

# Crags, Caves and Tunnels (CCT)

## Habitat Action Plan

Doncaster Local Biodiversity Action Plan  
January 2007



## Table of Contents

	Page
1. Introduction	1
2. Description	2
3. National status	5
4. Local status	6
5. Legal status	7
6. Links to associated habitats & species	9
7. Current factors causing loss or decline	10
8. Current local action	14
9. Objectives, targets & proposed actions	16
10. Indicative Habitat distribution & Opportunities map	25

Doncaster Biodiversity Action Partnership  
Doncaster Council, Environmental Planning, 2nd Floor, Danum House,  
St Sepulchre Gate, Doncaster, DN1 1UB.

Telephone: 01302 862896  
Email: [bio.diversity@doncaster.gov.uk](mailto:bio.diversity@doncaster.gov.uk)

[www.doncaster.gov.uk/biodiversity](http://www.doncaster.gov.uk/biodiversity)



Supported by  
**The National Lottery**<sup>®</sup>  
through the Big Lottery Fund



**Doncaster**  
**Biodiversity**  
**Action Partnership**

## 1. Introduction

1.1 The majority of caves and rocky crags within the Doncaster Borough are found in the part of the Southern Magnesian Limestone Natural Area that falls within Doncaster's administrative boundary. Central to this area within the Doncaster Borough is the Don Gorge, where the River Don has incised its way through a limestone valley, which has been carved out of the Magnesian limestone ridge over thousands of years. Caves and crags within this area are either naturally exposed or have become exposed as a result of limestone quarrying. Quarrying activity can provide opportunities for scientific research and archaeological exploration, as new subterranean crags and caves are uncovered. Sensitive and well-informed reclamation schemes have the potential to provide for a great diversity of wildlife, which may mean that landfill is no longer the most appropriate form of reclamation. Furthermore, some sites allocated for landfill that previously lacked nature conservation value can make a positive long-term contribution with sensitive final landscaping schemes.

1.2 The Southern Magnesian Limestone ridge was created in the Permian era some 255 million years ago, and is thought to have been laid down at the edges of a shallow sea, which left the ridge as it retreated and dried up. The limestone is as important for geological features and archaeological remains as it is for biodiversity, with significant collections of Pleistocene mammal remains and indications of ice age human occupancy having already been made, and it is thought that there is still more to be discovered. Caves further south on this limestone ridge in Creswell, Derbyshire, have become world famous as a result of such finds, however the Doncaster limestone has been subject to very little survey work in comparison.

1.3 Artificial caves are those that mimic the conditions of a natural cave, and the artificial caves most beneficial for wildlife within the Doncaster Borough have been found to be the numerous tunnels running underneath the railway within the Don Gorge. After the new Doncaster to Sheffield railway line was built, the quarry sites were isolated from the river that served as a transport route for the quarried stone, and tunnels were therefore incorporated under the railway line to maintain this vital link. Now the limestone is transported out by lorry and the tunnels no longer serve a useful purpose for the quarrying industry, yet they provide an excellent 'pseudo cave' with similar conditions in terms of light, temperature and humidity. Coarse stonework or brickwork with numerous gaps also imitates the physical attributes of a cave interior.

## 2. Description

2.1 Magnesian limestone is a soft rock that is composed of the skeletal remains of sea creatures and is easily weathered and penetrated by water. Limestone area landscapes are characterised by deep river valleys and gorges such as the Don Gorge, where the flow of the river has incised the distinctive 'U' shape out of the limestone. The penetration and movement of water within and around the soft rock can create a complex system of underground water channels and caves.

2.2 Bats are typically associated with caves and can be used for hibernation, summer maternity or autumn breeding by the various species. **Daubenton's** (*Myