dense 5m strip of tall herb/grassland, and scattered scrub. This is dominated by false oat grass, cocks foot, Himalayan balsam, and common nettle. Other species include greater willowherb, common hogweed (*Heracleum sphondylium*), mugwort and cleavers.

Patches of willow scrub and trees and bramble also occur along the bankside. Additionally rough chervil (*Choerophyllum temulum*) and Russian comfrey (*Symphytum uplandicum*) are abundant in the eastern edges of the site area. This swathe of tall/herb grassland is denser, more overgrown with a higher proportion of scrub than in western part of the site area.

Access to the water edge is restricted due to the dense bank zone vegetation. Where access was possible patches of emergent vegetation were recorded dominated by reed sweet grass, reed canary grass (*Phalaris arundinacea*) and Himalayan balsam. Aquatic vegetation was dominated by yellow water lily (*Nuphar lutea*). It is likely that marginal and aquatic vegetation was under recorded due to access restrictions. Additionally it was not possible to verify species on the LHS (northern bank).

As a major river the River Trent serves an important function as an ecological corridor throughout the site area, and through the county on wider a county level. The Trent River Park stage one Stakeholder and Baseline Report (2008) identifies protected natural environments of the River Trent Corridor, and the role of the Trent in connecting important nature conservation sites such as the Trent Valley Washlands and Attenborough Nature Reserve (approximately 5km west of the site area) to more rural areas of the Trent up to 5km east of the study including Gunthorpe Gravel Pits. The role of the Trent as an ecological corridor is relevant to a range of species associated with the aquatic, marginal and bank zones.

There are fish in the river (fishing platforms are located throughout the survey area). Consultation with the Environment Agency highlighted that Trent is a river known mainly for its coarse fish population (see desk study results).

The banks, marginal vegetation and swathe of unmanaged grassland, herbs and linear scrub provide food, foraging and shelter potential for small mammals including water vole. There are water vole records throughout the River Trent and its tributaries, and the steep banks provide burrowing potential for water vole in this section. This includes the drain which connects to the Trent adjacent to the option 2 connection point.

The strips of emergent vegetation, dense bank side vegetation and linear scrub and mature trees provide shelter and foraging potential for otter. Additionally fish present in the river provide a potential food source. There is limited obstruction along the banks of the river other than small sections of artificial bank which providing less shelter than the more semi natural areas. There are records of otter on the Trent within the site area. It should be assumed that otter(s) home range fall within the section of the Trent within the site area and/or the Trent is used for dispersing and migrating.

There are bat records throughout the River Trent area however no known bat roost. Mature trees occur throughout the banks of the Trent. Whilst no mature trees along the bank would directly lost by the options, mature trees near to the direct impact zone would require further assessment on their potential to support roosting bats should they be disturbed by the scheme. Additionally the river corridor provides linear foraging areas for bats.

The river corridor provides habitat potential for a range of bird species (both resident and migrants) in the marginal (emergent vegetation) and in the bank zones (tall herb/grassland, scrub and trees). This type of habitat will provide both breeding and

over-winter cover for both Schedule 1 and Red Data List species e.g. reed bunting, Yellowhammer and Kingfisher. This habitat will also support a wide range of summer migrants such as whitethroat, lesser whitethroat, blackcap, garden warbler, grasshopper warbler, sedge warbler, reed warbler and willow warbler. It is also envisaged that due to climate changes, this habitat has the potential to support Cetti's Warbler (*Cettia cetti*) in the future, as their breeding range is currently expanding northwards.

The emergent vegetation and swathe of tall herb/grassland on the riverbank provide nectar source for invertebrates which in turn are valuable for bats and birds.

3.3.2 Polser Brook

Figures 2.7-2.9 illustrate the River Corridor for sections of Polser Brook surveyed.

Polser Brook generally flows north through the site area, connecting Grantham Canal (Skinners Lock) with the River Trent adjacent to option 4 connection point (outside of the site area). The River Corridor Survey focused on sections of the brook and its tributaries within the direct impact zone of options 1 and 2. A summary of these sections is given below.

The Polser Brook channel is largely symmetrical with a width ranging from between 5m to 10m. Banks are generally steep (80° gradient and overhanging in places). Bank height varied from between 1m to 2m. The substrate is generally silty, although cobbles, pebbles and boulders were noted north of the A52. Water depth varied from approx 0.25m to 0.5m during survey.

The flow of water varies from slow with frequent static pools particularly around debris dams to faster riffles where the water trickles through the dams.

Aquatic vegetation was limited to common duckweed within the survey sections, and patches of emergent vegetation were dominated by reed canary grass and reed sweet grass. Bankside vegetation varies from overhanging scrub and trees dominated by hawthorn and willow and bramble, to open banks with dense tall grass and herbs dominated by common nettle, false oat grass, Yorkshire fog, timothy, with abundant cleavers, and broad leaved dock (*Rumex obtusifolius*).

The steep earth banks provide burrowing potential for water vole. Additionally the marginal vegetation, and strips of tall grass and herbs on the bank zone provide a potential food source for water vole. Polser brook has habitat connections to both Grantham Canal and River Trent which have water vole records. Consultation with Rushcliffe Borough Council confirm water vole presence on Polser brook. Should any of the options affect Polser Brook a more detailed water vole survey would be required to confirm water vole presence in those sections, and if necessary to inform mitigation proposals.

Fish were visible in the water of the brook however the species is unknown. Polser Brook is connected to the Trent and Grantham Canal.

There is an otter record on Grantham canal which shares habitat connection to this section of Polser brook. The presence of scrub and trees provide potential shelter for otter, and the presence of fish provide a potential food source. DMRB Vol 10, 4 (Part 4) states that '*It is important to recognise any watercourse as a habitat and wildlife corridor, along which many species may disperse or migrate and that all*

watercourses have potential as otter habitat'. It should be assumed that areas of Polser Brook fall within otter(s) home range and/ otter use Posler Brook for migrating and dispersing as a minimum.

The Polser Brook corridor is considered highly suitable for bats as the species typically utilise linear features such as hedgerows and watercourses as foraging and commuting routes. There are mature trees throughout the Polser brook which require further assessment for their bat roosting potential.

3.3.3 Grantham Canal

Figure 2.10 illustrates the section of Grantham Canal surveyed.

The Grantham canal is a contour canal largely following the topography of the surrounding landscape, and is characterized by long pounds flowing broadly east to west through gently rolling, low-lying agricultural land.

The canal width is approximately 12m, and a probable depth of approximately 1.5m although this may have been reduced by siltation (this was not verified during survey).

A detailed habitat survey was carried out on Grantham Canal to inform British Waterways proposals to open up the canal for navigation (ECUS, 2007). A summary of the aquatic, marginal and bankside vegetation arising from this detailed survey is given below.

The aquatic macrophyte communities of the Grantham Canal are characteristic of lowland canal communities, being dominated by species typically of still or slow-flowing nutrient-rich waters. Rigid hornwort (*Ceratophyllum demersum*) dominates extensive sections of the canal, sometimes occurring with Canadian and/or Nuttall's pondweed (*Elodea* spp.). Common duckweed (*Lemna minor*) also dominates in some stretches, often with frequently occurring fat duckweed (*Lemna gibba*).

The Grantham Canal supports diverse assemblages of marginal and emergent vegetation communities. Emergent vegetation fringes are present throughout much of the length of the canal and are typified by locally dominant reed sweet-grass and branched bur-reed (*Sparganium erectum*) with yellow iris (*Iris pseudacorus*) and flowering rush (*Butomus umbellatus*) occurring occasionally. Lesser water parsnip (*Berula erectum*) is a frequent and sometimes abundant component of the emergent fringes and common reed is also locally abundant. Common reed (*Phragmites australis*) dominates the marginal vegetation in some areas, where it is often present at up to 100% cover of the canal.

Bankside and towpath vegetation is typically dominated by tall or mown grass and herb communities and ruderal vegetation. Species typically include coarse grasses such as perennial rye-grass (*Lolium perenne*), false oat-grass, Yorkshire fog, cocks foot and common couch (*Elymus repens*), with common herb and ruderal species such as red clover (*Trifolium pratense*), white clover, white dead nettle (*Lamium alba*), creeping buttercup (*Ranunculus repens*) and meadow buttercup (*Ranunculus acris*). Some more diverse areas are present supporting species such as reed canary grass, meadowsweet (*Filipendula ulmaria*), hedge woundwort, (*Stachys sylvatica*), bittersweet (*Solanum dulcamara*), sedges (*Carex* spp.) and meadow vetchling (*Lathyrus pratensis*).

Species poor hawthorn or blackthorn dominated hedgerows are present on the towpath side of the canal through most of its length. These are typically 1-2 m in height and are box-flailed and largely intact with occasional gap planting. Hedgerow trees dominated by ash are present in many of the hedgerows. The offside banks are typically dominated by grown-out hawthorn-dominated hedgerows and bankside trees including willow, alder and ash.

The majority of the banks of the canal are broadly suitable for water vole, particularly on the offside, being dominated by soft, grassed earth banks with abundant marginal vegetation suitable for water vole foraging, which also provides cover for individual animals. There are water vole records throughout Grantham canal within the site area including around the connection points for options 1,3 and 4

The Grantham Canal Habitat survey recorded grass snake in adjacent to the A52 road bridge within the site area. The habitats throughout the canal are suitable for grass snake, and it is likely that this species is present throughout the length of the canal. A summary of habitat requirements for species within the site area are included in Appendix 3.

The Grantham Canal Habitat survey recorded a badger sett on offside bank near to the A52 road bridge within the site area.

The canal corridor in general is highly suitable for use by bats, as they species typically utilise linear features such as hedgerows and watercourses as foraging and commuting routes. The majority of bridges on the Grantham Canal are not particularly suitable for roosting bats as they typically comprise concrete piped culverts of around 0.6 m diameter. A number of trees with potential to support roosting bats were identified during the Grantham Canal Habitat Survey, however none of these were located within the site area. Aerial photographs show a number of mature trees and buildings adjacent to the canal in West Bridgeford (this section was not included in the ECUS 2007 study) which may have potential to support roosting bats. However there are no buildings or trees that would be affected by the option 3 connection point.

There is an otter record for around the option 1 connection point of the canal. A search was carried out for otter spraint but no evidence of otter was found. However it should be assumed that otter(s) home range falls within Grantham Canal within the site area, and/or otters use this section of the canal for dispersal and migration.

3.4 Legally Protected and Otherwise Notable Species

Consultation data received from NBGRC, the local mammal recorder and through review of existing reports for the site identified the following protected species to be present within the site area (all bird species are discussed in the next section):

- water vole (*Arvicola terrestris*) (also LBAP species);
- otter (*Lutra lutra*) (also LBAP species);
- badger (*Meles meles*);
- bats (also LBAP);
- great crested newt (*Triturus cristatus*);

- grass snake (*Natrix natix*); and
- slow worm (*Anguis fragilis*).
- harvest mouse (*Micromys minutus*) and Atlantic salmon (*Salmo salar*) are present within the site area. Whilst not protected, these are LBAP species and worthy of protection.

Additionally the following plants: Deptford pink (*Dianthus armeria*); Nottingham autumn crocus (*Crocus nudiflorus*); Nottingham spring crocus (*Crocus vernus*), and following butterflies; dingy skipper (*Erynnis tages*); grizzled skipper (*Pyrgus malvae*) are LBAP species. The Deptford pink, dingy skipper and grizzled skipper are often found on disused railways. The Nottingham crocuses are often found on cemeteries, parks, golf courses, meadows, old gardens and public open space within Nottinghamshire. These LBAP species and may be relevant to the site area.

Plans showing the location of protected/notable species records obtained during desk study and consultation is shown in Figures 5.1 to 8.1. A summary of their habitat requirements is provided in Appendix 3.

A summary of protected species records on site is provided below. Where particular habitats have been found to offer potential for protected species during the Extended Phase 1 Habitat Survey and River Corridor Survey, these have been identified and highlighted in relevant sections of this report.

Relevant Legislation relating to protected species is provided in Appendix 4.

3.4.1 Amphibians

Figure 5.1 shows the amphibian records for the site from 1989 to 1995.

There are 27 ponds indicated on the 1:10,000 OS Plan within the site area. These are scattered throughout the site area, with the highest concentration between Radcliffe Road and the agricultural fields to the north of Grantham Canal SINC.

There is one record of great crested newt (GCN), within the site area, recorded in Adbolton Pond SINC.

There are a further six records of GCN outside of the site boundary. The nearest of these is adjacent to the Grantham Canal SINC, approximately 620m west of the site, recorded in Adbolton in 1993. There are direct habitat connections from Adbolton to the site area along the Grantham Canal SINC. A GCN was also recorded in agricultural fields, approximately 1200m east of the site area boundary in 1995. There are direct habitat connections to the site area from this location through the fields and grassland. The remaining four GCN records are all located over 1000m from the site area in Radcliffe on Trent, Tollerton and Edwalton. There are no direct habitat connections to the site area from these locations.

There are two smooth newt records within the site boundary, recorded in 1994 and 2006 in Holme Pierrepont SINC and Cotgrave village. All three newt species are found in similar habitat types. The presence of other newt species within the site area highlights the suitability of the site area for GCN.

To adopt a precautionary approach, it should be assumed that any ponds or non-flowing ditches within the site area boundary have the potential to support GCN.

There are records of common frog and toad adjacent to the site area. The majority of these records are in excess of ten years old, and are located in the urban areas adjacent to the site area with no direct habitat connections to the site area.

3.4.2 Reptiles

Figure 5.1 shows the location of the reptile records, which includes grass snake and slow worm, both local BAP species. The dates of these records are between 1992 to 2007.

There are eight records of grass snake within the site area boundary, recorded along the Grantham Canal SINC, adjacent to the dismantled railway near Shepherd's houses, and adjacent to Cotgrave Village. Some of these records are dated between 1992-1995, however some records have no date and may have been recorded more recently. The Grantham Canal Restoration Habitat Impact Study (ECUS, 2007) recorded grass snake throughout Grantham Canal including within the site area. The study noted that the canal corridor passing through a largely agricultural landscape is likely to represent a key habitat for grass snake present in the district.

There are no records of slow worm within the site area boundary. There are three records of slow worm within the consultation boundary. All the records are over 1km away from the site area and there are no direct habitat connections to the site area.

Rat snake has been recorded along the River Trent, near Holme Lock in 2000. This is an exotic species and is most likely a released pet, likely to be feeding on rodents within the local area.

3.4.3 Water vole

Figure 6.1 shows the location of water vole records within the site area. The date of these records are from between 1989 to 2005.

Water vole is a LBAP species. There are 29 records of water vole within the site area with the majority located along Grantham Canal and Polser Brook (dated 1998 and 2005). The remaining three water vole records within the site area are situated adjacent to Adbolton Pond SINC (dated 2005), the canal link route option 2 connection point (dated 1998) and within Gamston Pits SINC (dated 1999).

There are records of water vole scattered throughout the consultation area within 2km of the site area (dated 1998-2006). These are concentrated within Colwick Country Park SINC and Colwick Racecourse Wetland SINC to the north and Trent Fields to the west of the site area. There are additional records throughout Grantham Canal including at Hollygate Bridge to Kinoulton SINC (located on the Grantham Canal) sharing clear habitat connections to the site. Water vole have also been recorded in Netherfield pits SINC approximately 400m northeast of the site.

The suitability of habitats within the site area for water vole is described in the River Corridor Survey results.

3.4.4 Otter

Figure 6.1 shows the location of otter records within the site area. The date of these records are between 1998 to 2001.

Otter are a LBAP species. There are three otter records located within the site area in Holme Pierrepont SINC and along the Grantham Canal SINC (all dated 2001). There are a further three records of otter within the consultation area (dated 2001), located approximately 920m south of the site area near Tollerton, 1200m east of the site area along Grantham Canal (Hollygate Bridge to Kinoulton) SINC and 2km north east of the site along the River Trent. The location of these records are in areas that share habitat connections to the site area along the River Trent and Grantham Canal. The home range of otters varies depending on the habitat and food availability and can cover many kilometres, with males averaging 35 km and females 20 km along rivers. Further detail on habitat requirements for otters is given in Appendix 3.

The suitability of habitats within the site area for otter is described in the River Corridor Survey results.

3.4.5 Badger (Confidential Sensitive Information)

Figure 7.1 shows the location of badger records within the site area. The date of these records are between 1998 to 2008.

There is one badger sett record within the site adjacent to Grantham Canal SINC, (dated 2007). In addition, there are six records of badger activity/road traffic accidents (RTAs) within the site area (dated 2000-2002) around Holme, Bassingfield and on A6011. There are an additional four RTAs adjacent to the site area (dated 2000) near Stragglethorpe and Cotgrave Country Park. There are additional RTAs within the consultation area at Cotgrave village and along the main road between Cotgrave and Tollerton (dated 1998-2000).

The high number of badger RTA'S within and adjacent to the site boundary suggest that badger are active within the site area and there may be additional badger setts which have not yet been recorded.

There are seven badger setts located within the consultation boundary approximately 1500m from the site area. The majority of these setts are located on the Gratham Canal, near Cropwell Bishop and in woodland near Cotgrave.

3.4.6 Harvest Mouse

Figure 6.1 shows the location of harvest mouse records within the site area. The date of these records are between 1986 to 2008.

Harvest mouse is listed as a LBAP species. A good population of harvest mice are known to exist in Skylarks Nature Reserve, located within Holme Pierrepont Country Park SINC within the site area. There are three historic records in Holme Pierrepont Country Park SINC and Gamston Pits SINC (1987) and near Bassingfield in (1986). Consultation with the county mammal recorded suggested harvest mouse to be under recorded. Harvest mice may be present throughout the site area in hedgerows, reedbeds and other areas of tall, dense vegetation.

3.4.7 Bats

The bat consultation data records are shown in Figure 8.1. The date of these records are between 1985 to 2007.

A high diversity of bat species occur within the locality.

There are records of whiskered (*Myotis mystacinus*) and brandt's (*Myotis brandtii*) bat within the site area, recorded in Holme Pierrepont Country Park SINC (1995) and in Holme (2000). Both these species tend to feed in wooded areas often near water. There are five records of brown long eared bat (*Plecotus auritus*) in Cotgrave adjacent and up to 200m from the site boundary (dated between 1989 and 2001). A single record of brown long eared bat is also situated approximately 50m north of the site area in Colwick Country Park SINC, recorded in 1998. Brown long eared are often found in woodlands, parks and gardens.

Pipistrelle (*Pipistrellus pipistrellus*) area also present within the locality. There is an old record in Cotgrave village (1987), and two records of pipistrelle bat within Colwick Country Park (dated 1998). One of the records is situated approximately 128m north of the site area boundary. The exact location of the second record is not known.

There are no known bat roosts within the site area. The closest roosts to the site are three pipistrelle roosts recorded in 1988 and 1990 and an unidentified bat roost recorded in 1987. All of these are located in Colwick, although the exact location of each of the roosts is unknown.

There are nine records of bat roost within the consultation area. These include

- one brown long eared bat roost in Cotgrave (dated 2001), approximately 130m south of the site area;
- six pipistrelle bat roosts located within Colwick Country Park SINC, all within 1km of the site area boundary, recorded between 1998 and 2004.
- a whiskered/brandt's bat roost approximately 1300m southwest of the site boundary (dated 2002); and
- a pipistrelle bat roost approximately 1200m southwest of the site area (dated 2002).

There are a number of records associated with Gratham Canal SINC, approximately 1200m west of the site area near Trent Lock, within the outskirts of West Bridgford including three records of Daubenton's bat (*Myotis daubentonii*) (dated 1997) and three records of pipistrelle bats (1997, 2004 and 2005). There are also two pipistrelle bat roosts recorded (dated 1997 and 2004).

There is one record of Noctule bat (*Nyctalus noctula*) within Cotgrave Country Park approximately 600m north of the site area, however, there is no date supplied for this record.

The remaining records are scattered around the consultation area, with clusters of records near Colwick Country Park SINC to the north of the site, Radcliffe on Trent to the northeast of the site and Cotgrave village to the southeast of the site.

Where mature trees or other potential bat roost structures have been identified in the Extended Phase 1 Habitat Survey and River Corridor Survey, these are mentioned in those sections.

3.4.8 White clawed crayfish

Whilst there are no records of white clawed crayfish in the area, this does not confirm absence. White clawed crayfish are a LBAP species and species of particular note in the Natural England Area Profile (described at the start of this section). Consultation with the Environment Agency highlighted that white clawed crayfish may occur in the area and should be considered in this project.

3.4.9 Exotic fauna

There is one record of a terrapin within the site area, recorded on the Grantham Canal SINC, in 1998. The species of terrapin was not positively identified. There are additional red-eared terrapin (*Trachemys scripta*) records within the consultation area. The red-eared terrapin has been widely released by the general public into village ponds and other sites with good public access as individual animals outgrow their pet status. It now survives on a diet of fish, small waterfowl and amphibians and is suspected of also consuming large quantities of invertebrates. The nearest record to the site area boundary is within West Bridgford, approximately 100m from the site boundary, recorded in 1993. Figure 5.1 illustrates the location of these records.

3.4.10 Fish

Consultation with the Environment Agency highlighted that Trent is a river known mainly for its coarse fish population. The coarse fish species found within the Trent around Nottingham are (in alphabetical order): barbel (*Barbus barbus*), bleak (*Alburnus alburnus*), bream (common & silver) (*Alburnus brama*), chub (*Leuciscus cephalus*), dace (*Leuciscus leuciscus*), eel (*Anguilla anguilla*), gudgeon (*Gobio gobio*), lamprey (*Lampetra planeri*), minnow (*Phoxinus phoxinus*), perch (*Perca fluviatilis*), pike (*Esox lucius*), roach (*Rutilus rutilus*), rudd (*Scardinius erythrophthalmus*), ruffe (*Gymnocephalus cernua*), salmon (*Salmo salar*), loach (*Noemacheilus barbatulus* and *Cobitis taenia*) (stone & spined), stickleback (*Gasterosteus aculeatus*)(3 & 10 spined), tench (*Tinca tinca*), and zander (*Stizostedion lucioperca*).

There are populations of anadromous (salmon, river/sea lamprey) and catadromous (eels) fish but due to physical barriers, their distribution within the catchment is limited. Salmon migrate into the Trent and then move upstream to the River Dove and Upper Trent to spawn. This occurs between the months October to December. The smolts then migrate back out to sea March to May.

The Atlantic salmon (*Salmo salar*) is listed on the local Biodiversity Action Plan and is also a IUCN Red List of threatened species. Salmon had completely disappeared from the Trent River system by about the mid 1930s due to a combination of factors. Over the last twenty years, investment in improved sewage treatment facilities, closer regulation of all discharges, and the closure of a number of coal-fired power stations have all contributed to a gradual improvement in river water quality. For almost ten years the water quality in the River Trent has been such that once again salmon could survive in the river on their passage to the cleaner waters of the tributary breeding streams. A major factor, however, has been the construction of the canoe slalom course at Holme Pierrepont by-passing the Colwick Sluices, which previously formed an impenetrable barrier to migrating fish.

The Environment Agency was unable to confirm which fish species occur in the other water courses within the site area.

3.4.11 Birds

The Ornithological value of the site area has been coarsely mapped based on consultation data. This is illustrated in Figure 1.1.

Holme Pierrepont Complex

Appendix 5 is a table of consultation data provided by Nottingham County Bird Recorder. It includes a species list and Conservation Status of birds recorded within the Holme Pierrepont Complex.

The Holme Pierrepont Complex supports a wide range of species. It has also recorded an impressive number of “rarities” making it one of the top bird watching sites in the County. Figure 1.1 illustrates the extent of the Holme Pierrepont Complex.

Consultation data received from the County Bird Recorder for 2007 lists the following Schedule 1 and Red Data List birds records for the Holme Pierrepont Complex:

Table 3: Schedule 1 Birds Recorded Within the Holme Pierrepont Complex

Species	Scientific Name	BoCC	Nottinghamshire LBAP
Black-tailed Godwit	<i>Limosa limosa</i>	Red	*
Great Bittern	<i>Botaurus stellaris</i>	Red	
Barn Owl	<i>Tyto alba</i>	Amber	*
Black-necked Grebe	<i>Podiceps nigricollis</i>	Amber	*
Garganey	<i>Anas querquedula</i>	Amber	*
Green Sandpiper	<i>Tringa ochropus</i>	Amber	
Kingfisher	<i>Alcedo atthis</i>	Amber	*
Long-tailed Duck	<i>Clangula hyemalis</i>	Amber	
Mediterranean Gull	<i>Larus melanocephalus</i>	Amber	
Merlin	<i>Falco columbarius</i>	Amber	*
Peregrine Falcon	<i>Falco peregrinus</i>	Amber	*
Redwing	<i>Turdus iliacus</i>	Amber	*
Ruff	<i>Philomachus pugnax</i>	Amber	*
Whimbrel	<i>Numenius phaeopus</i>	Amber	
Whooper Swan	<i>Cygnus cygnus</i>	Amber	*
Black Tern	<i>Chlidonias niger</i>	Green	
Brambling	<i>Fringilla montifringilla</i>	Green	*
Hobby	<i>Falco subbuteo</i>	Green	*
Little Gull	<i>Hydrocoloeus minutus</i>	Green	
Little Ringed Plover	<i>Charadrius dubius</i>	Green	*

A total of 20 Schedule 1 birds have been recorded within the Holme Pierrepont Complex.

Table 4: Red List Birds Recorded within the Holme Pierrepont Complex

Species	Scientific Name	Nottinghamshire LBAP
Bullfinch	<i>Pyrrhula pyrrhula</i>	*
Common Starling	<i>Sturnus vulgaris</i>	*
Corn Bunting	<i>Miliaria calandra</i>	*
Grasshopper Warbler	<i>Locustella naevia</i>	*
Linnet	<i>Carduelis cannabina</i>	*
Red-crested Pochard	<i>Netta rufina</i>	
Reed Bunting	<i>Emberiza schoeniclus</i>	*
Ring Ouzel	<i>Turdus torquatus</i>	
Skylark	<i>Alauda arvensis</i>	*
Song Thrush	<i>Turdus philomelos</i>	*
Spotted Flycatcher	<i>Muscicapa striata</i>	*
Turtle Dove	<i>Streptopelia turtur</i>	*
Willow Tit	<i>Poecile montana</i>	*
Yellowhammer	<i>Emberiza citrinella</i>	*

A total of 14 Red List Birds have been recorded in the Holme Pierrepont Complex.

The A52 pit reed beds are also important for large flock of over-wintering starlings (Red List species) with a total of ~3500 starlings being recorded roosting on 11th of November 2007.

A review of the Nottinghamshire Local Biodiversity Action Plan highlighted the following bird Species Action Plans which may be relevant to the study area:

- barn owl (*Tyto alba*).

The Nottinghamshire Local Biodiversity Action Plan also list a number of birds that it considers “particularly characteristic of the County or local populations are in decline”. These species are indicated in the above tables.

The latest Wetland Bird Survey (WeBS) – Alerts ¹ from the BTO lists a number of species which it considers on alert due to decline in numbers:

- “of the 40 species evaluated, alerts have been triggered for eight species;
- of the eight species that have had Alerts triggered, one species has had a High-Alert triggered; and
- of the eight species that have had Alerts triggered, two Alerts have been flagged as precautionary because the species in question exhibits inherent variability in numbers”.

Of the eight alerts, two species have been recorded within the Holme Pierrepont complex, these are as follows:

¹ Wetland Bird Survey (WeBS) Alerts. Data evaluated 2004/05 inclusive.

- mallard “As with Great Britain as a whole, since the early 1980s, there has been a steady decline in the number of Mallard occurring in England and as such, a long-term Medium-Alert has been triggered. The reasons for this decline are still unclear. Ringing recoveries suggest that at least part of the decline is due to a reduction in continental immigrants (Wernham et al. 2002). It could also be part of a wider trend, as similar declines have been noted in north-west Europe (Delany et al 1999). It is possible that such declines could be due to a general increase in winter temperatures in central Europe”; and
- pintail “The short-term Medium-Alert that has been triggered for this species is of little Immediate concern as this species is prone to short-term fluctuations in numbers”.

Cotgrave Country Park

The Cotgrave Country Park supports a wide range of species, with 103 bird species being recorded between 2005 and 2007.

A total of nine Schedule 1 birds, and thirteen Red Data List birds have been recorded within the area (see Table 5 below).

Table 5: Schedule 1 and Red Data list Birds recorded between 2005 and 2007

Schedule 1 Birds Recorded (2005 to 2007)	Red Data List Birds (2005 to 2007)
Barn Owl	Bullfinch
Black Redstart	Common Starling
Fieldfare	Grey Partridge
Kingfisher	House Sparrow
Little Ringed Plover	Linnet
Mediterranean Gull	Reed Bunting
Northern Goshawk	Sky Lark
Peregrine Falcon	Song Thrush
Redwing	Spotted Flycatcher
	Tree Sparrow
	Turtle Dove
	Willow Tit
	Yellowhammer

A small number of records were obtained for the Grantham Canal stretch (Bridgford Lock to Josse's Lock), with one red list species being recorded (yellowhammer) (Grantham Canal Restoration – Habitat Impact Study, Ecus, 2007).

Ornithological Interest

A review of the data obtained at the consultation stage has highlighted the significance of the Holme Pierrepont Complex for both bird species. Consultation with the County Bird Recorder confirmed the initial data review findings, which found that the area is considered to be of “significant” value for birds, with particular reference to (please refer to Figure 1.1):

- A52 Pit and the surrounding hinterland. Black-necked grebes are breeding on this pit. This is one of only one or two sites in the country where black-necked grebe are known to breed. The Pit is also significant in terms of supporting large numbers of waders during winter passage and a gull roost, and the A52 pit reed beds are important for large flock of over-wintering starlings (Red List species) with a total of ~3500 starlings being recorded roosting on 11th of November 2007.
- Finger Ponds. These ponds and surrounding scrub habitat support a wide range of wetland birds, summer migrants and resident passerines. The habitat at this location differs from that surrounding the A52 Pit and it is this difference which makes the area “interesting” in terms of its resident and passage avifauna.
- Blotts Pits are also shown to have a significant ornithological interest, with similar species of birds being recorded on these pits to those on the A52 Pit. The County Bird Records show that birds regularly “commute” between the two water bodies.

During the 2007 winter months (January, February, November and December) the complex (Including the A52 and Blotts Pits) recorded the notable counts numbers of bird species:

Species	Total	Maximum Count
Eurasian Wigeon	~6500	1510 on 17/2/07
Canada Geese	~1490	351 on 17/11/07
Gadwall	~ 650	173 on 15/12/07
Shoveler	~ 300	145 on 15/12/07
Common Pochard	~270	101 on 15/12/07
Goldeneye	~580	104 on 17/2/07
Mallard	~730	218 on 15/12/07

Table 6: 2007 winter bird counts in A52 and Blotts Pits complex

During 2007 a total of 136 species was recorded within the Holme Pierrepont Complex, with the A52 Pit shown to be a key area, especially for birds on winter passage

4.0 Constraints and Opportunities

4.1.1 Non Statutory Designated Sites

There are ten non statutory designated sites (SINCS) within the site area, and a further three within 150m of the site area. These are indicated in Figure 2.3.1. After statutorily protected sites (of which there are none within the site area), SINCS are considered to be of county-level importance for their biodiversity and are selected by an expert panel using defined criteria. The Nottinghamshire and Nottingham Draft Guide to Biodiversity and Planning (2006) state that the protection and enhancement of SINCS is considered vital for sustaining the county's biodiversity where loss or damage to SINCS would result in a decline in the biodiversity of Nottinghamshire.

Whilst these sites do not have statutory protection, in accordance with national planning policy guidance (PPS9), there is a general presumption against any development on a SINCS which is likely to have an adverse impact on the flora and fauna unless it can be clearly demonstrated that there are reasons for the proposals which outweigh the need to safeguard the nature conservation value of the site (Nottingham Local Plan, 2000). If development is permitted on or close to a designated site, every effort is required to avoid damage and disturbance to important habitats or species. Where detrimental effects cannot be avoided, mitigation measures are required to keep these to a minimum. Indirect detrimental effects may include hydrological changes, noise, dust, and damage from inappropriate public use. If the loss of habitats or species cannot be avoided, the provision of compensatory habitats or features of at least equivalent area and quality is generally required (Nottinghamshire and Nottingham Draft Guidance to Biodiversity and Planning (2006)). This would be determined during subsequent stages of the assessment process.

The SINCS within and immediately adjacent to the site area boundary are therefore a constraint to the construction of a the canal link. It would be preferable for the new canal link to avoid SINCS where possible. As the most valuable sites for biodiversity within the site area they also represent an opportunity for enhancement through implementation of green infrastructure (described at the end of this section).

4.1.2 Habitats

There are habitats present within the site area identified in the Nottinghamshire Local BAP (LBAP), which have declined to such an extent that any loss would seriously deplete the remaining resource. These include (UK Priority habitats are in bold):

- canals and associated habitats;
- ditches;
- **eutrophic and mesotrophic standing water;**
- farmland; arable farmland, field margins and improved grassland;
- fens marshes and swamps;
- **hedgerows including ancient and/or species-rich hedgerows;**

- mixed ash-dominated woodland*;
- oak-birch woodland*;
- parkland and woods pasture*;
- planted coniferous woodland*
- lowland wet grassland;;
- reedbed;
- rivers and streams;
- urban and post-industrial habitats; and
- wet broadleaved woodland*.

*woodland types have not been confirmed at this stage. It is assumed all above woodland types occur within the site area.

Although most areas of these habitats are designated as SINCs, many are not. The Nottinghamshire and Nottingham Draft Guidance to Biodiversity and Planning (2006) highlights the importance of recognising the high national and local importance of LBAP habitats in addition to any SINC designation. Any loss of LBAP habitats as part of the development of the canal link would be considered a constraint. If the loss of habitat cannot be avoided, provision would be required for the creation of compensatory habitat of at least equivalent size and quality, including links between the newly created habitat and the surrounding network to allow species to colonise the area.

New habitat may be created through the translocation of soil, turf or other material from the footprint of the link. The Nottinghamshire and Nottingham Draft Guidance to Biodiversity and Planning (2006) state that although this may be preferable to creating new habitat from scratch, careful consideration would be required to the methods used and the properties of the receptor site. Generally translocation will not be given substantial weight in planning decisions and should only be considered as a last resort if damage is unavoidable. Translocated habitats are unlikely to be of equivalent quality in terms of species diversity of the habitat lost.

There are opportunities to enhance local BAP habitats as part of the scheme. Provision should be made for the future management of retained and newly created habitats and linking features, and for monitoring the effectiveness of this management and the long term impact of the development. This would be a consideration in the design of green infrastructure within the site area (described at the end of this section).

4.1.3 Legally Protected and Otherwise Notable Species

Certain species of plant and animals are legally protected because of their vulnerability. Although not all are rare, protected species are under threat in some way, and many would be likely to become rare if protection measures were not in place.

Over 900 plant and animal species are listed in the LBAP as being of conservation concern for reasons of international, national or local rarity, threat or decline (this includes most protected species but also other species that are not legally protected). The conservation of most of these species can be addressed through the conservation of their habitats. However, some species have such specific requirements that habitat action plans are not enough, and individual species action plans have been created.

Consultation and data collection has confirmed that the following protected and/or LBAP species have been previously recorded within the site area (birds are described separately in the next section):

- otter;
- great crested newt;
- water vole;
- badger;
- bats;
- white clawed crayfish;
- grass snake;
- hedgerows (of significant biodiversity value under Hedgerow Regulations 1997);
- harvest mouse (LBAP only, not protected).

Additionally, whilst there are no records, habitats within the site area boundary provide potential for the following protected species:

- slow worm;
- common lizard;
- adder;
- dormouse;
- plants (listed on Schedule 8 of Wildlife and Countryside Act as amended); and
- invertebrates (listed on Schedule 5 of Wildlife and Countryside Act as amended);
- Deptford pink (*Dianthus armeria*) (local BAP only, not protected, often found on disused railways)
- dingy skipper (*Erynnis tages*) and grizzled skipper (*Pyrgus malvae*) (local BAP only, not protected, often found on disused railways)

- Nottingham autumn crocus (*Crocus nudiflorus*) and Nottingham spring crocus (*Crocus vernus*) (local BAP only, not protected, often found in cemeteries, parks, golf courses, meadows, old gardens and public open space)

A summary of legislation relevant to these species is given in Appendix 4.

In addition to SINCS, desk study and consultation has identified areas within the site of particular potential for protected species. Some of these areas are illustrated in the Figures 5.1 to 8.1 and comprise:

- water voles on Polser brook, Grantham Canal and River Trent
- protected hedgerows, particularly on old parish boundaries (see Figure 2.3);
- badger and reptiles (particularly grass snake) on the disused railway;
- great crested newt on ponds within the site area;
- grass snake on Grantham Canal; and
- otters on the lagoons, lakes, Grantham canal and River Trent.

Whilst these particular areas have been identified, certain habitats and features throughout the site area make it more likely for certain protected species to be present. A summary of the protected species potential for habitats present within the site area boundary is given in Appendix A (Appendix 6 of the Ecology Report). This includes potentially protected hedgerows and plants. If any of these habitats or features are likely to be directly or indirectly affected by the construction of the canal link, or any other part of the scheme, further species specific surveys will be required to confirm presence or absence, establish approximate distribution and population size, and identify magnitude and significance of potential impacts. Should this be the case particular mitigation measures will need to be developed which will be pertinent to the species and location of site.

As a generic guide, The Nottinghamshire and Nottingham Draft Guidance to Biodiversity and Planning (2006) state that the following is generally expected (in order of preference):

- the protection of the species, in its current location, from harm or disturbance, and the maintenance of habitats and features necessary for nesting, roosting, feeding etc;
- where it is not possible to retain the population in its current location, the provision of suitable alternative habitats and features elsewhere on or adjacent to the site to maintain at least the current levels of populations affected;
- as a last resort, exclusion, or removal of the population to a suitable alternative location;

- provision should be made for the future management of retained and newly created features, and for monitoring the effectiveness of the conservation measures on the species concerned.

Mitigation measures may have cost implications, and affect the programme and should therefore be considered a potential constraint.

There is the potential to enhance the value of the site area for protected and local BAP species. Appropriate enhancement measures are dependent on target species, however the general enhancement of habitats listed in Appendix 6 within the site area is likely to be beneficial to those species described. Such enhancements are described through green infrastructure (described at the end of this section).

Birds

The Holme Pierrepont/Colwick Country Park/Netherfield Lagoons complex is important for both breeding and wintering birds, the complex also supports up to 20 Schedule 1 birds (see Figure 1.1). In particular the A52 pit is one of only one or two sites to support breeding black-necked grebe in the county. This is reflected by the SINC designation (see Figure 3.1), and also through consultation responses (see Appendix 1/5).

The value of these sites for birds is a constraint to the new canal link. Deepening the A52 pit would be detrimental to the black-necked grebes. They prefer shallow warm pond for breeding, which has extensive fringe habitat. Scrub removal may also open out areas, removing cover, which has the potential to increase levels of disturbance. Also this species is targeted by egg thieves. Scrub habitat against the wetland fringe is also important for migrant warblers including grasshopper warbler, whitethroat, sedge and reed warbler. If the new canal link were to avoid the A52 pits and its hinterland, Blotts pit and the Finger Ponds (see Figure 2.1), this would minimize the potential for disturbance and associated impacts on Schedule 1 breeding birds, in particular black-necked grebe, and would ensure that this area would continue to support a wide variety of bird species throughout the year.

It may be possible to accommodate losses in habitat in certain areas of the complex with appropriate mitigation. It should be noted that this would involve habitat loss of a non statutory designated site area SINC (described above). Further detailed surveys/assessment would be required to determine which areas could accommodate habitat losses and disturbance. Further detailed surveys would be undertaken to inform an accurate baseline and enable areas of the site to be thoroughly evaluated for birds. The magnitude and significance of potential impacts would be assessed, and any mitigation would be discussed and planned in detail through consultation with Natural England, Royal Society for the Protection of Birds (RSPB) and the County Ecologist. Mitigation measures may have cost implications, and are likely to affect the programme and should therefore be considered a potential constraint.

It should be noted that constraints associated with disruption of the lagoon complex as a nature based recreational resource (e.g. perceived impact from local bird watching groups) is considered in the recreation section of the Interim Feasibility Report.

For the remainder of the study area, further wintering or breeding bird surveys may be required if the new link passes through other wetland areas, trees or scrub. Any vegetation clearance should take place outside of the breeding bird season (taken to be late February to early September depending on seasonal and geographical variations). Should removal of vegetation have to be undertaken within this period, it is recommended that a suitably qualified ecologist undertakes a thorough search for nesting birds before the removal of any vegetation.

There is the potential for the proposed scheme and in particular green infrastructure to enhance the site area for birds. This is considered below.

4.1.4 Green Infrastructure

Green infrastructure is described as the physical environment within and between our cities, towns and villages. It is a network of multi-functional open spaces, including formal parks, gardens, woodlands, green corridors, waterways, street trees and open countryside. It comprises all environmental resources, and thus a green infrastructure approach also contributes towards sustainable resource management. (<http://www.greeninfrastructure.eu>, 2008)

Green infrastructure assets are elements which make up the green infrastructure in the area i.e. areas of ecological value, and features which connect them. The development of green infrastructure as part of this scheme provides opportunities to:

1. Identify, protect and if possible enhance areas of ecological value within the site area; and
2. Provide greater connectivity between areas of ecological value within the site area and to the surrounding landscape.

At this stage areas of ecological value area are considered to be:

- SINCS (see Figure 3.1);
- additional LBAP habitats which are not protected as a SINC (see Phase 1 Drawings Figures 4.1 to 4.4); and
- additional areas of potential value for protected species listed in the 'Protected and Notable Species' section of this report (see Figures 5.1 to 8.1) (e.g. Polser Brook, disused railway, ponds).

As part of the green infrastructure proposals these areas of ecological value should be safeguarded. This could be achieved through the creation of buffer zones around the Holme pierrepont complex, and potentially. woodland areas, which would have an additional benefit of providing transitional landscape types and ecotones (edge habitats) and therefore greater habitat and structure diversity within the site area.

The quality of habitats within the ecological valuable areas could be enhanced for particular species. This would be particular to the site and target species but may include re-profiling water body embankments to create burrowing potential for water vole with tall grass/herbs on bank zone to provide varied food source;

creation of areas with bankside vegetation (scrub and woodland) along watercourses and around water bodies, to increase areas of suitable otter habitat, allowing otters to pass freely under the cover.

Connectivity between areas of value around the site is provided through corridors and ecological stepping stones. Key corridors within the site area and surrounding landscape are the River Trent Grantham Canal, and the disused railway. The ditches and hedgerows act as smaller corridors, and the water bodies (ponds, lake, lagoons) and patches of woodland provide ecological stepping stones across the site for a variety of species. Additional corridors and stepping stones within the site include areas of unmanaged grassland, gardens, playing fields, parks and patches of scrub, bridleways and footpaths.

The provision of connectivity at a landscape scale will favour expansion of biodiversity assets and lead to an overall increase in ecotones (edge habitats). This could be achieved through:

enhancement of ditches throughout the site area (e.g. selective removal of scrub to reduce over-shadowing and leaf litter; slubbing (de-silting) of ditches; water level management; habitat enhancement for water voles e.g. use of seed mix to enhance bankside vegetation where appropriate and fencing to prevent poaching of banks by farm animals);

- enhancement of hedgerows throughout the site area. Where hedgerows are gappy these could be thickened-up through the addition of new stock the opportunity should be taken to increase the length of hedgerows, in particular linking up isolated hedgerows, woodland and areas of scrub. Hedgerows planted should include a diverse range of woody species native to Nottinghamshire and appropriate to the local soil type. The potential ecological value of new hedgerow plantings could be further enhanced by allowing some of the larger tree species (oak, ash, field maple, crab-apple) planted to develop into mature standards. Such trees should be adequately marked so that they are not damaged during routine hedgerow trimming operations. An associated flower-rich, sensitively managed, verge would also enhance the ecological value of a hedgerow;
- the diversification of the green landscape could be achieved through meadow management or species enhancement. Areas of semi improved grassland throughout the site could be targeted for this; and
- the new canal link is an opportunity to create new green infrastructure through the site. This could be achieved through establishing off-line (non operational) sections of the canal, creating new wetland and backwater areas associated with the canal/new canal link, provision of linear vegetation (scrub, trees) adjacent to multi user routes including provision of bat and bird boxes.

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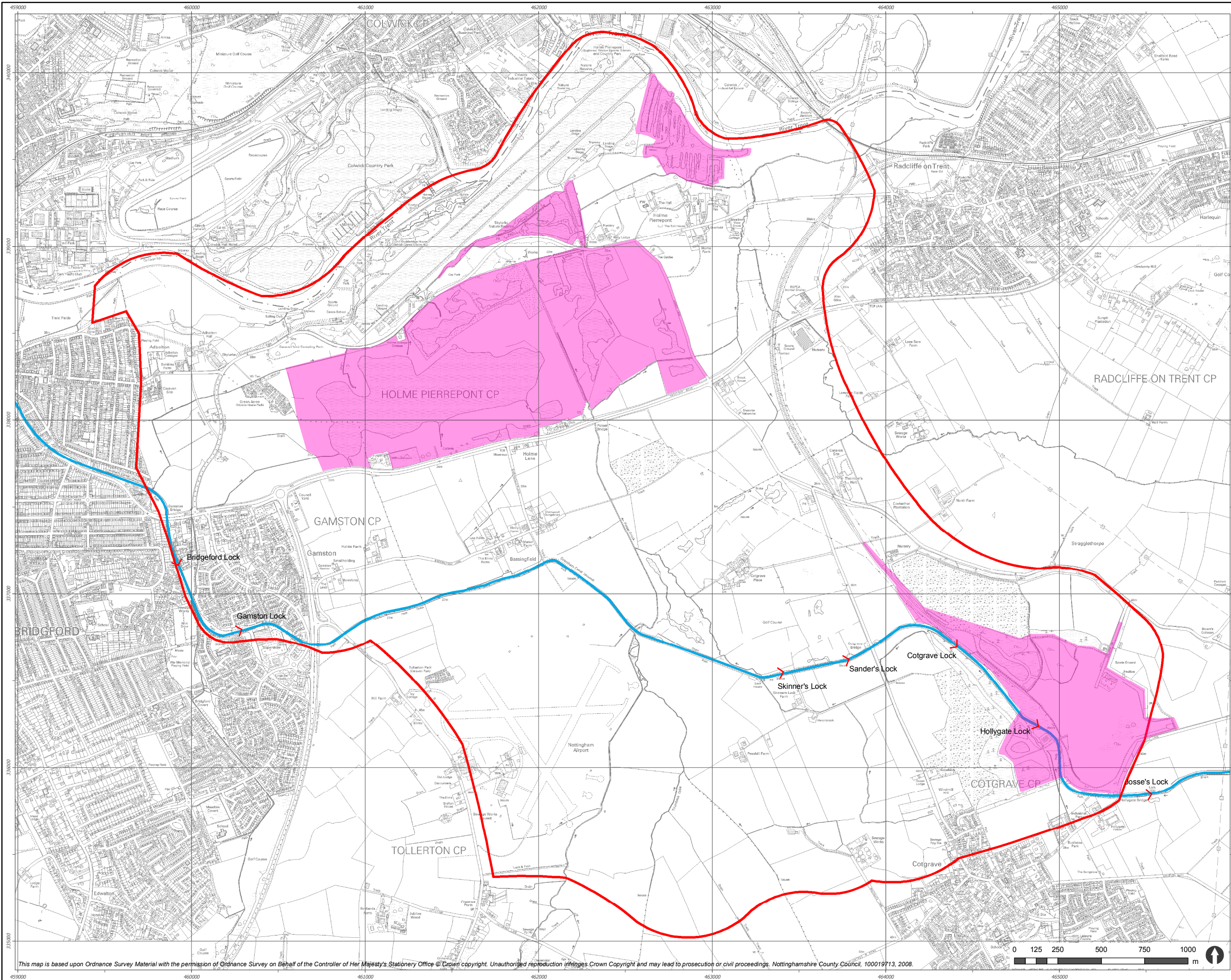
www.woolstoneyes.co.uk/survey.php

www.bto.org/bbs

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FIGURES

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- KEY:**
- Grantham Canal Lock
 - Sites of Ornithological Value Based on Consultation Data
 - Grantham Canal
 - Study Area

Revision Details		By	Check	Date	Suffix

DRAWING STATUS				
Code	Description	Current Status	Appd	Date
P	Preliminary			
A	Submitted for Review	X	SBB	08/08/08
C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title

**RIVER TRENT TO
COTGRAVE
GREEN INFRASTRUCTURE
STUDY**

Drawing Title

**FIGURE 1.1
SITES OF ORNITHOLOGICAL
VALUE BASED ON
CONSULTATION DATA
(SHEET 1 OF 1)**

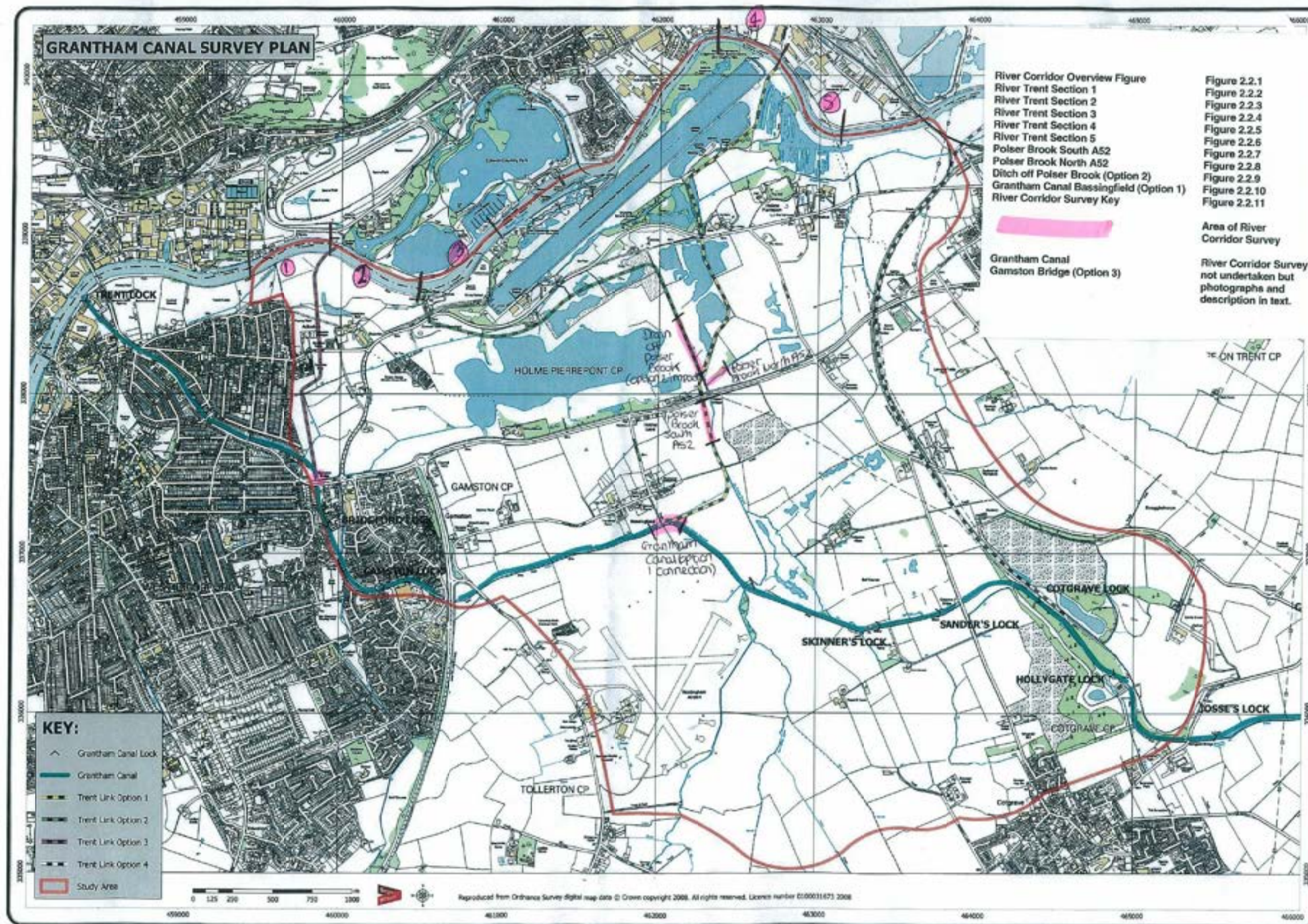
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Stage 1 check JAW	Stage 2 check 	Originated CH_ENV	Date 08/08/08



Drawing Number

D120103/BRDS/1.1

Revision



River Corridor Overview Figure
River Trent Section 1
River Trent Section 2
River Trent Section 3
River Trent Section 4
River Trent Section 5
Polser Brook South A52
Polser Brook North A52
Ditch off Polser Brook (Option 2)
Grantham Canal Bassingfield (Option 1)
River Corridor Survey Key

Figure 2.2.1
Figure 2.2.2
Figure 2.2.3
Figure 2.2.4
Figure 2.2.5
Figure 2.2.6
Figure 2.2.7
Figure 2.2.8
Figure 2.2.9
Figure 2.2.10
Figure 2.2.11

Area of River
Corridor Survey

River Corridor Survey
not undertaken but
photographs and
description in text.

Grantham Canal
Gamston Bridge (Option 3)

KEY:

- Grantham Canal Lock
- Grantham Canal
- Trent Link Option 1
- Trent Link Option 2
- Trent Link Option 3
- Trent Link Option 4
- Study Area

0 125 250 500 750 1000

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Job Title

RIVER TRENT TO COTGRAVE
GREEN INFRASTRUCTURE
STUDY

FIGURE 2.1
RIVER CORRIDOR
OVERVIEW FIGURE

(SHEET 1 OF 11)

Scale @ A3

NTS

Drawn JV

Approved SBB

Stage 1 check Stage 2 check Originated Date

LP CH_ENV 30/07/08



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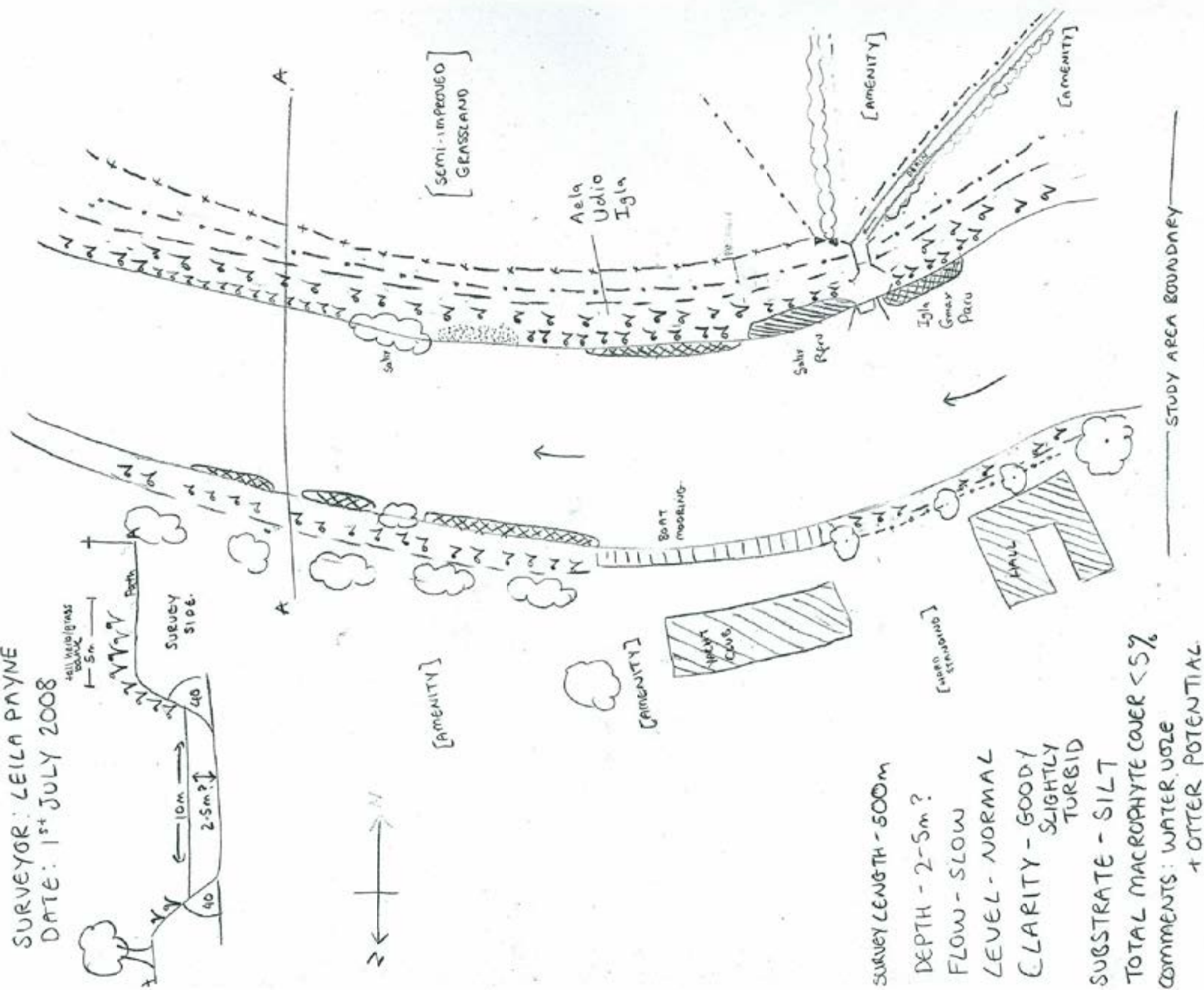
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D120103/RCS/2.1

RIVER TRENT: SECTION 1 (WEST)

SURVEYOR: LEILA PAYNE

DATE: 1st JULY 2008



SURVEY LENGTH - 500m
DEPTH - 2-5m?
FLOW - SLOW
LEVEL - NORMAL
CLARITY - GOOD / SLIGHTLY TURBID
SUBSTRATE - SILT
TOTAL MACROPHYTE COVER < 5%
COMMENTS: WATER USE + OTTER POTENTIAL

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C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title
RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title
FIGURE 2.2
RIVER TRENT
SECTION 1
(SHEET 2 OF 11)

Scale @ A3 NTS	Drawn JV	Approved SBB
Stage 1 check LP	Stage 2 check CH_ENV	Date 30/07/08



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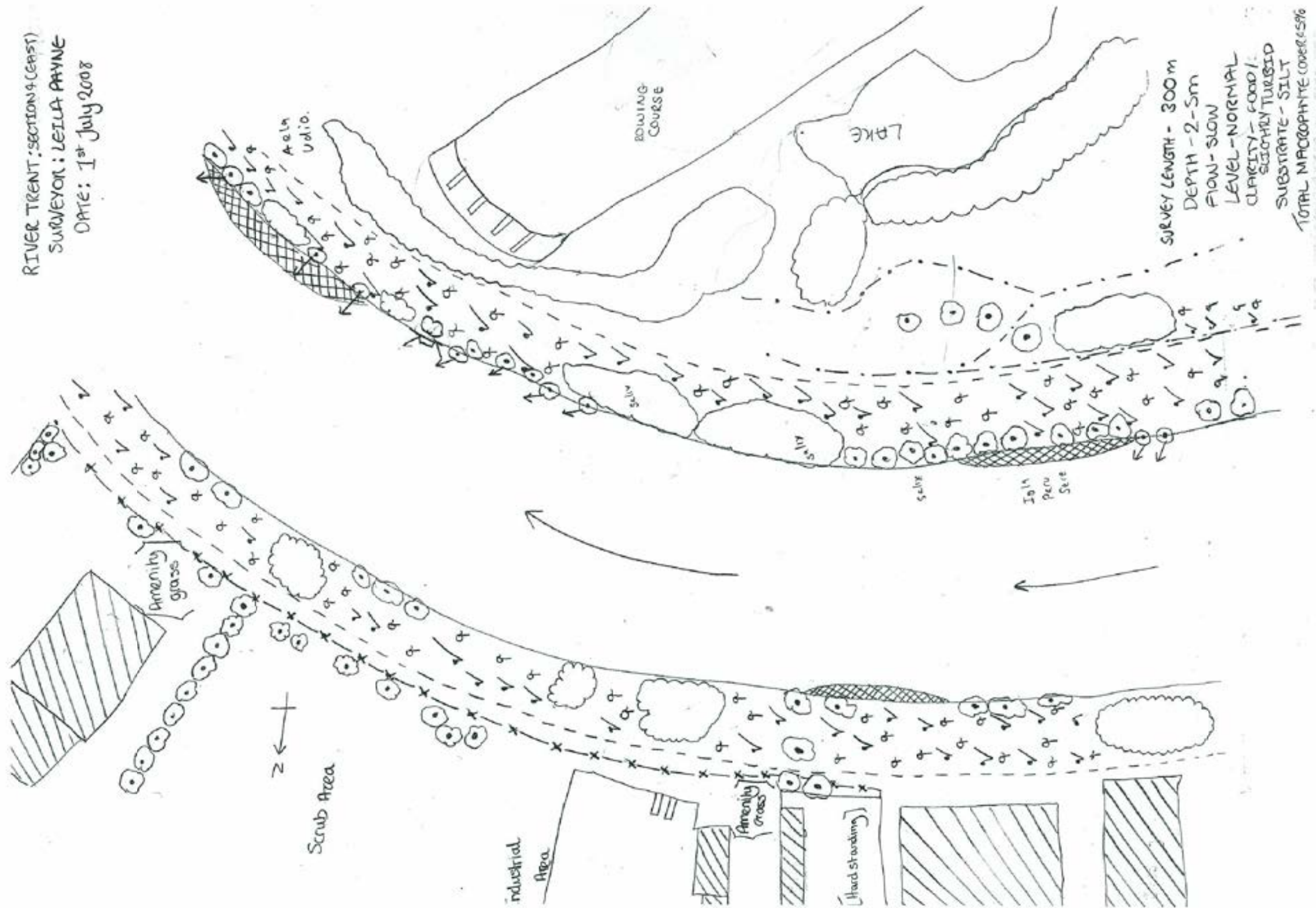
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Drawing Title

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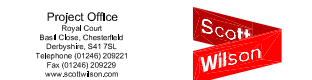
Job Title

RIVER TRENT TO COTGRAVE
GREEN INFRASTRUCTURE
STUDY

Drawing Title
**FIGURE 2.5
RIVER TRENT
SECTION 4**

(SHEET 5 OF 11)

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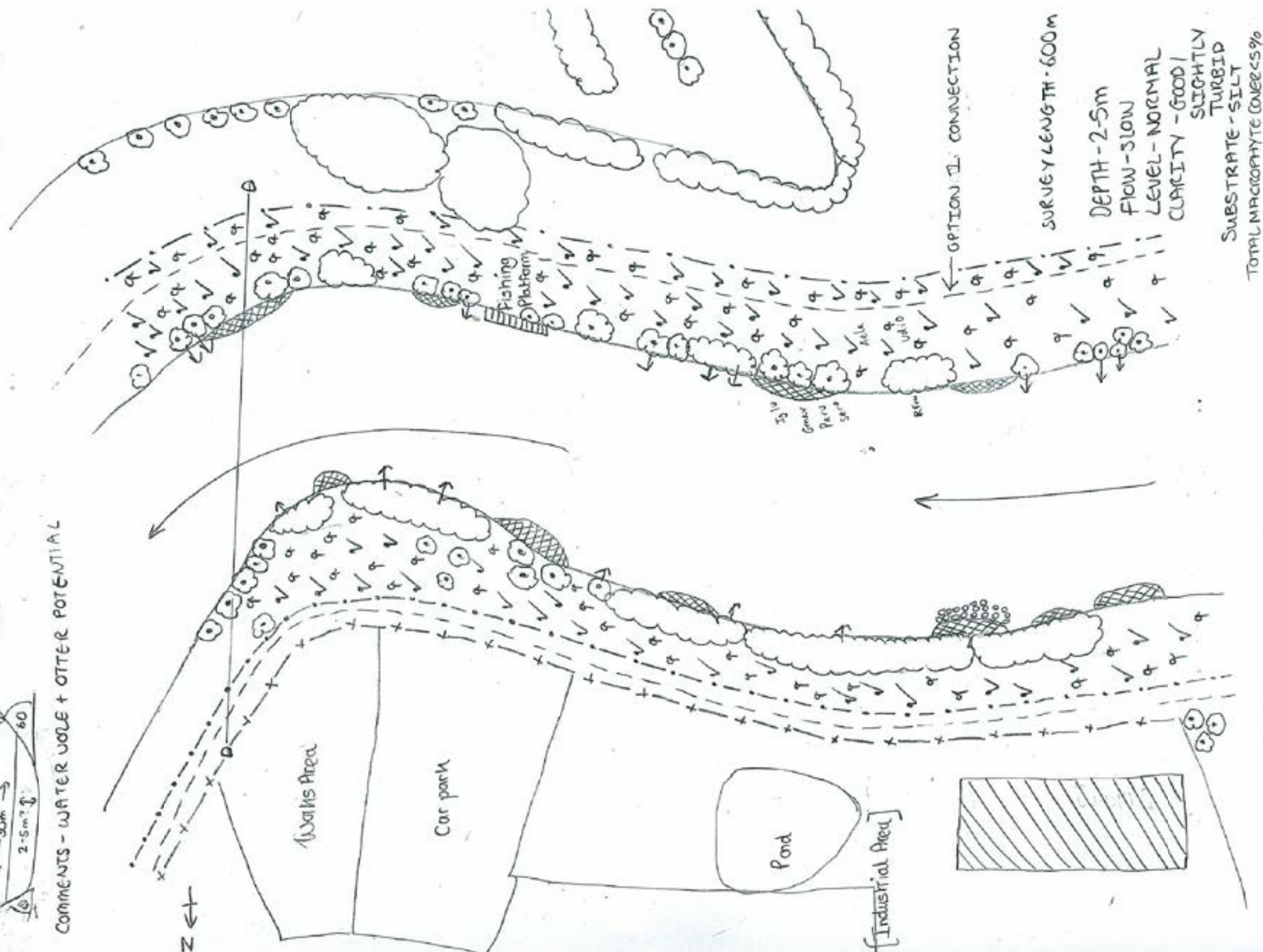


Drawing Number
D120103/RCS/2.5

RIVER TRENT : SECTION 5
(EAST)
SURVEYOR - LEILA PAYNE
DATE: 2nd JULY 2008



COMMENTS - WATER VOLE + OTTER POTENTIAL



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Code Description Current Status Appd Date

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E Cost Estimate

AB As Built

Job Title

RIVER TRENT TO COTGRAVE
GREEN INFRASTRUCTURE
STUDY

Drawing Title

FIGURE 2.6
RIVER TRENT
SECTION 5

(SHEET 6 OF 11)

Scale @ A3

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Drawn JV

Approved SBB

Stage 1 check Stage 2 check Originated CH_ENV Date 30/07/08

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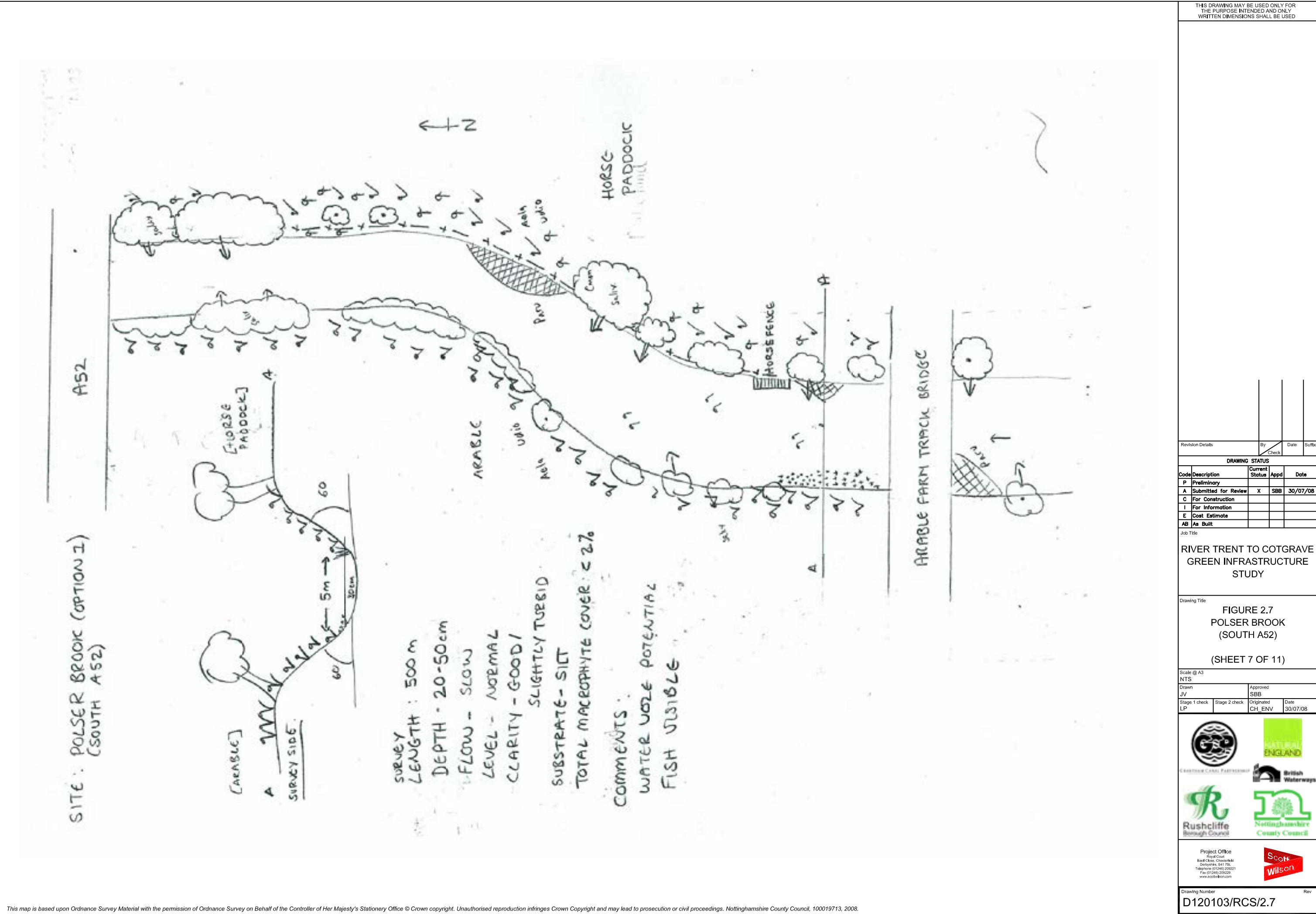
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Drawing Number

D120103/RCS/2.6

Rev



SITE: POLSER BROOK
(NORTH ASZ)

SURVEYOR - LEILA PAYNE

DATE - 2nd JULY 2008.

ARABLE

[WOODLAND]

N

DEBRIS DAM

POLSER BROOK
(NO ACCESS FOR SURVEY)

DENSE SCRUB

DRAIN DRY OFF POLSER BROOK

FISH VISIBLE

CRAWFISH POTENTIAL

COMMENTS: WATER VOICE POTENTIAL

TOTAL MACROPHYTE - 0%
OVER SHADOWING - 90%

SUBSTRATE - SILT / SAND COBBLES

CLARITY - GOOD / SLIGHTLY TURBID

LEVEL - NORMAL

FLOW - SLOW

DEPTH - 0.3 - 0.5m

SURVEY LENGTH - 300m

ASZ

AS2

FOOTPATH

SURVEY SIDE

WY ROAD

3m

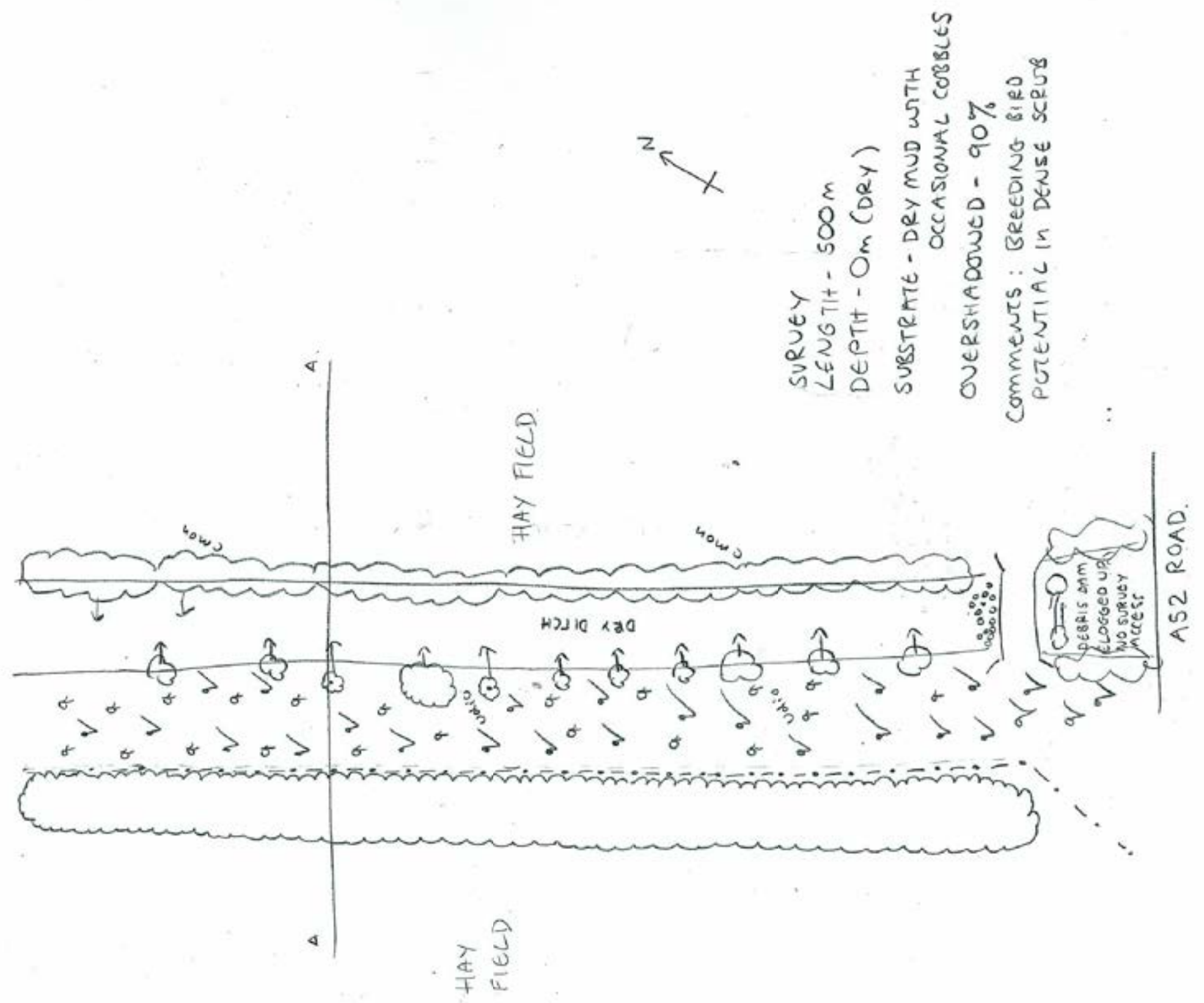
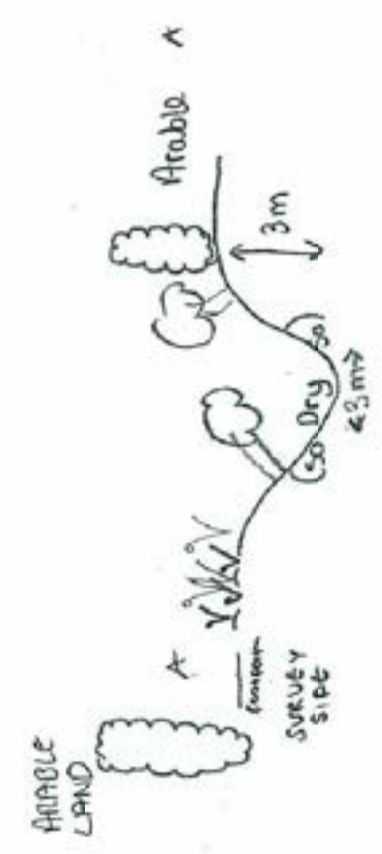
0.5

0.8

Diagram illustrating the site location and survey area. The diagram shows a cross-section of the Polser Brook, with labels for various features: Arable land, Woodland, Drain dry off Polser Brook, Dense Scrub, Debris Dam, Fish Visible, Crawfish Potential, Comments: Water Voice Potential, Total Macrophyte - 0%, Over Shadowing - 90%, Substrate - Silt / Sand Cobble, Clarity - Good / Slightly Turbid, Level - Normal, Flow - Slow, Depth - 0.3 - 0.5m, Survey Length - 300m, ASZ, AS2, Footpath, Survey Side, Wy Road, 3m, 0.5, 0.8.

Drawing Number	Rev
D120103/RCS/2.8	

SITE: DRAIN OFF POLSER BROOK (OPTION 2)
SURVEYOR: LÉILA PAYNE
DATE: 2nd JULY 2008



SURVEY
LENGTH - 500M
DEPTH - 0m (DRY)
SUBSTRATE - DRY MUD WITH
OCCASIONAL COBBLES
OVERSHADOWED - 90%
COMMENTS: BREEDING BIRD
POTENTIAL IN DENSE SCRUB

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P	Preliminary			
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AB	As Built			

Job Title

RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

FIGURE 2.9
DRAIN OFF
POLSER BROOK
(OPTION 2 IMPACT ZONE)
(SHEET 9 OF 11)

Scale @ A3
NTS

Drawn	Approved
JV	SBB

Stage 1 check	Stage 2 check	Originated	Date
LP		CH_ENV	30/07/08

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D120103/RCS/2.9

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TITLE: GRANTHAM CANAL
(OPTION 1 CONNECTION)
DATE OF SURVEY: 2nd July 2008
SURVEYOR: LÉILA PAYNE

DEPTH - 2-5m
FLOW - SLOW/NONE
LEVEL - NORMAL
CLARITY - TURBID

2143
2144

Arable land

Arable land

DRY DRAIN
DITCH WITH NO
CONNECTION TO
THE CANAL

OPTION 1
CONNECTION

2009

Chir

For

Attable land

Track

A diagram showing a semi-circular path. The path is a quarter-circle with a radius of 12 m. The angle subtended by the arc is 90°. The path starts at point A and ends at point B. The path is labeled with a radius of 12 m and an angle of 90°.

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RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

FIGURE 2.10
GRANTHAM CANAL
(OPTION 1 CONNECTION)

(SHEET 10 OF 11)

Scale @ A3	
NTS	
Design	Approved

Drawn JV		Approved SBB	
Stage 1 check	Stage 2 check	Originated	Date

LP		CH_ENV	30/07/08
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The logo for Scott Wilson, featuring the company name in white text on a red, three-dimensional rectangular background.

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Job Title

RIVER TRENT TO COTGRAVE
GREEN INFRASTRUCTURE
STUDY

Drawing Title

FIGURE 2.11
SURVEY KEY
(SHEET 11 OF 11)

Scale @ A3		Approved	
NTS		SBB	
Drawn	JV	Stage 1 check	Stage 2 check
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		CH_ENV	30/07/08



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Key to River Corridor Survey

Tall ruderal with grass

Dense shrubs

Broadleaf

Woodland + symbol for type

Hedgerow

Overhanging tree

Fallen tree

Shrub

Short grass

Mown

Road/Track

Footpath

Fence

Building

Land use category

Inlet

Outfall

Direction of flow

Artificial bank protection

Reed/Sedge

Floating leaves

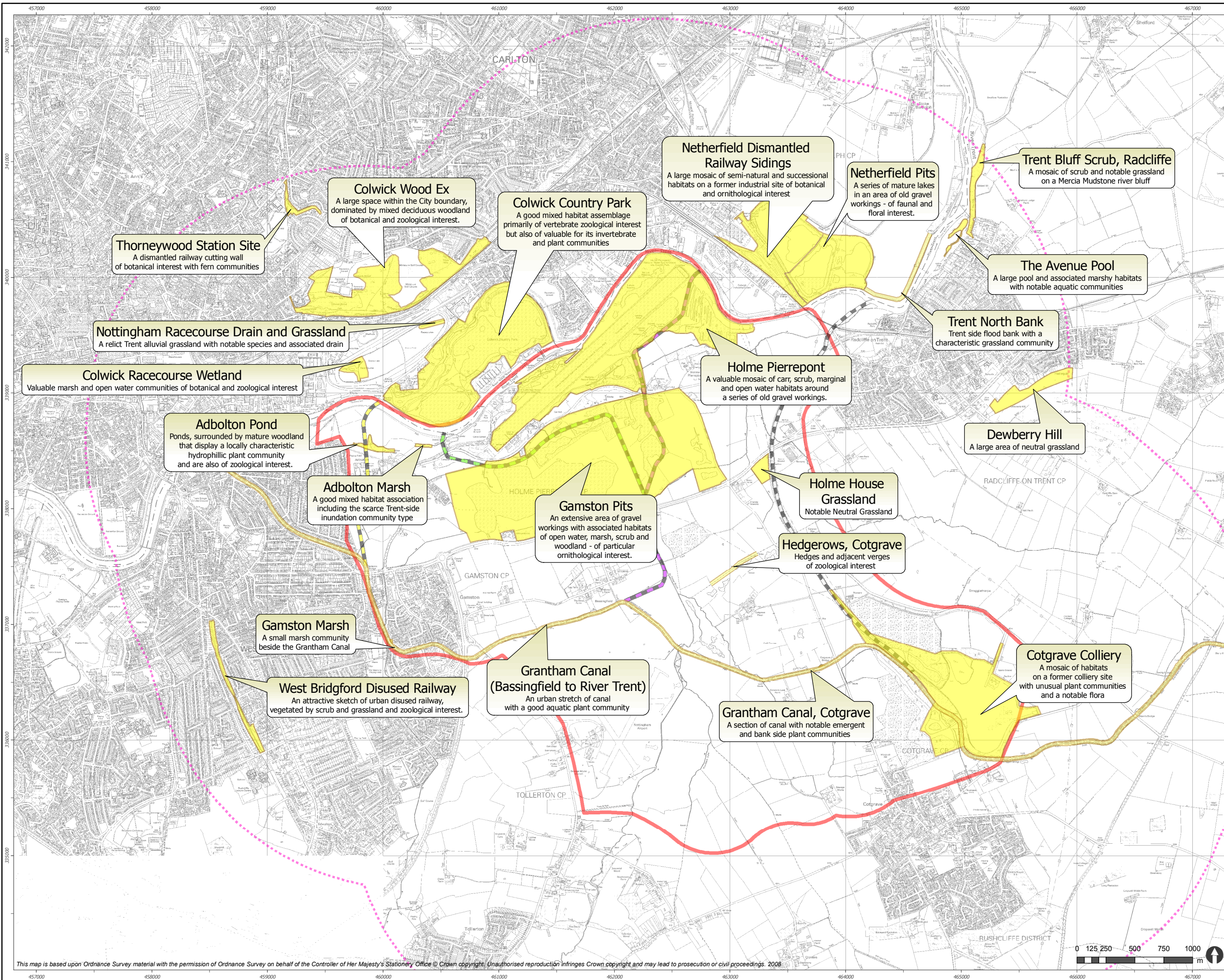
Bare gravel/shingle

Gate

Island with vegetation

Photograph

Cross section



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KEY:

- SINC
- Study Area
- 2 km Consultation area
- Trent Link Option 1
- Trent Link Option 2
- Trent Link Option 3
- Trent Link Option 4

NOTE:
Source Nottinghamshire Biological and Geological Records Centre and Local Wildlife Site Citations.

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I	For Information			
E	Cost Estimate			
AB	As Built			

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RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

**FIGURE 3.1
SITES OF IMPORTANCE FOR NATURE CONSERVATION (SINCS)
(SHEET 1 OF 1)**

Scale @ A3
1:30,000

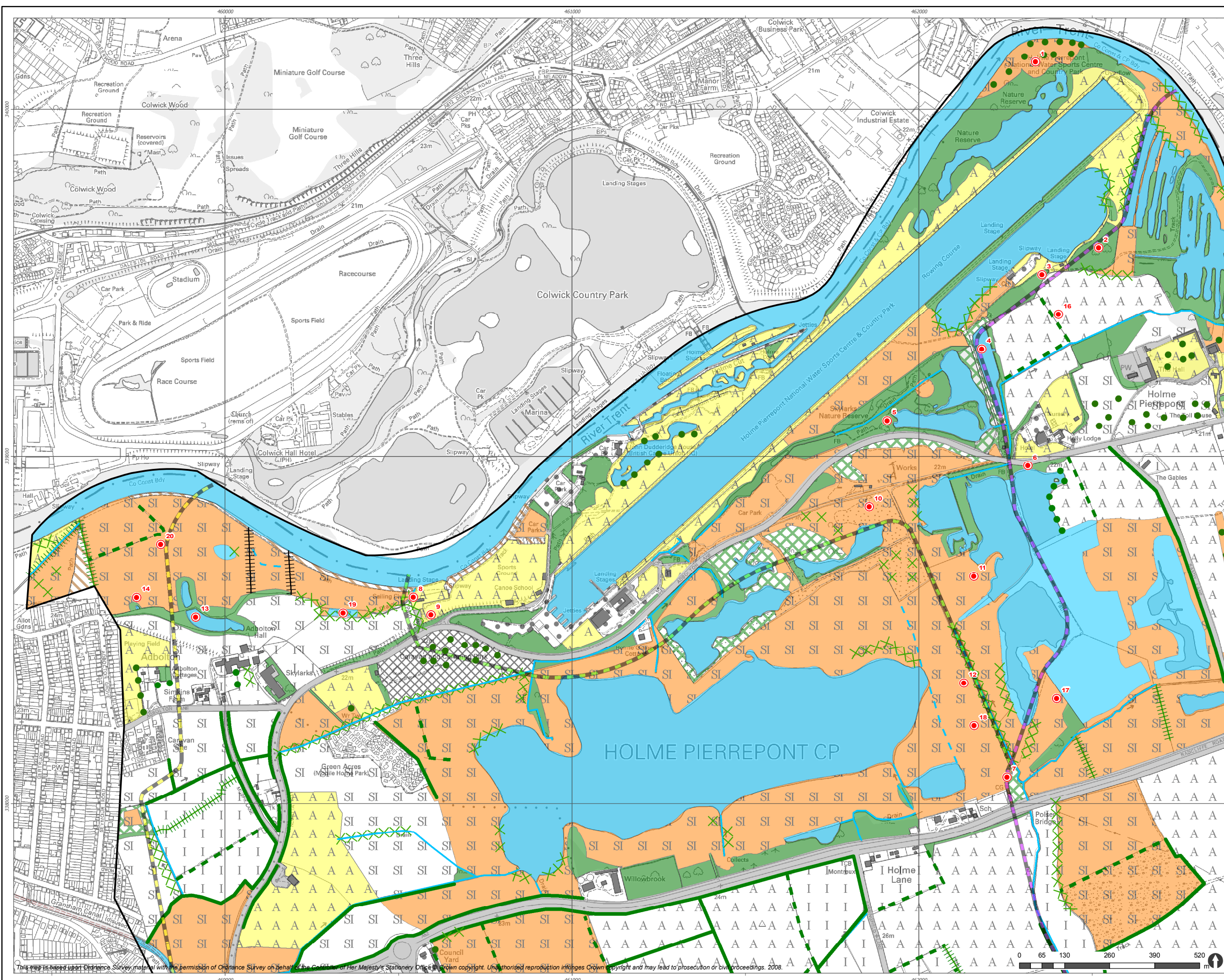
Drawn	Approved
JV	SBB
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LP	TA
Originated	Date
CH_ENV	06/08/08

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KEY:

- Study Area
- Scrub
- Broadleaved Tree
- Target Note
- Running Water
- Intact Hedge
- Defunct Hedge
- Hedge with Trees
- Fence
- Dry Ditch
- Semi-natural Broadleaved Woodland
- Plantation Broadleaved Woodland
- Plantation Mixed Woodland
- Continuous Scrub
- Semi-improved Neutral Grassland
- Improved Grassland
- Poor Semi-improved Grassland
- Tall Ruderal
- Standing Water
- Running Water
- Arable
- Amenity Grassland
- Caravan Site
- Building
- Bare Ground
- Hard Standing
- Trent Link Option 1
- Trent Link Option 2
- Trent Link Option 3
- Trent Link Option 4

DRAWING STATUS				
Code	Description	Current Status	Appd	Date
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I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title

RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

**FIGURE 4.1
PHASE 1
HABITAT SURVEY
(SHEET 1 OF 4)**

Scale @ A3
1:10,000

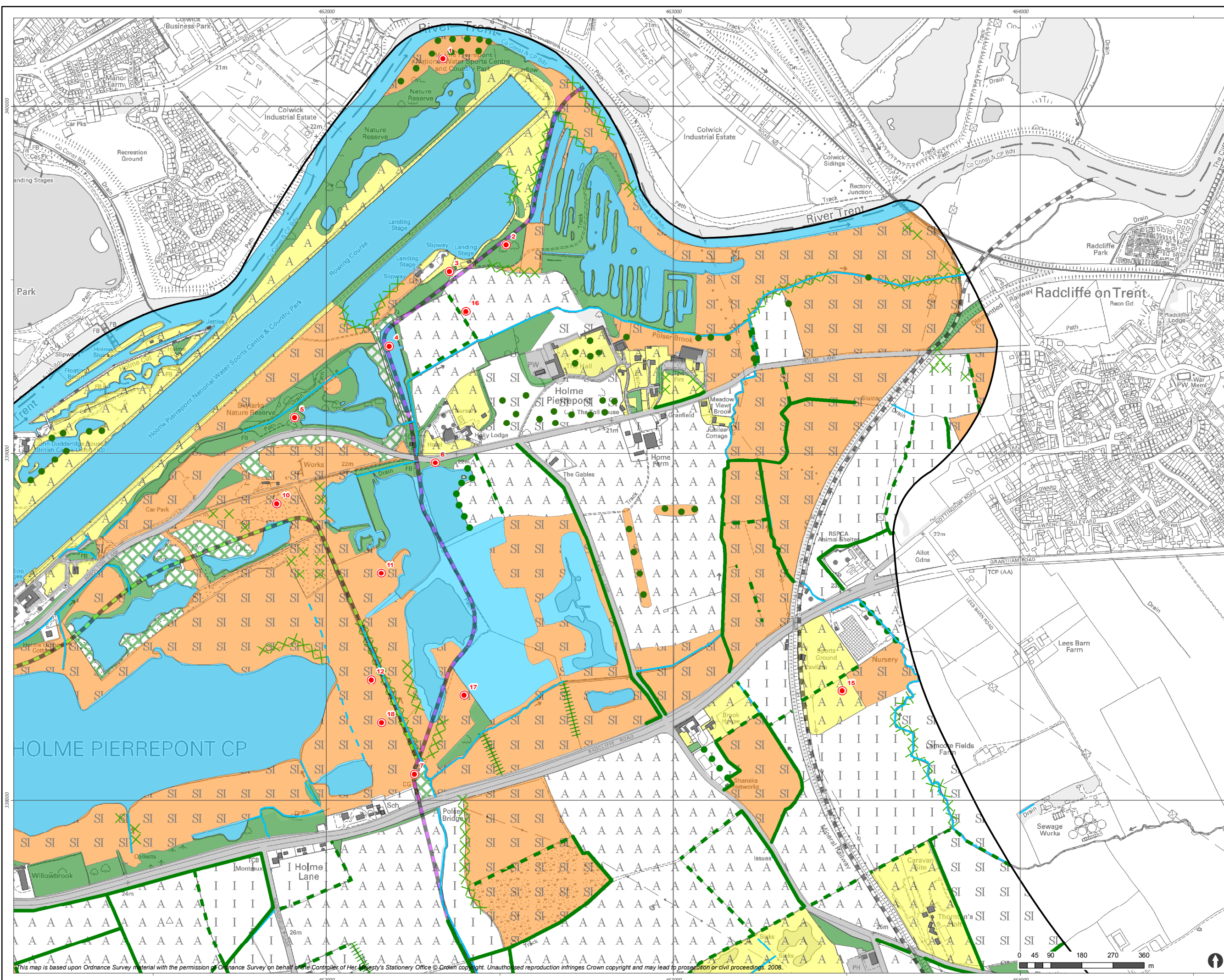
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JV	SBB
Stage 1 check LP	Stage 2 check DC
Originated CH_ENV	Date 12/08/08

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KEY:

- Study Area
- Scrub
- Broadleaved Tree
- Target Note
- Running Water
- Intact Hedge
- Defunct Hedge
- Hedge with Trees
- Fence
- Dry Ditch
- Semi-natural Broadleaved Woodland
- Plantation Broadleaved Woodland
- Plantation Mixed Woodland
- Continuous Scrub
- Semi-improved Neutral Grassland
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- Tall Ruderal
- Standing Water
- Running Water
- Arable
- Amenity Grassland
- Caravan Site
- Building
- Bare Ground
- Hard Standing
- Trent Link Option 1
- Trent Link Option 2
- Trent Link Option 3
- Trent Link Option 4

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Job Title

RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

**FIGURE 4.2
PHASE 1
HABITAT SURVEY
(SHEET 2 OF 4)**

Scale @ A3
1:10,000

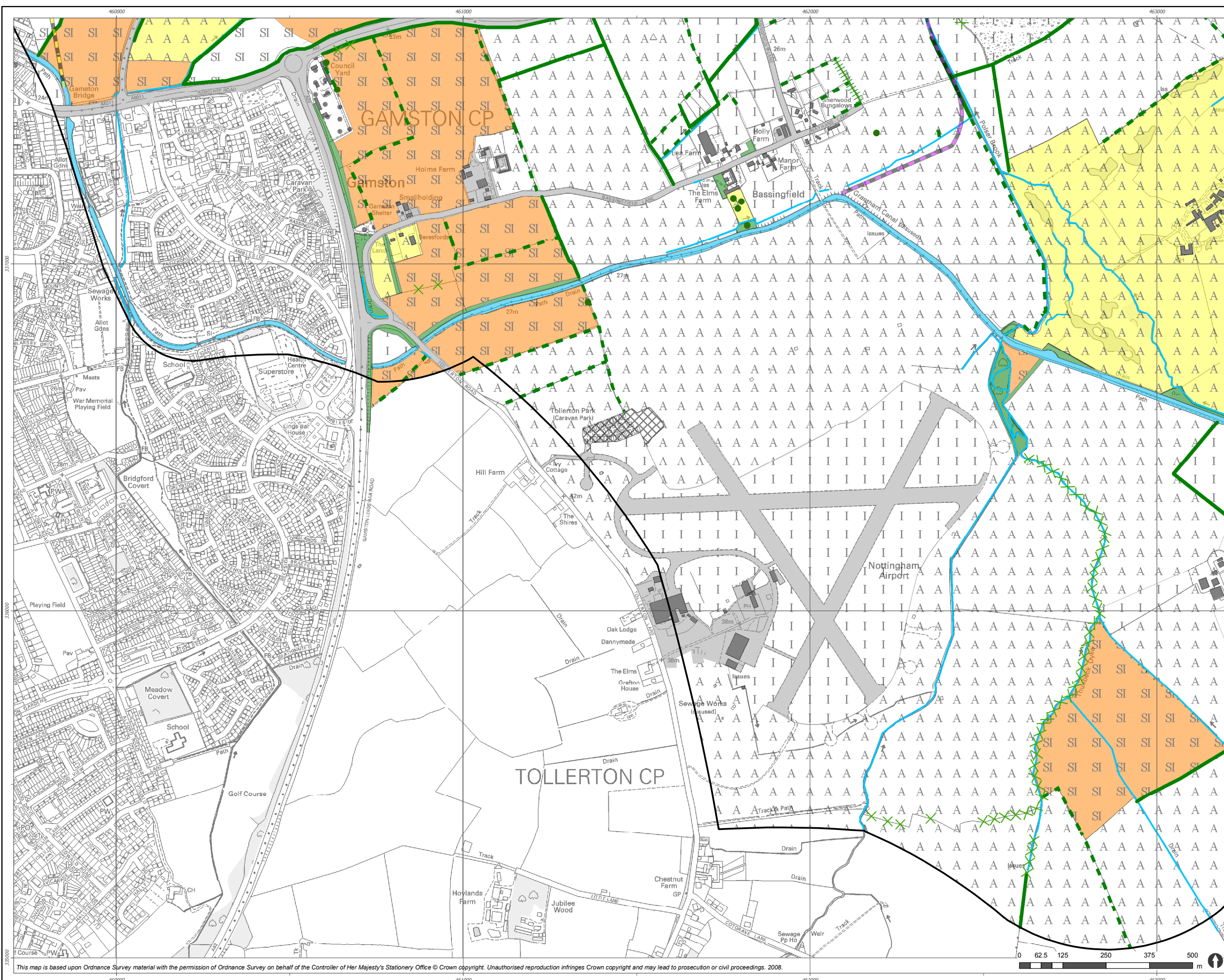
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KEY:

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- Scrub
- Broadleaved Tree
- Target Note
- Running Water
- Intact Hedge
- Defunct Hedge
- Hedge with Trees
- Fence
- Dry Ditch
- Semi-natural Broadleaved Woodland
- Plantation Broadleaved Woodland
- Plantation Mixed Woodland
- Continuous Scrub
- Semi-improved Neutral Grassland
- Improved Grassland
- Poor Semi-improved Grassland
- Tall Ruderal
- Standing Water
- Running Water
- Arable
- Amenity Grassland
- Caravan Site
- Building
- Bare Ground
- Hard Standing
- Trent Link Option 1
- Trent Link Option 2
- Trent Link Option 3
- Trent Link Option 4

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E	Cost Estimate			
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RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

**FIGURE 4.3
PHASE 1
HABITAT SURVEY
(SHEET 3 OF 4)**

Scale @ A3
1:10,000

Drawn	Approved
JV	SBB
Stage 1 check LP	Stage 2 check DC
Originated CH_ENV	Date 12/08/08

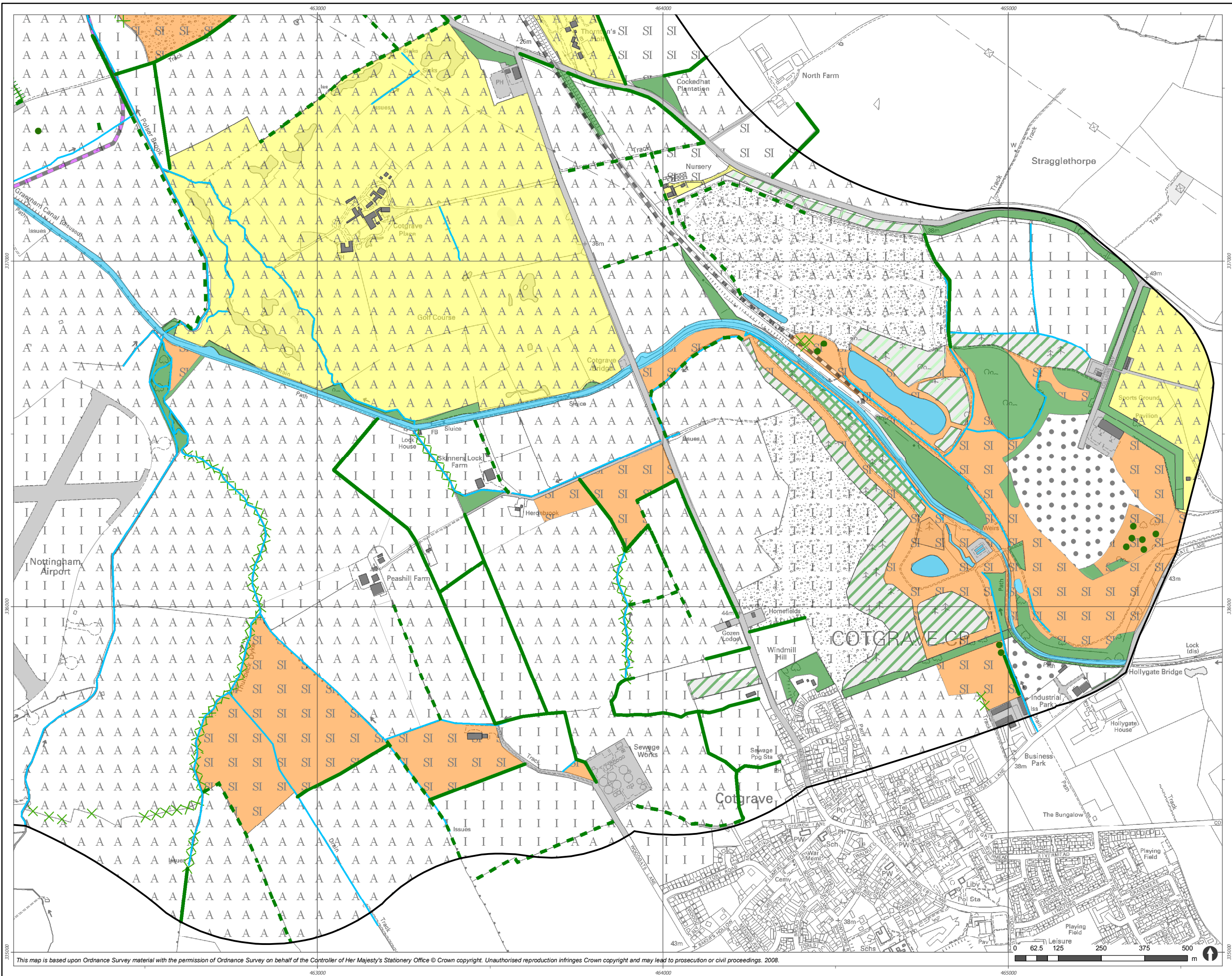


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KEY:

- Study Area
- Scrub
- Broadleaved Tree
- Target Note
- Running Water
- Intact Hedge
- Defunct Hedge
- Hedge with Trees
- Fence
- Dry Ditch
- Semi-natural Broadleaved Woodland
- Plantation Broadleaved Woodland
- Plantation Mixed Woodland
- Continuous Scrub
- Semi-improved Neutral Grassland
- Improved Grassland
- Poor Semi-improved Grassland
- Tall Ruderal
- Standing Water
- Running Water
- Arable
- Amenity Grassland
- Caravan Site
- Building
- Bare Ground
- Hard Standing
- Trent Link Option 1
- Trent Link Option 2
- Trent Link Option 3
- Trent Link Option 4

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I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title

RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

**FIGURE 4.4
PHASE 1
HABITAT SURVEY
(SHEET 4 OF 4)**

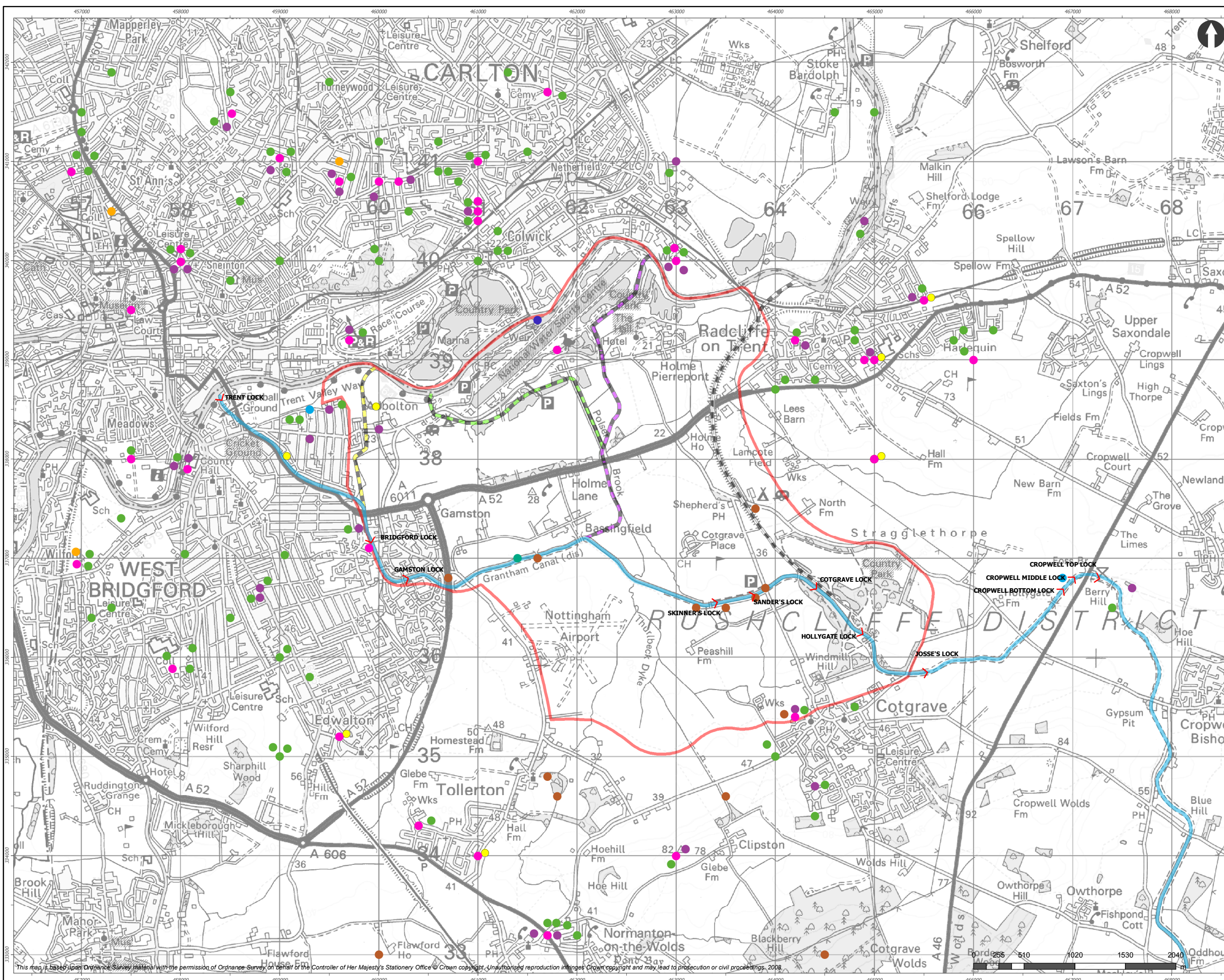
Scale @ A3
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KEY:

- Grantham Canal Lock
- Common Frog
- Common Toad
- Grass Snake
- Great Crested Newt
- Rat Snake
- Red-Eared Terrapin (*Trachemys scripta*)
- Slow Worm
- Smooth Newt
- Terrapin not positively identified to species
- Trent Link Option 1
- Trent Link Option 2
- Trent Link Option 3
- Trent Link Option 4
- Grantham Canal
- Study Area

NOTE:
Source Nottinghamshire Biological and Geological Records Centre and Local Wildlife Site Citations.

Revision Details				
By	Check	Date	Suffix	

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Code	Description	Current Status	Appd	Date
P	Preliminary			
A	Submitted for Review	X	LP	06/08/08
C	For Construction			
I	For Information			
E	Cost Estimate			
AB	As Built			

Job Title

RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

**FIGURE 5.1
ECOLOGY
CONSULTATION DATA
AMPHIBIANS AND
REPTILES
(SHEET 1 OF 1)**

Scale @ A3
1:35,000

Drawn	Approved
JV	SBB
Stage 1 check	Stage 2 check
LP	CH_ENV
	Date
	06/08/08

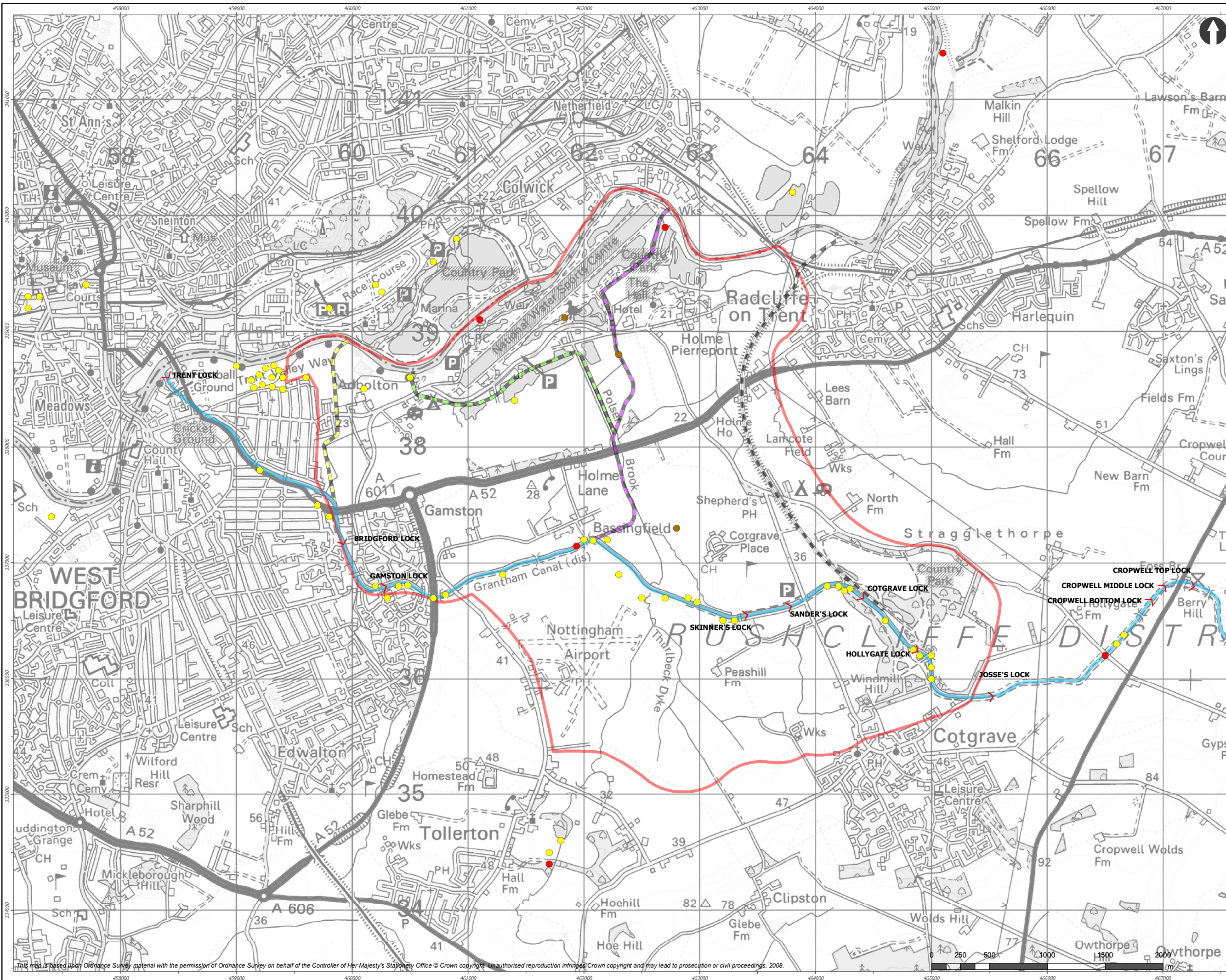
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KEY:

- Grantham Canal Lock
- Harvest Mouse
- Otter
- Water Vole
- Trent Link Option 1
- Trent Link Option 2
- Trent Link Option 3
- Trent Link Option 4
- Grantham Canal
- Study Area

NOTE:

Source Nottinghamshire Biological and Geological Records Centre

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RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

FIGURE 6.1 ECOLOGY CONSULTATION DATA - MAMMALS (EXCLUDING BADGERS) (SHEET 1 OF 1)

Scale @ A3
1:30,000

Drawn	Approved
JV	SBB
Stage 1 check	Stage 2 check
LP	CH_ENV
	Date
	06/08/08

GRANTHAM CANAL PARTNERSHIP

NATURAL ENGLAND

British Waterways

Rushcliffe Borough Council

Nottinghamshire County Council

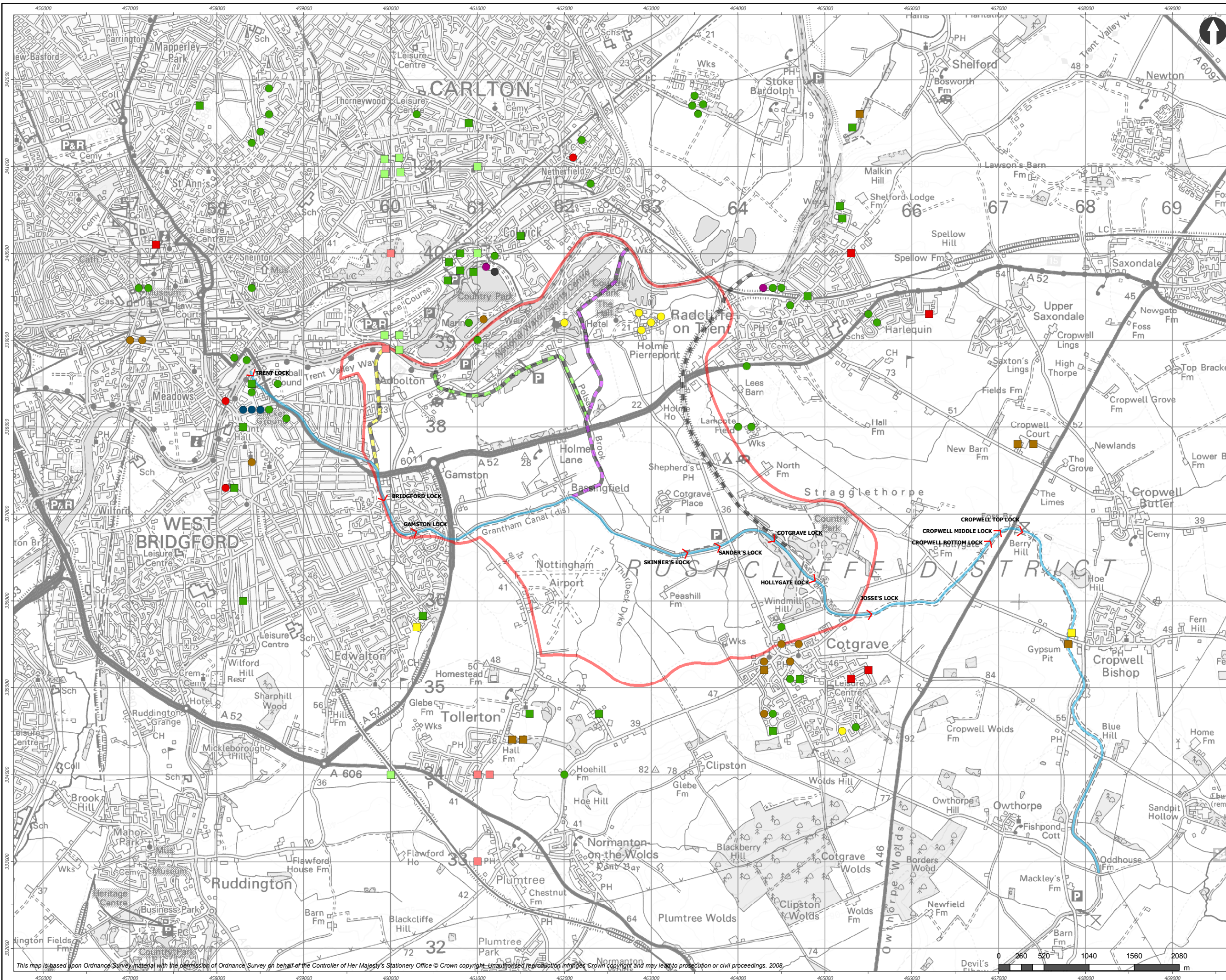
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KEY:

- Grantham Canal Lock
- BAT ROOSTS (within xxxm location accuracy unless stated)
- Pipistrelle
- Pipistrelle, (with 500 m location accuracy)
- Brown Long-eared
- Whiskered/Brandt's
- Unidentified bat
- Unidentified bat, (with 500 m location accuracy)

OTHER BAT RECORDS

- 45 Pipistrelle
- 55 Pipistrelle
- Brown Long-eared
- Daubenton's
- Noctule
- Whiskered/Brandt's
- Unidentified bat

TRENT LINK OPTIONS

- Trent Link Option 1
- Trent Link Option 2
- Trent Link Option 3
- Trent Link Option 4
- Grantham Canal
- Study Area

NOTE:
Source Nottinghamshire Biological and Geological Records Centre

Revision Details				
By	Check	Date	Suffix	

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AB	As Built			

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RIVER TRENT TO COTGRAVE GREEN INFRASTRUCTURE STUDY

Drawing Title

**FIGURE 8.1
ECOLOGY
CONSULTATION DATA
BATS
(SHEET 1 OF 1)**

Scale @ A3
1:40,000

Drawn	Approved
JV	SBB
Stage 1 check	Stage 2 check
LP	CH_ENV
	Date
	06/08/08

Logos:

- Grantham Canal Partnership
- Natural England
- British Waterways
- Rushcliffe Borough Council
- Nottinghamshire County Council
- Scott Wilson

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D120103/BAT/8.1

APPENDIX 1

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APPENDIX 1: ECOLOGY CONSULTATION/PUBLIC CONSULTATION RESPONSE SUMMARIES

Statutory Body/ Stakeholder	Summary of Consultation Response
<p>Natural England</p> <p>(Anna Collins)</p>	<p>The steering group expects the ecology team to give clear guidance to the rest of the team about the ecological constraints in regard to the canal link. If, despite these constraints, a favoured route comes forward which will have a negative ecological impact, then mitigation should be considered.</p> <p>Natural England does not have a great deal of site specific knowledge and directs you to Paul Phillips, Nick Crouch, the wildlife trust and the record centre.</p> <p>Bird data are key and collected data should be used to gain an understanding of the importance of the study area for birds (and bird watchers!) and also the capacity of the birds to tolerate disturbance caused by regular boat use.</p> <p>Green Infrastructure study is a key and major part of the brief. NE is expecting a proposal for Green Infrastructure to be one of the outputs of the study and this should include, alongside improved access and the other features of green infrastructure, identification of the best areas of biodiversity within the study area and the opportunities to enhance these areas and create links between them to improve biodiversity. Please have a look at green infrastructure work done around the country to see what the biodiversity elements of this work look like.</p> <p>NE is happy that assessment of birds is based on historic records rather than limited survey effort.</p>
<p>Nottinghamshire County Council</p> <p>Senior Nature Conservation Officer</p> <p>(Nick Crouch)</p>	<p>Preliminary obvious concerns include direct impacts in terms of landtake within designated sites (e.g. Gamston Pits/Holme Pierrepont Disused Gravel Pits/Adbolton Pond SINCS/Local Wildlife Sites), and other non-designated features such as hedgerows, watercourses etc.</p> <p>Potential indirect impacts of concern include increased disturbance in previously undisturbed areas and potential future aspirations for marinas/similar development once the link has gone in.</p> <p>The Holme Pierrepont/Colwick Country Park/Netherfield Lagoons complex is extremely important for both breeding and wintering birds, and Schedule 1 birds breed at Holme Pierrepont. Options avoiding these areas would be least damaging.</p> <p>In terms of mitigation/enhancement, the new link would provide opportunities for creating new wetland areas associated with the canal, such as off-line (non-operational) sections of canal, new areas of associated habitat (e.g. grassland, hedgerows), as well as carrying out enhancements to existing habitats that the canal</p>

	may pass through.
<p>Environment Agency</p> <p>Biodiversity Officer (Anja.Nonnenmacher)</p> <p>Fisheries Officer (Joel Rawlinson)</p>	<p>The Trent is a river known mainly for its coarse fish population. There are populations of anadromous (salmon, river/sea lamprey) and catadromous (eels) fish but, due to physical barriers, their distribution within the catchment is limited.</p> <p>Salmon migrate into the Trent and then move upstream to the River Dove and Upper Trent to spawn. This occurs between the months of October to December. The smolts will then migrate back out to sea March to May.</p> <p>The coarse fish species found within the Trent around Nottingham are (in alphabetical order): Barbel, bleak, bream (common & silver), chub, dace, eel, gudgeon, lamprey, minnow, perch, pike, roach, rudd, ruffe, salmon, loach (stone & spined), stickleback (3 & 10 spined), tench, zander.</p> <p>Regarding crayfish records, we do not hold any for the study area, neither do I have detailed knowledge of Polser Brook regarding its habitat suitability/ potential. As we said it would be best not to rule it out and confirm with an ecological survey.</p> <p>Concerns and aspirations: options that touch on the Gamston Pits and Holme Pierrepont SINC's would need to be developed with input from Notts Wildlife Trust.</p>
<p>Rushcliffe Borough Council</p> <p>Environmental Sustainability Officer (Paul Phillips)</p>	<p>Possible constraints:</p> <p>Much of the area is covered by Sites of Interest for Nature Conservation (SINC's), including parts of the canal and the lakes at Holme Pierrepont. The large lake at Home Pierrepont is used by Black Necked Grebe, of amber concern, but which excites much interest locally, along with lots of other waders and water fowl. Water voles are present in the area and need to be taken into account - I have been told they are found on Polser Brook, although they are not on the record centre records - obviously any plan to use this as a route needs to avoid vole habitat.</p> <p>Aspirations:</p> <p>Increasing the value of the water bodies for waders etc; increasing wetland marginal habitat, eg reed beds, marsh etc and increasing the opportunities for water vole. Otter habitat is another possibility.</p>
<p>British Waterways</p> <p>Richard Bennet Deanne Gow</p> <p>(Telecon)</p>	<p>RB said the section of canal west of the ECUS study (the more urban section) is of less ecological value than the more eastern section due to dense duckweed cover.</p> <p>Generally there is no preference (with regards to ecological value on canal corridor) of route option. The general aspiration is that a greater section of canal is opened up to navigation to increase water flow, which would reduce duckweed cover (i.e. Option 3). RB pointed out that ecological constraints are more likely to be related to the value of Holme Pierrepont and Cotgrave Country</p>

	<p>Park rather than the canal.</p> <p>All ecological records are passed on to the local records centre – there are no additional records that BW can provide.</p>
<p>Biodiversity Action Group</p> <p>Biodiversity Officer</p> <p>(Chris Jackson)</p>	<p>You have already consulted with a number of the Biodiversity Action Group members who would normally represent the BAG on such matters, and as such they should have covered any issues that needed comment with regards to Nature Conservation and Biodiversity.</p>
<p>County Bird Recorder</p> <p>(Andy Hall)</p>	<p>AH commented that the whole Pierrepont complex had significant ornithological interest. Black-necked grebes are breeding on the A52 pits (Gamston Pits), making this site of county level importance. In particular the A52 pit and hinterland (Blotts Pits) is considered a “significant area” for birds and the area round the finger ponds is considered of lesser importance than the A52 pit, but offers habitat not found round the A52, making it interesting for other species. AH considered that the A52 pits and Blotts Pits are of considerable importance for wader passage and summer migrants.</p>
<p>British Trust for Ornithology, Breeding Birds Surveys</p> <p>(Kate Risley),</p> <p>British Trust for Ornithology, Wetland Bird Surveys.</p> <p>(Neil Calbrade)</p>	<p>KR could not provide any breeding bird information for the Holme Pierrepont complex.</p> <p>The Holme Pierrepont has been subject to wetland bird survey for a number of years. This information can be obtained from the BTO at a cost.</p>
<p>Campaign to Protect Rural England</p> <p>(Carol Collins)</p> <p>Response from public exhibition</p>	<p>Thank you for putting on this event and for inviting CPRE to attend the morning session, which was useful.</p> <p>One comment we would make is that there seemed to be no mention of the effects which the creation of a link between the existing Canal and the Trent would have on the rest of the Canal across the Vale of Belvoir - or indeed on the countryside and villages through which it passes. Whilst we understand that the Green Infrastructure Study has to be limited to a specific area, and that most of the Canal is beyond that area, we feel that the study should take account of the fact that there may be constraints imposed by the necessity to conserve the existing biodiversity of the Canal corridor and the desire of residents of villages along the corridor to preserve the tranquility of their countryside. In planning for a marina at Cotgrave, for instance, the fact that the amount of boat traffic up a restored Grantham</p>

	Canal may have to be limited to prevent damage to the ecosystem of the more sensitive stretches is a relevant piece of information, but there seemed at the exhibition to be no awareness of the recently completed Ecological Study which made recommendations on this?
Wildlife Trust (Valerie Holt) Response from public exhibition	<p>Thank you for the opportunity to discuss issues with you. You will be aware that a baseline ecological survey has been carried out from A52 to Grantham and I hope your ecologist will be using this for assessment of the conservation value of the canal from A52 to Cotgrave, using the information & recommendations given for any new cut of canal, particularly in-line and off-line reserves.</p> <p>In relation to the route options it would seem only 1 & 2 have any future, but both cut through sites of importance for NC. The NWT would prefer the 'purple' route, the off-shoot from option 1, that would see the creation of a marina and development between the railway line and Radcliffe on Trent.</p> <p>As chair of the Grantham Canal Partnership Environmental Sub-Committee I would hope that we, as a group, will be able to have dialogue with you on all conservation issues.</p>
Nottinghamshire Wildlife Trust (Gaynor Jones Jenkins) South & West Notts Conservation Officer	<p>The trust have made reference to each of the options either bisecting or affecting Sites of Importance for Nature Conservation (SINC).</p> <p>Option 1, Holme Pierpoint – will result in the direct loss of SINC site to the north, and would not allow adjacent habitat creation without further loss of habitat of county importance. They identify agricultural land to the south as an opportunity for habitat creation.</p> <p>Option 2, would impact on the Gamston Pits SINC – an extensive area of open water, marsh, scrub and wood land habitats, and would entail the loss of county important habitats and would not allow for adjacent habitat creation, but possibilities of mitigation are as per option 1.</p> <p>Option 3 is stated as producing the least environmental damage by virtue of being the shortest route; however, this option affects the Adbolton Ponds SINC and the Grantham Canal to river Trent SINC. Due to the route entering the canal at an earlier point a loss of plant communities is expected, which are the SINC's primary feature. Mitigation may be problematic due to the urban nature of the area.</p> <p>Option 4 (disused railway line between Ratcliffe on Trent and Cotgrave colliery) is stated as having the least impact on biodiversity as it affects the smallest area of SINC (Cotgrave Colliery) and also allows adjacent habitat creation. However, the trust identifies the great ecological interest of disused railway lines and will require full ecological data for the route and adjacent habitats, to make a decision on its suitability.</p> <p>With respect to habitat creation or mitigation the trust would expect the loss of invertebrate habitat, aquatic and marginal</p>

	<p>vegetation to be mitigated through the provision of additional adjacent water bodies.</p> <p>Loss of species rich grassland should be mitigated by replacement at a 2:1 ratio to compensate for temporary loss and disturbance. This would also apply to loss of hedgerows, trees and scrub.</p>
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APPENDIX 2

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APPENDIX 2 RIVER CORRIDOR DESCRIPTIONS

River Trent

The River Trent is one of the major rivers in England. Its source is in Staffordshire, it flows through the Midlands until it joins the River Ouse at Trent Falls to form the Humber Estuary which empties into the North Sea at Hull. The Trent is 298km in length with an average discharge rate (at Colwick, Nottingham in the centre of the study area) of 85 m³/second.

This section should be read in conjunction with the River Corridor Overview (Figure 2.2.1) and River Corridor Survey Figures (Figures 2.2.1 to 2.2.6). The survey was carried out from the footpath on the southern side of the river which is referred to as the Right Hand Side (RHS) of the river bank in accordance with Figures 2.2.1 to 2.2.6. The four canal link options would connect to the River on the RHS.

River Trent Section 1



Plate 1 Section 1 Upstream (left)



Plate 2 drain into Trent (right)

Location:

Please refer to the River Corridor Overview (Figure 2.2.1) and River Corridor Survey Figures 2.2.2 for this section.

This section starts on the western boundary of the site study area at OS 459500, 338600 and ends at the start of Section 2 (see below). The river flows in a north easterly direction and meanders round to an easterly direction for the remainder of the section. The section ends west, just west of the option 3 connection area (included in Section 2 below). Section 1 is approximately 500m in length.

Physical Channel Characteristics

The channel is wide (approx 30m) and, as a large river, likely to be deep (1.5-5m) (although this was not verified during survey). The channel is largely symmetrical. The banks have a shallow gradient across the bank zone (comprising a 5m swathe of tall herb/grassland), but become steeper (up to 40°) at the water's edge. Approximately a 100m section of the LHS bank is artificial bank for boat mooring associated with the yacht club (see Plate 1).

The substrate is predominantly silt.

There is a drain which runs across the adjacent amenity grassland on the RHS into the River (see Plate 2).

Aquatic Zone

No aquatic plants were noted, however access to the aquatic zone was restricted due to dense bankside vegetation.

Marginal Zone

Access to water's edge to inspect marginal vegetation on the RHS was restricted due to dense bankside vegetation (see below), however marginal plants were clearly visible at the discharge point of the field drain on the RHS (Plate 2). This included reed sweet grass (*Glyceria maxima*), reed canary grass (*Phalaris arundinacea*) and Himalayan balsam (*Impatiens glandulifera*).

One patch of emergent vegetation was visible on the far side of the bankside vegetation, which appeared to be reed sweet grass and reed canary grass. It is likely that more patches of marginal vegetation were present but not visible from the footpath and therefore not recorded.

Patches of marginal vegetation were visible on the LHS bank through binoculars, however it was not possible to determine species at this distance from the RHS bank (approx 40m).

Bank Zone

The RHS bankside vegetation comprises a dense 5m strip of tall herb/grassland, and scattered scrub. This is dominated by false oat grass (*Arrhenatherum elatius*), cock's foot (*Dactylis glomerata*), Himalayan balsam, common nettle (*Urtica dioica*). Other species include great willowherb (*Epilobium hirsutum*), common hogweed (*Heracleum sphondylium*), mugwort (*Artemisia vulgaris*) and cleavers (*Galium aparine*). Patches of willow scrub and trees (*Salix* spp.) and bramble (*Rubus fruticosus* agg) also occur along the bankside.

The LHS bankside vegetation appears to be similar to the RHS with a 5m swathe of tall herb/grassland, scrub and trees, however it was not possible to verify species from the RHS of the river.

Adjacent Land Use

The RHS adjacent land use is amenity grassland at the start of the section (Trent Fields) and tall semi improved grassland in the second half of the section. The amenity grassland and semi improved grassland is separated by a hedgerow, fence and gate. A footpath and cycle track is present throughout the section between the bank zone and the grasslands.

The LHS adjacent land use is a yacht club with associated buildings, hard standing and amenity grassland.

Ecological Assessment

As a major river, the River Trent serves an important function as an ecological corridor throughout the study area, and potentially on a wider county level. The Trent River Park Stage One Stakeholder and Baseline Report (2008) identifies protected natural environments of the River Trent Corridor, and the role of the Trent in connecting important nature conservation sites such as the Trent Valley Washlands and Attenborough Nature Reserve (approximately 5km west of the study area) to more rural areas of the Trent up to 5km east of the study area, including Gunthorpe Gravel Pits. The role of the Trent as an ecological corridor is relevant to a range of species associated with the aquatic, marginal and bank zones (described below).

This section of the Trent is subject to high level disturbance from recreational users both within the aquatic zone (boats) and along the banks (boat mooring, cycling, walking, dog walking, fishing) and may therefore have less ecological value than less disturbed areas of the river to the east (Sections 4 and 5). Nevertheless there is potential for protected species to be present within this section.

Consultation with the Environment Agency highlighted that the Trent is a river known mainly for its coarse fish population. The coarse fish species found within the Trent around Nottingham are (in alphabetical order): Barbel (*Barbus barbus*), bleak (*Alburnus alburnus*), bream (common & silver) (*Alburnus alba*), chub (*Leuciscus cephalus*), dace (*Leuciscus leuciscus*), eel (*Anguilla anguilla*), gudgeon (*Gobio gobio*), lamprey (*Lampetra planeri*), minnow (*Phoxinus phoxinus*), perch (*Perca fluviatilis*), pike (*Esox lucius*), roach (*Rutilus rutilus*), rudd (*Scardinius erythrophthalmus*), ruffe (*Gymnocephalus cernua*), salmon (*Salmo salar*), loach (*Noemacheilus barbatulus* and *Cobitis taenia*) (stone & spined), stickleback (*Gasterosteus aculeatus*) (3 & 10 spined), tench (*Tinca tinca*), zander (*Stizostedion lucioperca*).

There are populations of anadromous (salmon, river/sea lamprey) and catadromous (eels) fish but due to physical barriers, their distribution within the catchment is limited. Salmon (local BAP species) migrate into the Trent and then move upstream to the River Dove and Upper Trent to spawn. This occurs between the months of October to December. The smolts then migrate back out to sea March to May.

The banks, marginal vegetation and swathe of unmanaged grassland, herbs and linear scrub provide food, foraging and shelter potential for small mammals, including water vole. There are water vole records throughout the River Trent and its tributaries, and the steep banks provide burrowing potential for water vole in this section. This includes the drain which connects to the Trent on the RHS.

The strips of emergent vegetation, dense bankside vegetation and linear scrub and mature trees provide shelter and foraging potential for otter. Additionally fish present in the river provide a potential food source. There is limited obstruction along the banks of the river in this section other than small sections of artificial bank providing less shelter than the more semi natural areas. This would allow otters to run along the river bank. There are records of otter on the Trent within the study area.

There are bat records throughout the River Trent area, although no known bat roost. Mature trees occur throughout the banks of the Trent. Whilst no mature trees along the bank would be directly lost by the options, mature trees near to the direct impact zone will require further assessment on their potential to support roosting bats if there is a possibility of disturbance through construction. Additionally the river corridor provides linear foraging areas for bats.

The river corridor provides habitat potential for a range of bird species (both resident and migrants) in the marginal (emergent vegetation) and in the bank zones (tall herb/grassland, scrub and trees). This type of habitat will provide both breeding and over-winter cover for both Schedule 1 and Red List species e.g. reed bunting, yellowhammer and kingfisher. This habitat will also support a wide range of summer migrants such as whitethroat, lesser whitethroat, blackcap, garden warbler, grasshopper warbler, sedge warbler, reed warbler and willow warbler. It is also envisaged that due to climate change, this habitat has the potential to support Cetti's Warbler in the future, as their breeding range is currently expanding northwards.

The emergent vegetation and swathe of tall herb/grassland on the riverbank provide a nectar source for invertebrates which in turn are valuable for bats and birds.

Colwick Country Park Local Wildlife Site is present on the LHS of the river corridor. The Nottingham Site Alert List describes the site as having '*a good mixed habitat assemblage primarily of vertebrate zoological interest, but also of value for its invertebrate and plant communities*'.

River Trent Section 2



Plate 3 Option 3 connection at River Trent upstream (left) Plate 4 downstream (right)

Location:

Please refer to River Corridor Overview (Figure 2.2.1) and River Corridor Survey (Figures 2.2.3).

This Section starts at OS 459800 338600 at the Option 3 connection point and ends at the start of Section 3 (see below) just before the Option 2 connection point. The river flows east at the start of the section, but soon meanders sharply to the south east. The length of this section is approximately 700m.

Physical Channel Characteristics

The physical channel remains the same as Section 1, however there is no artificial bank on the LHS other than a slipway and landing stage. Also the gradient in this section is slightly steeper than Section 1 on both sides (up to 60° in places).

Aquatic Zone

A patch of yellow water lily (*Nuphar lutea*) was noted in the middle of the section on the RHS.

Marginal Zone

Patches of emergent vegetation were visible throughout the RHS, wherever access was possible through dense bankside vegetation to examine the water edge. Species were dominated by reed canary grass, reed sweet grass, branched bur reed (*Sparganium erectum*) and Himalayan balsam.

Small patches of emergent vegetation were visible on the LHS however it was not possible to verify species from the RHS of the river.

Bank Zone

As per Section 1, there is a 5m swathe of tall grassland, herbs and scattered scrub on the bank zone, or a similar species composition. Additional elder (*Sambucus nigra*) scrub was noted.

The LHS bankside vegetation appears to be similar to the RHS with a 5m swathe of unmanaged grassland, scrub and trees, however there are a greater number of mature

broadleaf trees present. It was not possible to verify the grass, herb or tree species on the LHS.

Adjacent Land Use

The RHS adjacent land use is semi-improved grassland, which is fenced off from the public footpath. The footpath continues throughout this section approximately 5m from the unmanaged grassland.

The LHS adjacent land use is Colwick Country Park Local Wildlife Site. This area comprises lakes surrounded by woodland, amenity grassland and buildings (Colwick Hall). A footpath is visible alongside the river bank.

Ecological Assessment

The ecological value of Section 2 is very similar to Section 1 of the River Trent, and there are similar levels of recreational disturbance. In summary:

- The Colwick Country Park Local Wildlife Site is present on the LHS of the river. Wildlife from this local wildlife site may use this section of the Trent;
- the structural diversity of emergent and bank zone vegetation is valuable for a good range of invertebrates, which in turn support bats and birds;
- this section has potential for water vole, otter, bat (foraging and roosting) and breeding birds; and
- the Trent serves a valuable role as a wildlife corridor through the county.

River Trent Section 3



Plate 5: Option 2 connection point (left)



Plate 6 central section (right)

Location

Please refer to River Corridor Overview (Figure 2.2.1) and River Corridor Survey Figures 2.2.4.

This section starts at OS 460500 338500 at Option 2 connection point and ends at the Holme Pierrepont car park at OS 461000 338600. At the start of this section the river flows east, and then immediately meanders north east for the remainder of the section. The length of this section is approximately 600m.

Physical Channel Characteristics

The physical channel remains largely the same as Section 2, with steep 60° gradient from the bank zone into the water. There is approximately 200m of artificial bank on the RHS associated with the sailing club and includes a boat ramp. There is also a wooden fishing platform adjacent to the car park at the start of the section.

There is a drain which connects to the River between the Option 2 connection point and the sailing club. This drain is clogged up with marginal vegetation (see below).

Aquatic Zone

A patch of yellow water lily was noted at the Option 2 connection point on the RHS (see plate 5).

Marginal Zone

Patches of emergent vegetation were visible throughout the RHS wherever access was possible through dense bank side vegetation to examine the water edge, including around the boat ramp (Plate 5) and the bridge over the ditch adjacent to Option 2. As per Sections 1 and 2, emergent species were dominated by reed canary grass, reed sweet grass, branched bur reed and Himalayan balsam.

Small patches of emergent vegetation were visible on the LHS however it was not possible to verify species from the RHS of the river.

Bank Zone

The 5m swathe of unmanaged grassland herbs and scattered scrub on the bank zone continues from Sections 1 and 2 with similar species composition.

The LHS bankside vegetation appears to be similar to the RHS with a swathe of unmanaged grassland, scrub and trees. Some willows were noted, however it was not possible to verify the grass, herb or other tree species on the LHS.

Adjacent Land Use

The RHS adjacent land use is sailing club (including buildings, hard standing and amenity grassland), a sports ground (amenity grassland) and a sandy car park. The footpath and cycle track continues throughout this section separating the bank zone from adjacent land use.

As per Section 2 the LHS adjacent land use is Colwick Country Park Local Wildlife Site with lakes, woodland and amenity grassland. Towards the end of the section is a Marina with landing stages. A footpath is visible alongside the river bank.

Ecological Assessment

The ecological value of Section 3 is very similar to Sections 1 and 2 of the River Trent, and there are similar levels of recreational disturbance. In summary:

- The Colwick Country Park Local Wildlife Site designation is present on the LHS of the river;
- the structural diversity of emergent and bank zone vegetation is valuable for a good range of invertebrates, which in turn support bats and birds;
- this section has potential for water vole, otter, bat (foraging and roosting) and breeding birds. This includes the drain which connects to the Trent on the RHS. Additionally there is a water vole record on the Option 2 connection point; and
- the value of the Trent as a wildlife corridor through the county should also be noted.

River Trent Section 4 (Eastern area of Site Boundary)



Plate 7: secluded fishing area



Plate 8 steep banks/artificial protection on LHS

Location

Please refer to River Corridor Overview (Figure 2.2.1) and River Corridor Survey Figures 2.2.5.

This section starts at OS 462300 340200 at the northern most point of the River Trent within the study area, and ends just before Option 1 connection point, which is included in Section 5 (below). At the start of this section the river flows east, and meanders immediately south east for the remainder of the section. The length of this section is approximately 300m.

Physical Channel Characteristics

The physical channel characteristics are similar to Sections 1-3 at the western side of the study area. The river is wide (approx 30m) and likely to be deep (1.5-5m) in the centre with steep 60° gradient slopes from the bank zone into the water. There are regular tracks and steps leading down to secluded fishing areas (see plate 7).

On the LHS the bank zone gradient is steeper in places (80°) particularly around the industrial areas. Small sections here have artificial cement bank protection (see plate 8).

The substrate is silt.

Aquatic Zone

No aquatic plants were visible in this section, however access to the water's edge to search for aquatic plants was restricted by dense bankside vegetation.

Marginal Zone

Patches of marginal vegetation were visible at two points of this section on the RHS. As per Sections 1-3, species were dominated by reed canary grass, reed sweet grass, branched bur reed and Himalayan balsam. Additionally bulrush (*Typha latifolia*) and common reed (*Phragmites australis*) were noted. Occasional patches of sedge (*Carex* spp.) and rush (*Juncus* spp.) were noted, however it was not possible to access these patches through dense bankside vegetation in order to verify species.

Small patches of emergent vegetation were visible on the LHS however it was not possible to verify species from the RHS of the river

Bank Zone

As per Sections 1-3, the bank zone comprises a dense swathe of unmanaged grassland, herbs and scattered scrubs. This is dominated by false oat grass, cock's foot, nettles, Himalayan balsam and great willowherb. Additionally rough chervil (*Chaerophyllum temulum*) and Russian comfrey (*Symphytum uplandicum*) are abundant in this section. Scrub and trees are dominated by willows.

The LHS bank zone comprises a swathe of unmanaged grassland similar to the RHS, although this appears to be slightly narrower (approx 3m). A large bund separates the LHS bank zone from the adjacent industrial estate. It was not possible to verify species, although hedge bindweed (*Calystegia sepium*) was visible.

Adjacent Land Use

The RHS adjacent land use is Holme Pierrepont National Water Sports Centre and Country Park nature reserve and Rowing Lake, also a Local Wildlife Site. This comprises two large water bodies, scrub, woodland and amenity grassland. The footpath and cycle track continues throughout this section, however this is a strip of mown grass rather than the well used track present in the Sections 1-3. .

Colwick Industrial Estate is located on the LHS and comprises associated buildings, hard standing, and amenity grassland. This area is fenced off from the bank zone of the river.

Ecological Assessment

More incidental wildlife was noted during survey including:

- A fox was seen scratching itself on the bank of the Trent on the LHS;
- Two pairs of swans with cygnets were noted in this section;
- During the survey two fishermen, who had been camping adjacent to the river, said they had seen a kingfisher in the morning and showed a digital photograph of the kingfisher perched on a fishing rod.

The RHS of the River Trent includes the Holme Pierrepont Country Park Local Wildlife Site designation which is described in the Nottinghamshire Site Alert List as '*A valuable mosaic of carr, scrub, marginal and open-water habitats around a series of old gravel workings*'. This Local Wildlife Site is considered to be valuable for birds, which may use the Trent as a corridor.

Section 4 of the Trent is considered to have more potential for protected species, particularly on the RHS (survey side) due its Local Wildlife Site designation, than Sections 1-3. Additionally it is located further away from the urban areas of Nottingham and is subject to less recreational use (other than fishing), resulting in less disturbance. Protected species potential in this area includes water vole, otter and bats (roosting and foraging). Additionally the structural diversity of the riparian corridor provides for a good range of invertebrates.

River Trent Section 5 (Eastern side of study area)



Plate 9 Option 1 connection point upstream (left) Plate 10 adjacent bank zone/footpath

Location

Please refer to River Corridor Overview (Figure 2.2.1) and River Corridor Survey Figures 2.2.6.

This section starts at OS 462800 340100 at the Option 1 connection point where the river flows south east, and ends at OS 463200 339700 where the river meanders to the east. The length of this section is approximately 600m.

Physical Channel Characteristics

The physical channel characteristics are similar to Section 4, but both sides appear to have slightly steeper gradients (approximately 80°) connecting the bank zone to the water.

Aquatic Zone

No aquatic plants were visible in this section, however access to the water's edge to search for aquatic plants was restricted by dense bank side vegetation.

Marginal Zone

Small patches of marginal vegetation are visible on the RHS where access to the water's edge was possible through fishing platforms. As per Sections 1-4 this is dominated by reed sweet grass, reed canary grass and branched bur reed.

Patches of marginal vegetation were visible on the LHS, but it was not possible to verify the species.

Bank Zone

As per Sections 1-4, the bank zone comprises a dense swathe of tall herb/grassland, and scattered scrub. The species here are the same as Section 3, however there is a greater density of scrub dominated by bramble and willow. Additional perennial ryegrass (*Lolium perenne*) was noted.

As per Section 3, the LHS bank zone comprises a thin swathe of unmanaged grassland adjacent to a large bund, which separates the bank zone from the adjacent industrial estate.

Adjacent Land Use

The RHS adjacent land use comprises a series of lagoons associated with Holme Pierrepont National Water Sports Centre. Dense scrub and tall herbs separate this adjacent land from the footpath adjacent to the bank zone (see plate 10).

Colwick Industrial Estate continues on the LHS with associated buildings, hard standing, and amenity grassland. This area is fenced off from the bank zone of the river.

Ecological Assessment

The ecological value of Section 5 is very similar to Section 4 of the River Trent. In summary: Holme Pierrepont Local Wildlife Site is a valuable site for birds and includes the RHS of the river corridor. This area is reasonably undisturbed and provides potential for protected species including water vole, otter, bat (foraging and roosting) and breeding birds. Additionally the value of the Trent as a wildlife corridor through the county should also be noted.

Polser Brook

Polser Brook (South A52) (within Option 1 direct impact zone)



Plate 11 at Arable Farm Track Bridge



Plate 12 midway through section

Location

Please refer to River Corridor Overview (Figure 2.2.1) and River Corridor Survey Figures 2.2.7.

This section starts at a small arable farm bridge over Polser Brook OS462500, 337400, and ends at Polser Bridge at the A52 OS462400 338000. The majority of this section falls within the direct impact zone of Option 1. The length of this section is approximately 500m.

The survey was carried out from arable field margin on the LHS.

Physical Channel Characteristics

The first half of this section flows in a steady north west direction, meandering round to a north direction just before Polser Bridge.

The channel is reasonably narrow (5m across the aquatic zone, 10m from bank top to bank top), largely symmetrical with steep banks (<60° gradient). The banks are approximately 3m high.

The substrate is silty.

The flow of water is steady and slow with occasional pools.

Aquatic Zone

A small amount of common duckweed (*Lemna minor*) was noted in the channel.

Marginal Zone

Two small patches of emergent vegetation dominated by reed canary grass were noted in this section.

Bank Zone

The arable field margin comprises 2-3 m strip of dense unmanaged grassland and herbs dominated by false oat grass, Yorkshire fog (*Holcus lanatus*), Timothy, (*Phleum pratense*), common nettle, with abundant cleavers, and broad leaved dock (*Rumex obtusifolius*). The ditch is heavily shaded by scrub dominated by bramble, willow and hawthorn (*Crataegus monogyna*). There is a line of mature willow trees along the last part of the section before Polser Bridge.

Adjacent Land Use

The adjacent land use on the LHS is arable field, and on the RHS is a horse paddock.

Ecological Assessment

The steep earth banks provide burrowing potential for water vole. Additionally the marginal vegetation, and strip of tall grass and herbs on the bank zone, provide a potential food source for water vole. Polser Brook has habitat connections to both Grantham Canal and River Trent which have water vole records. Consultation with Rushcliffe Borough Council confirmed water vole presence on Polser Brook. A more detailed water vole survey is required to confirm water vole presence in this section. In the absence of such a survey it should be assumed that water vole are present.

Fish were visible in the water of the brook, however it is not known what species. The Environment Agency was unable to confirm what species of fish occur within Polser Brook. The brook is connected to the Trent and Grantham Canal, so fish species within these water courses may have connections to Polser Brook.

There is an otter record on Grantham Canal, which shares habitat connection to this section of Polser Brook. The presence of scrub and trees provide potential shelter for otter, and the presence of fish provide a potential food source. DMRB Vol 10, 4(Part 4) states that 'It is important to recognise any watercourse as a habitat and wildlife corridor, along which many species may disperse or migrate and that all watercourses have potential as otter habitat'.

There are mature trees within this section which require further assessment for their bat roosting potential. Additionally, this section of Polser Brook provides a linear foraging route for bats.

Polser Brook (North A52) (off Option 1 and Option 2)



Plate 13 Typical Cross Section (left) Plate 14 Cobbles Pebbles Substrate (right)

Location

Please refer to River Corridor Overview (Figure 2.2.1) and River Corridor Survey Figures 2.2.8.

This section starts approximately 50m north of Polser Bridge at OS462400 338100, where Polser Brook meanders sharply to the east, and ends shortly after the woodland at OS462500 338200. Whilst this section of Polser Brook is not within any direct impact areas of the Trent Link Options, it is downstream of the direct impact area of Option 1 on Polser Brook (described above). The length of this section is approximately 300m.

The survey was carried out from the footpath on the LHS of the brook.

Access was not possible between Polser Bridge and this section due to heavy scrub. The channel in this section appeared to be clogged up with branches and debris.

Physical Channel Characteristics

This is a reasonably straight section flowing north east.

The channel is largely symmetrical with a width ranging from between 5m to 10m. Banks are shallow throughout the bank zone (30°) becoming steep at the water's edge (80° gradient and overhanging in places). Banks are approximately 2m high.

The substrate is silty with cobbles, pebbles and boulders (see plates 13 and 14). There are occasional small silty beaches at a meander.

The flow of water is slow and with frequent static pools particularly around debris dams. Water trickles through the debris dams forming faster riffles in these places.

Aquatic Zone

There were no aquatic plants within this section during the survey.

Marginal Zone

There were no marginal plants within this section during the survey.

Bank Zone

This section is heavily overshadowed by trees and scrub on the bank zone, dominated by hawthorn, bramble and willow with some elder and ash (*Fraxinus excelsior*). There are common nettles and ivy (*Hedera helix*).

Adjacent Land Use

The LHS adjacent land use is arable fields at the start of the section, leading to broadleaved woodland. A footpath is present adjacent to the brook through this section.

The RHS adjacent land use is arable fields.

Ecological Assessment

The ecological value of this section of Polser Brook (north A52) is similar to the value of the section of Polser Brook south of A52. In summary there is potential for water vole, otter and bat (roosting and foraging). This southern section of Polser Brook is closer to Grantham Canal, which has records of water vole and otter. A more detailed survey is required to confirm whether these species are present and, as a minimum, it should be assumed that these species disperse or migrate through this section.

Additionally the overhanging banks, cobbles and roots of woody vegetation and leaf litter provide potential white clawed crayfish shelter. Also the soft earthy banks provide burrowing potential.

Drain off Polser Brook (North A52) (within Option 2 direct impact zone)



start of section



Plate 16 typical cross section

Plate 15

Location

Please refer to River Corridor Overview (Figure 2.2.1) and River Corridor Survey Figures 2.2.9.

This section starts approximately 50m north of Polser Bridge at OS462400 338100, where Polser Brook meanders sharply to the east, and ends at the end of the field drain at approximately OS 462200, 338600. The full length of this field drain is within the direct impact area of Option 2 and was therefore selected for survey. The length of this section is approximately 500m.

The survey was carried out from the footpath on the LHS of the brook.

Physical Channel Characteristics

This is a reasonably straight section flowing north west.

The channel is largely symmetrical with a width of approximately 5m between banks. Banks are steep (approximate 60° gradient), and approximately 2m high.

The channel is largely dry other than a small puddle at the start of the section (see plate 15). The substrate at this section appears silty and cobbly, but throughout the remainder of the section is dry silt (see plate 16).

Aquatic Zone

There are no aquatic plants in this section.

Marginal Zone

There are no marginal plants in this section.

Bank Zone

This section is heavily shaded by trees and scrub dominated by willow, hawthorn and bramble. There is a dense swathe of common nettle between the footpath and the ditch on the LHS.

The RHS bank zone comprises a dense, overgrown/overhanging hedge dominated by hawthorn.

Adjacent Land Use

The adjacent land use on both sides is hay field or silage. The fields were being cut during survey.

Ecological Assessment

As a dry ditch there is no aquatic species potential in this area. The dense scrub and mature trees however provide nesting potential for birds, and roosting/foraging potential for bats.

Grantham Canal (Option 1 connection point)



Plate 17 Grantham Canal (west from bridge at Bassingfield) (left)

Plate 18 dry field drain connecting Grantham Canal to Polser Brook (right)

Location

Please refer to River Corridor Overview (Figure 2.2.1) and River Corridor Survey Figures 2.2.10.

The section of Grantham Canal surveyed includes approximately 200m either side of the Option 1 connection point from OS 461900, 337100 to OS 462200 337000. The length of this section is approximately 400m.

Physical Channel Characteristics

The Grantham Canal is a contour canal largely following the topography of the surrounding landscape, and is characterized by long pounds flowing broadly east to west through gently rolling, low-lying agricultural land.

This section of canal runs north east past the village of Bassingfield where it turns sharply south running south east.

The canal width is approximately 12m, and a probable depth of approximately 1.5m although this may have been reduced by siltation (this was not verified during survey).

Dense marginal and bankside vegetation restricted a thorough inspection of the canal banks. ECUS (2007) state that the offside (non towpath side) of Grantham Canal is soft grassed earth banks. There may be some artificial structure on the towpath side, however this was not visible through the dense marginal and bankside vegetation.

The OS plan indicates a field drain providing a habitat connection from Grantham Canal to Polser Brook within the direct impact zone of Option 1. This field drain is dry (see plate 18).

Aquatic Zone

The aquatic and marginal habitats of Grantham Canal are characterized by still or slow-flowing nutrient rich waters.

The canal was blanketed with common duckweed during survey.

Marginal Zone

Emergent vegetation lines the sides of the canal. Species are dominated by greater pond sedge (*Carex riparia*), hard rush (*Juncus inflexus*) branched bur reed and common reed.

Bank Zone

Tall grass, herbs and scrub occupy the bank zone. Grasses are dominated by false oat grass and Yorkshire fog. Herbs include great willowherb, common nettle, woundwort (*Stachys* sp) and yarrow (*Achillea millefolium*). Scrub includes butterfly bush (*Buddleja davidii*), hawthorn, willow and bramble.

Adjacent Land Use

The adjacent land use on both sides is arable fields. These are likely to be associated with a number of farms in the village of Bassingfield on the LHS (Lea Farm, The Elms farm, Manor Farm, Holly Farm).

On the RHS, Nottingham airport is located beyond arable land.

Ecological Assessment

This section of canal is suitable for water vole with earthed banks, grass, herb and marginal vegetation supplying food, foraging, shelter and protection.

An otter record was provided by the local records centre for this area of the canal. A search was carried out for otter spraint but no evidence of otter was found. However it should be assumed that otter use this section of the canal for dispersal and migrating as a minimum.

A mammal run was observed on the LHS, which may have been badger, however no other signs were noted. ECUS (2007) noted a 'smell of badger' in the area when carrying out the habitat survey of the canal.

No trees with potential to support roosting bats were noted in this section.

The adjacent scrub and emergent reeds provide nesting potential for breeding birds. A moorhen and coot were noted during the survey.

Grantham Canal (Option 3 connection point)

A River Corridor Survey was not carried out on this section due to time constraints. However a brief visit was made to this section and photographs were taken to document character.



Plate 19 and 20 Grantham Canal on A6011 (north)



Plate 21 and 22 Grantham Canal on A6011 (south)

As a man-made structure the physical dimensions of the canal are roughly consistent with the section of Grantham Canal Surveyed (at the option 1 connection point). Consultation with British Waterways has confirmed that ecological value of this area is lower than the sections of canal further east, due to high level of cover by duckweed which blankets the surface, and minimal water flow.

Species present are common nettle, bulrush, false oat grass, common couch (*Elytrigia repens*), hedge bindweed (*Calystegia sepium*) hedge mustard (*Sisymbrium officinale*) and great willowherb.

APPENDIX 3

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APPENDIX 3 SUMMARY OF HABITAT REQUIREMENTS FOR PROTECTED SPECIES

Great crested newt (*Triturus cristatus*)

Great crested newts spend much of the year on land where they need a variety of different conditions to provide food, shelter and places to spend the winter. Like all amphibians, great crested newts rely on water for breeding and for the development of their larvae and so return to ponds in the spring to breed. Eggs are laid singly on underwater leaves near the water margin between late February and early August, but usually between April and June, with each female laying several hundred eggs. The larvae normally take three months to develop into juvenile newts (also known as 'efts') before leaving the water, but some may over-winter as larvae. Juvenile newts disperse up to 1km, only returning to ponds to breed when sexually mature after one to three years. Adult newts leave the ponds from July onwards, generally staying within 200 – 500m of the ponds. From October or November, they hibernate in damp, frost-free environments, sometimes underground.

On land, great crested newts are found in cool, moist conditions under debris or in dense vegetation. They feed both on land and in water, eating small aquatic animals such as water fleas and insect larvae and terrestrial invertebrates, especially worms.

Reptile

Reptiles can be found in a wide variety of habitats including heathland, rough grassland, woodland edges and urban situations such as golf courses, brownfield sites, allotments, gardens, road embankments and railway lines. Reptile species prefer a varied habitat structure with a range of both shady areas as well as sunny spots for basking (apart from slow worms, see below). They also require sheltered areas such as log piles and other sorts of debris and suitable hibernation sites (e.g. tree roots, mammal burrows, piles of leaves and rubble piles).

Slow worm (*Anguis fragilis*)

The slow worm is found in a wide range of open habitats. It tends to take refuge under stones, planks of wood or sheets of corrugated iron in the sun, rather than basking. It is commonly found in gardens and compost heaps, where food is plentiful and the rotting plant material creates warm conditions.

Grass snake (*Natrix natrix*)

While most British reptiles prefer well-drained areas, grass snakes are frequently found near wet habitats where they primarily feed on amphibians. Rivers, canals, ditches and ponds will all be utilised as a feeding resource.

Water vole (*Arvicola terrestris*)

The water vole inhabits many different waterside habitats. They can occur on rivers, canals, ditches dykes, reedbeds, lakes and ponds.

The following habitat preferences are taken from Strachan (1998 and 2006):

- water vole appear to show a relatively high site specificity and this may be tied to the suitability of banks for burrowing, suitable refuge areas above winter flood levels and a year round availability of feeding material;
- abundant water vole populations may be found where the conditions favour slow-flowing watercourse, less than 3m wide, around 1m in depth and do not show extreme fluctuations in water levels;

- permanent water is essential during periods of low flow in summer, while sites that suffer protracted periods (seven days or more) of winter flooding are generally untenable unless nest sites are available above the risen water level;
- water voles may also survive at a few dried out sites but are particularly vulnerable to terrestrial and avian predators;
- shore type is predominantly earth or clay with a stepped or steep bank (usually vegetated rather than bare cliffs) where they can burrow and create nest chambers above the water table;
- water meadows and expanses of wetland also offer habitat for water vole provided that they have tussocks of grass, rush, sedge or reed in which to create a dry nest above the water table;
- the amount of bank side and emergent vegetation cover is very important with the best sites offering a continuous swathe of tall and luxuriant riparian plants (at least 60% bank side ground cover). Sites excessively shaded by shrubs or trees are less favoured;
- where water voles occur in urban situations they appear to be very tolerant of disturbance and may even occupy degraded habitats. They may survive here as there are very few predators present. These sites are obviously sub-optimal and can be enhanced with additional vegetation cover.

Otter (*Lutra lutra*)

Otters prefer rivers and streams which provide good cover and plenty of food. Although good swimmers, swimming is still an inefficient way for otters to move around the countryside. The preferred option is to run along the bank especially if moving upstream, against the flow of water. Otters tend to use a bank that is free of obstructions and it may only have low-lying vegetation with a path indicating its use by otters. They are not restricted to major waterways, but can be found in marshes and on small streams as well as lakes and reservoirs. Their preferred habitat in these areas is one with good vegetative cover, such as scrub with herbaceous vegetation. Reeds and other emergent vegetation have been shown to be an important resource for providing shelter and food. Woodlands also provide plenty of cover with old and fallen trees providing possible holts and a dense understorey providing cover above ground. Ponds, bogs and marshes also provide cover and more importantly, food, mostly amphibians.

Holts are rarely constructed by the otter. Instead the animal utilises any suitable structure within its range such as a hole in the river bank, hollow trees, the crowns of pollarded willows, cavities in rock piles or tree roots, peat tunnels, or some man made structures. Many otters will seek shelter above ground, using couches, which are usually formed from vegetation used as bedding, located in areas of scrub, reed beds or long grass. Large stands of riparian gorse and other scrub or tussock sedge and extensive reedbeds are particularly important habitats. On inland waterways, holts and couches are used to rest during nocturnal foraging and for lying up during the day. They are also important for breeding. Female otters prefer to use areas that are secluded to avoid disturbance and both holts and couches are equally important for this purpose. These areas also tend to be away from main rivers, up to a kilometre on a small tributary, and can also be located up to 500 m away overland.

Each otter has its own home range, which it defends against other individuals of the same sex. The size of these home ranges varies depending on the habitat and food availability and can cover many kilometres, with males averaging 35 km and females

20 km along rivers. This home range will contain the various requirements that the animal needs on a day-to-day basis. It will combine several habitat types, allowing for different food resources at different times of year, areas of cover and sources of fresh water if located near the coast. Most home ranges appear to overlap, but usually conflicts are avoided by the use of spraint as a marker, informing other otters of the presence of a particular individual in the locality.

Badger (*Meles meles*)

Badgers occur within a wide range of habitats in Britain, from sand dunes to upland areas. However, the following generalisations can be made about habitat preferences:

- sandy soils as well as chalk and limestone substrates are preferred to heavy clay soils, as they are generally easier to dig and have good drainage;
- nearly all setts are dug into a slope, as less material needs to be excavated and often rock strata are exposed, increasing the chances that the badger will find a suitable stratum in which to dig;
- cover around the sett should be high to allow badgers to emerge inconspicuously and cubs to play safely out of sight of predators and people. Deciduous woodland, mixed woodland and copses are favoured with coniferous woodland generally only being used when there are no alternatives in the area;
- a variety of food supplies must be available throughout the year. The earthworm is the single most important food item for badgers and is found in high abundance in agricultural systems. Hedgerows are also important foraging areas; and
- altitude is also important with the majority of setts in Britain occurring between 100 and 200m above sea level. Land under 100m tends to be highly cultivated, less well drained and there is more disturbance from humans. At altitudes greater than 200m, food becomes less readily available.

Bats

All bats in the UK eat insects and other invertebrates and have complex ecological requirements. They make use of a diverse array of roosting habitats, including trees, caves, buildings, bridges, tunnels and other structures. Bats are long-lived animals, which are often faithful to particular roost sites. They rely heavily on habitat types that can provide a large biomass of insects, such as woodland or wetland, for feeding (DMRB, 2001).

In winter, bats hibernate in response to a decrease in abundance of their food source (i.e. insects). This period is spent in a 'hibernaculum', often a cool, underground site with high humidity and stable temperatures (DMRB, 2001). Such sites include caves, icehouses, buildings and hollow trees.

The ideal environment for supporting a diverse and abundant bat population would comprise a varied array of suitable seasonal roosting sites (e.g. trees, buildings) and would occur in close proximity to a number of different foraging habitats, supporting an abundance of invertebrate prey.

For most species of bats, such sites must be linked by a more or less continuous network of linear features (such as rivers, woodland edges and hedgerows) along which bats may commute from place to place (Limpens & Kapteyn, 1991).

Each species has its own individual set of roosting and foraging requirements. Urban fringe environments (where large areas of housing border rural or green spaces) are particularly successful in attracting large numbers of more common bat species (e.g. common and soprano pipistrelle (*Pipistrellus pipistrellus*) and brown long eared bats (*Plecotus auritus*) through the provision of large numbers of suitable roosting sites (i.e. buildings) in close proximity to suitable foraging areas. Species that are less common or rare (e.g. bechsteins (*Myotis bechsteini*) or barbastelle (*Barbastella barbastellus*)) may be closely tied to more rural environments and less common habitats (e.g. ancient woodlands).

Harvest Mouse (*Micromys minutus*)

Harvest mice inhabit hedgerows and reed beds and other areas of tall, dense vegetation. Breeding nests are built in stems high above the ground. The spherical nests are made from woven grass and are about 10cm in diameter. Non-breeding nests are smaller (5cm in diameter) and may be built closer to the ground or in buildings.

Barn Owl (*Tyto alba*)

Barn owls require rough grassland with good populations of rodents, especially voles. Field edges, the edges of watercourses and grass strips alongside woods provide ideal hunting habitat. Recent studies suggest that a pair of owls require about 20-25 km of edge, with several suitable roosting sites, although this will vary in different parts of the country.

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APPENDIX 4

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APPENDIX 4 RELEVANT NATURE CONSERVATION LEGISLATION

Breeding Birds

The Wildlife and Countryside Act (1981) (as amended) makes it an offence (with exception to species listed in Schedule 2) to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built (barn owls do not 'build' a nest but may make a nest scrape);
- intentionally take or destroy the egg of any wild bird;
- have in one's possession or control any wild bird, dead or alive, or any part of a wild bird, which has been taken in contravention of the Act or the Protection of Birds Act 1954;
- have in one's possession or control any egg or part of an egg which has been taken in contravention of the Act or the Protection of Birds Act 1954;
- use traps or similar items to kill, injure or take wild birds;
- have in one's possession or control any bird of a species occurring on Schedule 4 of the Act unless registered, and in most cases ringed, in accordance with the Secretary of State's Regulations; and
- intentionally or recklessly disturb any wild bird listed on Schedule 1, while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Section 1 (5)(a), as amended by the Countryside and Rights of Way Act, 2000 (CROW), creates the offence of recklessly disturbing any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or disturbing dependent young of such a bird.

The Secretary of State may also designate Areas of Special Protection (subject to exceptions) under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) to provide further protection to birds.

Bats

All bat species and their roosts are protected in the UK under Schedules 5 & 6 of the Wildlife and Countryside Act 1981 (as amended). These make it an offence to:

- intentionally kill, injure or take any bat;
- intentionally or recklessly damage or destroy or obstruct access to any structure or place which any bat uses for shelter or protection (at any time even when the animal is not there);
- intentionally or recklessly disturb a bat whilst it is occupying such a structure or place which it uses for that purpose

All bat species are further protected by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) which makes it an offence to:

- deliberately capture, injure or kill a bat;

- deliberately disturb a bat in such a way as to be likely significantly to affect:
 - (i) the ability of any significant group of bats to survive, breed, or rear or nurture their young; or
 - (ii) the local distribution or abundance of that species;
- damage or destroy a breeding site or resting place of a bat.

Water vole

From the 6th April 2008, water voles became subject to increased legal protection and are now fully covered by the provisions of Section 9 of the Wildlife and Countryside Act 1981 (as amended). Legal protection makes it an offence to:

- intentionally kill, injure or take water voles;
- possess or control live or dead water voles or derivatives;
- intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection;
- intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose;
- sell, offer for sale, or advertise for live or dead water voles.

Licences are available from Natural England to allow activities that would otherwise be an offence, including:

- for scientific or educational purposes;
- for the purposes of ringing or marking;
- for conserving wild animals or introducing them into particular areas;
- preserving public health or safety;
- preventing the spread of disease; and
- preventing serious damage to any form of property or to fisheries.

Badger

Badgers and their setts are protected by the Protection of Badgers Act (1992). Under the Act it is illegal to:

- willfully kill, injure or take a badger or attempt to do so;
- cruelly ill-treat a badger;
- interfere with a sett by doing any of the following:-
 - damaging a badger sett or any part of it;
 - destroying a badger sett;
 - obstructing access to a badger sett;
 - causing a dog to enter a sett;
- disturbing a badger while it is occupying a sett.

Disturbance to a badger sett can be caused by working close to a sett (within 30 metres), dependent upon the activities undertaken.

Otter

Otters are 'fully protected' under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and it is therefore subject to the provisions of Section 9, which makes it an offence to:

- intentionally kill, injure or take an otter [Section 9(1)];
- possess or control any live or dead specimen or anything derived from an otter [Section 9(2)];
- intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by an otter. [Section 9(4)(a)];
- intentionally or recklessly disturb an otter while it is occupying a structure or place which it uses for that purpose [Section 9(4)(b)];
- sell, offer for sale, possess or transport for the purpose of sale or publish advertisements to buy or sell an otter [section 9(5)].

A licence is required from Natural England (NE) if the potential to commit an offence exists in order for any development to take place.

Great Crested Newt

Great crested newts are protected under Section 9 of the Wildlife and Countryside Act 1981 (as amended) and Regulation 39 of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (known as the Habitats Regs). Under the Wildlife and Countryside Act it is an offence to:

- intentionally kill, injure or take a great crested newt;
- intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a great crested newt;
- intentionally or recklessly damage disturb a great crested newt while it is occupying a structure or place which it uses for that purpose; and
- possess or control any live or dead specimen or anything derived from a great crested newt.

The inclusion of great crested newts in Schedule 2 of the Habitats Regs as a European Protected Species strengthens the protection of this species by making it an offence to:

- deliberately disturb great crested newts in such a way as to be likely significantly to affect:
- (i) the ability of any significant group of animals of that species to survive, breed, or rear or nurture their young; or
- (ii) the local distribution or abundance of that species;
- deliberately take or destroy the eggs of a great crested newt; or
- damage or destroy a breeding site or resting place of a great crested newt.

Reptile

The six species of reptile in the UK are afforded varying levels of legal protection to reflect their different conservation status. Smooth snake and sand lizard are both

rare, with restricted ranges in southern England, as well as north-west England and north Wales in the case of the sand lizard. These are both 'European Protected Species' and are afforded full protection under the Habitats Regulation 1994 (as amended) and the Wildlife and Countryside Act 1981 (as amended). Taken together, the following are offences, in relation to these two species:

- intentionally or recklessly killing and capturing or intentional injuring;
- deliberately disturbing;
- deliberately taking or destroying eggs;
- damaging or destroying a breeding site or resting place or intentionally damaging or obstructing access to a place used for shelter and protection;
- intentionally obstructing access to a place used for shelter;
- keeping, transporting, selling or exchanging; offering for sale or advertising.

The other four species of reptile are more widespread and are only part protected under the Wildlife and Countryside Act, 1981 (as amended). Under Section 9 of the Act, grass snake, adder, slowworm and common lizard are protected against intentional killing and injuring. Trade in these species is also prohibited under Section 9(5). Offences are tried in a Magistrates' court and the penalties are up to £5000 or a custodial sentence of up to 6 months for each offence committed i.e. each animal affected.

Invertebrates

Several species of insect are covered by legal protection under the Wildlife and Countryside Act 1981 (as amended).

Planning Policy Statement 9 (PPS9) includes a list of plants and animals of principal importance for the conservation of biodiversity in England. This list includes a number of insect species which were included within the UK Biodiversity Action Plan (UKBAP). PPS9 provides guidance on planning policy relating to these species, and notes that the presence of such species should be taken into account when determining planning applications.

Hedgerow Regulations

The Hedgerows Regulations 1997, made under the Environment Act 1995, were introduced in England and Wales in order to protect this characteristic element of the countryside. These Regulations were amended by the Hedgerows (Amendment) (England) Regulations 2002.

The Regulations prevent the removal of most countryside hedgerows without first submitting a hedgerow removal notice to the Local Planning Authority (LPA). The Regulations also set out criteria that must be used by the LPA in determining which hedgerows are important. The LPA may order the retention of important hedgerows.

Under the Regulations, criteria are established that must be used by the LPA in determining which hedgerows are Important. The criteria relate to the value of the hedgerows from an archaeological, historical, landscape or ecological perspective. Hedgerows that are younger than 30 years old are excluded if supporting evidence of age can be provided, as are any hedgerows that mark the boundary of a house.

In addition, the Regulations only apply to hedgerows that are of a certain length. These are:

- hedgerows that are 20 metres or more long; or
- hedgerows that are less than 20 metres long, if they are connected at each end to another hedgerow – thereby forming a continuous network of hedgerows. The length of the adjoining hedgerows is immaterial, the significant factor being the connection; and
- any stretch within one of these hedgerows.

Any hedgerows that are over 30 years old and qualify under any one of the criteria would be termed 'Important'.

In addition to the Regulations, 'ancient and/or species-rich hedgerows' are a priority habitat type under the UK Biodiversity Action Plan (UK BAP). The Countryside and Rights of Way (CROW) Act 2000 places a duty on Government Departments and Ministries to have regard to and promote the conservation, enhancement and restoration of priority habitats.

Priority habitats translate as habitats of 'principal importance' under Planning Policy Statement 9: Biodiversity and Geological Conservation (PPS9). Under PPS9 LPAs are required to conserve, enhance and add to priority habitats.

The network function of hedgerows is recognised at the European level. The Habitats Directive, carried forward in Regulation 37 of the Conservation Regulations 1997, encourages the management of linear features such as hedgerows to aid the 'migration, dispersal and genetic exchange of wild species'.

Arable Plants

The legislative provisions in England for the protection of wild plants are contained primarily in the Wildlife and Countryside Act 1981 (as amended) and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). This legislation affords special protection to a specific list of 'Scheduled' plant species.

In addition, arable plant species also received limited protection under the WCA? Act prohibiting the uprooting of wild plants not listed on a Schedule, unless the uprooting is carried out by the owner or occupier of the land on which the plant is growing, or by someone having their permission to do so, or unless the action is authorised in writing by the appropriate local authority.

The UK Government has recognised the importance of arable plants through the identification of twelve arable plant species, and the cereal field margin habitat itself, as priorities under the UK Biodiversity Action Plan (BAP). Further to this, a specific Arable Plants Group has been set up under the aegis of the UK BAP process (Byfield & Wilson, 2005). Under Planning Policy Statement 9 the UK Government requires Local Authorities to take steps to conserve and enhance species and habitats listed as being of Principal Importance i.e. BAP species and habitats.

APPENDIX 5

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APPENDIX 5: SPECIES LIST AND CONSERVATION STATUS OF BIRDS RECORDED WITHIN THE HOLME PIERREPONT COMPLEX

Species	Scientific Name	BoCC	Wildlife and Countryside Act (1981) Status
Arctic Tern	<i>Sterna paradisaea</i>	Amber	
Barn Owl	<i>Tyto alba</i>	Amber	Schedule 1
Barn Swallow	<i>Hirundo rustica</i>	Amber	
Bar-tailed Godwit	<i>Limosa lapponica</i>	Amber	
Black Tern	<i>Chlidonias niger</i>	Green	Schedule 1
Blackbird	<i>Turdus merula</i>	Green	
Blackcap	<i>Sylvia atricapilla</i>	Green	
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Amber	
Black-necked Grebe	<i>Podiceps nigricollis</i>	Amber	Schedule 1
Black-tailed Godwit	<i>Limosa limosa</i>	Red	Schedule 1
Blue Tit	<i>Cyanistes caeruleus</i>	Green	
Brambling	<i>Fringilla montifringilla</i>	Green	Schedule 1
Bullfinch	<i>Pyrrhula pyrrhula</i>	Red	
Canada Goose	<i>Branta canadensis</i>	Green	
Carrion Crow	<i>Corvus corone corone</i>	Green	
Caspian Gull?	<i>Larus cachinnans</i>	N/A	
Chaffinch	<i>Fringilla coelebs</i>	Green	
Common Buzzard	<i>Buteo buteo</i>	Green	
Common Chiffchaff	<i>Phylloscopus collybita</i>	Green	
Common Pheasant	<i>Phasianus colchicus</i>	Introduced	
Common Pochard	<i>Aythya ferina</i>	Amber	
Common Redshank	<i>Tringa totanus</i>	Amber	
Common Sandpiper	<i>Actitis hypoleucos</i>	Green	
Common Shelduck	<i>Tadorna tadorna</i>	Amber	

Species	Scientific Name	BoCC	Wildlife and Countryside Act (1981) Status
Common Snipe	<i>Gallinago gallinago</i>	Amber	
Common Starling	<i>Sturnus vulgaris</i>	Red	
Common Stonechat	<i>Saxicola torquata</i>	Amber	
Common Swift	<i>Apus apus</i>	Green	
Common Tern	<i>Sterna hirundo</i>	Green	
Common Whitethroat	<i>Sylvia communis</i>	Green	
Coot	<i>Fulica atra</i>	Green	
Cormorant	<i>Phalacrocorax carbo</i>	Amber	
Corn Bunting	<i>Miliaria calandra</i>	Red	
Cuckoo	<i>Cuculus canorus</i>	Amber	
Curlew	<i>Numerius arquata</i>	Amber	
Dunlin	<i>Calidris alpina</i>	Amber	
Dunnock	<i>Prunella modularis</i>	Amber	
Eurasian Teal	<i>Anas crecca</i>	Amber	
Eurasian Wigeon	<i>Anas penelope</i>	Amber	
Eurasian Woodcock	<i>Scolopax rusticola</i>	Amber	
European Golden Plover	<i>Pluvialis apricaria</i>	Green	
Gadwall	<i>Anas strepera</i>	Amber	
Gannet	<i>Morus bassanus</i>	Amber	
Garden Warbler	<i>Sylvia borin</i>	Green	
Garganey	<i>Anas querquedula</i>	Amber	Schedule 1
Glaucous Gull	<i>Larus hyperboreus</i>	Green	
Goldcrest	<i>Regulus regulus</i>	Amber	
Goldeneye	<i>Bucephala clangula</i>	Amber	
Goldfinch	<i>Carduelis carduelis</i>	Green	
Goosander	<i>Mergus merganser</i>	Green	
Grasshopper Warbler	<i>Locustella naevia</i>	Red	

Species	Scientific Name	BoCC	Wildlife and Countryside Act (1981) Status
Great Bittern	<i>Botaurus stellaris</i>	Red	Schedule 1
Great Black-backed Gull	<i>Larus marinus</i>	Green	
Great Crested Grebe	<i>Podiceps cristatus</i>	Green	
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Green	
Great Tit	<i>Parus major</i>	Green	
Greater Scaup			
Green Sandpiper	<i>Tringa ochropus</i>	Amber	Schedule 1
Green Woodpecker	<i>Picus viridis</i>	Amber	
Greenshank	<i>Tringa nebularia</i>	Green	
Grey Heron	<i>Ardea cinerea</i>	Green	
Grey Wagtail	<i>Motacilla cinerea</i>	Amber	
Greylag Goose	<i>Anser anser</i>	Amber	
Herring Gull	<i>Larus argentatus</i>	Amber	
Hobby	<i>Falco subbuteo</i>	Green	Schedule 1
House Martin	<i>Delichon urbica</i>	Amber	
Iceland Gull	<i>Larus glaucoides</i>	Green	
Jack Snipe	<i>Lymnocyptes minimus</i>	Green	
Jackdaw	<i>Corvus monedula</i>	Green	
Jay	<i>Garrulus glandarius</i>	Green	
Kestrel	<i>Falco tinnunculus</i>	Amber	
Kingfisher	<i>Alcedo atthis</i>	Amber	Schedule 1
Lesser Redpoll	<i>Carduelis flammea cabaret</i>	Amber	
Lesser Whitethroat	<i>Sylvia curruca curruca</i>	Green	
Linnet	<i>Carduelis cannabina</i>	Red	
Little Egret	<i>Egretta garzetta</i>	Amber	
Little Grebe	<i>Tachybaptus ruficollis</i>	Green	
Little Gull	<i>Hydrocoloeus minutus</i>	Green	Schedule 1

Species	Scientific Name	BoCC	Wildlife and Countryside Act (1981) Status
Little Ringed Plover	<i>Charadrius dubius</i>	Green	Schedule 1
Long-tailed Duck	<i>Clangula hyemalis</i>	Amber	Schedule 1
Long-tailed Tit	<i>Aegithalos caudatus</i>	Green	
Magpie	<i>Pica pica</i>	Green	
Mallard	<i>Anas platyrhynchos</i>	Green	
Meadow Pipit	<i>Anthus pratensis</i>	Amber	
Mediterranean Gull	<i>Larus melanocephalus</i>	Amber	Schedule 1
Merlin	<i>Falco columbarius</i>	Amber	Schedule 1
Mistle Thrush	<i>Turdus viscivorus</i>	Amber	
Moorhen	<i>Gallinula chloropus</i>	Green	
Mute Swan	<i>Cygnus olor</i>	Amber	
Northern Lapwing	<i>Vanellus vanellus</i>	Amber	
Northern Wheatear	<i>Oenanthe oenanthe</i>	Green	
Oystercatcher	<i>Haematopus ostralegus</i>	Amber	
Peregrine Falcon	<i>Falco peregrinus</i>	Amber	Schedule 1
Pied Wagtail	<i>Motacilla alba yarrellii</i>	Green	
Pink-footed Goose	<i>Anser brachyrhynchus</i>	Amber	
Pintail	<i>Anas acuta</i>	Amber	
Raven	<i>Corvus corax</i>	Green	
Red Knot?	<i>Calidris Canutus</i>	N/A	
Red-crested Pochard	<i>Netta rufina</i>	Red	
Redwing	<i>Turdus iliacus</i>	Amber	Schedule 1
Reed Bunting	<i>Emberiza schoeniclus</i>	Red	
Reed Warbler	<i>Acrocephalus scirpaceus</i>	Green	
Richard's Pipit	<i>Anthus novaeseelandiae</i>	Green	
Ring Ouzel	<i>Turdus torquatus</i>	Red	
Ringed Plover	<i>Charadrius hiaticula</i>	Amber	

Species	Scientific Name	BoCC	Wildlife and Countryside Act (1981) Status
Robin	<i>Erithacus rubecula</i>	Green	
Rock Pipit	<i>Anthus petrosus</i>	Green	
Ruddy Duck	<i>Oxyura jamaicensis</i>	Green	
Ruff	<i>Philomachus pugnax</i>	Amber	Schedule 1
Sand Martin	<i>Riparia riparia</i>	Amber	
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	Green	
Shoveler	<i>Anas clypeata</i>	Amber	
Siskin	<i>Carduelis spinus</i>	Green	
Sky Lark	<i>Alauda arvensis</i>	Red	
Smew	<i>Mergellus albellus</i>	Green	
Song Thrush	<i>Turdus philomelos</i>	Red	
Sparrowhawk	<i>Accipiter nisus</i>	Green	
Spotted Flycatcher	<i>Muscicapa striata</i>	Red	
Tawny Owl	<i>Strix aluco</i>	Green	
Treecreeper	<i>Certhia familiaris</i>	Green	
Tufted Duck	<i>Aythya fuligula</i>	Green	
Turnstone	<i>Arenaria interpres</i>	Amber	
Turtle Dove	<i>Streptopelia turtur</i>	Red	
Water Pipit	<i>Anthus spinoletta</i>	Green	
Water Rail	<i>Rallus aquaticus</i>	Amber	
Whimbrel	<i>Numenius phaeopus</i>	Amber	Schedule 1
Whinchat	<i>Saxicola rubetra</i>	Green	
White Wagtail	<i>Motacilla alba alba</i>	Green	
Whooper Swan	<i>Cygnus cygnus</i>	Amber	Schedule 1
Willow Tit	<i>Poecile montana</i>	Red	
Willow Warbler	<i>Phylloscopus trochilus</i>	Amber	
Wood Pigeon	<i>Columba palumbus</i>	Green	

Species	Scientific Name	BoCC	Wildlife and Countryside Act (1981) Status
Wren	<i>Troglodytes troglodytes</i>	Green	
Yellow Wagtail	<i>Motacilla flava flavissima</i>	Amber	
Yellowhammer	<i>Emberiza citrinella</i>	Red	
Yellow-legged Gull	<i>Larus cachinnans michahellis</i>	Green	

Consultation Data Supplied by the Nottinghamshire County Bird Recorded

Species	Scientific Name		Number	Comment
Mute Swan	Holme Pierrepont	20/01/2007	13	
Mute Swan	Holme Pierrepont	24/01/2007	10	
Mute Swan	Holme Pierrepont	04/02/2007	2	
Mute Swan	Holme Pierrepont	17/02/2007	14	
Mute Swan	Holme Pierrepont	25/03/2007	2	a pair on pond by Little Chef - nesting
Mute Swan	Holme Pierrepont	28/03/2007	29	
Mute Swan	Holme Pierrepont	29/04/2007	77	
Mute Swan	Holme Pierrepont	20/05/2007	3	
Mute Swan	Holme Pierrepont	24/06/2007	163	
Mute Swan	Holme Pierrepont	05/08/2007	183	
Mute Swan	Holme Pierrepont	17/10/2007	118	
Mute Swan	Holme Pierrepont	20/10/2007	116	
Mute Swan	Holme Pierrepont	01/11/2007	129	
Mute Swan	Holme Pierrepont	17/11/2007	146	
Mute Swan	Holme Pierrepont	09/12/2007	127	
Whooper Swan	Holme Pierrepont	21/10/2007	5	
Pink-footed Goose	Holme Pierrepont	21/01/2007	28	Flew high Southeast over Holme Pierrepont village at 11.05am.
Pink-footed Goose	Holme Pierrepont	11/03/2007	1	Blotts Pit with Canada & Greylag Geese.
Pink-footed Goose	Holme Pierrepont	29/03/2007	3	A52 Pit/Blotts Pit with Canada & Greylag Geese.
Pink-footed Goose	Holme Pierrepont	01/04/2007	3	Present on & off with the Canada & Greylag Geese throughout month.
Pink-footed Goose	Holme Pierrepont	01/05/2007	3	With Canada Geese & Greylag Geese around A52 Pit/Blotts Pit all month.
Pink-footed Goose	Holme Pierrepont	11/05/2007	3	
Pink-footed Goose	Holme Pierrepont	29/12/2007	1	A52 Pit with Greylag Geese.
Pink-footed Goose	Holme Pierrepont	30/12/2007	7	birds flew over towards the WNW at 10.34am
Pink-footed Goose	Holme Pierrepont	31/12/2007	62	west
Greylag Goose	Holme Pierrepont	20/01/2007	41	

Species	Scientific Name		Number	Comment
Greylag Goose	Holme Pierrepont	04/02/2007	135	
Greylag Goose	Holme Pierrepont	17/02/2007	216	
Greylag Goose	Holme Pierrepont	18/05/2007	9	
Greylag Goose	Holme Pierrepont	20/10/2007	12	
Greylag Goose	Holme Pierrepont	17/11/2007	194	
Greylag Goose	Holme Pierrepont	15/12/2007	246	
Canada Goose	Holme Pierrepont	20/01/2007	422	
Canada Goose	Holme Pierrepont	04/02/2007	143	
Canada Goose	Holme Pierrepont	17/02/2007	337	
Canada Goose	Holme Pierrepont	18/05/2007	71	
Canada Goose	Holme Pierrepont	20/05/2007	11	
Canada Goose	Holme Pierrepont	20/10/2007	299	
Canada Goose	Holme Pierrepont	17/11/2007	351	
Canada Goose	Holme Pierrepont	15/12/2007	233	
Common Shelduck	Holme Pierrepont	20/01/2007	3	Blotts Pit
Common Shelduck	Holme Pierrepont	30/01/2007	3	
Common Shelduck	Holme Pierrepont	31/01/2007	2	
Common Shelduck	Holme Pierrepont	11/02/2007	1	
Common Shelduck	Holme Pierrepont	17/02/2007	25	
Common Shelduck	Holme Pierrepont	18/02/2007	1	A52 Pit
Common Shelduck	Holme Pierrepont	26/02/2007	4	A52 Pit - Highest count during month.
Common Shelduck	Holme Pierrepont	03/03/2007	2	on A52 pit
Common Shelduck	Holme Pierrepont	04/03/2007	2	A52 Pit
Common Shelduck	Holme Pierrepont	22/03/2007	3	
Common Shelduck	Holme Pierrepont	25/03/2007	4	A52 Pit (Highest Count During March 2007)
Common Shelduck	Holme Pierrepont	06/04/2007	5	
Common Shelduck	Holme Pierrepont	21/04/2007	2	
Common Shelduck	Holme Pierrepont	22/04/2007	3	
Common Shelduck	Holme Pierrepont	30/04/2007	12	A52 Pit (Highest Count During April 2007)
Common Shelduck	Holme Pierrepont	01/05/2007	2	A52 Pit.
Common Shelduck	Holme Pierrepont	07/05/2007	2	a pair

Species	Scientific Name		Number	Comment
Common Shelduck	Holme Pierrepont	03/06/2007	2	
Common Shelduck	Holme Pierrepont	04/08/2007	2	flew east
Common Shelduck	Holme Pierrepont	22/12/2007	1	flew from Blott's over A52 pit
Eurasian Wigeon	Holme Pierrepont	20/01/2007	1324	
Eurasian Wigeon	Holme Pierrepont	23/01/2007	460	
Eurasian Wigeon	Holme Pierrepont	30/01/2007	390	
Eurasian Wigeon	Holme Pierrepont	04/02/2007	536	
Eurasian Wigeon	Holme Pierrepont	17/02/2007	1510	
Eurasian Wigeon	Holme Pierrepont	11/03/2007	315	
Eurasian Wigeon	Holme Pierrepont	21/03/2007	300	
Eurasian Wigeon	Holme Pierrepont	08/04/2007	29	
Eurasian Wigeon	Holme Pierrepont	02/05/2007	2	
Eurasian Wigeon	Holme Pierrepont	07/05/2007	4	
Eurasian Wigeon	Holme Pierrepont	18/05/2007	2	
Eurasian Wigeon	Holme Pierrepont	20/05/2007	5	
Eurasian Wigeon	Holme Pierrepont	01/06/2007	4	3 drakes & 1 female - summering on Blotts Pit.
Eurasian Wigeon	Holme Pierrepont	03/06/2007	3	
Eurasian Wigeon	Holme Pierrepont	17/06/2007	5	
Eurasian Wigeon	Holme Pierrepont	01/07/2007	2	Blotts Pit - At least 2 still.
Eurasian Wigeon	Holme Pierrepont	19/08/2007	3	
Eurasian Wigeon	Holme Pierrepont	26/08/2007	11	
Eurasian Wigeon	Holme Pierrepont	20/10/2007	634	
Eurasian Wigeon	Holme Pierrepont	17/11/2007	963	
Eurasian Wigeon	Holme Pierrepont	15/12/2007	1330	
Gadwall	Holme Pierrepont	01/01/2007	37	
Gadwall	Holme Pierrepont	13/01/2007	48	on Ski pit
Gadwall	Holme Pierrepont	20/01/2007	66	
Gadwall	Holme Pierrepont	30/01/2007	34	
Gadwall	Holme Pierrepont	04/02/2007	4	
Gadwall	Holme Pierrepont	17/02/2007	88	
Gadwall	Holme Pierrepont	28/03/2007	50	

Species	Scientific Name		Number	Comment
Gadwall	Holme Pierrepont	29/04/2007	14	
Gadwall	Holme Pierrepont	20/05/2007	2	
Gadwall	Holme Pierrepont	03/06/2007	9	
Gadwall	Holme Pierrepont	26/08/2007	24	
Gadwall	Holme Pierrepont	20/10/2007	71	
Gadwall	Holme Pierrepont	17/11/2007	139	
Gadwall	Holme Pierrepont	06/12/2007	60	
Gadwall	Holme Pierrepont	15/12/2007	173	
Eurasian Teal	Holme Pierrepont	20/01/2007	43	
Eurasian Teal	Holme Pierrepont	04/02/2007	11	
Eurasian Teal	Holme Pierrepont	17/02/2007	63	
Eurasian Teal	Holme Pierrepont	06/04/2007	24	
Eurasian Teal	Holme Pierrepont	22/04/2007	2	
Eurasian Teal	Holme Pierrepont	20/10/2007	34	
Eurasian Teal	Holme Pierrepont	17/11/2007	54	
Eurasian Teal	Holme Pierrepont	15/12/2007	82	
Mallard	Holme Pierrepont	20/01/2007	135	
Mallard	Holme Pierrepont	04/02/2007	8	
Mallard	Holme Pierrepont	17/02/2007	125	
Mallard	Holme Pierrepont	18/05/2007	9	
Mallard	Holme Pierrepont	20/05/2007	11	
Mallard	Holme Pierrepont	20/10/2007	60	
Mallard	Holme Pierrepont	17/11/2007	241	
Mallard	Holme Pierrepont	15/12/2007	218	
Pintail	Holme Pierrepont	07/01/2007	8	2 drakes & 6 females flew east through the A52 Pit at 8.55am.
Pintail	Holme Pierrepont	14/01/2007	1	male - A52 Pit
Pintail	Holme Pierrepont	14/01/2007	1	drake - A52 Pit.
Pintail	Holme Pierrepont	26/01/2007	2	drake & female - A52 Pit.
Pintail	Holme Pierrepont	29/03/2007	2	Drake & female - A52 Pit.
Pintail	Holme Pierrepont	21/08/2007	1	juvenile

Species	Scientific Name		Number	Comment
Pintail	Holme Pierrepont	05/09/2007	1	juvenile
Pintail	Holme Pierrepont	16/09/2007	1	Blotts Pit
Pintail	Holme Pierrepont	16/09/2007	1	A52 Pit.
Pintail	Holme Pierrepont	21/09/2007	2	1 A52 Pit & 1 Blotts Pit.
Pintail	Holme Pierrepont	22/09/2007	5	4 A52 Pit & 1 Blotts Pit.
Pintail	Holme Pierrepont	24/09/2007	3	
Pintail	Holme Pierrepont	24/09/2007	3	A52 Pit.
Pintail	Holme Pierrepont	01/10/2007	3	A52 Pit.
Pintail	Holme Pierrepont	04/10/2007	2	A52 Pit.
Pintail	Holme Pierrepont	05/10/2007	3	
Pintail	Holme Pierrepont	06/10/2007	3	
Pintail	Holme Pierrepont	07/10/2007	2	2 females - A52 Pit
Pintail	Holme Pierrepont	09/12/2007	2	
Garganey	Holme Pierrepont	05/05/2007	2	pair feeding on shoreline
Species	Scientific Name		Number	Comment
Garganey	Holme Pierrepont	05/05/2007	2	drake & female - Located on A52 Pit early morning. Noted most days on either A52 Pit or Blotts Pit (very elusive)
Garganey	Holme Pierrepont	18/06/2007	1	Eclipse Drake - Blotts Pit during the evening.
Shoveler	Holme Pierrepont	01/01/2007	11	
Shoveler	Holme Pierrepont	20/01/2007	22	
Shoveler	Holme Pierrepont	04/02/2007	14	
Shoveler	Holme Pierrepont	17/02/2007	28	
Shoveler	Holme Pierrepont	21/03/2007	53	
Shoveler	Holme Pierrepont	22/03/2007	58	
Shoveler	Holme Pierrepont	25/03/2007	57	A52 Pit
Shoveler	Holme Pierrepont	22/04/2007	1	
Shoveler	Holme Pierrepont	17/10/2007	9	
Shoveler	Holme Pierrepont	20/10/2007	11	
Shoveler	Holme Pierrepont	04/11/2007	27	

Species	Scientific Name		Number	Comment
Shoveler	Holme Pierrepont	17/11/2007	53	
Shoveler	Holme Pierrepont	15/12/2007	145	
Red-crested Pochard	Holme Pierrepont	13/04/2007	1	drake - A52 Pit/Rowing Course
Red-crested Pochard	Holme Pierrepont	21/04/2007	1	
Red-crested Pochard	Holme Pierrepont	29/04/2007	1	drake adopted female mallard and seven ducklings
Red-crested Pochard	Holme Pierrepont	11/05/2007	1	drake
Red-crested Pochard	Holme Pierrepont	31/05/2007	2	drake & female - A52 Pit.
Red-crested Pochard	Holme Pierrepont	13/10/2007	1	drake
Red-crested Pochard	Holme Pierrepont	16/12/2007	2	drakes & 1 female - A52 Pit (probably commuting to Colwick Park)
Red-crested Pochard	Holme Pierrepont	16/12/2007	3	2m & 1f - A52 pit
Common Pochard	Holme Pierrepont	20/01/2007	42	
Common Pochard	Holme Pierrepont	04/02/2007	1	
Common Pochard	Holme Pierrepont	17/02/2007	53	
Common Pochard	Holme Pierrepont	29/04/2007	2	
Common Pochard	Holme Pierrepont	18/05/2007	1	
Common Pochard	Holme Pierrepont	19/06/2007	4	
Common Pochard	Holme Pierrepont	26/08/2007	2	
Common Pochard	Holme Pierrepont	20/10/2007	78	
Common Pochard	Holme Pierrepont	21/10/2007	83	
Common Pochard	Holme Pierrepont	17/11/2007	71	
Common Pochard	Holme Pierrepont	15/12/2007	101	
Tufted Duck	Holme Pierrepont	20/01/2007	460	
Tufted Duck	Holme Pierrepont	04/02/2007	13	
Tufted Duck	Holme Pierrepont	17/02/2007	535	
Tufted Duck	Holme Pierrepont	18/05/2007	24	
Tufted Duck	Holme Pierrepont	20/05/2007	24	
Tufted Duck	Holme Pierrepont	01/06/2007	15	juvs
Tufted Duck	Holme Pierrepont	20/10/2007	510	
Tufted Duck	Holme Pierrepont	17/11/2007	453	

Species	Scientific Name		Number	Comment
Tufted Duck	Holme Pierrepont	15/12/2007	798	
Aythya Hybrid	Holme Pierrepont	06/01/2007	1	Regular bird noted on various pits throughout the month.
Aythya Hybrid	Holme Pierrepont	07/01/2007	1	female type hybrid with white blaze - Common Pochard x Greater Scaup ?? Blotts Pit
Aythya Hybrid	Holme Pierrepont	20/01/2007	1	
Aythya Hybrid	Holme Pierrepont	11/02/2007	1	
Aythya Hybrid	Holme Pierrepont	24/02/2007	1	Regular bird on Finger Ponds.
Aythya Hybrid	Holme Pierrepont	04/03/2007	1	Common Pochard x Tufted Duck resembling Ring-necked Duck
Aythya Hybrid	Holme Pierrepont	10/03/2007	1	Regular drake on various pits.
Aythya Hybrid	Holme Pierrepont	13/03/2007	1	drake
Aythya Hybrid	Holme Pierrepont	23/06/2007	1	Regular drake on Blotts Pit (first time I have seen it on site since 25 March 2007)
Aythya Hybrid	Holme Pierrepont	12/10/2007	1	Regular drake - Blotts Pit.
Aythya Hybrid	Holme Pierrepont	17/10/2007	1	
Aythya Hybrid	Holme Pierrepont	01/12/2007	1	drake - Noted on various pits around the complex (long staying bird)
Aythya Hybrid	Holme Pierrepont	09/12/2007	1	
Aythya Hybrid	Holme Pierrepont	15/12/2007	1	
Greater Scaup	Holme Pierrepont	20/01/2007	1	female
Greater Scaup	Holme Pierrepont	11/02/2007	1	female
Greater Scaup	Holme Pierrepont	17/02/2007	2	1st W females
Greater Scaup	Holme Pierrepont	17/06/2007	1	drake
Greater Scaup	Holme Pierrepont	19/06/2007	1	male, nice black nib on bill, fat head! And classic back pattern. WAS a drake Scaup not hybrid that has been hanging around for ages
Greater Scaup	Holme Pierrepont	19/06/2007	1	adult drake - Blotts Pit
Greater Scaup	Holme Pierrepont	10/11/2007	1	first winter female
Greater Scaup	Holme Pierrepont	11/11/2007	1	First-winter female - Initially on A52 Pit then on Blotts Pit for rest of month.

Species	Scientific Name		Number	Comment
Greater Scaup	Holme Pierrepont	11/11/2007	1	female - A52 Pit
Greater Scaup	Holme Pierrepont	17/11/2007	1	first winter female
Greater Scaup	Holme Pierrepont	24/11/2007	1	first winter female
Greater Scaup	Holme Pierrepont	01/12/2007	1	first winter female - On Blotts Pit all month (first noted 11/11/2007)
Greater Scaup	Holme Pierrepont	01/12/2007	1	1st winter female
Greater Scaup	Holme Pierrepont	06/12/2007	1	
Greater Scaup	Holme Pierrepont	08/12/2007	1	1st winter female
Greater Scaup	Holme Pierrepont	15/12/2007	1	female
Greater Scaup	Holme Pierrepont	22/12/2007	1	1st winter female
Greater Scaup	Holme Pierrepont	26/12/2007	1	
Greater Scaup	Holme Pierrepont	30/12/2007	1	1st winter female
Long-tailed Duck	Holme Pierrepont	16/06/2007	1	Drake - Located on Blotts Pit mid morning (Present until at least 7.00pm) (Photo Description sent separately)
Goldeneye	Holme Pierrepont	06/01/2007	16	
Goldeneye	Holme Pierrepont	20/01/2007	66	
Goldeneye	Holme Pierrepont	24/01/2007	73	
Goldeneye	Holme Pierrepont	30/01/2007	7	
Goldeneye	Holme Pierrepont	04/02/2007	5	
Goldeneye	Holme Pierrepont	17/02/2007	104	
Goldeneye	Holme Pierrepont	05/03/2007	28	
Goldeneye	Holme Pierrepont	13/03/2007	65	
Goldeneye	Holme Pierrepont	21/03/2007	53	
Goldeneye	Holme Pierrepont	06/04/2007	40	
Goldeneye	Holme Pierrepont	08/04/2007	14	
Goldeneye	Holme Pierrepont	01/05/2007	2	females - A52 Pit (1 the resident flightless bird)
Goldeneye	Holme Pierrepont	07/05/2007	2	females
Goldeneye	Holme Pierrepont	11/05/2007	1	resident flightless female - A52 Pit.
Goldeneye	Holme Pierrepont	20/05/2007	1	female
Goldeneye	Holme Pierrepont	20/05/2007	1	

Species	Scientific Name		Number	Comment
Goldeneye	Holme Pierrepont	01/06/2007	1	resident flightless female on A52 Pit all month.
Goldeneye	Holme Pierrepont	03/06/2007	1	female
Goldeneye	Holme Pierrepont	01/07/2007	1	Resident Flightless Female - A52 Pit.
Goldeneye	Holme Pierrepont	28/07/2007	2	Resident Flightless Female on A52 Pit & second female (with 2 wings!) commuting between A52 Pit & Blotts Pit.
Goldeneye	Holme Pierrepont	05/08/2007	1	female
Goldeneye	Holme Pierrepont	01/09/2007	2	Both summering females on A52 Pit/Blotts Pit all month.
Goldeneye	Holme Pierrepont	02/09/2007	1	Fem. 52 Pit
Goldeneye	Holme Pierrepont	16/09/2007	1	fem. Blotts Pit
Goldeneye	Holme Pierrepont	20/10/2007	21	
Goldeneye	Holme Pierrepont	21/10/2007	10	
Goldeneye	Holme Pierrepont	11/11/2007	18	52 Pit
Goldeneye	Holme Pierrepont	17/11/2007	52	
Goldeneye	Holme Pierrepont	08/12/2007	55	
Goldeneye	Holme Pierrepont	15/12/2007	91	
Goldeneye	Holme Pierrepont	26/12/2007	67	
Smew	Holme Pierrepont	01/01/2007	1	drake
Smew	Holme Pierrepont	06/01/2007	2	male and Redhead on pit between rowing course and the Trent
Smew	Holme Pierrepont	06/01/2007	3	drake & 2 redheads - On pool between Rowing Course & River Trent or Finger Ponds.
Smew	Holme Pierrepont	07/01/2007	1	Pit between rowing coarse and river, drake
Smew	Holme Pierrepont	14/01/2007	3	2 female & 1 male - Finger Ponds
Smew	Holme Pierrepont	20/01/2007	3	drake and 2 redheads
Smew	Holme Pierrepont	21/01/2007	1	Male
Smew	Holme Pierrepont	03/02/2007	4	drake & 3 redheads - Blotts Pit/Works Compound Pit.
Smew	Holme Pierrepont	09/02/2007	4	1 drake
Smew	Holme Pierrepont	17/02/2007	1	female

Species	Scientific Name	Number	Comment
Smew	Holme Pierrepont	11/03/2007	1 redhead
Smew	Holme Pierrepont	13/03/2007	2
Smew	Holme Pierrepont	17/03/2007	2 redheads - Finger Ponds
Smew	Holme Pierrepont	22/12/2007	3 redheads
Smew	Holme Pierrepont	22/12/2007	3 drake & 2 redheads - Noted on Blotts Pit/Riverside Pit/Works Compound Pit (mobile around site)
Smew	Holme Pierrepont	30/12/2007	3 1 drake
Goosander	Holme Pierrepont	21/01/2007	3 2 drakes & 1 redhead - Flew west along Rowing Course during morning.
Goosander	Holme Pierrepont	17/03/2007	1 drake - A52 Pit.
Goosander	Holme Pierrepont	11/11/2007	1 female - A52 Pit.
Goosander	Holme Pierrepont	22/12/2007	2 both drakes - Finger Ponds
Goosander	Holme Pierrepont	31/12/2007	1 drake
Ruddy Duck	Holme Pierrepont	20/01/2007	106
Ruddy Duck	Holme Pierrepont	30/01/2007	21
Ruddy Duck	Holme Pierrepont	04/02/2007	18
Ruddy Duck	Holme Pierrepont	17/02/2007	29
Ruddy Duck	Holme Pierrepont	28/03/2007	20
Ruddy Duck	Holme Pierrepont	20/05/2007	1
Ruddy Duck	Holme Pierrepont	27/08/2007	1 m
Ruddy Duck	Holme Pierrepont	20/10/2007	11
Ruddy Duck	Holme Pierrepont	17/11/2007	28
Ruddy Duck	Holme Pierrepont	15/12/2007	38
Common Pheasant	Holme Pierrepont	18/05/2007	2
Little Grebe	Holme Pierrepont	20/01/2007	26
Little Grebe	Holme Pierrepont	23/01/2007	15
Little Grebe	Holme Pierrepont	04/02/2007	21
Little Grebe	Holme Pierrepont	17/02/2007	36
Little Grebe	Holme Pierrepont	14/10/2007	25 A52 Pit
Little Grebe	Holme Pierrepont	20/10/2007	56

Species	Scientific Name		Number	Comment
Little Grebe	Holme Pierrepont	21/10/2007	30	
Little Grebe	Holme Pierrepont	17/11/2007	48	
Little Grebe	Holme Pierrepont	15/12/2007	43	
Great Crested Grebe	Holme Pierrepont	01/01/2007	14	on rowing course
Great Crested Grebe	Holme Pierrepont	20/01/2007	40	
Great Crested Grebe	Holme Pierrepont	04/02/2007	4	
Great Crested Grebe	Holme Pierrepont	17/02/2007	21	
Great Crested Grebe	Holme Pierrepont	25/03/2007	2	a pair on pond by Little Chef
Great Crested Grebe	Holme Pierrepont	18/05/2007	3	
Great Crested Grebe	Holme Pierrepont	20/05/2007	2	
Great Crested Grebe	Holme Pierrepont	30/07/2007	24	
Great Crested Grebe	Holme Pierrepont	05/08/2007	22	
Great Crested Grebe	Holme Pierrepont	17/10/2007	26	
Great Crested Grebe	Holme Pierrepont	20/10/2007	27	
Great Crested Grebe	Holme Pierrepont	01/11/2007	28	
Great Crested Grebe	Holme Pierrepont	17/11/2007	36	
Great Crested Grebe	Holme Pierrepont	15/12/2007	57	
Great Crested Grebe	Holme Pierrepont	22/12/2007	31	
Black-necked Grebe	Holme Pierrepont	27/03/2007	1	Transitional plumage bird - A52 Pit
				A52 Pit - Transitional bird (first noted 27/03/07)
Black-necked Grebe	Holme Pierrepont	01/04/2007	2	& new near summer plumage bird
Black-necked Grebe	Holme Pierrepont	02/04/2007	1	A52 Pit - Transitional bird (first noted 27/03/07).
				A52 Pit - Transitional bird (first noted 27/03/07)
Black-necked Grebe	Holme Pierrepont	04/04/2007	3	& 2 new full summer plumage birds
Black-necked Grebe	Holme Pierrepont	05/04/2007	1	A52 Pit - Transitional bird (first noted 27/03/07)
Black-necked Grebe	Holme Pierrepont	13/05/2007	2	
Black-necked Grebe	Holme Pierrepont	13/05/2007	2	summer plumage - A52 Pit.
Black-necked Grebe	Holme Pierrepont	01/07/2007	2	A52 Pit - Summer Plumage
				in full summer plumage, only one bird seen on
Black-necked Grebe	Holme Pierrepont	01/07/2007	2	the 3 subsequent days
Black-necked Grebe	Holme Pierrepont	02/07/2007	1	A52 Pit - Summer Plumage

Species	Scientific Name		Number	Comment
Gannet	Holme Pierrepont	28/09/2007	1	juvenile - A52 Pit - Flew in from west at 6.40pm. Eventually settled on pit where it remained until 7.20pm (dusk).
Cormorant	Holme Pierrepont	13/01/2007	31	
Cormorant	Holme Pierrepont	20/01/2007	50	
Cormorant	Holme Pierrepont	04/02/2007	3	
Cormorant	Holme Pierrepont	17/02/2007	47	
Little Egret	Holme Pierrepont	30/07/2007	1	Dropped in to A52 Pit at 9.05pm. Also seen flying over Holme Grange Pool following day.
Little Egret	Holme Pierrepont	30/07/2007	1	
Little Egret	Holme Pierrepont	05/08/2007	1	
Little Egret	Holme Pierrepont	06/09/2007	1	Flew east through A52 Pit at 5.13pm.
Little Egret	Holme Pierrepont	22/09/2007	1	
Grey Heron	Holme Pierrepont	20/01/2007	11	
Grey Heron	Holme Pierrepont	04/02/2007	1	
Grey Heron	Holme Pierrepont	17/02/2007	6	
Grey Heron	Holme Pierrepont	18/05/2007	11	
Grey Heron	Holme Pierrepont	20/05/2007	10	
Great Bittern	Holme Pierrepont	17/02/2007	1	
Great Bittern	Holme Pierrepont	27/10/2007	1	flying between Holme Grange Pool and another reedbed to the North of the A52 pit
Great Bittern	Holme Pierrepont	16/12/2007	1	Flushed from Holme Grange Pool reedbed late morning.
Sparrowhawk	Holme Pierrepont	14/01/2007	1	female took Wood Pigeon
Sparrowhawk	Holme Pierrepont	24/01/2007	1	
Sparrowhawk	Holme Pierrepont	08/04/2007	1	
Sparrowhawk	Holme Pierrepont	05/08/2007		fledged brood
Sparrowhawk	Holme Pierrepont	21/10/2007	1	
Sparrowhawk	Holme Pierrepont	22/12/2007	1	
Common Buzzard	Holme Pierrepont	04/02/2007	1	
Common Buzzard	Holme Pierrepont	09/09/2007	2	A52 Pit

Species	Scientific Name		Number	Comment
Common Buzzard	Holme Pierrepont	07/10/2007	1	52 Pit
Common Buzzard	Holme Pierrepont	20/10/2007	1	
Common Buzzard	Holme Pierrepont	31/12/2007	1	
Kestrel	Holme Pierrepont	06/03/2007	1	
Kestrel	Holme Pierrepont	22/04/2007	1	
Kestrel	Holme Pierrepont	11/05/2007	1	
Kestrel	Holme Pierrepont	05/08/2007	1	
Kestrel	Holme Pierrepont	17/10/2007	2	
Kestrel	Holme Pierrepont	04/11/2007	1	
Kestrel	Holme Pierrepont	02/12/2007	1	
Kestrel	Holme Pierrepont	31/12/2007	2	
Merlin	Holme Pierrepont	07/04/2007	1	
Hobby	Holme Pierrepont	22/04/2007	2	A52 Pit.
Hobby	Holme Pierrepont	23/04/2007	1	A52 Pit.
Hobby	Holme Pierrepont	24/04/2007	1	Feeding on insects
Hobby	Holme Pierrepont	26/04/2007	2	A52 Pit.
Hobby	Holme Pierrepont	01/05/2007	6	Peak Count during May 2007)
Hobby	Holme Pierrepont	03/05/2007	4	
Hobby	Holme Pierrepont	07/05/2007	3	
Hobby	Holme Pierrepont	11/05/2007	8	Eight hawking insects over A52 pit
Hobby	Holme Pierrepont	18/05/2007	1	
Hobby	Holme Pierrepont	19/05/2007	2	
Hobby	Holme Pierrepont	20/05/2007	5	
Hobby	Holme Pierrepont	17/06/2007	1	
Hobby	Holme Pierrepont	08/07/2007	1	A52 Pit.
Hobby	Holme Pierrepont	09/07/2007	1	A52 Pit.
Hobby	Holme Pierrepont	18/07/2007	1	A52 Pit.
Hobby	Holme Pierrepont	23/07/2007	1	A52 Pit.
Hobby	Holme Pierrepont	05/08/2007	1	
Hobby	Holme Pierrepont	16/09/2007	1	A52 Pit.
Hobby	Holme Pierrepont	18/09/2007	1	A52 Pit.

Species	Scientific Name	Number	Comment
Hobby	Holme Pierrepont	22/09/2007	3 Blotts Pit/A52 Pit.
Hobby	Holme Pierrepont	23/09/2007	1 A52 Pit.
Hobby	Holme Pierrepont	04/10/2007	1 A52 Pit.
Peregrine Falcon	Holme Pierrepont	24/02/2007	1 adult - Flew west through the A52 Pit at 12.35pm.
Peregrine Falcon	Holme Pierrepont	17/03/2007	1 adult - Circled A52 Pit 3.03pm then flew east.
Peregrine Falcon	Holme Pierrepont	28/03/2007	1
Peregrine Falcon	Holme Pierrepont	23/07/2007	2 Juveniles - Playing over A52 Pit for 10 minutes during the evening.
Peregrine Falcon	Holme Pierrepont	07/10/2007	1 A52 Pit
Peregrine Falcon	Holme Pierrepont	25/11/2007	1 1cy - Hunting over A52 Pit during the afternoon.
Peregrine Falcon	Holme Pierrepont	02/12/2007	1 adult - Spent several minutes circling A52 Pit during the afternoon.
Water Rail	Holme Pierrepont	18/02/2007	1 calling Blotts Pit
Water Rail	Holme Pierrepont	22/03/2007	1
Water Rail	Holme Pierrepont	08/04/2007	1
Water Rail	Holme Pierrepont	06/10/2007	1
Water Rail	Holme Pierrepont	20/10/2007	1
Water Rail	Holme Pierrepont	10/11/2007	1
Water Rail	Holme Pierrepont	17/11/2007	3
Water Rail	Holme Pierrepont	25/11/2007	2
Water Rail	Holme Pierrepont	01/12/2007	1 calling
Water Rail	Holme Pierrepont	15/12/2007	2
Water Rail	Holme Pierrepont	16/12/2007	2
Moorhen	Holme Pierrepont	20/01/2007	15
Moorhen	Holme Pierrepont	04/02/2007	2
Moorhen	Holme Pierrepont	17/02/2007	39
Moorhen	Holme Pierrepont	20/05/2007	2
Moorhen	Holme Pierrepont	20/10/2007	38
Moorhen	Holme Pierrepont	17/11/2007	38
Moorhen	Holme Pierrepont	15/12/2007	48

Species	Scientific Name		Number	Comment
Coot	Holme Pierrepont	20/01/2007	688	
Coot	Holme Pierrepont	04/02/2007	14	
Coot	Holme Pierrepont	17/02/2007	508	
Coot	Holme Pierrepont	18/05/2007	9	
Coot	Holme Pierrepont	20/05/2007	10	
Coot	Holme Pierrepont	20/10/2007	865	
Coot	Holme Pierrepont	17/11/2007	949	
Coot	Holme Pierrepont	15/12/2007	1045	
Oystercatcher	Holme Pierrepont	10/03/2007	1	A52 Pit.
Oystercatcher	Holme Pierrepont	11/03/2007	2	A52 Pit.
Oystercatcher	Holme Pierrepont	13/03/2007	1	
Oystercatcher	Holme Pierrepont	27/03/2007	1	A52 Pit.
Oystercatcher	Holme Pierrepont	03/04/2007	1	A52 Pit.
Oystercatcher	Holme Pierrepont	04/04/2007	2	A52 Pit.
Oystercatcher	Holme Pierrepont	06/04/2007	2	
Oystercatcher	Holme Pierrepont	18/04/2007	3	
Oystercatcher	Holme Pierrepont	22/04/2007	3	A52 Pit.
Oystercatcher	Holme Pierrepont	07/05/2007	4	A52 Pit (Peak Count During May 2007)
Oystercatcher	Holme Pierrepont	11/05/2007	2	A pair
Oystercatcher	Holme Pierrepont	14/05/2007	4	A52 Pit (Peak Count During May 2007)
Oystercatcher	Holme Pierrepont	20/05/2007	2	
Oystercatcher	Holme Pierrepont	02/06/2007	1	A52 Pit.
Oystercatcher	Holme Pierrepont	03/06/2007	2	
Oystercatcher	Holme Pierrepont	17/06/2007	2	
Oystercatcher	Holme Pierrepont	23/06/2007	1	
Oystercatcher	Holme Pierrepont	10/07/2007	3	A52 Pit.
Oystercatcher	Holme Pierrepont	18/07/2007	3	1 A52 Pit & 2 Blotts Pit.
Oystercatcher	Holme Pierrepont	30/07/2007	2	
European Golden Plover	Holme Pierrepont	29/04/2007	3	
European Golden Plover	Holme Pierrepont	17/11/2007	60	c.60 - A52 Pit
Ringed Plover	Holme Pierrepont	03/03/2007	1	on A52 pit

Species	Scientific Name		Number	Comment
Ringed Plover	Holme Pierrepont	08/05/2007	1	Blotts Pit.
Ringed Plover	Holme Pierrepont	21/07/2007	2	On east shore of the A52 Pit during afternoon.
Ringed Plover	Holme Pierrepont	02/09/2007	1	Flew south through A52 Pit with 6 Dunlin during afternoon.
Ringed Plover	Holme Pierrepont	24/09/2007	1	A52 Pit.
Little Ringed Plover	Holme Pierrepont	28/03/2007	1	
Little Ringed Plover	Holme Pierrepont	30/03/2007	3	Blotts Pit.
Little Ringed Plover	Holme Pierrepont	31/03/2007	1	Blotts Pit.
Little Ringed Plover	Holme Pierrepont	01/04/2007	1	A52 Pit - Flew north
Little Ringed Plover	Holme Pierrepont	04/04/2007	1	A52 Pit
Little Ringed Plover	Holme Pierrepont	09/04/2007	5	4 Blotts Pit and 1 A52 Pit.
Little Ringed Plover	Holme Pierrepont	10/04/2007	2	A52 Pit.
Little Ringed Plover	Holme Pierrepont	13/04/2007	2	1 A52 Pit & 1 Blotts Pit.
Little Ringed Plover	Holme Pierrepont	17/04/2007	3	2 Blotts Pit & 1 A52 Pit.
Little Ringed Plover	Holme Pierrepont	21/04/2007	1	Blotts Pit.
Little Ringed Plover	Holme Pierrepont	21/04/2007	1	
Little Ringed Plover	Holme Pierrepont	24/04/2007	2	Blotts Pit.
Little Ringed Plover	Holme Pierrepont	26/04/2007	3	1 A52 Pit & 2 Blotts Pit.
Little Ringed Plover	Holme Pierrepont	30/04/2007	1	Blotts Pit.
Little Ringed Plover	Holme Pierrepont	01/05/2007	1	A52 Pit.
Little Ringed Plover	Holme Pierrepont	08/05/2007	1	A52 Pit.
Little Ringed Plover	Holme Pierrepont	19/05/2007	2	A52 Pit.
Little Ringed Plover	Holme Pierrepont	27/05/2007	1	A52 Pit.
Little Ringed Plover	Holme Pierrepont	17/06/2007	1	male
Little Ringed Plover	Holme Pierrepont	23/06/2007	1	A52 Pit.
Little Ringed Plover	Holme Pierrepont	24/06/2007	3	A52 Pit.
Little Ringed Plover	Holme Pierrepont	25/06/2007	1	A52 Pit.
Northern Lapwing	Holme Pierrepont	01/01/2007	120	
Northern Lapwing	Holme Pierrepont	05/08/2007	15	
Northern Lapwing	Holme Pierrepont	14/10/2007	30	A52 Pit
Northern Lapwing	Holme Pierrepont	02/12/2007	82	

Species	Scientific Name		Number	Comment
Eurasian Woodcock	Holme Pierrepont	20/01/2007	1	Flew over the Reedy Pit at dawn.
Eurasian Woodcock	Holme Pierrepont	25/01/2007	1	Flew over Skylarks NR at dusk.
Eurasian Woodcock	Holme Pierrepont	27/01/2007	1	Flushed from track north of the A52 Pit during morning.
Eurasian Woodcock	Holme Pierrepont	23/02/2007	1	Flew over Buggyland at dusk
Eurasian Woodcock	Holme Pierrepont	04/11/2007	2	Flew over Holme Pierrepont Hall at dusk.
Eurasian Woodcock	Holme Pierrepont	16/12/2007	2	Flushed from the Holme Grange Pool area.
Eurasian Woodcock	Holme Pierrepont	30/12/2007	1	Flew over Reedy Pit at dusk.
Common Snipe	Holme Pierrepont	31/01/2007	1	
Common Snipe	Holme Pierrepont	04/02/2007	1	
Common Snipe	Holme Pierrepont	22/03/2007	1	
Common Snipe	Holme Pierrepont	22/09/2007	4	
Common Snipe	Holme Pierrepont	07/10/2007	5	Blotts Pit
Common Snipe	Holme Pierrepont	14/10/2007	10	A52 Pit
Common Snipe	Holme Pierrepont	28/10/2007	8	
Common Snipe	Holme Pierrepont	01/11/2007	5	
Common Snipe	Holme Pierrepont	17/11/2007	21	
Jack Snipe	Holme Pierrepont	30/01/2007	1	Blotts Pit.
Jack Snipe	Holme Pierrepont	06/10/2007	1	flushed
Jack Snipe	Holme Pierrepont	16/12/2007	1	A52 Pit.
Jack Snipe	Holme Pierrepont	24/12/2007	3	A52 Pit
Black-tailed Godwit	Holme Pierrepont	01/03/2007	1	Located on A52 Pit with Redshank flock during afternoon.
Black-tailed Godwit	Holme Pierrepont	03/03/2007	1	on A52 pit
Black-tailed Godwit	Holme Pierrepont	04/03/2007	1	A52 Pit
Black-tailed Godwit	Holme Pierrepont	05/03/2007	1	with Redshanks
Bar-tailed Godwit	Holme Pierrepont	30/04/2007	1	Summer plumage male - A52 Pit.
Bar-tailed Godwit	Holme Pierrepont	01/05/2007	1	Summer plumage male - A52 Pit still (present since 30/04/2007)
Whimbrel	Holme Pierrepont	27/04/2007	2	In field on North side of A52 Pit 4.45pm then flew Northeast

Species	Scientific Name		Number	Comment
Whimbrel	Holme Pierrepont	03/05/2007	1	Feeding on east side of Blotts Pit late afternoon/early evening.
Whimbrel	Holme Pierrepont	05/05/2007	1	Flew east through A52 Pit at 7.35am.
Whimbrel	Holme Pierrepont	06/05/2007	1	On A52 Pit from 8.10am !! 8.20am then departed west having initially approached from the east
Whimbrel	Holme Pierrepont	21/07/2007	8	Flew west through the A52 Pit during the morning (6 at 9.50am and 2 at 10.10am)
Whimbrel	Holme Pierrepont	05/08/2007	5	calling and circling over A52 pit at 9.40am then flew SW
Curlew	Holme Pierrepont	25/03/2007	1	A52 Pit.
Curlew	Holme Pierrepont	06/04/2007	2	A52 Pit - Flew north at 10.20am.
Curlew	Holme Pierrepont	07/04/2007	1	Rowing Course - Flew south at 12.15pm.
Curlew	Holme Pierrepont	03/05/2007	1	landed at 20.18 fed for 10 mins and preened then flew off west
Curlew	Holme Pierrepont	07/05/2007	1	feeding on shoreline
Curlew	Holme Pierrepont	21/08/2007	10	flew in at 8.05pm calling returned later at 8.40pm and landed
Curlew	Holme Pierrepont	05/09/2007	1	fly through
Curlew	Holme Pierrepont	18/09/2007	1	Circled A52 Pit just prior to dusk.
Common Redshank	Holme Pierrepont	06/01/2007	38	
Common Redshank	Holme Pierrepont	13/01/2007	45	A52 Pit (Peak Count During Month)
Common Redshank	Holme Pierrepont	14/01/2007	13	A52 Pit
Common Redshank	Holme Pierrepont	14/01/2007	30	
Common Redshank	Holme Pierrepont	20/01/2007	45	A52 Pit (Peak Count During Month)
Common Redshank	Holme Pierrepont	27/01/2007	31	
Common Redshank	Holme Pierrepont	04/02/2007	1	
Common Redshank	Holme Pierrepont	09/02/2007	3	
Common Redshank	Holme Pierrepont	11/02/2007	32	
Common Redshank	Holme Pierrepont	17/02/2007	30	
Common Redshank	Holme Pierrepont	24/02/2007	37	A52 Pit - Highest count during month
Common Redshank	Holme Pierrepont	01/03/2007	38	A52 Pit (Highest Count During March 2007)

Species	Scientific Name	Number	Comment
Common Redshank	Holme Pierrepont	04/03/2007	30 c.30 A52 Pit
Common Redshank	Holme Pierrepont	05/03/2007	30 one flock
Common Redshank	Holme Pierrepont	13/03/2007	20
Common Redshank	Holme Pierrepont	25/03/2007	1 A52 Pit
Common Redshank	Holme Pierrepont	03/04/2007	15 Highest Count During April 2007.
Common Redshank	Holme Pierrepont	06/04/2007	8
Common Redshank	Holme Pierrepont	08/04/2007	11
Common Redshank	Holme Pierrepont	05/05/2007	A52 Pit (Peak Count During May 2007) (1 injured bird present throughout the month)
Common Redshank	Holme Pierrepont	01/06/2007	Injured bird (which was present throughout May) last seen attempting to fly across A52 Pit and plummeting in to the middle!.
Common Redshank	Holme Pierrepont	22/06/2007	1 Flew north through the A52 Pit early evening.
Common Redshank	Holme Pierrepont	01/07/2007	1
Common Redshank	Holme Pierrepont	19/10/2007	1 Blotts Pit.
Common Redshank	Holme Pierrepont	20/10/2007	3 1 A52 Pit & 2 Blotts Pit.
Common Redshank	Holme Pierrepont	21/10/2007	2
Common Redshank	Holme Pierrepont	28/10/2007	4 A52 Pit/Blotts Pit.
Common Redshank	Holme Pierrepont	11/11/2007	11 A52 Pit/Blotts Pit (Highest Count During Month)
Common Redshank	Holme Pierrepont	17/11/2007	12
Common Redshank	Holme Pierrepont	18/11/2007	3 1 bird 52 pit, 2 Blotts
Common Redshank	Holme Pierrepont	02/12/2007	13
Common Redshank	Holme Pierrepont	16/12/2007	13
Common Redshank	Holme Pierrepont	24/12/2007	3 A52 Pit
Common Redshank	Holme Pierrepont	26/12/2007	21
Common Redshank	Holme Pierrepont	29/12/2007	Highest Personal Site Count During December 2007 (8 A52 Pit, 2 Blotts Pit & 4 Rowing Course).
Greenshank	Holme Pierrepont	28/04/2007	1 A52 Pit.
Greenshank	Holme Pierrepont	29/04/2007	1 Flew East through A52 Pit at 8.09am
Greenshank	Holme Pierrepont	05/05/2007	1 A52 Pit.

Species	Scientific Name		Number	Comment
Greenshank	Holme Pierrepont	21/07/2007	1	Flew west through the A52 Pit at 10.07am.
Greenshank	Holme Pierrepont	18/08/2007	1	
Greenshank	Holme Pierrepont	20/08/2007	1	through to the west
Greenshank	Holme Pierrepont	22/08/2007	1	
Green Sandpiper	Holme Pierrepont	22/08/2007	1	
Green Sandpiper	Holme Pierrepont	21/09/2007	2	A52 Pit.
Green Sandpiper	Holme Pierrepont	22/09/2007	1	Blotts Pit.
Common Sandpiper	Holme Pierrepont	19/04/2007	4	1 Blotts Pit & 3 A52 Pit.
Common Sandpiper	Holme Pierrepont	21/04/2007	2	1 Blotts Pit & 1 A52 Pit.
Common Sandpiper	Holme Pierrepont	22/04/2007	2	
Common Sandpiper	Holme Pierrepont	24/04/2007	2	A52 Pit.
Common Sandpiper	Holme Pierrepont	25/04/2007	2	
Common Sandpiper	Holme Pierrepont	27/04/2007	3	2 A52 Pit & 1 Blotts Pit.
Common Sandpiper	Holme Pierrepont	28/04/2007	2	1 Blotts Pit & 1 A52 Pit.
Common Sandpiper	Holme Pierrepont	29/04/2007	4	
Common Sandpiper	Holme Pierrepont	30/04/2007	2	Blotts Pit.
Common Sandpiper	Holme Pierrepont	01/05/2007	3	2 Blotts Pit & 1 A52 Pit.
Common Sandpiper	Holme Pierrepont	02/05/2007	3	A52 Pit.
Common Sandpiper	Holme Pierrepont	03/05/2007	2	A52 Pit.
Common Sandpiper	Holme Pierrepont	05/05/2007	4	3 A52 Pit & 1 Blotts Pit.
Common Sandpiper	Holme Pierrepont	06/05/2007	1	Blotts Pit.
Common Sandpiper	Holme Pierrepont	07/05/2007	2	A52 Pit.
Common Sandpiper	Holme Pierrepont	11/05/2007	2	
Common Sandpiper	Holme Pierrepont	11/05/2007	1	A52 Pit.
Common Sandpiper	Holme Pierrepont	20/05/2007	1	Blotts Pit.
Common Sandpiper	Holme Pierrepont	29/05/2007	1	A52 Pit.
Common Sandpiper	Holme Pierrepont	05/06/2007	1	A52 Pit.
Common Sandpiper	Holme Pierrepont	28/06/2007	1	Blotts Pit.
Common Sandpiper	Holme Pierrepont	01/07/2007	4	2 on Blotts 2 on A52 pit
Common Sandpiper	Holme Pierrepont	06/07/2007	1	1 A52 Pit.
Common Sandpiper	Holme Pierrepont	08/07/2007	4	3 Blotts Pit & 1 A52 Pit.

Species	Scientific Name		Number	Comment
Common Sandpiper	Holme Pierrepont	15/07/2007	1	A52 Pit.
Common Sandpiper	Holme Pierrepont	18/07/2007	4	A52 Pit.
Common Sandpiper	Holme Pierrepont	21/07/2007	2	1 A52 Pit & 1 Blotts Pit.
Common Sandpiper	Holme Pierrepont	23/07/2007	2	A52 Pit.
Common Sandpiper	Holme Pierrepont	02/09/2007	6	3 A52 Pit & 3 Blotts Pit.
Common Sandpiper	Holme Pierrepont	03/09/2007	8	3 A52 Pit & 5 Blotts Pit.
Common Sandpiper	Holme Pierrepont	04/09/2007	2	A52 Pit.
Common Sandpiper	Holme Pierrepont	05/09/2007	6	
Common Sandpiper	Holme Pierrepont	16/09/2007	3	A52 Pit.
Common Sandpiper	Holme Pierrepont	18/09/2007	2	A52 Pit.
Common Sandpiper	Holme Pierrepont	22/09/2007	1	
Common Sandpiper	Holme Pierrepont	22/09/2007	1	A52 Pit.
Turnstone	Holme Pierrepont	14/05/2007	1	A52 Pit with 5 Dunlin.
Turnstone	Holme Pierrepont	18/09/2007	1	juvenile - A52 Pit.
				Located on Blotts Pit - Usually feeding along the western shore of the pit.
Red Knot	Holme Pierrepont	20/01/2007	1	
Red Knot	Holme Pierrepont	20/01/2007	1	
Red Knot	Holme Pierrepont	21/01/2007	1	Winter
Red Knot	Holme Pierrepont	24/01/2007	1	
Red Knot	Holme Pierrepont	27/01/2007	1	on Blotts
				Partially summer plumage - A52 Pit early morning
Red Knot	Holme Pierrepont	28/04/2007	2	
Dunlin	Holme Pierrepont	24/01/2007	5	
Dunlin	Holme Pierrepont	27/01/2007	5	A52 Pit.
Dunlin	Holme Pierrepont	01/03/2007	1	A52 Pit
Dunlin	Holme Pierrepont	03/03/2007	2	on A52 pit
Dunlin	Holme Pierrepont	04/03/2007	2	A52 Pit
Dunlin	Holme Pierrepont	10/03/2007	2	A52 Pit
Dunlin	Holme Pierrepont	14/03/2007	1	A52 Pit
Dunlin	Holme Pierrepont	25/03/2007	2	A52 Pit
Dunlin	Holme Pierrepont	04/04/2007	1	A52 Pit

Species	Scientific Name	Number	Comment
Dunlin	Holme Pierrepont	28/04/2007	1 A52 Pit
Dunlin	Holme Pierrepont	01/05/2007	1 A52 Pit.
Dunlin	Holme Pierrepont	02/05/2007	1 A52 Pit.
Dunlin	Holme Pierrepont	05/05/2007	1 A52 Pit.
Dunlin	Holme Pierrepont	10/05/2007	1 A52 Pit.
Dunlin	Holme Pierrepont	11/05/2007	2 A52 Pit.
Dunlin	Holme Pierrepont	12/05/2007	1 A52 Pit.
Dunlin	Holme Pierrepont	14/05/2007	5 A52 Pit.
Dunlin	Holme Pierrepont	26/05/2007	1 Blotts Pit.
Dunlin	Holme Pierrepont	30/07/2007	3
Dunlin	Holme Pierrepont	20/08/2007	9 flying to the NW over the pit
Dunlin	Holme Pierrepont	21/08/2007	1
Dunlin	Holme Pierrepont	02/09/2007	6 Flew south through A52 Pit with 1 Ringed Plover during afternoon.
Dunlin	Holme Pierrepont	19/09/2007	1 A52 Pit.
Dunlin	Holme Pierrepont	20/10/2007	1
Dunlin	Holme Pierrepont	24/11/2007	1 Blotts Pit.
Ruff	Holme Pierrepont	11/09/2007	1 juvenile - A52 Pit during evening.
Ruff	Holme Pierrepont	01/10/2007	2 A52 Pit.
Great Black-backed Gull	Holme Pierrepont	03/03/2007	42
Glaucous Gull	Holme Pierrepont	16/12/2007	1 1st winter in the roost at 4.05pm. A very dirty bird
Glaucous Gull	Holme Pierrepont	22/12/2007	1 juvenile/first winter - On A52 Pit from dawn - 8.03am and again 3.25pm - 3.35pm (same bird as 16/12/2007)
Glaucous Gull	Holme Pierrepont	30/12/2007	1 juvenile/first winter - Located on A52 Pit at 2.40pm. Present until dusk (different bird to that noted on 16/12 & 22/12)
Glaucous Gull	Holme Pierrepont	31/12/2007	1 1st winter bird again at 3.35pm

Species	Scientific Name		Number	Comment
Iceland Gull	Holme Pierrepont	30/12/2007	1	juvenile/first winter - Located flying in from east at 3.55pm. Landed on A52 Pit and remained until dusk. Seen by Alan Clewes and David Kirman et al.
Iceland Gull	Holme Pierrepont	31/12/2007	1	1st winter bird again-in at 3.45pm
Herring Gull	Holme Pierrepont	11/11/2007	7	
Caspian Gull	Holme Pierrepont	30/12/2007	1	adult - Located on A52 Pit at 2.40pm. Present until dusk.
Yellow-legged Gull	Holme Pierrepont	28/08/2007	1	adult in the gull roost
Yellow-legged Gull	Holme Pierrepont	03/09/2007	1	adult - A52 Pit.
Yellow-legged Gull	Holme Pierrepont	16/12/2007	1	
Black-headed Gull	Holme Pierrepont	04/02/2007	23	
Black-headed Gull	Holme Pierrepont	01/03/2007	1	leucistic adult roosted on A52 Pit
Black-headed Gull	Holme Pierrepont	07/05/2007	5	
Black-headed Gull	Holme Pierrepont	03/06/2007	2	
Mediterranean Gull	Holme Pierrepont	01/01/2007	1	adult on the A52 pit
Mediterranean Gull	Holme Pierrepont	07/01/2007	1	adult - Roosted on A52 Pit.
Mediterranean Gull	Holme Pierrepont	13/01/2007	1	adult - Roosted on A52 Pit.
Mediterranean Gull	Holme Pierrepont	14/01/2007	1	adult - Roosted on A52 Pit.
Mediterranean Gull	Holme Pierrepont	20/01/2007	1	
Mediterranean Gull	Holme Pierrepont	27/01/2007	1	adult flew north over A52 Pit at 11.25am & roosted on A52 Pit during late afternoon.
Mediterranean Gull	Holme Pierrepont	30/01/2007	1	adult - Roosted on A52 Pit.
Mediterranean Gull	Holme Pierrepont	03/02/2007	2	adult & first winter - A52 Pit roost.
Mediterranean Gull	Holme Pierrepont	10/02/2007	1	adult in the roost
Mediterranean Gull	Holme Pierrepont	26/02/2007	1	adult - A52 Pit roost.
Mediterranean Gull	Holme Pierrepont	27/02/2007	1	adult - A52 Pit roost.
Mediterranean Gull	Holme Pierrepont	01/03/2007	1	adult near summer plumage - A52 Pit roost
Mediterranean Gull	Holme Pierrepont	21/08/2007	1	adult in near winter plumage (moult not quite completed)
Mediterranean Gull	Holme Pierrepont	28/08/2007	1	1W bird in the roost

Species	Scientific Name		Number	Comment
Mediterranean Gull	Holme Pierrepont	11/11/2007	1	adult winter
Mediterranean Gull	Holme Pierrepont	17/11/2007	1	adult - Roosted on A52 Pit.
Mediterranean Gull	Holme Pierrepont	18/11/2007	1	adult - Roosted on A52 Pit.
Mediterranean Gull	Holme Pierrepont	24/11/2007	1	adult - Present on Blotts Pit & A52 Pit during the morning.
Mediterranean Gull	Holme Pierrepont	02/12/2007	1	adult - A52 Pit roost.
Mediterranean Gull	Holme Pierrepont	08/12/2007	1	adult
Mediterranean Gull	Holme Pierrepont	15/12/2007	1	adult - A52 Pit roost.
Mediterranean Gull	Holme Pierrepont	16/12/2007	1	adult - Waterski Pit late morning.
Mediterranean Gull	Holme Pierrepont	22/12/2007	1	adult - A52 Pit roost.
Mediterranean Gull	Holme Pierrepont	23/12/2007	1	adult
Mediterranean Gull	Holme Pierrepont	24/12/2007	1	adult - A52 Pit roost.
Mediterranean Gull	Holme Pierrepont	25/12/2007	1	adult - A52 Pit roost.
Mediterranean Gull	Holme Pierrepont	26/12/2007	2	adult & first winter - A52 Pit roost.
Mediterranean Gull	Holme Pierrepont	29/12/2007	1	adult - A52 Pit roost.
Mediterranean Gull	Holme Pierrepont	31/12/2007	1	adult
Little Gull	Holme Pierrepont	16/09/2007	1	juvenile - showing very well on A52 Pit from 7.15am onwards.
Common Tern	Holme Pierrepont	25/04/2007	13	
Common Tern	Holme Pierrepont	27/05/2007	17	
Common Tern	Holme Pierrepont	03/06/2007		
Common Tern	Holme Pierrepont	01/07/2007	32	
Arctic Tern	Holme Pierrepont	25/04/2007	1	Feeding over the Rowing Course during evening
Arctic Tern	Holme Pierrepont	01/05/2007	5	A52 Pit during the afternoon.
Arctic Tern	Holme Pierrepont	23/08/2007	1	juvenile over the pit all evening, roosted on the water at dusk
Arctic Tern	Holme Pierrepont	25/09/2007	1	juvenile - A52 Pit
Arctic Tern	Holme Pierrepont	28/09/2007	3	1 adult & 2 juveniles - A52 Pit.
Arctic Tern	Holme Pierrepont	05/10/2007	1	feeding and flying
Arctic Tern	Holme Pierrepont	12/10/2007	1	Rowing Course - juvenile
Arctic Tern	Holme Pierrepont	17/10/2007	1	1st W

Species	Scientific Name		Number	Comment
Arctic Tern	Holme Pierrepont	11/11/2007	1	juvenile - Flew low west through A52 Pit late afternoon. Seen by Alan Clewes, John Szczur, Tony Critchley et al.
Black Tern	Holme Pierrepont	21/08/2007	2	juveniles over the pit all evening from 6.30pm
Wood Pigeon	Holme Pierrepont	04/02/2007	11	
Wood Pigeon	Holme Pierrepont	31/03/2007	75	
Wood Pigeon	Holme Pierrepont	18/05/2007	18	
Wood Pigeon	Holme Pierrepont	20/05/2007	18	
Turtle Dove	Holme Pierrepont	21/07/2007	1	Flew over Finger Ponds heading towards Netherfield early afternoon.
Cuckoo	Holme Pierrepont	17/04/2007	1	A52 Pit (First bird noted during 2007)
Cuckoo	Holme Pierrepont	03/05/2007	1	calling
Cuckoo	Holme Pierrepont	07/05/2007	1	
Cuckoo	Holme Pierrepont	17/05/2007	1	
Cuckoo	Holme Pierrepont	20/05/2007	2	
Cuckoo	Holme Pierrepont	23/06/2007	1	
Cuckoo	Holme Pierrepont	23/07/2007	1	Juvenile being fed by Reed Warblers in trees bordering Holme Grange Pool during the evening.
Barn Owl	Holme Pierrepont	07/05/2007	1	
Barn Owl	Holme Pierrepont	02/06/2007	1	Hunting setaside field on south side of A52 at 11.30am.
Barn Owl	Holme Pierrepont	09/09/2007	1	Flew over the A52 to hunt A52 pit.
Tawny Owl	Holme Pierrepont	31/12/2007	1	heard
Common Swift	Holme Pierrepont	18/04/2007	2	first record for me for 2007
Common Swift	Holme Pierrepont	21/04/2007	100	feeding over the pit
Common Swift	Holme Pierrepont	22/04/2007	250	
Common Swift	Holme Pierrepont	24/04/2007	50	
Common Swift	Holme Pierrepont	29/04/2007	100	
Common Swift	Holme Pierrepont	13/05/2007	450	busy feeding
Common Swift	Holme Pierrepont	18/05/2007	100	
Common Swift	Holme Pierrepont	20/05/2007	1	

Species	Scientific Name		Number	Comment
Common Swift	Holme Pierrepont	27/05/2007	1200	
Common Swift	Holme Pierrepont	19/08/2007	1	
Kingfisher	Holme Pierrepont	20/01/2007	1	
Kingfisher	Holme Pierrepont	04/02/2007	2	
Kingfisher	Holme Pierrepont	17/02/2007	3	
Kingfisher	Holme Pierrepont	06/03/2007	4	
Kingfisher	Holme Pierrepont	09/06/2007	1	
Kingfisher	Holme Pierrepont	05/08/2007	1	
Kingfisher	Holme Pierrepont	05/10/2007	2	
Kingfisher	Holme Pierrepont	17/11/2007	5	
Great Spotted Woodpecker	Holme Pierrepont	23/01/2007	1	
Great Spotted Woodpecker	Holme Pierrepont	04/02/2007	1	
Great Spotted Woodpecker	Holme Pierrepont	20/05/2007	1	
Green Woodpecker	Holme Pierrepont	23/01/2007	1	
Green Woodpecker	Holme Pierrepont	31/12/2007	2	
Sky Lark	Holme Pierrepont	04/02/2007	5	
Sky Lark	Holme Pierrepont	31/03/2007	4	singing
Sky Lark	Holme Pierrepont	18/05/2007	2	
Sky Lark	Holme Pierrepont	20/05/2007	1	
Sky Lark	Holme Pierrepont	14/10/2007	12	A52 Pit
Sand Martin	Holme Pierrepont	09/03/2007	3	Flew west through A52 Pit at 6pm (First birds noted during 2007)
Sand Martin	Holme Pierrepont	28/03/2007	12	
Sand Martin	Holme Pierrepont	31/03/2007	30	
Sand Martin	Holme Pierrepont	06/04/2007	5	
Sand Martin	Holme Pierrepont	10/04/2007	40	
Sand Martin	Holme Pierrepont	02/05/2007	100	
Sand Martin	Holme Pierrepont	20/06/2007	1	Leucistic bird feeding low over Blotts Pit during the evening.
Barn Swallow	Holme Pierrepont	06/04/2007	1	flying through
Barn Swallow	Holme Pierrepont	08/04/2007	1	

Species	Scientific Name		Number	Comment
Barn Swallow	Holme Pierrepont	18/05/2007	3	
House Martin	Holme Pierrepont	06/04/2007	1	A52 Pit (First bird noted during 2007)
House Martin	Holme Pierrepont	29/04/2007	5	
House Martin	Holme Pierrepont	18/05/2007	26	
Richard's Pipit	Holme Pierrepont	14/10/2007	1	grassland around A52 Pit - description to follow
Meadow Pipit	Holme Pierrepont	14/01/2007	20	c.20 - Blotts Pit
Meadow Pipit	Holme Pierrepont	04/02/2007	6	
Rock Pipit	Holme Pierrepont	12/10/2007	1	A52 Pit - Showing well along east shore during afternoon.
Rock Pipit	Holme Pierrepont	14/10/2007	1	on shoreline
Rock Pipit	Holme Pierrepont	20/10/2007	1	A52 Pit - At east end with Meadow Pipits until 10.40am when flew east.
Water Pipit	Holme Pierrepont	13/04/2007	1	A52 Pit - near summer plumage - Present from 6.30pm - 7.10pm.
White Wagtail	Holme Pierrepont	25/03/2007	1	A52 Pit
White Wagtail	Holme Pierrepont	17/04/2007	1	A52 Pit.
White Wagtail	Holme Pierrepont	07/05/2007	1	male bird, seem VERY thin on the ground this year
Pied Wagtail	Holme Pierrepont	25/03/2007	46	A52 Pit
Pied Wagtail	Holme Pierrepont	20/05/2007	2	
Yellow Wagtail	Holme Pierrepont	05/05/2007	1	
Yellow Wagtail	Holme Pierrepont	07/05/2007	2	
Yellow Wagtail	Holme Pierrepont	07/06/2007	2	
Yellow Wagtail	Holme Pierrepont	02/09/2007	1	East-Blotts Pit
Grey Wagtail	Holme Pierrepont	06/01/2007	1	
Grey Wagtail	Holme Pierrepont	07/01/2007	1	On rowing coarse
Grey Wagtail	Holme Pierrepont	28/03/2007	2	
Grey Wagtail	Holme Pierrepont	17/06/2007	3	female and 2 young
Grey Wagtail	Holme Pierrepont	05/08/2007	1	
Grey Wagtail	Holme Pierrepont	13/10/2007	3	
Grey Wagtail	Holme Pierrepont	03/11/2007	1	

Species	Scientific Name		Number	Comment
Grey Wagtail	Holme Pierrepont	11/11/2007	2	
Grey Wagtail	Holme Pierrepont	16/12/2007	2	
Grey Wagtail	Holme Pierrepont	22/12/2007	2	
Wren	Holme Pierrepont	04/02/2007	1	
Wren	Holme Pierrepont	20/05/2007	2	
Dunnoek	Holme Pierrepont	20/05/2007	3	
Robin	Holme Pierrepont	04/02/2007	4	
Robin	Holme Pierrepont	18/05/2007	2	
Whinchat	Holme Pierrepont	22/04/2007	1	Male - A52 Pit.
Whinchat	Holme Pierrepont	01/05/2007	1	Female - A52 Pit.
Whinchat	Holme Pierrepont	22/08/2007	1	female
Common Stonechat	Holme Pierrepont	07/10/2007	1	52 Pit
Common Stonechat	Holme Pierrepont	12/10/2007	1	A52 Pit - female
Common Stonechat	Holme Pierrepont	13/10/2007	1	
Common Stonechat	Holme Pierrepont	10/11/2007	2	male and female
Common Stonechat	Holme Pierrepont	11/11/2007	1	male - North side of A52 Pit.
Common Stonechat	Holme Pierrepont	17/11/2007	2	male and female
Northern Wheatear	Holme Pierrepont	30/03/2007	1	male - A52 Pit.
Northern Wheatear	Holme Pierrepont	08/04/2007	1	
Northern Wheatear	Holme Pierrepont	17/04/2007	2	A52 Pit - Males
Northern Wheatear	Holme Pierrepont	18/04/2007	1	male
Northern Wheatear	Holme Pierrepont	21/04/2007	2	A52 Pit - Male & Female
Northern Wheatear	Holme Pierrepont	22/04/2007	1	A52 Pit - Male
Northern Wheatear	Holme Pierrepont	23/04/2007	2	A52 Pit - Males
Northern Wheatear	Holme Pierrepont	24/04/2007	3	A52 Pit - 2 Males & 1 Female
Northern Wheatear	Holme Pierrepont	25/04/2007	2	A52 Pit - Male & Female
Northern Wheatear	Holme Pierrepont	26/04/2007	1	A52 Pit - Male
Northern Wheatear	Holme Pierrepont	14/05/2007	7	A52 Pit (2 males & 5 females)
Northern Wheatear	Holme Pierrepont	20/08/2007	1	female
Ring Ouzel	Holme Pierrepont	19/04/2007	1	Male - Feeding on East side of Blotts Pit late afternoon - 8.00pm at least.

Species	Scientific Name		Number	Comment
Ring Ouzel	Holme Pierrepont	21/04/2007	1	Male - Flew low East through the A52 Pit at 6.19pm calling constantly.
Ring Ouzel	Holme Pierrepont	22/04/2007	1	Male - On north side of A52 Pit 10.15am - mid afternoon (possibly bird noted on 21/04/2007)
Blackbird	Holme Pierrepont	04/02/2007	3	
Blackbird	Holme Pierrepont	18/05/2007	6	
Blackbird	Holme Pierrepont	20/05/2007	2	
Redwing	Holme Pierrepont	28/03/2007	11	
Song Thrush	Holme Pierrepont	04/02/2007	2	
Song Thrush	Holme Pierrepont	31/03/2007	2	
Song Thrush	Holme Pierrepont	05/05/2007	1	
Song Thrush	Holme Pierrepont	13/05/2007	1	
Song Thrush	Holme Pierrepont	07/06/2007	1	
Mistle Thrush	Holme Pierrepont	30/09/2007	2	52 Pit, to E.
Grasshopper Warbler	Holme Pierrepont	22/04/2007	1	Singing & showing well in setaside field north of Bridge at Gamston Pub.
Sedge Warbler	Holme Pierrepont	22/04/2007	1	
Sedge Warbler	Holme Pierrepont	05/05/2007	3	
Sedge Warbler	Holme Pierrepont	12/05/2007	3	
Sedge Warbler	Holme Pierrepont	09/06/2007	1	
Sedge Warbler	Holme Pierrepont	19/06/2007	6	
Reed Warbler	Holme Pierrepont	22/04/2007	5	
Reed Warbler	Holme Pierrepont	05/05/2007	1	
Reed Warbler	Holme Pierrepont	12/05/2007	2	
Reed Warbler	Holme Pierrepont	13/05/2007	1	
Reed Warbler	Holme Pierrepont	09/06/2007	6	
Blackcap	Holme Pierrepont	05/05/2007	2	
Blackcap	Holme Pierrepont	12/05/2007	1	
Blackcap	Holme Pierrepont	13/05/2007	3	
Blackcap	Holme Pierrepont	20/05/2007	1	
Garden Warbler	Holme Pierrepont	22/04/2007	3	

Species	Scientific Name		Number	Comment
Garden Warbler	Holme Pierrepont	24/04/2007	1	
Garden Warbler	Holme Pierrepont	05/05/2007	1	
Garden Warbler	Holme Pierrepont	12/05/2007	2	
Garden Warbler	Holme Pierrepont	13/05/2007		
Garden Warbler	Holme Pierrepont	09/06/2007	2	
Common Whitethroat	Holme Pierrepont	22/04/2007	3	
Common Whitethroat	Holme Pierrepont	05/05/2007	4	
Common Whitethroat	Holme Pierrepont	12/05/2007	8	
Common Whitethroat	Holme Pierrepont	13/05/2007	6	
Common Whitethroat	Holme Pierrepont	20/05/2007	1	
Common Whitethroat	Holme Pierrepont	09/06/2007	10	
Lesser Whitethroat	Holme Pierrepont	15/04/2007	1	Blotts Pit (First bird noted during 2007)
Lesser Whitethroat	Holme Pierrepont	22/04/2007	3	
Lesser Whitethroat	Holme Pierrepont	24/04/2007	3	
Lesser Whitethroat	Holme Pierrepont	22/09/2007	1	juvenile
Willow Warbler	Holme Pierrepont	07/04/2007	4	Noted throughout the complex (First birds noted during 2007)
Willow Warbler	Holme Pierrepont	15/04/2007	15	
Willow Warbler	Holme Pierrepont	19/04/2007	3	
Willow Warbler	Holme Pierrepont	05/05/2007	5	
Willow Warbler	Holme Pierrepont	09/06/2007	6	
Common Chiffchaff	Holme Pierrepont	07/01/2007	1	By Ski Pit
Common Chiffchaff	Holme Pierrepont	14/01/2007	1	Finger Ponds
Common Chiffchaff	Holme Pierrepont	20/01/2007	1	
Common Chiffchaff	Holme Pierrepont	17/02/2007	1	
Common Chiffchaff	Holme Pierrepont	13/03/2007	2	
Common Chiffchaff	Holme Pierrepont	14/03/2007	1	
Common Chiffchaff	Holme Pierrepont	20/03/2007	1	singing
Common Chiffchaff	Holme Pierrepont	25/03/2007	1	A52 Pit
Common Chiffchaff	Holme Pierrepont	28/03/2007	6	
Common Chiffchaff	Holme Pierrepont	31/03/2007	6	

Species	Scientific Name		Number	Comment
Common Chiffchaff	Holme Pierrepont	14/04/2007	7	
Common Chiffchaff	Holme Pierrepont	19/04/2007	6	
Common Chiffchaff	Holme Pierrepont	05/05/2007	6	
Common Chiffchaff	Holme Pierrepont	12/05/2007	3	
Common Chiffchaff	Holme Pierrepont	13/05/2007	1	
Common Chiffchaff	Holme Pierrepont	09/06/2007	6	
Common Chiffchaff	Holme Pierrepont	13/10/2007	2	
Common Chiffchaff	Holme Pierrepont	11/11/2007	1	
Common Chiffchaff	Holme Pierrepont	22/12/2007	1	
Common Chiffchaff	Holme Pierrepont	30/12/2007	1	
Goldcrest	Holme Pierrepont	30/09/2007	1	52 Pit
Spotted Flycatcher	Holme Pierrepont	22/09/2007	1	Blotts Country Club garden.
Long-tailed Tit	Holme Pierrepont	18/05/2007	2	
Long-tailed Tit	Holme Pierrepont	20/05/2007	3	
Long-tailed Tit	Holme Pierrepont	04/11/2007	16	
Willow Tit	Holme Pierrepont	13/03/2007	1	
Willow Tit	Holme Pierrepont	07/05/2007	3	BREEDING - 2 adult & 1 recently fledged juvenile in scrub north of A52 Pit.
Willow Tit	Holme Pierrepont	27/05/2007	6	A pair and four juvs Skylarks NR
Willow Tit	Holme Pierrepont	19/06/2007	2	in scrub
Willow Tit	Holme Pierrepont	05/08/2007	1	
Willow Tit	Holme Pierrepont	13/10/2007	2	
Willow Tit	Holme Pierrepont	17/10/2007	1	
Willow Tit	Holme Pierrepont	24/11/2007	2	
Willow Tit	Holme Pierrepont	16/12/2007	1	
Willow Tit	Holme Pierrepont	22/12/2007	1	
Great Tit	Holme Pierrepont	04/02/2007	3	
Great Tit	Holme Pierrepont	18/05/2007	2	
Great Tit	Holme Pierrepont	20/05/2007	2	
Blue Tit	Holme Pierrepont	20/05/2007	2	
Treecreeper	Holme Pierrepont	16/12/2007	1	

Species	Scientific Name		Number	Comment
Treecreeper	Holme Pierrepont	26/12/2007	1	
Jay	Holme Pierrepont	31/01/2007	1	
Jay	Holme Pierrepont	21/10/2007	3	
Jay	Holme Pierrepont	17/11/2007	3	
Jay	Holme Pierrepont	26/12/2007	1	
Magpie	Holme Pierrepont	04/02/2007	5	
Magpie	Holme Pierrepont	18/05/2007	12	
Magpie	Holme Pierrepont	20/05/2007	10	
Jackdaw	Holme Pierrepont	30/01/2007	80	
Jackdaw	Holme Pierrepont	18/05/2007	14	
Jackdaw	Holme Pierrepont	20/05/2007	8	
Carrion Crow	Holme Pierrepont	04/02/2007	4	
Carrion Crow	Holme Pierrepont	18/05/2007	13	
Carrion Crow	Holme Pierrepont	20/05/2007	15	
Raven	Holme Pierrepont	14/07/2007	2	Patrolling over woodland viewable from the Raptor Watchpoint twice during the morning.
Raven	Holme Pierrepont	12/10/2007	1	Flew southwest over fields west of A52 Pit at 9.37am (continued over West Bridgford)
Common Starling	Holme Pierrepont	18/05/2007	9	
Common Starling	Holme Pierrepont	20/05/2007	8	
Common Starling	Holme Pierrepont	11/11/2007	3500	reedbed nw of 52Pit
Chaffinch	Holme Pierrepont	04/02/2007	3	
Chaffinch	Holme Pierrepont	18/05/2007	10	
Chaffinch	Holme Pierrepont	20/05/2007	8	
Brambling	Holme Pierrepont	19/10/2007	1	A52 Pit - Flew south
Brambling	Holme Pierrepont	16/11/2007	1	
Brambling	Holme Pierrepont	17/11/2007	1	Flew south through A52 Pit during morning.
Siskin	Holme Pierrepont	22/09/2007	41	Flew through A52 during the morning .
Siskin	Holme Pierrepont	17/10/2007	2	
Siskin	Holme Pierrepont	04/11/2007	1	
Siskin	Holme Pierrepont	17/11/2007	1	

Species	Scientific Name		Number	Comment
Siskin	Holme Pierrepont	26/12/2007	18	
Goldfinch	Holme Pierrepont	18/05/2007	2	
Lesser Redpoll	Holme Pierrepont	22/09/2007	5	calling and seen flying in scrub near Buggyland
Lesser Redpoll	Holme Pierrepont	03/11/2007	3	
Lesser Redpoll	Holme Pierrepont	17/11/2007	1	
Linnet	Holme Pierrepont	31/03/2007	2	
Linnet	Holme Pierrepont	12/05/2007	5	
Linnet	Holme Pierrepont	18/05/2007	12	
Linnet	Holme Pierrepont	16/09/2007	20	Blotts Pit
Bullfinch	Holme Pierrepont	27/01/2007	2	
Bullfinch	Holme Pierrepont	30/01/2007	1	female
Bullfinch	Holme Pierrepont	01/03/2007	3	2 male
Yellowhammer	Holme Pierrepont	07/06/2007	1	
Yellowhammer	Holme Pierrepont	24/12/2007	6	A52 Pit
Yellowhammer	Holme Pierrepont	30/12/2007	11	highest site count I've had
Reed Bunting	Holme Pierrepont	25/03/2007	1	male with Pied Wagtails
Reed Bunting	Holme Pierrepont	20/05/2007	1	
Corn Bunting	Holme Pierrepont	07/05/2007	1	On wires south of the A52 viewable from the west end of the A52 Pit.
Corn Bunting	Holme Pierrepont	13/05/2007	1	On wires south of the A52 viewable from the west end of the A52 Pit again.
Corn Bunting	Holme Pierrepont	19/05/2007	1	On wires south of the A52 viewable from the west end of the A52 Pit again.

Species	Location	Date	Number	Comment
Common Pheasant	Cotgrave	04/02/2007	14	Suddenly appeared through a gap in the fence disappeared after cold snap!
Pied Wagtail	Cotgrave	17/07/2007	7	Family, 2 adult + 5 young, foraging, and being fed by adults
Northern Wheatear	Cotgrave	22/04/2007	1	
Common Snipe	Cotgrave CP	29/01/2007	17	
Jack Snipe	Cotgrave CP	29/01/2007	4	Highest count for over a year probably due to site invasion by Phragmites and willow
Cuckoo	Cotgrave CP	26/04/2007	1	
Green Woodpecker	Cotgrave CP	09/08/2007	3	Incl 1 juv
Song Thrush	Cotgrave CP	17/06/2007	1	
Sedge Warbler	Cotgrave CP	10/06/2007	3	
Reed Warbler	Cotgrave CP	26/04/2007	5	
Reed Warbler	Cotgrave CP	10/06/2007	6	
Common Whitethroat	Cotgrave CP	22/04/2007	2	
Common Whitethroat	Cotgrave CP	24/04/2007	9	
Common Whitethroat	Cotgrave CP	26/04/2007	17	Singing
Common Whitethroat	Cotgrave CP	19/05/2007	15	
Common Whitethroat	Cotgrave CP	10/06/2007	8	
Lesser Whitethroat	Cotgrave CP	22/04/2007	6	All Singing
Willow Warbler	Cotgrave CP	19/05/2007	5	
Willow Warbler	Cotgrave CP	10/06/2007	6	
Common Chiffchaff	Cotgrave CP	19/05/2007	3	
Common Chiffchaff	Cotgrave CP	10/06/2007	4	
Common Chiffchaff	Cotgrave CP	01/07/2007	1	
Willow Tit	Cotgrave CP	01/07/2007	1	
Jay	Cotgrave CP	28/09/2006	2	Feeding on acorns
Rook	Cotgrave CP	26/05/2007	80	
Bullfinch	Cotgrave CP	09/08/2007	1	
Yellowhammer	Cotgrave CP	10/06/2007	5	

Species	Location	Date	Number	Comment
Great Spotted Woodpecker	Cotgrave	24/06/2005	3	on feeders in cotgrave garden
Common Chiffchaff	Cotgrave	15/03/2005	1	
Eurasian Nuthatch	Cotgrave	13/11/2005	1	Observer's garden, first in Cotgrave for 7 years
Common Crossbill	Cotgrave	24/06/2005	8	Cotgrave over to the north
Reed Bunting	Cotgrave	23/03/2005	2	A pair in observer's garden
Mute Swan	Cotgrave	07/03/2006	53	SK633363 Feeding on winter cereals-regular occurrence in February and March
Northern Goshawk	Cotgrave CP	14/11/2005	1	male
Peregrine Falcon	Cotgrave CP	06/05/2005	1	Fly over
Little Ringed Plover	Cotgrave CP	13/04/2005	1	
Little Ringed Plover	Cotgrave CP	29/04/2005	2	
Common Snipe	Cotgrave CP	13/04/2005	7	
Turtle Dove	Cotgrave CP	29/04/2005	1	
Yellow Wagtail	Cotgrave CP	16/04/2005	1	
Black Redstart	Cotgrave CP	16/04/2005	1	Female on pit site 1st seen 08.30
Northern Wheatear	Cotgrave CP	13/04/2005	4	
Northern Wheatear	Cotgrave CP	16/04/2005	4	
Northern Wheatear	Cotgrave CP	29/04/2005	2	
Garden Warbler	Cotgrave CP	29/04/2005	1	
Willow Warbler	Cotgrave CP	13/04/2005	10	
Tree Sparrow	Cotgrave CP	13/02/2005	5	
Mute Swan	Cotgrave CP	27/02/2006	58	1 Pair 7 cygnets. 2 pair all year
Eurasian Wigeon	Cotgrave CP	01/01/2006	1	
Gadwall	Cotgrave CP	25/02/2006	6	
Eurasian Teal	Cotgrave CP	12/02/2006	1	
Mallard	Cotgrave CP	10/09/2006	66	Present all year
Shoveler	Cotgrave CP	29/11/2006	1	
Common Pochard	Cotgrave CP	01/01/2006	1	
Tufted Duck	Cotgrave CP	12/03/2006	18	Present Jan - Mar & Sept - Dec
Goosander	Cotgrave CP	09/11/2006	2	
Ruddy Duck	Cotgrave CP	08/05/2006	1	

Species	Location	Date	Number	Comment
Red-legged Partridge	Cotgrave CP	01/01/2006	2	Present all Year
Grey Partridge	Cotgrave CP	14/09/2006	4	Present all year
Common Pheasant	Cotgrave CP	12/02/2006	6	Present all year
Little Grebe	Cotgrave CP	06/07/2006	8	Present all year
Cormorant	Cotgrave CP	03/01/2006	3	Present Dec - April only
Grey Heron	Cotgrave CP	05/07/2006	4	Up to 6 birds present all year
Sparrowhawk	Cotgrave CP	01/01/2006		Present all year
Common Buzzard	Cotgrave CP	20/01/2006	2	Pair hunt in the park all year. Another pair fledged 1 youngster in Cotgrave Forest.
Kestrel	Cotgrave CP	01/01/2006	2	Present all year - breeding unsuccessful this year
Kestrel	Cotgrave CP	22/08/2006	1	Between: 10:30-12:30.
Water Rail	Cotgrave CP	12/02/2006	1	
Water Rail	Cotgrave CP	07/10/2006	1	
Water Rail	Cotgrave CP	13/12/2006	2	Present Oct - March. Never seen/heard outside these months
Moorhen	Cotgrave CP	12/02/2006	23	
Moorhen	Cotgrave CP	16/06/2006	28	Present all year. 5 pairs nested successfully. (3 on canal 2 on lakes)
Coot	Cotgrave CP	12/02/2006	42	Present all year. 6 pairs nested successfully. Some had 2 broods after losing earlier chicks. 1 Pair raised 7 chicks!
European Golden Plover	Cotgrave CP	27/01/2006	60	Only seen in Jan, Feb, Mar & Sept

Species	Location	Date	Number	Comment
Little Ringed Plover	Cotgrave CP	06/04/2006	6	1 Pair raised 2 broods. The first youngster stayed with its parents while they had 2 more chicks. Not seen after 29 June
Northern Lapwing	Cotgrave CP	27/01/2006	30	Only seen until April. 26 seen 28 Sept
Common Snipe	Cotgrave CP	01/11/2006	19	Present through the winter - but have to be flushed to count.
Common Redshank	Cotgrave CP	06/07/2006	1	Passing through
Green Sandpiper	Cotgrave CP	03/08/2006	1	
Herring Gull	Cotgrave CP	01/04/2006	3	On lake
Lesser Black-backed Gull	Cotgrave CP	04/03/2006	2	On lake
Black-headed Gull	Cotgrave CP	12/02/2006	107	Present all year. Roost on lake in winter.
Mediterranean Gull	Cotgrave CP	17/01/2006	1	adult
Common Tern	Cotgrave CP	29/06/2006	4	Present sporadically through the summer fishing in the lake
Feral Pigeon	Cotgrave CP	22/08/2006	14	Between: 10:30-12:30.
Stock Dove	Cotgrave CP	01/01/2006	10	Present all year. With 2 young on 29 June
Stock Dove	Cotgrave CP	22/08/2006	1	Between: 10:30-12:30.
Wood Pigeon	Cotgrave CP	01/01/2006	28	Present all year. Bred
Turtle Dove	Cotgrave CP	06/05/2006	3	1 juv present on 9 Aug & 1 on 16 Sept. Numbers down this year, due in part to railway work along the embankment where they usually nest.
Turtle Dove	Cotgrave CP	07/05/2006	2	.
Turtle Dove	Cotgrave CP	09/05/2006	1	
Turtle Dove	Cotgrave CP	13/05/2006	22	(? 3)
Turtle Dove	Cotgrave CP	03/08/2006	1	singing
Collared Dove	Cotgrave CP	01/01/2006	38	Present all year .Bred
Cuckoo	Cotgrave CP	13/05/2006	3	2 males and 1 female - mating observed!
Barn Owl	Cotgrave CP	28/04/2006	1	Birds present all year. 2 pairs nested on adjoining farmland and Cotgrave Golf Course

Species	Location	Date	Number	Comment
Tawny Owl	Cotgrave CP	01/01/2006	2	Present all year. Heard and seen around nearby houses. Not known if they bred this year -their hollow nesting tree was damaged in the winter gales.
Little Owl	Cotgrave CP	28/09/2006	1	First bird seen for 4 years
Common Swift	Cotgrave CP	30/04/2006	16	This flock included juvs hunting over the lake
Kingfisher	Cotgrave CP	04/03/2006	1	Between: 15:00-15:00.
Kingfisher	Cotgrave CP	16/09/2006	3	On this date 2 juvs with an adult bird, fishing in the canal lock,early in the morning. 1 Pair present all year.
Great Spotted Woodpecker	Cotgrave CP	08/06/2006	5	On this date 2 adults with 3 juvs. 2 more pairs also successfully bred, within the park.
Great Spotted Woodpecker	Cotgrave CP	22/08/2006	1	Between: 10:30-12:30.
Green Woodpecker	Cotgrave CP	04/03/2006	4	Between: 15:00-15:00.
Green Woodpecker	Cotgrave CP	05/07/2006	4	On this date 2 adults with 2 juvs. Usually 2 pairs present all year.
Sky Lark	Cotgrave CP	18/10/2006	25	4 singing males
Sand Martin	Cotgrave CP	28/04/2006	8	Passsing through
Barn Swallow	Cotgrave CP	28/04/2006	31	Nested in stables next to the canal. 15 fledged juvs counted on 6 July
House Martin	Cotgrave CP	30/04/2006	33	Flock including juvs on 6th Sept
Meadow Pipit	Cotgrave CP	09/10/2006	32	Passing through. 6 birds are present all year. 2 pair fledged 2 young each on the old colliery site.
Pied Wagtail	Cotgrave CP	05/07/2006	9	On this date 4 adults + 5 fledged young
Yellow Wagtail	Cotgrave CP	03/05/2006	1	Passing through
Grey Wagtail	Cotgrave CP	28/07/2006	5	On this date 2 adults + 3 fledged young. 2 adults present all year.
Wren	Cotgrave CP	01/01/2006		Present all year and bred
Dunnock	Cotgrave CP	01/01/2006		Present all year and bred
Robin	Cotgrave CP	01/01/2006		Present all year and bred
Robin	Cotgrave CP	22/08/2006	1	Between: 10:30-12:30.

Species	Location	Date	Number	Comment
Common Redstart	Cotgrave CP	14/09/2006	1	Passing through
Common Stonechat	Cotgrave CP	01/01/2006	2	A female was also present on 28 Sept
Common Stonechat	Cotgrave CP	13/02/2006	1	
Common Stonechat	Cotgrave CP	28/09/2006	2	
Common Stonechat	Cotgrave CP	01/11/2006		
Northern Wheatear	Cotgrave CP	01/04/2006	6	
Blackbird	Cotgrave CP	01/01/2006		Present all year and bred
Fieldfare	Cotgrave CP	12/01/2006	20	Max no. on 20 Jan. 12 birds max in Dec.
Redwing	Cotgrave CP	25/09/2006	1	Very early bird on 25 Sept. No more until 15 on 6 Nov
Redwing	Cotgrave CP	06/11/2006	15	
Song Thrush	Cotgrave CP	12/02/2006	3	3 Singing males on this date. Fledged young seen.
Mistle Thrush	Cotgrave CP	01/01/2006	2	2 birds present all year. No known breeding
Sedge Warbler	Cotgrave CP	24/04/2006	4	only 2 singing males. 1 adult and 3 fledged young seen
Sedge Warbler	Cotgrave CP	22/08/2006	2	Between: 10:30-12:30.
Reed Warbler	Cotgrave CP	24/04/2006	12	record 12 singing males. 5family parties found. Average 3 chicks. Nested on both lakes and the canal.
Blackcap	Cotgrave CP	24/04/2006	10	3 pairs. 2 had fledged young - 3+4.
Garden Warbler	Cotgrave CP	24/04/2006	2	Not known if any bred
Common Whitethroat	Cotgrave CP	24/04/2006	6	6 singing males on 30 April. In July 2 families seen - 4 juvs + 2 juvs
Lesser Whitethroat	Cotgrave CP	24/04/2006	1	Bird singing on that date and on 6 May
Willow Warbler	Cotgrave CP	24/04/2006	3	singing males on 2 June
Common Chiffchaff	Cotgrave CP	30/03/2006	5	singing males on 3 April
Goldcrest	Cotgrave CP	02/03/2006	2	no more than 2 birds seen all year
Spotted Flycatcher	Cotgrave CP	30/08/2006	2	stayed for a week
Long-tailed Tit	Cotgrave CP	01/01/2006		Present all year and bred
Willow Tit	Cotgrave CP	25/09/2006	2	only sighting this year
Coal Tit	Cotgrave CP	05/03/2006	2	only sighting this year

Species	Location	Date	Number	Comment
Blue Tit	Cotgrave CP	01/01/2006		Present all year and bred. 5 pairs were successful in our new boxes. 1 pair fledged 8 .
Treecreeper	Cotgrave CP	30/01/2006	1	1 bird only seen a couple of times
Jay	Cotgrave CP	28/09/2006	2	Feeding on acorns
Magpie	Cotgrave CP	03/03/2006	18	On this date. Birds present all year and 2 pairs had 2 fledged young each
Magpie	Cotgrave CP	22/08/2006	2	Between: 10:30-12:30.
Jackdaw	Cotgrave CP	01/01/2006	10	Present all year. Do not nest in the park. 2 pair nested on nearby farm buildings
Rook	Cotgrave CP	22/08/2006	150	Present all year. 2 rookeries in the poplar trees with around 20 nests
Carrion Crow	Cotgrave CP	22/08/2006	20	Present all year and bred. On 22 Aug a mixed flock of birds were feeding on a newly ploughed field.
Common Starling	Cotgrave CP	06/11/2006	150	Present all year and bred. 1 pair were successful in an old greenwoodpecker hole
House Sparrow	Cotgrave CP	01/01/2006	12	Present all year and bred
Tree Sparrow	Cotgrave CP	15/07/2006	54	on this date, flock with juvs. At least 4 singing males along the canal in May
Chaffinch	Cotgrave CP	30/01/2006	12	Present all year and bred. Scattered across the park, so probably many more than 12.
Greenfinch	Cotgrave CP	30/01/2006	14	Present all year and at least 2 pair bred. Family groups seen
Siskin	Cotgrave CP	18/01/2006	100	Started with 60 birds in Jan, peaked at over 100 on 25 Feb. In Mar c50 birds
Siskin	Cotgrave CP	13/02/2006	110	
Goldfinch	Cotgrave CP	09/08/2006	100	Present all year. Most numerous finch. The August flock contained good numbers of juvs
Common Redpoll	Cotgrave CP	25/02/2006	1	With the siskin flock, feeding on alders
Lesser Redpoll	Cotgrave CP	30/01/2006	4	With the siskin flock, feeding on alders
Lesser Redpoll	Cotgrave CP	25/02/2006	5	
Linnet	Cotgrave CP	21/07/2006	47	On this date the flock contained many juvs. Present all year and breed

Species	Location	Date	Number	Comment
Bullfinch	Cotgrave CP	25/09/2006	8	2 families present all year. Both had 2 fledged young on this date
Yellowhammer	Cotgrave CP	06/07/2006	28	On this date 4 family parties, 2x3juvs, 1x2, 1x4 + parents. Birds present all year
Reed Bunting	Cotgrave CP	29/06/2006	13	On this date 3 family parties, 2x 2juvs, 1x3juvs. Birds present all year
Reed Bunting	Cotgrave CP	22/08/2006	3	Between: 10:30-12:30.

APPENDIX 6

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APPENDIX 6 HABITATS WITHIN SITE AREA AND SURVEY TRIGGERS FOR PROTECTED/BAP SPECIES

Habitats present within the study area boundary	Protected/BAP species potential	Survey Triggers
River (LBAP)	Otter	All rivers streams and water bodies especially embankments with good cover including reeds and emergent vegetation, and adjacent woodland
	Water vole	All rivers, streams and water bodies, especially with steep banks suitable for burrowing and bank side and emergent vegetation cover
	Breeding birds	Trees, scrub, buildings on bankside. Emergent vegetation
	Bat species	Buildings, cellars, bridges, tunnels, caves, mines, culverts, trees with rot holes. Linear features such as trees and shrubs along river side and suitable foraging areas such as woodland or wetland along the river course.
	White-clawed Crayfish	Rivers, streams, canals especially with stony substrate and/or other refuges
	Aquatic Invertebrates	Aquatic invertebrate larvae may be present in all water bodies (including flowing and still)
Ditch (LBAP)	Water vole	All rivers, streams and water bodies, especially with steep banks suitable for burrowing and bank side and emergent vegetation cover
	White-clawed Crayfish	Rivers, streams, canals especially with stony substrate and/or other refuges
	Grass snake	Proximity to suitable terrestrial habitat (derelict land, scrub, heath, dry and wet grassland), offering varied structure and good cover
	Aquatic Invertebrates	Aquatic invertebrate larvae may be present in all water bodies (including flowing and still)
Canal (LBAP)	Water vole	Soft banks suitable for burrowing (particularly on non towpath side), suitable refuges and emergent vegetation cover. Slow moving water
	Grass snake	Railway, canal, derelict land, heath, dry and wet grassland, Proximity to suitable terrestrial habitat offering varied structure and good cover
	Bat species	Buildings, cellars, bridges, tunnels, caves, mines, culverts, trees with rot holes. Linear features such as trees and shrubs along river side and suitable foraging areas such as woodland or wetland along canal.
	Breeding birds	Trees, scrub, buildings on bankside. Emergent vegetation.
	White-clawed Crayfish	Rivers, streams, canals especially with stony substrate and/or other refuges
	Aquatic Invertebrates	Aquatic invertebrate larvae may be present in all water bodies (including flowing and still)
Lake (LBAP)	Wading birds	Open water, exposed ground/mud, emergent vegetation
	Great crested newt	Only present in smaller waterbodies. Presence of shallow margins for displaying and aquatic vegetation for egg laying to allow eggs to remain submerged
	Grass snake	Proximity to suitable terrestrial habitat (derelict land, scrub, heath, dry and wet grassland), offering varied structure and good cover
	Aquatic Invertebrates	Aquatic invertebrate larvae may be present in all water bodies (including flowing and still)

Pond (LBAP)	Water vole	All rivers, streams and water bodies, especially with steep banks suitable for burrowing and bank side and emergent vegetation cover
	Grass snake	Proximity to suitable terrestrial habitat (derelict land, scrub, heath, dry and wet grassland), offering varied structure and good cover
	Great crested newt	Terrestrial habitat including tussocky grassland or woodland within the vicinity of the pond. Shallow margins for displaying and aquatic vegetation for egg laying.
	Breeding birds	Presence of reeds and other emergent vegetation suitable for nesting.
	Bat species	Foraging opportunities
Woodland (LBAP)	Badger	Advisable to check all habitats, particularly if woodland and hedgerows are nearby
	Bats	trees with bat roost potential
	Breeding Birds	trees offering nesting potential
Shrub	Breeding birds Reptiles	Shrub offers cover for reptiles and suitable nesting for breeding birds.
Marsh and swamp (LBAP)	Wading birds	Open water, exposed ground/mud, emergent vegetation
	Great crested newts	Suitable terrestrial habitat for great crested newt
	Grass snake	Suitable terrestrial habitat for grass snake
	Harvest mouse	Harvest mice will nest in reed beds
Scattered trees	Nesting breeding birds	Offer nesting opportunities
	Roosting bats	Trees with bat potential
Buildings	Roosting bats	Offer roosting opportunities
	Nesting birds	Offer nesting opportunities
Hedgerows (LBAP)	Nesting birds	Provides suitable nesting habitat
	Badger	Particularly on field margins/near woodland
	Harvest mouse	Provides suitable nesting habitat
	Protected Hedgerows	Species rich hedgerows as defined by Hedgerow Regulations (1997)
Grassland habitats (LBAP)	Reptiles Great Crested Newts	Tussocky grassland provides suitable terrestrial habitats for reptiles and great crested newts
	Breeding birds	Foraging opportunities, ground nesting nesting (eg skylark, lapwing)
	Bat species	Foraging opportunities
	Harvest mouse	Nesting opportunities in dense, tall vegetation
Arable habitats (LBAP)	Rare arable plant species	Rare arable species may be present on arable field margins.
	Harvest mouse	Nesting opportunities

APPENDIX D

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Table 4.1 – Listed Buildings, Archaeological sites and Find Spots

The following table outline the known cultural heritage resource within the study area. In the table below, assets are referred to by a Scott Wilson project number and represented on Figure 4.1 of the main report.

SW Project Number	Type	Description	Period	Designation
1	Listed Building	Church of St Edmund; Parish church. C13, C14, C15, 1666 rebuilt, restored 1878-81 by T. C. Hine, when the chancel was rebuilt, further restorations in 20 th century. Ashlar construction with slate roofs.	Medieval	I
2	Listed Building	Holme Pierrepont Hall; Early C16 courtyard house built for the Pierrepont family, Earls and Dukes of Kingston and Earls Manvers, now truncated U-plan. Red brick, some blue brick chequering and diaper, ashlar dressings, some render. Hipped slate roofs behind c.1800 embattled parapets	Medieval and Post-medieval	I
3	Registered Park and Garden	Holme Pierrepont Hall Park and Garden; early 16th century park surrounding, on three sides, a partly medieval hall, with, on the fourth side, an early 17th century formal garden. A late 19th century garden, possibly by W A Nesfield, is within the courtyard of the hall, with late 20th century gardens to the east.	Post-medieval	II
4	Listed Building	Wall and Gazebo at Holme Pierrepont Hall; Early C17, red brick with moulded ashlar coping.	17th century	II*
5	Listed Building	Memorial in the Churchyard of Church of St Edmund, 7 metres south west of the tower; Late C18. Ashlar. Plinth supporting a panelled square chest	18th century	II
6	Listed Building	Memorial in the Churchyard of Church of St Edmund, 12 metres south of the aisle; 1795, to Samuel and William Sanday. Ashlar. Plinth surmounted by tall rectangular chest	18th century	II
7	Listed Building	Hall Farmhouse, Gamston; 18th and 19th century farmhouse. Coursed hydraulic limestone rubble with red brick patching. 19th century slate roof.	18th and 19th century	II
8	Lock Keeper's Cottage	Lock Keeper's Cottage, Grantham Canal	1790 - present	N/A
9	Canal Bridge	Brown's Bridge, Grantham Canal	1790 - present	N/A

SW Project Number	Type	Description	Period	Designation
10	Canal Bridge	Holly Gate Bridge, Grantham Canal	1790 - present	N/A
11	Canal Bridge	Cotgrave Bridge, Grantham Canal	1790 - present	N/A
12	Canal Bridge	Swing Bridge, Cotgrave	1790 - present	N/A
13	Canal Bridge	Swing Bridge, Holme Pierrepont	1790 - present	N/A
14	Canal Lock	Lock, Grantham Canal	1790 - present	N/A
15	Canal Lock	Lock, Grantham Canal	1790 - present	N/A
16	Listed Building	Holly Lodge; Early 19th century lodge, possibly by William Wilkins. Whitewashed brick with a slate roof.	19th century	II
17	Listed Building	Cotgrave Place Farmhouse; Early 19th century farmhouse. Render over probably red brick, on an ashlar plinth. Hipped slate roof.	19th century	II
18	Listed Building	Memorial in the Churchyard of Church of St Edmund, 2 metres south of the organ chamber; Memorial. 1802, to "Francis Dort de le Borde of Mereville and Clessy". Ashlar and slate. Ashlar plinth supporting a large rectangular ashlar chest	19th century	II
19	Listed Building	Hall Cottage and attached Estate Office; Cottage c.1810, probably by William Wilkins for the first Earl Manvers of Thoresby. c.1890 estate office. Render over red brick. Slate roofs with overhanging eaves.	19th century	II
20	Listed Building	Simkins Farmhouse; Early 19th century farmhouse, render over red brick with a hipped slate roof	19th century	II
21	Listed Building	Holme House; Early 19th century farmhouse with mid 19th century alterations. Render, probably over red brick, on an ashlar plinth. Hipped slate roof with eaves overhang.	19th century	II
22	Listed Building	Railway Bridge over the River Trent, Red brick, ashlar and iron bridge, built 1851 and altered c1970	19th century	II
23	Locally Listed	Beaton Cottages, Holme Pierrepont	19th century	N/A
24	Listed Building	Lychgate to Churchyard of Church of St Edmund; Built 1921. Rock-face ashlar, wood, some iron	Modern	II

SW Project Number	Type	Description	Period	Designation
25	River Lock	Holme Lock, Holme Pierrepont	Modern	N/A
26	Blacksmiths Workshop	Smithy, Holme Pierrepont	Modern	N/A
27	Canal Bridge	Tollerton Bridge, Gamston	Modern	N/A
28	Blacksmiths Workshop	Smithy, Cotgrave	Modern	N/A
29	River Lock	Upper Holme Lock, Holme Pierrepont	Modern	N/A
30	Building	Brick building at Gamston	Modern?	N/A
31	Structure	A concrete World War II pillbox is situated in the right hand corner of a hangar, on a brick base, with three embrasures facing down the length of the hangar.	Modern	N/A
32	Structure	World War II hexagonal pillbox with brick cladding and a concrete roof.	Modern	N/A
33	Structure	World War II pillbox of elongated octagonal form. Brick cladding with deep concrete embrasures.	Modern	N/A
34	Structure	World War II hexagonal pillbox, brick cladding with a concrete roof.	Modern	N/A
35	Structure	World War II pillbox of elongated octagonal form. Brick cladding with deep concrete embrasures. Entrance at the east end is protected by a 'porch'.	Modern	N/A
36	Structure	World War II hexagonal pillbox.	Modern	N/A
37	Structure	World War II elongated octagonal pillbox.	Modern	N/A
38	Structure	World War II elongated octagonal pillbox.	Modern	N/A
39	Structure	World War II elongated octagonal pillbox.	Modern	N/A
40	Structure	World War II Type 24 hexagonal pillbox.	Modern	N/A
41	Structure	World War II elongated octagonal pillbox.	Modern	N/A
42	Structure	World War II Type 24 hexagonal pillbox.	Modern	N/A
43	Structure	World War II elongated octagonal pillbox.	Modern	N/A
44	Structure	World War II elongate octagonal pillbox.	Modern	N/A
45	Structure	World War II elongate octagonal pillbox.	Modern	N/A
46	Structure	World War II hexagonal pillbox.	Modern	N/A
47	Structure	World War II hexagonal pillbox.	Modern	N/A

SW Project Number	Type	Description	Period	Designation
48	Structure	World War II hexagonal pillbox.	Modern	N/A
49	Structure	World War II hexagonal pillbox.	Modern	N/A
50	Structure	World War II battle headquarters. Constructed between 1939 and 1945.	Modern	N/A
51	Structure	Water tower at Nottingham Airport, Tollerton. A machine gun post was positioned at the top of the tower during World War II.	Modern	N/A
52	Airfield	Nottingham Airport is a former military airfield used before, during and after World War II. It opened in 1930. The wartime airfield consisted of three concrete runways with Bellman and Blister aircraft hangar designs. There was limited temporary accommodation for 142 personnel. Its wartime role was as a satellite airfield for Newton Airfield, and was used by the Service Flying Training School. 21 defensive installations, mainly pillboxes, relating to the World War II airfield's defence have been recorded.	Modern	N/A
53	Structure	Pillbox at Tollerton	Modern	N/A
54	Locally Listed	28 Main Road, Cotgrave	Unknown	N/A
55	Locally Listed	53 to 55 Main Road, Cotgrave	Unknown	N/A
56	Locally Listed	37 Main Road, Cotgrave	Unknown	N/A
57	Locally Listed	29 Main Road, Cotgrave	Unknown	N/A
58	Locally Listed	12 Main Road, Cotgrave	Unknown	N/A
59	Locally Listed	43 & 45 Main Road, Cotgrave	Unknown	N/A
60	Locally Listed	51 Main Road, Cotgrave	Unknown	N/A
61	Locally Listed	2 Morkinshire Lane, Cotgrave	Unknown	N/A
62	Locally Listed	4 Morkinshire Lane, Cotgrave	Unknown	N/A
63	Locally Listed	7 Morkinshire Lane, Cotgrave	Unknown	N/A
64	Locally Listed	11 Morkinshire Lane, Cotgrave	Unknown	N/A
65	Locally Listed	Manor Farm, Gamston	Unknown	N/A
66	Locally Listed	Grange Farmhouse, Gamston	Unknown	N/A
67	Locally Listed	Hall Farm Barn, Gamston	Unknown	N/A
68	Locally Listed	Malone Cottage, Gamston	Unknown	N/A
69	Locally Listed	The Gables, Holme Pierrepont	Unknown	N/A
70	Locally Listed	Old Rectory, Holme Pierrepont	Unknown	N/A
71	Locally Listed	The Firs, Holme Pierrepont	Unknown	N/A
72	Chapel	Chapel, Gamston	Unknown	N/A
73	Find spot	Palaeolithic flints and a scatter of Neolithic and Bronze Age finds.	Palaeolithic, Bronze Age	N/A
74	Find spot	Mammoth tusk.	Palaeolithic	N/A

SW Project Number	Type	Description	Period	Designation
75	Find spot	Palaeolithic flint flake.	Palaeolithic	N/A
76	Find spot	Palaeolithic flint tool.	Palaeolithic	N/A
77	Find spot	Red deer antlers, a human tibia and a Palaeolithic hand-axe found on a waste tip following gravel extraction.	Palaeolithic	N/A
78	Find spot	Neolithic axe head.	Neolithic	N/A
79	Find spot	Neolithic axe head.	Neolithic	N/A
80	Find spot	Neolithic axe head.	Neolithic	N/A
81	Site	Neolithic round barrow with ring ditch and pits, Great Briggs. Roman, Medieval and Post-medieval pottery was also recovered.	Neolithic	N/A
82	Site	Neolithic long barrow and linear features and enclosures of unknown date at Holly Farm, Bassingfield.	Neolithic	N/A
83	Find spot	13 Neolithic/Bronze Age flints comprising, "spokeshave", three damaged blades and waste flakes found on the surface of a field.	Neolithic, Bronze Age	N/A
84	Find spot	Bronze Age flint scraper.	Bronze Age	N/A
85	Find spot	Bronze axe head.	Bronze Age	N/A
86	Find spot	Bronze Age cremation found under an inverted collared urn during topsoil stripping.	Bronze Age	N/A
87	Find spot	Three Bronze Age spearheads found during the construction of the Grantham Canal near Nottingham.	Bronze Age	N/A
88	Find spot	Bronze Age finds, no further information.	Bronze Age	N/A
89	Find spot	Bronze Age pottery and a flint scraper from a pit together with possible cropmark site. Site now removed by quarrying.	Bronze Age	N/A
90	Find spot	Bronze axe head.	Bronze Age	N/A
91	Find spot	Bronze axe head.	Bronze Age	N/A
92	Find spot	Two bronze axe heads found in plough soil.	Bronze Age	N/A
93	Site	Bronze Age barrow cemetery	Bronze Age	N/A
94	Find spot	Bronze Age weapons.	Bronze Age	N/A
95	Find spot	Bronze axe head.	Bronze Age	N/A
96	Find spot	Flint dagger of Beaker A-C type found at the side of a disused gravel pit.	Bronze Age	N/A
97	Find spot	Iron Age dug out canoe.	Iron Age	N/A
98	Find spot	Iron Age pottery and animal bone, now within national watersports centre.	Iron Age	N/A
99	Site	Iron Age hut circle and enclosures.	Iron Age	N/A
100	Site	Iron Age settlement identified by cropmarks.	Iron Age	N/A

SW Project Number	Type	Description	Period	Designation
101	Find spot	Iron Age pottery sherd.	Iron Age	N/A
102	Site	Iron Age settlement, Neolithic and Bronze Age finds were also recovered. Site now removed by quarrying.	Iron Age	N/A
103	Find spot	Prehistoric flint scatter.	Prehistoric	N/A
104	Site	Cropmarks of possible prehistoric settlement at Smeeton's Field to the east of Cotgrave. The site has also produced Roman, early-medieval, medieval and post-medieval pottery.	Prehistoric to Post-medieval	N/A
105	Find spot	Iron Age/Romano-British dug-out canoe.	Iron Age/Romano-British	N/A
106	Find spot	Iron Age/Romano-British dug-out canoe.	Iron Age/Romano-British	N/A
107	Site	Iron Age/Romano-British settlement first identified as cropmarks, now removed by quarrying.	Iron Age/Romano-British	N/A
108	Site	Iron Age/Romano-British settlement now removed by quarrying.	Iron Age/Romano-British	N/A
109	Site	Iron Age/Romano-British settlement site.	Iron Age/Romano-British	N/A
110	Site	Multi-phase Iron Age and Romano-British settlement at Gamston. The site is now under modern housing.	Iron Age/Romano-British	N/A
111	Cropmark	Cropmarks of a sub-rectangular enclosure and a D shaped enclosure with internal ring ditch of possible Iron Age to Romano-British date.	Iron Age/Romano-British?	N/A
112	Find spot	Oak beam.	Roman	N/A
113	Find spot	Roman wheel.	Roman	N/A
114	Find spot	Roman pottery found in a gravel pit, now within national watersports centre.	Roman	N/A
115	Site	Site of a Roman Villa and Roman finds.	Roman	N/A
116	Site	Roman settlement to the north of Bassingfield identified by cropmarks. Iron Age pottery and prehistoric flint flakes recovered from the same site.	Roman	N/A
117	Cropmarks	Roman settlement to the east of Gamston identified by cropmarks.	Roman	N/A
118	Site	Roman ditches to the east of Gamston.	Roman	N/A
119	Find spot	Roman tile fragment and pottery sherd.	Roman	N/A

SW Project Number	Type	Description	Period	Designation
120	Find spot	Romano-British pottery and part of a beehive quern.	Roman	N/A
121	Find spot	Human skull and Romano-British pottery.	Roman	N/A
122	Find spot	Roman pottery, now within national watersports centre.	Roman	N/A
123	Find spot	Roman and Medieval pottery found. It is now within the national watersports centre.	Roman, Medieval	N/A
124	Find spot	Wooden paddle.	Early-Medieval	N/A
125	Site	Anglo-Saxon inhumation cemetery at Windmill Hill.	Early-Medieval	N/A
126	Site	Early medieval burial.	Early-Medieval	N/A
127	Site	An Anglo-Saxon cemetery with a few cremations discovered in 1842 by labourers digging for gravel. Grave goods were present and included a spearhead, buckle, beads and brooches. A Romano-British brooch and glass cup were also recovered.	Early-Medieval	N/A
128	Find spot	Saxon quern.	Early-Medieval	N/A
129	Site	Earthworks and remains of Adbolton deserted medieval village. The Domesday survey records a church at Adbolton. The church was demolished in 1746. Excavations before gravel-working were made by G Richardson between 1945 and 1960. Three medieval buildings and an industrial site were found; no report has been published.	Medieval	N/A
130	Structure	Church tower foundations Adbolton.	Medieval	N/A
131	Site	Deserted medieval village.	Medieval	N/A
132	Find spot	Scatter of medieval pottery.	Medieval	N/A
133	Site	Documentary reference to the site of St James' Chapel, Bassingfield.	Medieval	N/A
134	Find spot	Medieval pottery and tiles.	Medieval	N/A
135	Structure	Foundations of medieval windmill, Windmill Hill; Gozen's Mill, Cotgrave.	Medieval	N/A
136	Earthworks	Earthwork remains of medieval ridge and furrow.	Medieval	N/A
137	Site	Holme Pierrepont deserted medieval village. Romano-British potsherds were also recovered.	Medieval	N/A
138	Find spot	Medieval pottery sherds.	Medieval	N/A
139	Site	Site of moated manor house and fishponds, Gamston.	Medieval	N/A
140	Site	Site of Gamston shrunken medieval village, now under modern housing.	Medieval	N/A
141	Site	Site of hollows and gullies that formed a spring	Medieval	N/A

SW Project Number	Type	Description	Period	Designation
142	Site	Site of ridge and furrow earthworks, now below modern housing.	Medieval	N/A
143	Site	Site of ridge and furrow earthworks, now below modern housing.	Medieval	N/A
144	Site	Site of ridge and furrow earthworks, now below modern housing.	Medieval	N/A
145	Site	Site of ridge and furrow earthworks, now below modern housing.	Medieval	N/A
146	Find spot	Medieval and post-medieval pottery recovered by fieldwalking, site now under modern housing.	Medieval, Post-medieval	N/A
147	Site	Post-medieval moated enclosure.	Post-medieval	N/A
148	Site	Post-medieval ditch to the east of Gamston.	Post-medieval	N/A
149	Find spot	Post-medieval finds scatter.	Post-medieval	N/A
150	Site	Windmill, Gozen's Hill Mill, Windmill Hill.	Post-medieval	N/A
151	Find spot	Worked flint, Medieval, Post-medieval and Modern artefacts found to the north of Gamston.	Prehistoric?, Medieval to Modern	N/A
152	Site	Site of a Second World War anti aircraft battery at Skylarks Nature Reserve.	Modern	N/A
153	Site	World War II bombing decoy site to the north of Cotgrave.	Modern	N/A
154	Canal	Holme Cut.	Modern	N/A
155	Backfill	Modern backfill at Gamston.	Modern	N/A
156	Site	Site of World War II heavy anti aircraft battery DNH17 at Adbolton.	Modern	N/A
157	Site	Site of World War II heavy anti aircraft battery at Adbolton.	Modern	N/A
158	Earthworks	Earthworks of terraces, banks and hollows, Cotgrave.	Unknown	N/A
159	Site	Site of a quarry depicted on historic mapping.	Unknown	N/A
160	Pit	Pit to the north of Cotgrave, no further information.	Unknown	N/A
161	Well	Well depicted on historic mapping within Cotgrave.	Unknown	N/A
162	Well	Well depicted on historic mapping within Cotgrave.	Unknown	N/A
163	Earthwork	Hollow and pond at Holme Pierrepont Hall.	Unknown	N/A
164	Earthwork	Boundary bank at Holme Pierrepont Hall.	Unknown	N/A
165	Moat	Moat at Holme Pierrepont Hall.	Unknown	N/A
166	Earthworks	Trackway, depression and platforms.	Unknown	N/A
167	Earthworks	Ridge and furrow and bank.	Unknown	N/A
168	Find spot	Beehive querns.	Unknown	N/A
169	Earthworks	Flood defences and bank.	Unknown	N/A
170	Earthwork	Causeway, with associated wooden stake..	Unknown	N/A

SW Project Number	Type	Description	Period	Designation
171	Palaeochannel	Palaeochannel to east of Holme Pierrepont	Unknown	N/A
172	Watercourse	Watercourse to east of Holme Pierrepont.	Unknown	N/A
173	Earthworks	Terrace and bank, Home Farm, Holme Pierrepont.	Unknown	N/A
174	Well	Well depicted on historic mapping within Holme Pierrepont parish.	Unknown	N/A
175	Site	Ring ditches, no further information	Unknown	N/A
176	Site	Linear feature, no further information.	Unknown	N/A
177	Site	Square enclosure, no further information.	Unknown	N/A
178	Quarry	Quarry	Unknown	N/A
179	Earthworks	Linear ditches to the west of Radcliffe-on-Trent.	Unknown	N/A
180	Well	Well in the parish of Radcliffe-on-Trent depicted on historic mapping.	Unknown	N/A
181	Well	Well in the parish of Radcliffe-on-Trent depicted on historic mapping.	Unknown	N/A
182	Site	Curvilinear feature, no further information.	Unknown	N/A
183	Site	Double ring ditch and linear feature, no further information.	Unknown	N/A
184	Sheep wash	Sheep wash depicted on historic mapping.	Unknown	N/A
185	Well	Well depicted on historic mapping within Holme Pierrepont parish.	Unknown	N/A
186	Site	Linear feature, no further information.	Unknown	N/A
187	Site	A large number of flint implements dating to the Palaeolithic, Neolithic and Bronze Age periods, and Neolithic to Roman potsherds have been found at Bassingfield. A glacial erratic is said to have been surrounded by 8 hearths and a post hole, although there is some debate about the nature of the hearths and post-hole.	Unknown	N/A
188	Cropmarks	Cropmarks of an enclosure and ring ditch to the east of Bassingfield.	Unknown	N/A
189	Earthworks	Earthwork remains of ridge and furrow to the east of Bassingfield.	Unknown	N/A
190	Earthworks	Earthwork remains of ridge and furrow and field systems on the southeastern edge of Bassingfield.	Unknown	N/A
191	Site	Ditch on the southwestern edge of Bassingfield.	Unknown	N/A
192	Cropmark	Linear and circular cropmarks of an enclosure to the northwest of Bassingfield.	Unknown	N/A
193	Find spot	Bones from a gravel pit.	Unknown	N/A

SW Project Number	Type	Description	Period	Designation
194	Earthworks	Ridge and furrow earthworks to the west of Adbolton.	Unknown	N/A
195	Feature	Linear feature to the north of Gamston.	Unknown	N/A
196	Feature	Linear feature to the north of Gamston.	Unknown	N/A
197	Feature	Linear feature to the north of Gamston.	Unknown	N/A
198	Well	Well in depicted on old maps at within Holme Pierrepont parish.	Unknown	N/A
199	Well	Well in depicted on old maps at within Holme Pierrepont parish.	Unknown	N/A
200	Cropmark	Cropmark of a double linear feature, now removed by quarrying.	Unknown	N/A
201	Cropmark	Linear cropmark of unknown date identified from aerial photographs.	Unknown	N/A
202	Site	Site of a quarry pit depicted on maps.	Unknown	N/A
203	Find spot	Wooden stake.	Unknown	N/A
204	Structure	Cobbled floor.	Unknown	N/A
205	Site	Site of earthworks representing medieval field systems, now under modern housing.	Unknown	N/A
206	Site	Site of earthworks representing building platforms, now below modern housing.	Unknown	N/A
207	Site	Site of earthworks representing building platforms, now below modern housing.	Unknown	N/A
208	Site	Site of earthworks, Gamston, now under modern housing.	Unknown	N/A
209	Site	Old Chapel of Luttrells at farm. In 1959 it was in a fragmentary condition. No remains are visible above ground.	Unknown	N/A
210	Cropmark	Cropmark of a rectangular enclosure with rounded corners.	Unknown	N/A

APPENDIX E

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Table 5.1. Landscape Constraints and Opportunities

	<i>Landscape Impacts</i>		<i>Visual Impacts</i>	
	Advantages	Disadvantages	Advantages	Disadvantages
Option 1	<ul style="list-style-type: none"> • Of all the option 1 route variations, this option would utilise most of the existing canal network, i.e. the section from the Polser Brook to Cotgrave. • The route would minimise the disruption to existing agricultural land. • The route would utilise existing water courses: Holme Pierrepont Pits, Polser Brook; and as such, vegetation would be in place to locate the canal within the landscape. • The route would integrate into the Holme Pierrepont Pits body of water thus creating opportunities for canal users to experience a variety of waterscapes. • The route would meander through the landscape in a similar fashion to the existing route, thus appearing more canal-like in form. • The route would bring the route closer to settlement at Bassingfield, which would increase potential usage and act as a catalyst for development. 	<ul style="list-style-type: none"> • Potential disruption to the setting of existing water courses and associated vegetation during construction. • Loss of vegetation. • The existing field pattern between Bassingfield and the existing Grantham Canal would be severed by the route where it would cut across the field boundaries. • Footpaths and bridges would be required in order to continue an existing Public Right of Way over Polser Brook and to cross the A52 respectively. • The route would use less of the existing canal network than options 3, T1, T1A (variation on T1) and H. 	<ul style="list-style-type: none"> • There will be instant screening along certain parts of the route, due to the use of existing water bodies (Polser Brook, Holme Pierrepont Pits). • The route would generally follow existing field boundary vegetation and hedgerows thus minimising its visual impact on the landscape. • The route would also follow footpaths north of Holme Pierrepont Pits with existing mature vegetation thereby reducing the visual envelope of the route [Viewpoint 11]. • The location of receptors in Bassingfield would not have any significant views of this option [see Viewpoint 33]. 	<ul style="list-style-type: none"> • Screening vegetation would potentially be lost in order to integrate the canal into Holme Pierrepont Pits water body [Viewpoint 17].
Option 1a	<ul style="list-style-type: none"> • The route would integrate 	<ul style="list-style-type: none"> • Potential disruption to the 	<ul style="list-style-type: none"> • There would be instant 	<ul style="list-style-type: none"> • Recreational receptors

	Landscape Impacts		Visual Impacts	
	Advantages	Disadvantages	Advantages	Disadvantages
	<p>into the ski lake creating opportunities for canal users to experience a variety of waterscapes.</p> <ul style="list-style-type: none"> • The route would be integrated into the setting of Colwick Country Park. 	<p>setting of existing water courses during construction.</p> <ul style="list-style-type: none"> • Severance of land from the end of the ski lake and River Trent may need a footbridge for pedestrian access. 	<p>vegetation along certain parts of the route, due to the use of existing water bodies [Viewpoint 14].</p>	<p>using Holmes Pierrepont Pits would have a direct view of the proposed route, during construction and operation. [Viewpoint 14].</p> <ul style="list-style-type: none"> • Some screening vegetation would potentially be lost in order to connect the route into the ski lake.
Option 1b	<ul style="list-style-type: none"> • This route would link into the development at Option M [600 berth marina] which would create greater connectivity for potential users. • The route would generally follow field boundary vegetation which will provide a setting for the canal and integrate it into the landscape. • There would be minimal disruption to the setting of adjacent water bodies, unlike Option 1. 	<ul style="list-style-type: none"> • Sandy Lane would be severed by the route, requiring bridge access. • The Trent Valley Way/Holme Lane would be severed by the route, requiring bridge access. 	<ul style="list-style-type: none"> • Viewpoint 26 shows dense mature vegetation in place to screen the route from vehicle users of the A52, thus minimising visual intrusion. • The location of the route would screen views for receptors in Holme Farm and The Firs. 	<ul style="list-style-type: none"> • There may be open views of the route from receptors using Sandy Lane [Viewpoint 20] although vegetation along field boundaries would offer a visual barrier in parts.
Option 1c	<p>There are no foreseeable landscape advantages for this variation</p>	<ul style="list-style-type: none"> • The existing field pattern would be severed by the route where it cuts across the field boundaries. • An element of existing woodland to the north of the A52 would need to be removed to accommodate the route. • The A52 would require bridge access creating an impact on the landscape. 	<ul style="list-style-type: none"> • An opportunity exists to improve appearance of storage area through screen planting [Viewpoint 42]. 	<ul style="list-style-type: none"> • Receptors from a local school on Radcliffe Road in close proximity to the proposed route would have a direct view of the development. • The removal of existing woodland north of the A52 would open up the visual envelope of the route significantly.

	<i>Landscape Impacts</i>		<i>Visual Impacts</i>	
	Advantages	Disadvantages	Advantages	Disadvantages
Option 1d	<ul style="list-style-type: none"> • The route would utilise more of the existing Polser Brook watercourse and as such, vegetation would be in place to locate the canal within the landscape. • The route would generally minimise the disruption to existing agricultural land. 	<ul style="list-style-type: none"> • Potential disruption to the setting of existing water courses during construction. • Vegetation on the western side of Polser Brook would be lost with the widening of the watercourse to a canal route. 	<ul style="list-style-type: none"> • There will be instant screening along certain parts of the route, due to the use of existing water bodies [Polser Brook]. 	<ul style="list-style-type: none"> • Vegetation on the western side of Polser Brook would be lost with the widening of the watercourse to a canal route. • The route would produce distant views from Hill Farm due to the topography of the area to the south west.
Option 2	<ul style="list-style-type: none"> • The route would bring into use a significant proportion of the existing Grantham Canal, i.e. the section from the Polser Brook to Cotgrave. • The route would in general minimise the disruption to existing agricultural land. • The proposal would utilise existing water courses: Blotts Pits, Polser Brook; and as such, vegetation will be in place to locate the canal within the landscape. • The proposal would connect to the Blotts Pits body of water thus creating opportunities for canal users to experience a variety of waterscapes. • The proposal integrates into the Sailing Club creating opportunities for canal users to experience a variety of waterscapes. 	<ul style="list-style-type: none"> • The route would be linear in form and would go against the grain of the existing character of the landscape and the existing Grantham Canal. • Some existing field boundary vegetation would need to be removed to accommodate the route. • An element of existing woodland around Adbolton Lane would need to be removed to accommodate the route. • Existing scrubland would be dissected by the route around the A52 pit. • Potential disruption to the setting of Green Acres Mobile Home Park and the Sailing Club during and post construction [Viewpoint 8] (could be minimised by Option 2A variation). 	<ul style="list-style-type: none"> • Existing vegetation along field boundaries north of Green Acres Mobile Home Park would be in place to reduce visual intrusion from the south [Viewpoint 8]. • The route would generally follow existing field boundary vegetation and hedgerows thus minimising its visual impact on the landscape. 	<ul style="list-style-type: none"> • Broken views of the proposed canal link would be obtainable from this viewpoint where there are breaks in the trees lining Polser Brook. • A loss of vegetation around Adbolton Lane would open up the visual envelope of the proposal and potentially cause intrusion.
Option 2a	<ul style="list-style-type: none"> • The route would integrate into the Sailing Club creating 	<ul style="list-style-type: none"> • An element of existing woodland to the north of 	<ul style="list-style-type: none"> • Existing vegetation along field boundaries north of 	<ul style="list-style-type: none"> • A loss of vegetation around Adbolton Lane would open

	<i>Landscape Impacts</i>		<i>Visual Impacts</i>	
	Advantages	Disadvantages	Advantages	Disadvantages
	opportunities for canal users to experience a variety of waterscapes.	Adbolton would need to be removed to accommodate the route. • The route would sever playing fields to the east of the Sailing Club.	Green Acres Mobile Home Park is in place to reduce visual intrusion from the south [Viewpoint 8].	up the visual envelope of the proposal and potentially cause intrusion.
Option 2b	• The route would meander across the A52, thus appearing more canal-like in form.	• The existing field pattern would be severed by the route where it cuts across the field boundaries. • An element of existing woodland to the north of the A52 would need to be removed to accommodate the proposed canal route. • The route would have to cross the A52 requiring a bridge access, opening up the visual envelope.	• An opportunity exists to improve appearance of storage area through screen planting [Viewpoint 42].	• Receptors from a local school on Radcliffe Road in close proximity to the proposed route would have a direct view.
Option 2c	• The route would utilise more of the existing Polser Brook watercourse and as such, vegetation would be in place to locate the canal within the landscape. • The route would generally minimise the disruption to existing agricultural land.	• Potential disruption to the setting of existing water courses during construction. • Vegetation on the western side of Polser Brook would be lost with the widening of the watercourse to a canal route.	• There will be instant screening along certain parts of the route, due to the use of existing water bodies [Polser Brook].	• Vegetation on the western side of Polser Brook would be lost with the widening of the watercourse to a canal route. • The route would produce distant views from Hill Farm due to the topography of the area to the south west.
Option 3	• This route would bring into use the greatest proportion of the existing Grantham Canal than any of the other options. • The route would avoid disruption to many of the existing areas of ecological interest.	• An element of existing woodland to the north of Adbolton would need to be removed to accommodate the proposed route. • The existing field pattern between Gamston Bridge and Adbolton would be	• Views of the route from key receptors would be generally limited due to existing topography, existing roadside vegetation and existing field boundary vegetation. • Receptors living on the outskirts of West Bridgford	• Receptors travelling along Adbolton Lane to West Bridgford would have views of the route. Narrow boats using the route would be visible whilst the canal itself would not [Viewpoint 4].

	<i>Landscape Impacts</i>		<i>Visual Impacts</i>	
	Advantages	Disadvantages	Advantages	Disadvantages
	<ul style="list-style-type: none"> • The route would link to both the Trent Valley Way to Nottingham and the Trent Valley Way to Radcliffe. • The route would bring the route closer to settlement at West Bridgford, which would increase potential usage and act as a catalyst for development. 	<p>severed by the route, where it cuts across nine field boundaries – the entire length of the route.</p> <ul style="list-style-type: none"> • Disruption to site of ecological interest north of Adbolton. 	<p>would have a reduced visual impact from the proposed route due to a backdrop of existing trees along field boundaries [Viewpoint 2].</p> <ul style="list-style-type: none"> • Receptors using the Trent Valley Way would have a reduced visual impact from the proposed route due to a backdrop of existing trees along field boundaries [Viewpoint 3]. 	
Option 4	<ul style="list-style-type: none"> • The route utilises the existing line of the abandoned former Cotgrave Colliery railway line. • As a result, vegetation at the base of the embankment would be retained to locate the canal within the landscape setting [Viewpoint 44]. • A canal setting would improve the visitor attraction to this underused part of the study area. • The route is in close proximity to Radcliffe on Trent, which would increase the number of potential users and would bring the potential to act as a catalyst for development. 	<ul style="list-style-type: none"> • There may be limited space and encroachment into adjacent field boundaries and loss of vegetation may occur. • Field severance north of route. • Two bridges would be required to cross the A52 and Holme Lane, although existing railway bridges may be used. 	<ul style="list-style-type: none"> • Existing vegetation in place has the potential to screen receptors to the west of the study area [Viewpoint 44]. • A canal network will improve the visual aesthetic of the existing route. • Passengers using railway line to the north would have direct views of the route, enhancing the richness of the landscape. 	<ul style="list-style-type: none"> • Screening vegetation may be lost in certain areas due to potential widening of the route. • Due to the close proximity to Radcliffe on Trent, there may be an increased number of highly sensitive receptors who may be negatively impacted by the construction process.
Option 4a	There are no foreseeable advantages for this variation.	<ul style="list-style-type: none"> • The existing field pattern is severed by the route where it cuts across the field 	<ul style="list-style-type: none"> • Existing vegetation in place has the potential to screen receptors within the study 	<ul style="list-style-type: none"> • Partial loss of screening vegetation would be lost north of Holme Lane.

	Landscape Impacts		Visual Impacts	
	Advantages	Disadvantages	Advantages	Disadvantages
		boundaries. • Severance of Holme Way would require a bridge.	area and in Radcliffe on Trent.	
Option 4b	<ul style="list-style-type: none"> Existing vegetation in place along the closest field boundary would have the potential to provide a setting [Viewpoint 26]. This route would link into the development at Option M [600 berth marina] which would create greater connectivity for potential users. 	<ul style="list-style-type: none"> The existing field pattern would be severed by the route where it cuts across the field boundaries. This route would conflict with proposed Trent Crossing Corridor. 	<ul style="list-style-type: none"> Vehicle receptors using Holme Lane would be screened by existing vegetation [Viewpoint 26]. 	There would be no foreseeable visual disadvantages.
Option T1	<ul style="list-style-type: none"> Brings into use a significant proportion of the existing Grantham Canal i.e. from Holme Farm to Cotgrave, utilising the existing disused canal and towpath. Avoids disruption to existing areas of ecological interest. The route would provide a direct link between Cotgrave and Nottingham. The route would link to both the Trent Valley Way to Nottingham and the Trent Valley Way to Radcliffe. Disruption to agricultural land would be generally minimised. The new canal would potentially provide an attractive waterside edge of any future expansion of Gamston and West Bridgford. The Green 	<ul style="list-style-type: none"> Whilst the route creates a direct link to the River Trent, the route would be more linear than the meandering form of the existing canal, and therefore goes against the grain of the landscape. The route would cross the A52 and Adbolton Lane requiring bridges which would create an impact on the character of the landscape. The Green Acres Mobile Home Park would be severed by the route. Severance of five fields within a landscape already altered by gravel workings. 	<ul style="list-style-type: none"> The route generally follows the line existing hedgerows and vegetation thus minimising its visual impact on the landscape [Viewpoint 5]. 	<ul style="list-style-type: none"> There would be open views across fields for vehicle receptors traveling along Adbolton Lane. Receptors in Green Acres Mobile Home Park would experience a visual impact as route dissects site. There would be a visual impact for receptors in Holme Farm. The route would sever a Public Right of Way requiring a footbridge.

	<i>Landscape Impacts</i>		<i>Visual Impacts</i>	
	Advantages	Disadvantages	Advantages	Disadvantages
	Acres Mobile Home Park would have a canal frontage on two sides.			
Option T1a	<ul style="list-style-type: none"> • The route would in general minimise the disruption to existing agricultural land, compared with option T1. • The route would connect into the Sailing club development which will add to the waterside setting. • The Green Acres Mobile Home Park would have a canal frontage on two sides. 	<ul style="list-style-type: none"> • The route would be more linear in form than the Option T1, which bears little character resemblance to the form of the existing canal route. • Some existing field boundary vegetation would need to be removed to accommodate the proposed canal route. • Potential disruption to the setting of Green Acres Mobile Home Park during and post construction (could be minimised by Option 2A variation). • Adbolton Lane would be severed, requiring a bridge. • The Green Acres Mobile Home Park would be severed by the route. 	<ul style="list-style-type: none"> • The route would follow the line of existing hedge-lined field boundaries in order to minimise visual intrusion. • The route would also move away from settlements south of Adbolton Lane which will reduce the number of highly sensitive receptors. 	<ul style="list-style-type: none"> • Screening vegetation would be lost in certain areas due to clearance for the route.
Option H	<ul style="list-style-type: none"> • This route would utilise a significant stretch of the existing Grantham Canal route. • It forms part of a wider scheme which would create a marina development at Pierrepont, thereby increasing offering a variety of attractive waterside settings to users. 	<ul style="list-style-type: none"> • The existing field pattern south of the A52 would be severed by the route where it cuts across the field boundaries. • The route would dissect a large area identified as having ecological interest: Gamston Pits. • Potential disruption to the setting of existing water 	<ul style="list-style-type: none"> • There would be instant screening along certain parts of the route, due to the use of existing water bodies. 	<ul style="list-style-type: none"> • The construction of the inclined plane over the A52 will increase the visual envelope of the proposed route significantly. • The route would sever a public right of way, requiring a footbridge for pedestrian access.

	<i>Landscape Impacts</i>		<i>Visual Impacts</i>	
	Advantages	Disadvantages	Advantages	Disadvantages
	<ul style="list-style-type: none"> • As such, vegetation would be in place to locate the canal within the landscape. 	<p>courses during construction.</p> <ul style="list-style-type: none"> • Severance of Adbolton Lane, requiring a bridge. • Severance of the playing fields to the east of the Sailing Club. 		
Option Ha	<ul style="list-style-type: none"> • The route would integrate into the Sailing Club creating opportunities for canal users to experience a variety of waterscapes. 	<ul style="list-style-type: none"> • An element of existing woodland to the north of Adbolton would need to be removed to accommodate the route. • The route would sever Adbolton Lane, requiring a bridge. • The route would sever the playing fields to the east of the Sailing Club. 	There are no foreseeable advantages for this option.	<ul style="list-style-type: none"> • A loss of vegetation north of Adbolton Lane would open up views to receptors in Green Acres Mobile Home Park.
Option M	<ul style="list-style-type: none"> • It forms part of a wider scheme which would create a marina development, thereby increasing offering a variety of attractive waterside settings to users. • The route would be in close proximity to Radcliffe on Trent, which will increase the number of potential users and has the potential to act as a catalyst for development. • The route would broadly follow the line of existing field patterns. 	<ul style="list-style-type: none"> • An element of existing woodland to the north of the A52 would need to be removed to accommodate the route. • The route would sever Polser Brook and Holme Lane. • The route would sever fields to the north of Holme Lane. 	<ul style="list-style-type: none"> • Viewpoint 26 shows dense mature vegetation in place to screen the development, thus minimising visual intrusion. • Existing vegetation along field boundaries south of Adbolton Lane would be in place to reduce visual intrusion from the north. 	<ul style="list-style-type: none"> • Due to the close proximity to settlements, there would be an increased number of highly sensitive receptors who may be negatively impacted by the construction process. This is a short term impact. • There may be open views of the development from receptors using Sandy Lane [Viewpoint 20] although vegetation along field boundaries should offer a visual barrier in parts. • There would be views of the route by vehicle receptors using the A52 and Sandy Lane.

	<i>Landscape Impacts</i>		<i>Visual Impacts</i>	
	Advantages	Disadvantages	Advantages	Disadvantages
	<i>Landscape Impacts</i>		<i>Visual Impacts</i>	
	Advantages	Disadvantages	Advantages	Disadvantages

Viewpoints



Viewpoint 1: Looking eastwards from Adbolton Lane.



Viewpoint 2: Looking north-eastwards from corner of Holme Road and Adbolton Lane.



Viewpoint 3: Looking south-eastwards at the edge of the River Trent.



Viewpoint 4: Looking north-eastwards from Adbolton Lane.



Viewpoint 5: Looking north-wards from Adbolton Lane.



Viewpoint 6: Looking eastwards from Adbolton lane.



Viewpoint 7: Looking north-eastwards from canoe school over Holme Pierrepont National Water Sports Centre & Country Park.



Viewpoint 8: Looking southwards from Adbolton Lane towards direction of the Caravan & Camping Park.



Viewpoint 9: Looking southwards from Adbolton lane.



Viewpoint 10: Looking southwards from Holme Lane.



Viewpoint 11: Looking northwards along path adjacent to Skylands Nature Reserve.



Viewpoint 12: Looking north-eastwards from long the path adjacent to Skylands Nature Reserve.



Viewpoint 13: Looking south-eastwards from the track that leads to the edge of the River Trent.



Viewpoint 14: Looking north-eastwards from track near Holme Pierreport National Water Sport Centre overlooking a related water-body.



Viewpoint 15: Looking north-eastwards from the tracking facing the River Trent.



Viewpoint 16: Looking south from track towards Polster Brook location.



Viewpoint 17: Looking southwards from Holme Lane over a water body realated to Holme Pierrepont.



Viewpoint 18: Looking southwards from Sandy Lane.



Viewpoint 19: Looking westwards from Sandy Lane.



Viewpoint 20: Looking eastwards from Sandy Lane.



Viewpoint 21: Looking southwards from Sandy Lane.



Viewpoint 22: Looking south-westwards from Holme Lane.



Viewpoint 23: Looking north-westwards from Holme Lane over Trent Valley Way.



Viewpoint 24 Looking eastwards back along Holme Lane.



Viewpoint 25: Looking southwards from Holme Lane.



Viewpoint 26: Looking south-eastwards from Holme Lane.



Viewpoint 27: Looking south-eastwards from Stragglethorpe Lane outside of Holme House.



Viewpoint 28: Looking southwards from along a track near Stragglethorpe Lane.



Viewpoint 29: Looking eastwards from along a track near Stagglethorpe Lane.



Viewpoint 30: Looking south-west from a track leading to Nathans Lane and the Bassingfield area.



Viewpoint 31: Looking north-east from a track leading to Nathans Lane and the Bassingfield area.



Viewpoint 32: Looking south-eastwards at the end of Nathans Lane.



Viewpoint 33: Looking northwards from Granthams Canal (no longer in use).



Viewpoint 34: Looking north-eastwards from Bassingfield Lane.



Viewpoint 35: Looking south-westwards from Bassingfield Lane.



Viewpoint 36: Looking north-westwards from Bassingfield Lane.



Viewpoint 37: Looking northwards from Bassingfield Lane.



Viewpoint 38: Looking southwards from Bassingfield Lane.



Viewpoint 39: Looking southwards from Bassingfield Lane over looking Beresfords.



Viewpoint 40: Looking northwards from Bassingfield Lane over a small holding and in the direction of Holme farm.



Viewpoint 41: Looking northeastwards from Radcliffe Road (A52) roundabout



Viewpoint 42: Looking northwards from a small site along Radcliffe Road (A52) looking over a water body related to Holme Pierrepont CP.



Viewpoint 43: Looking north-westwards from near the school on Radcliffe Road (A52) looking over a water body related to Holme Pierrepont CP.



Viewpoint 44: Looking north-eastwards from Stragglethorpe Lane towards the mineral railway.



Viewpoint 45: Looking north-westwards from Cotgrave Place Golf & Country Club.



Viewpoint 46: Looking along Stragglethorpe Lane.

APPENDIX F

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DEFINING MULTI-USER LEISURE ROUTES

Defining Multi-User Routes

There are a variety of different types of leisure and recreation routes across the UK that can be part of Green Infrastructure. These range from designated National Trails that can cover hundreds of miles, to more localised trails that focus on a single feature or asset of interest. The following section seeks to identify the different route types and the specific requirements of different users that should be incorporated into the route design.

Official Definitions

As defined by the Department for the Environment, Food and Rural Affairs (Defra), Rights of Way are minor public highways that exist for the benefit of the community at large, giving the public the opportunity to enjoy the English countryside. Defra estimates that there are about 188,700 kilometres of public rights of way in England, made up of the following route designations:

- Footpaths – (146,600 km) over which the right of way is on foot only.
- Bridleways – (32,400 km) for pedestrians, horse riders and bicyclists (who must give way to people on foot or on horseback).
- Byways open to all traffic (BOATs) - (3,700 km) carriageways over which the right of way is on foot, on horseback and for all vehicular traffic but which are used mainly for the purposes for which footpaths and bridleways are used (i.e. by walkers and horse riders).
- Restricted byways – (6,000 km) carriageways over which the right of way is for all types of traffic except mechanically propelled vehicles. Currently most of these are former Roads Used as Public Paths (RUPPs) re-designated en-masse by the Countryside and Rights of Way Act 2000 in 2006.

General Route Types

The above official rights of way designations are not routes in themselves, but rather present an initial framework from which the creation of routes can be realised. These designations only tend to become official routes once they are barrier free, there is clear waymarking, and they are supported by publicity and promotion.

It should be noted that not all are available as multi-user routes. In this respect, there are a number of different types of leisure and recreation routes. However the leisure and recreation routes that have a direct resonance with visitors can be summarised as:

- National Paths – nationally significant trails (predominantly for walking) that pass through or by some of the most important natural and historic environments in the UK (e.g. Thames Path, South West Coast Path, Pennine Way, Hadrian's Wall Path);
- National Cycle Network - both on-road and traffic-free joint cycling and walking routes that traverse the whole of the UK;
- The National Byway - a 4,500-mile (7,240 km.) signposted, largely on-road cycling route round England and parts of Scotland and Wales.
- National Bridleway Network – an aspirational network which is to consist of strategic national routes and regional routes dedicated to horse riding.
- Other Nationally Significant Leisure Routes – including canal towpaths and riverside paths that cross county and regional boundaries.
- Regional Trails – covering a range of circular and linear routes of different lengths, from 15-20 miles to 100 miles or over.

- Short Named Trails – tend to be short and highly accessible multi-purpose routes (mainly walking and cycling, but some horse riding on bridleways) that have helped to raise the profile of tourism destinations.
- Themed trails – similar to popular named trails, they tend to be short and accessible, but are themed to accentuate certain attributes such as certain wildlife or heritage features.
- Greenways - tend to be designed for shared use by people of all abilities on foot, bike or horseback, for commuting, play or leisure.
- Quiet Lanes – strategically identified minor rural roads for commuting or pleasure, including walking but are predominantly used for cycling and horse ride.
- Toll Rides (Off-Road) Trust (TROT) – routes designed specifically to cater for horse riding, with users paying an annual subscription for access.

In addition to the above, there are local circular and linear routes that visitors are able to access, many of which are provided in local publications/leaflet whilst others may simply be known by local residents and business operators.

Although many of the route types outlined above will incorporate and rely upon the rights of way, bridleways and byways, many sections will not be waymarked or form part of a marketed route. In these instances, the hardier user can, via Ordnance Survey Maps, create their own routes once at a destination.

General Requirements by User Type

The following provides an overview of the different requirements in relation to the leisure network by user type. This information has been sourced via Natural England's Greenways Handbook.

- The walking network should include:
 - Public Rights of Way (footpaths, bridleways, etc). "Local rights of way" are defined in section 60(5) of the CROW Act 2000 as including footpaths, cycle tracks, bridleways, restricted byways and byways open to all traffic.
 - Footways (the legal term used to refer to pavements – a public right of way on foot at the side of a road or a carriageway)
 - Pedestrian area (including shopping malls)
 - Towpaths alongside waterways
 - Paths through public open spaces
 - Shared-use paths – segregated and unsegregated
 - Subways, footbridges and other crossings with pedestrian access
 - Permissive paths
 - Promoted routes, such as National Trails, National Cycle Network (see below)
 - Quiet Lanes
- The cycle network should include:
 - The same road network as motor vehicles (i.e. metalled roads/carriageway)

- Quiet lanes
- Relevant Public Rights of Way (e.g. bridleway, RUPPs, etc)
- Dedicated cycle lanes (on road)
- Dedicated cycle tracks
- Shared-use paths – segregated and unsegregated
- Towpaths alongside waterways where these are shared use
- Paths through public opens spaces where these are shared use
- Permissive routes
- Promoted routes, such as the National Cycle Network and National Bridleway Network
- The horse riding network should include:
 - The same road network as motor vehicles (i.e. metalled roads/carriageway)
 - Quiet lanes
 - Relevant Public Rights of Way (e.g. bridleway, RUPPs, etc)
 - Shared-use paths – segregated and unsegregated
 - Towpaths alongside waterways where these are shared use for horses
 - Paths through public opens spaces where these are shared use for horses
 - Permissive routes, e.g. such as those provided by Environmental Stewardship schemes
 - Promoted routes, such as the National Bridleway Network
 - Specific routes for horse riding (e.g. access to farmland agreed with landowners, e.g. South East Toll Rides.

In relation to road use, Natural England acknowledges that the hazards presented by motor traffic mean that use of the road network is only applicable in limited cases. However, where use may be applicable (i.e. in rural areas and on roads which statistically carry the least amount of motorised traffic), the organisation is encouraging the introduction of measures to encourage use, particularly to overcome barriers to linking off-road routes together (see section 3 for more details).

The Importance of Green Infrastructure Activities to Economic Impact

The Importance of Green Infrastructure Activities to Potential Economic Impact

The following section seeks to identify the importance of the leisure route markets in relation to the potential economic impact of any Green Infrastructure project, particularly where this is generated by visitors or tourists.

Please note that in the absence of specific leisure route user research for this area, we have sought to obtain evidence from other regions, sub-regions and trails to denote the relationship between leisure and recreation routes and the tourism sector.

General Overview

A National Context

In 2003, 37.8 million domestic holiday trips in the UK were made specifically related to a leisure-based activity (i.e. the activity was the main reason for the trip), up from 14 million in 1997.

The broad definition of activities includes a full spectrum of pursuits and interests, including shopping, visiting attractions, participating in walking and cycling, participating in water sports, and fishing for example.

The characteristics of the market are not easy to classify due to the different levels of activities and interests included in the definition. However, in broad terms:

- those involving adventure activities (surfing, climbing, caving, pot holing, scuba diving) tend to attract younger market, are taken on an independent basis, and are more likely to stay in low cost accommodation, hence their spend per night tends to be less than average;
- those involving sports such as sailing, riding and golf are more likely to attract the AB social class due to the specialist equipment/membership requirements, who have higher levels of disposable income and thus have a higher propensity to stay in higher cost accommodation (possibly with the activity on site, especially in the case of golf);
- those involving more casual pursuits such as walking and cycling appeal to a much wider audience base and can be incorporated into virtually all types of destinations, themes and packages.

In addition, whilst activity and special interest based holidays tend to involve shorter stays at a destination (1-3 nights), the market also tends to be slightly higher spending compared to longer visits. This is generally borne of a desire to have a great experience in a known interest for the visitor, and also a realisation that the activity needs to be undertaken within a condensed time period.

In terms of future market opportunities, there is still a positive outlook for activity-based breaks and holidays, with people becoming less interested in purely sun related holidays and more interested in pursuing activities as part of an ever growing portfolio of pursuits.

The most popular activities are walking and cycling, and to a lesser extend horse riding. Each of these market sectors is explored further below, with their interactions with tourism destinations also outlined.

Walking

Market Volume and Value

Walking has a strong synergy with tourism. As an activity, it is regarded as being one of the most popular forms of leisure pursuits undertaken by visitors, whether on a day visit or overnight stay at a destination.

The key to having a successful walking product is the availability of easily navigable routes, provided through a combination of maps and route waymarking. Further requirements of walking routes are to ensure that they include sites of interest, such as from a scenic or heritage perspective; interpretation of key sites and other features of interest; and suitably located refreshment points.

The benefits of a successful walking route network can be considerable, with walking being the most popular leisure activity undertaken. The main data indicators suggest that:

- 77% of UK adults, or about 38 million people, say they walk for pleasure at least once a month, with 62% of these walking for more than 2 miles/3.2km¹.
- Walking is identified as both the prime motivation behind a domestic tourism trip (5% of domestic tourism trips) and the main activity undertaken once at a destination (70%)².
- An estimated 648 million day trips taken for leisure in England in 2005 included a 'walk, hill walk or ramble'. This is 18% of the total of all leisure day trips, with walking most likely to be undertaken in woods/forest (62%), on open access land (57%), and by water (54%)³.
- Over 50.5 million leisure trips for walking were taken as tourism day trips⁴ from home in England (i.e. the trip was classified as lasting for more than three hours and considered as being out of the ordinary).

Walking as an activity is also considered a relatively lucrative sector, with walking day trips estimated to generate £3.3 billion in spend³ in England. In addition, assuming the propensity to take walking-based holidays has not diminished between 2003 and 2006, it can be surmised that this sector generates a further £810 million in spend⁵.

On the basis that these values exclude Scotland and Wales, overseas trips for walking, the value of other walks taken on domestic tourism trips, and spend on clothing for walking, the assertion of Ramblers Association that walking across the UK generates some £6.14 billion in spend is certainly conceivable⁶.

The overall significance of this spend is that it creates and supports jobs. A study into walking related spend in Wales for example identified that 4,800 full time equivalent jobs were supported by walking-related spend, recorded at £132 million⁷. Likewise, the South West Coast Path is estimated to support 7,500 jobs from the £300 million that all users of the route are estimated to generate⁸.

¹ Ramblers Association

² UKTS – 2003. Please note, UKTS ceased providing a breakdown of trips by type of activity after 2003.

³ England Leisure Visits 2005

⁴ Tourism Day Trips – round trips that start from and return home for leisure purposes which last three hours or more and are not taken regularly.

⁵ UKTS 2003 – 'Walking Taken as Main Activity' accounts for 5% of total domestic tourism expenditure in England; UKTS 2006

– Total domestic tourism expenditure in England equates to £16.2 billion.

⁶ Ramblers Association

⁷ Midmore 2000, as identified by Ramblers Association walking facts and figures

⁸ South West Tourism 2003, as identified by Ramblers Association walking facts and figures

Walking and Tourism Destinations

Given the volume and value of walking as a pursuit, it is not surprising that many tourism destinations, particularly those associated with natural environments, are seeking to develop walking routes to attract the walking market.

Most tourism strategies identify walking as a significant market sector for destinations to develop, however more recently the walking has been the subject of further market segmentation in order to target product development opportunities that will better satisfy their behaviours and expectations. As an example, Wales Tourist Board produced a dedicated Walking Tourism Strategy in 2004, and similarly the Brecon Beacons National Park has also identified a series of strategic priorities for exploiting the tourism market further.

In the case of the Wales Tourist Board Walking Tourism Strategy, the vision is for Wales to become the best UK walking tourism destination, offering the widest choice, best managed, presented and promoted walking opportunities anywhere in the UK.

The strategy for the Brecon Beacons takes this premise further by identifying specific issues and priorities for action. In summary, these include:

- ensuring a minimum standard of path condition across the entire access network via the Rights of Way Improvement Plan;
- planning walking tourism to become integrated into the transport network, other visitor amenities and the key attractions and accommodation areas;
- making provision for people with disabilities as the access resource grows;
- adding local distinctiveness by incorporating local features of interest and stop-off points that include local food produce; and
- ensuring that the portfolio of walks cover the range of interests to take account of casual walkers through to dedicated ramblers and hillwalkers.

Similarly, all National Park destinations focus on the value of walking as an activity, which is perhaps to be expected, given historical involvement of the Ramblers Association in the first designations in the 1940's. This association between walking and landscapes of high environmental value is further evidenced in relation to the Cornwall, Norfolk Coast, and Cotswold Areas of Outstanding Natural Beauty designations; and emerging destinations such as the National Forest, Rutland Water, the Forest of Dean and the Cotswold Water Park.

Cycling

Market Volume and Value

Cycling as an activity is growing in popularity across a broad range of groups. In addition, although participation rates are much less than walking overall, the prospects for increasing participation is considered to be high throughout the UK.

The popularity of cycling was recently highlighted by a Sport England survey⁹ that revealed that 3.1 million adults take part in recreational cycling every month at levels beneficial for health. In this respect, cycling came out as the fourth most popular sport and recreational activity in England, ahead of football, the recognised 'national sport', and only behind walking, swimming and general gym activities.

Likewise, according to research undertaken by Sustrans in 2006¹⁰, the National Cycle Network (NCN) carried some 338 million trips with virtually half (168 million) being by bike and the remaining half being made by foot. A large part of the success of the NCN is a third of the network is traffic-free.

⁹ Active People, Sport England 2007

¹⁰ The National Cycle Network Route User Monitoring Survey, 2007

In terms of tourism, in the past it was estimated that approximately 1% of all domestic tourism trips in England are directly driven by cycling, and 7% involve some form of cycling once at the destination¹¹. By applying these proportions to 2006 UKTS data, this equates to nearly 708,000 trips taken specifically for cycling, and just over 4.9 million trips where cycling is undertaken. The value of these trips, proportionately speaking, can be estimated at £121.5 million and £972 million respectively.

Cycling is also a significant motivation behind day trips, with an estimated 71 million leisure day trips involving cycling and mountain biking¹².

Cycling and Tourism Destinations

Exactly half (50%) of the use of the NCN is for leisure purposes, with the focus on providing traffic-free sections where possible being a known factor for encouraging repeat usage. These routes are often associated with disused railways and canal towpaths that traverse countryside environments, and green spaces within urban areas.

The importance of the 'traffic free' factor has been highlighted by Sustrans as being a key instigator of tourism visits. The organisation estimated the economic impact of four routes that form part of the NCN in the North East region. The headline figures from the research are as follows.

- The four routes attracted a combined figure of 302,000 cycle trips in 2006 (see the 'Case Studies' section at the end of this chapter for more details).
- Route users contributed £9.6 million in direct expenditure to the North East economy over the year.
- The total value of this expenditure to the economy (allowing for the income multiplier effect) is estimated at £13.4 million.
- This spend supported a total of 216 jobs.

The study has helped to highlight the value of cycling to tourism destinations. In turn, this value provides a clear rationale as to why regions such as the North East and destinations such as the New Forest, the Peak District and Cumbria are actively seeking to develop their renown for cycling through the provision of a network of safe, user friendly, and accessible routes designed to appeal to a variety of cyclists.

In the case of Cumbria, a specific Cycling Tourism Strategy has been produced in order to exploit more of the opportunities that exist. A key recommendation for the strategy is to establish a small number of highly successful hubs that have the capacity to earn a well-deserved reputation for excellence in cycling. Specific opportunities associated with these hubs included the following.

- Encouraging cyclist-friendly accommodation, with cyclists requiring somewhere dry and secure to leave their bikes; potentially a hose to wash mud off the bikes; and somewhere to wash/dry wet panniers and clothes.
- Developing trails from the hubs that have the scope to offer well maintained and well signposted routes that use largely off-road tracks such as bridleways, byways and Roads Used as Public Paths (RUPPs). The sort of route development that is identified as presenting the fastest growth opportunity in terms of numbers of cyclists is defined as easy, family, traffic-free routes.
- Establishing events and challenges, including regular competitions and potentially one-off rides over a defined time or length (24-hour; 100 miles).

¹¹ UKTS – 2003. Please note, UKTS ceased providing a breakdown of trips by type of activity after 2003.

¹² England Leisure Visits 2005

- Sales and repairs to service requirements for bike spares, replacing parts and purchasing clothing.

Similarly, the WTB has identified cycle tourism as a sector that offers considerable benefits and potential for Wales, particularly because of the synergy cycling has with promoting environmentally sustainable tourism. The principal aims of the strategy are defined as:

- the promotion of high standards of cycle route design, maintenance and mapping;
- the encouragement of improved public transport access for cycle tourists;
- the development of an infrastructure of support facilities and services, including:

Ultimately, the WTB are seeking to increase the value of cycling tourism to over £41 million from an estimated £18 million.

These examples demonstrate the potential value of investing in improving the cycling infrastructure in relation to tourism. In fact, Sustrans estimate that relatively modest outlays in cycling routes can bring considerable returns. Although focussed on all types of spend benefit for local walking and cycling routes rather than specifically for tourism, Sustrans estimated a cost to benefit ratio of between 1:14.9 and 1:32.513.

Horse Riding

Market Volume and Value

Although there are aspects of both walking and cycling that can be highly specialised, on the whole they are pursuits that can be undertaken on a casual basis with relative ease. Horse riding on the other hand is more of a specialist pursuit.

Not only is the availability of a horse required, but there is the need for specialist clothing, equipment, and training for the rider; and stabling and feed for the horse itself. It is for this purpose that horse riding does not feature as strongly as the other two pursuits in relation to tourism.

However, horse riding in the UK is still a popular activity. Moreover, it has the capacity to be highly lucrative as a niche tourism activity. Data from the British Equestrian Trade Association's survey of riding across Britain revealed that the number of horses, including those kept by private owners and in professional establishments, has reached 1.35 million. These horses are owned or cared for by 720,000 people, or 1.2% of the UK population. Other indicators suggest that riding tends to be more of an interest amongst ABC1 socio-economic groups and is one of the few outdoor activities that are largely dominated by women.

Around 2.1 million people ride at least once a month, with a further 2.2 million having done so during the last year, making a total of 4.3 million participants. Leisure riding remains the main activity, up by 5% since a similar study conducted in 1999. However, the study also noted that:

- the amount of competition riding, both affiliated and unaffiliated, has also increased;
- hunting was also found to have attracted more followers, with the number of mounted participants increasing from 10% to 18% of regular riders; and
- riding has become less seasonal with more riders remaining active all year round.

In terms of value, horse owners and riders are estimated to spend around £4 billion per year on what is considered to be a growing leisure activity¹⁴.

¹³ Based on case studies conducted for Bootle, Hartlepool and Newhaven, Sustrans Economic Appraisal of Local Walking and Cycling Routes

¹⁴ National Equestrian Survey (NES), 2006 - British Equestrian Trade Association (BETA).

Horse riding and Tourism Destinations

As with other many other activities and pursuits, the strategic importance of horse riding is becoming increasingly evident at both a national, regional and sub-regional level.

In broad terms, there is now a national drive to increase participation in horse riding, exemplified by the fact that the British Horse Industry Confederation (BHIC) and the British Equestrian Federation (BEF) identify equestrian tourism as a key mechanism for increasing participation. In particular, both organisations regard the holiday sector as a means of tapping into latent demand, non-regular participants, and new users as a result of the willingness of visitors to participate in activities that they would consider to be 'out of the ordinary'.

For greater equine tourism to be achieved, the BHIC suggest that a more cohesive approach to promoting equestrian tourism is needed at a local, regional and national level; a national register of riding holidays and equestrian tourism opportunities should be published on the internet; and a national descriptive grading system for equestrian tourism should be established¹⁵. Furthermore, at a local level, the need for access to good quality riding tracks, riding schools and livery stables is identified as being vital to any type of leisure-based participation.

Such strategic requirements are now being translated into specific actions and policies at a regional and sub-regional level. For instance, the WTB has identified riding holidays as a considerable growth opportunity for Wales and have attached a target growth of 10% within this market alone. Specific priorities for the WTB are to:

- develop a better maintained network of routes and trails;
- create product and marketing links between routes and other rider products and services to create a holistic and co-ordinated riding tourism offer;
- to diversify the riding tourism accommodation base to include serviced and self-catering establishments that more closely match the needs of growth markets; and
- to co-ordinate and package the riding tourism holiday experience to maximise potential.

Similarly, Tourism South East has produced a strategy for developing the South East Region's sustainable equestrian tourism. The strategy adopted a more all-encompassing approach to equestrian tourism by including sports, competition and training in horse racing and show jumping. In this context, the strategy highlighted the need for:

- developing riding events;
- investigating the feasibility of a major indoor equestrian center; and
- creating racing short break packages.

In this respect, it should also be noted that special horse riding events and spectator-generating activities also have a considerable market appeal. According to recent research undertaken for the British Horse Racing, approximately 2.5 million individuals attended at least one fixture in 2005, equating to cumulative total attendances of around 5.9 million over 1,300 meetings staged across the UK¹⁶. Meanwhile, an economic impact appraisal of the Burghley Horse Trials in 2004 identified that this one event attracts more than 140,000 visitors over four days with an average daily spend of £264. The study also found that local hotels and camp sites tend to get booked well in advance of the event, with two-thirds (67%) of visitors travelling from outside the region¹⁷.

¹⁵ Strategy for the Horse Industry in England and Wales, British Horse Industry Confederation (BHIC), 2005

¹⁶ Economic Impact of British Racing in 2005, Deloitte 2006

¹⁷ An Economic Impact Assessment of Major Sports Events, East Midlands Development Agency 2005

These factors no doubt contributed to the rationale of the Welland SSP establishing an Equestrian Tourism and Leisure Strategy in order to maximise the potential of this activity market. The strategy identified that the area has a strength of identity, tradition and heritage in relation to equestrianism pursuits. However, the strategy also highlighted that the link between equestrian businesses and the tourism sector had not been fully explored either in terms of product development or marketing, with little formal connection between local hotels and B&B's with any equestrian activity (i.e. horse riding and schooling) other than by word of mouth.

One package that is available in the area has been established by Bridle Rides, designed for riders and their horse using a pre-defined loop route in Rutland. In this respect, riders park their transport at a safe location before riding to pre-booked accommodation establishments with stabling facilities over the course of a short break, with local taxi firms used to carry luggage from place to place.

A final equestrian tourism consideration is in relation to hunting, one of the more controversial forms of riding. A ban on hunting with dogs came into force in February 2005. An envisaged consequence of the ban was that it would bring to an end hunting, with a consequence of significantly damaging the rural economy. Part of the rationale for this premise was based on the level of jobs associated with hunting (total jobs associated with hunting were estimated at between 6,000-8,000¹⁸ in 2000), whilst a further aspect was that there would be a reduction in economic expenditure from visitors (both day and overnight). Since the ban, bloodless and drag hunting is still conducted, though there is still some debate as to whether this is proving to be a successful alternative from a wider (tourism) economic perspective.

Overall, the above points to equestrian tourism being a significant niche opportunity for tourism, and more importantly from the perspective of the Alliance SSP is that it is an opportunity that has a distinct advantage for less well known rural areas.

Market Segmentation

The different market segments by user type are identified in more detail in Appendix A1. However, in broad tourism terms, both walking and cycling markets can be segmented into similar categories, namely:

- Holiday makers that undertake activities – whereby the provision of activities forms part of the rationale behind destination choices, and whereby the participation in activities provides an important part of the portfolio of things to do and see.
- Activity holiday makers – this largely consists of walking and cycling enthusiasts who regard the activity as being an integral component of their lifestyles. This enthusiasm is often translated into the purchase of certain activity-focussed goods and services, including the types of holidays they undertake where the provision and challenge of certain routes can provide a fundamental appeal.
- Activity day visitors – the behaviours and interests of this group generally mirror those of activity holiday makers (i.e. activity enthusiasts), though the duration of the activity is less pronounced.

For walking, there is a further market segment, namely incidental walkers. This group tend to participate in walking more as consequence of general exploration and sightseeing; as a means of accessing a specific asset; or as a result of undertaking another type of interest (e.g. wildlife watching, investigating local geology, and discovering heritage).

The nature of horse riding, the equipment and training required means that users would generally fit into the activity holiday segment, though many riding stables also offer 'taster' sessions and rides for novices and beginners.

¹⁸ The Economic Effects of Hunting with Dogs, PACEC 2000

Other Considerations

Other Users

Although the analysis above has concentrated on the principal users of leisure and recreation routes from a tourism perspective, other users also need to be taken into consideration. These include:

- Commuters – some leisure routes/greenways are also being designed specifically to accommodate commuter traffic, especially cyclists.
- Sports training – joggers/runners are also identified as essential users of leisure-based routes/greenways, particularly where firm, more even surfaces are prevalent.
- Skate boards, in-line skaters or “rollerbladers” – this group require similar conditions to cyclists in urban areas and therefore are known to use leisure routes/greenways. A key issue concerning these users is that they tend to be youth in nature and that they can travel at high speeds. This can be discouraging to other types of users.

Leisure Routes and Sustainable Tourism

Walking, cycling and horse riding all form part of the approaches being identified for delivering sustainable tourism at a destination level.

The principal benefit of these activities are that they are motor-free forms of movement, but there are a number of other benefits that can be derived, including:

- undertaking these activities presents visitors with an opportunity to explore and gain a greater appreciation of both the natural and built environment of the destination;
- each of the activities present direct opportunities for tourism businesses to engage with, provide services for, and gain income from visitors (accommodation; bike hire; horse schools/equipment hire; lock-up/stabling facilities; guided rides; clothes stores);
- there are opportunities to integrate other enterprises (e.g. pubs, local stores, attractions) with the routes to ensure the visitors help underpin the wider economy;
- walkers, cyclists and horse riders are generally more acceptable types of visitors from a local community perspective due to the ‘softer’ nature of the activities they undertake;
- the use of leisure routes, especially from key visitor hubs, can be an active means of discouraging cars use; and associated with this
- walking and cycling in particular are identified as a means of reducing the carbon footprint visitors make once at the destination, which has both micro and macro implications in relation to addressing climate change.

Leisure Routes and Health Considerations

Walking, cycling and even horse riding are not only important pursuits in terms of leisure and tourism. They also feature highly as activities that can be undertaken to improve health and wellbeing amongst the general population.

Health concerns related to obesity are increasing, with recent evidence suggesting obesity rates are continuing to rise. In response, the government has established a dedicated cross-Government strategy for England, ‘Healthy Living, Healthy Lives’, in 2008. This strategy identifies a series of initiatives designed to reverse the upward trend in obesity rates, with investment in a ‘Walking into Health’ campaign being integral to this process. The aim of the campaign is to get a third of England walking at least 1,000 more steps daily by 2012.

Walking is identified as the main activity which people should be encouraged to undertake due to the ease of accessibility and participation, especially for short journeys from the

home. However, the same principles apply for cycling from a health improvement perspective.

Similarly, although the health agenda is primarily targeted at getting people to exercise close to the home, the leisure aspect and appeal of these activities needs to be considered. This is especially true at a destination level, with visitors often having a higher propensity to seek out leisure routes than they would at home. Promoting 'healthy' practices at a tourism destination may also be considered by the visitor as a means of counterbalancing 'indulgences' in food and beverages for example.

Potential Conflicts

Although the generic term of multi-leisure routes is used to encompass all the different types of routes and to encapsulate the different types of user, it should be recognised that a significant proportion of routes are not in fact able to facilitate use by different types of users. For example, long distance walking routes such as the Thames Path and South West Coast Path are designated walking only routes, though some sections of the routes can accommodate other users.

In the cases where routes are able to accommodate more than one user type, there is a need to ensure that suitable consideration is given to the needs of each user type in order to minimise the potential for conflict. Potential for conflicts generally arise where there are issues over safety, which in turn tends to be a consequence of space.

According to a paper prepared by CTC, the National Cyclists Organisation, collisions between cyclists and other users appear to be rare though figures are hard to come by. However, the perception of safety is as important as the technical evidence of safety. The example given by CTC is that someone overtaking pedestrians at speed may be perfectly confident that they are not endangering them, but those they are overtaking may be alarmed whether or not there are grounds for their alarm. Likewise, horses can be easily spooked by fast cyclists. Other potential issues include disrupting other user enjoyment of the countryside through inappropriate behaviour and increased erosion of paths, making them impassable to other users.

In this context, it is not always possible to accommodate all users via the one route. This situation has led to Natural England, in its guide for establishing Greenways, to suggest that there are in fact three separate networks (walking, cycling and horse riding) that should be considered, which in places may overlap.

Accessibility

Providing access for all is a significant consideration for all routes. This is a stipulation of the CROW Act, whereby local highway authorities are required to assess the needs of visually and mobility impaired people in relation to rights of way.

Furthermore, initiating measures to overcome such accessibility issues should be an integral part of the authority's Rights of Way Improvement Plans (RoWIP – see section 4 for more information). This could include making agreements with owners, lessees and occupiers of land for works to replace or improve structures (such as stiles or gates) to make them safer or more convenient for people with mobility problems.

Ensuring routes are accessible to people of all abilities is a particular aim of the Greenways initiative. In aiming to accommodate wheelchair users, Natural England identify that such users:

- require wider routes than pedestrians in order to manoeuvre and in particular turn around;
- will find gradients greater than 5% are problematic as of course are steps; and

- will need entrances to facilities and services along the route to be designed so that they can accommodate powered chairs.

Similarly, access to leisure routes for walking can be equally enjoyed by the visually or hearing impaired. In this respect, consideration needs to be given to maximising the experience through other senses. This could be through specific planting regimes to maximise the aromas along the route; through touch, with the arts potentially able to contribute to the physical interpretation of the landscape; and through the interpretation of sounds, especially in relation to different types of wildlife.

This is by no means an exhaustive list of potential measures that can be introduced into route design to ensure that people of all abilities can enjoy leisure and recreation, with more detailed consultation advised with relevant stakeholders at both a national and local level to understand more specific design measures that could be introduced.

Case Studies

Camel Trail, Padstow

The Camel Trail is a 17-mile walking, cycling and horse riding trail that hugs the Camel Estuary from Padstow to Wadebridge before joining the route through the deeply incised Camel Valley to Bodmin Bridge. From Bodmin Bridge, users can either travel into the Town itself or join another section that winds its way inland to the foot of Bodmin Moor, with the trail coming to an end near Blisland.

The trail is totally traffic-free, utilising a disused railway line, and is carefully managed and maintained to accommodate up to 350,000 users per annum. It is estimated that the Camel Trail generates upwards of £3 million to the local economy¹⁹. Bike hire facilities are available in Padstow, Wadebridge and Bodmin, with leaflets providing interpretation of the natural and built heritage that line the path of the route.

The popularity of the Camel Trail is exemplified by the fact that the route regularly records the highest average volume of daily cycle flows of all trails monitored in Cornwall (873 average daily cycle movements in August).

A key part of the management of the trail in recent years has been to encourage greater access from different points along the trail. For instance, the advent of cycle hire facilities in Bodmin is reported to have increased use by both cyclists and walkers as it has helped increase publicity. Also, there is anecdotal evidence that there has been an increase in the use of the Town's bike rack facilities, which suggests that Bodmin is being used as either the finish point or a resting point for cyclists travelling along the Camel Trail. Similarly, the route extension to Wendfordbridge has been identified as a great success with the Town's parking facilities being used as the starting point for the journey.

Tarka Trail

The Tarka Trail is a 180-mile leisure route in North Devon, predominantly for walkers though 30 miles has been opened to cyclists. The route takes in the much of the scenery as depicted by the novelist Henry Williamson in 1927.

The route has been the subject of a detailed benefits survey. Although much of the data refers to the situation ten years ago, it is likely that much of the sentiment still remains applicable today. Between 1985 and 1995, it was estimated that 483,000 people (walkers and cyclists) use the Trail each year, over half of which (59%) were tourists to the area. In summary, the benefits of the Tarka Trail were observed to be that it led to:

- above average increases in visitor stays compared to the wider Devon area;

¹⁹ Sustrans, included as part of the evidence base for the Cumbria Cycling Tourism Strategy

- the creation of new and dedicated businesses, particularly through the establishment of the cycleway which led to seven cycle hire businesses setting up along the route which has created new jobs.
- increased trade in existing businesses, with pubs and other businesses along its length demonstrating a significant increase in their business.
- defining the area as a focal point for walking and cycling and other activity-based tourism.
- the creation of a strong new identity and focus upon which a sustainable economic recovery was based.
- increased economic benefits spread over a wide cross-section of the local community, and not restricted to big operators or corporate businesses.
- extensions of the tourism season into the shoulder periods as more visitors come at these times to enjoy the activities.

The ultimate importance of the Tarka Trail Project was rationalised in relation to its impact on the economy of North Devon. The 488,000 tourist nights to the area generated £18.6 million of expenditure and created over 500 jobs directly. Moreover, much of the increase in tourist nights in the area took place in the rural hinterland of Tarka Country, the area that is the focus of the Project's activities, rather than along the coast. This benefit needs to be considered against the outlying maintenance cost that, on average, equated to some £70,000 per annum.

Cycling Tourism in the North East of England

As previously identified, a study examining the economic value of cycling tourism in the North East of England has been conducted on behalf of ONE North East²⁰.

The study focussed on four major cycling routes in the region, the C2C (Sea to Sea) Cycle Route, the Coast and Castles Cycle Route, Hadrian's Cycleway and the Pennine Cycleway (northern section), all of which form part of the National Cycle Network.

The figures for the individual routes were calculated to be as follows:

- Coast & Castles, a 200 mile route which takes in the whole east coast of Britain: 68,000 trips were made on the Coast & Castles Cycle Route in 2006. Of these 8,100 (12%) were found to be end-to-end users. Altogether, the route generated £3.3 million and created or safeguarded 53 full-time-equivalent jobs.
- C2C (Coast-2-Coast), a sea-to-Sea cycle route which runs across the North of England from the Cumbrian coast to the North Sea coast: 241,000 trips were made on the C2C Cycle Route in 2006 (113,000 in the North East and 128,000 in the North West region). Of these 14,000 (6%) travelled the full length of the route in one journey. The value of all users was estimated at £10.7 million and created or safeguarded 173 full-time-equivalent jobs.
- Hadrian's Cycleway, a 174-mile long distance cycle route that runs adjacent to Hadrian's Wall: 160,000 trips were made on Hadrian's Cycleway in 2006 (81,000 the North East and 79,000 in the North West region). Of these 7,500 (5%) were end-to-end users. The route generated £6.5 million and created or safeguarded 105 full-time-equivalent jobs.
- Pennine Cycleway (North East section): 39,000 trips were made on the Pennine Cycleway in 2006. Of these 2,100 (5%) were end-to-end users. The route generated £1.8 million and created or safeguarded 28 full-time-equivalent jobs.

²⁰ The Economic Impact of Cycle Tourism in North East England, 2007 (Sustrans)

It should be noted that the study concentrated on cycling as the defined user group, but other users such as walking will also have a significant economic contribution. To reiterate, Sustrans suggest that 50% of users on traffic-free routes are in fact walkers. It should be noted that walkers and cyclists have different expenditure requirements, plus not all sections of the NCN are traffic-free. As such, it cannot be inferred that the additional volume of users will result in a doubling of the observed value of tourists using the routes. However, the observation would certainly suggest that the overall worth of tourist users could be much more than these headline figures suggest.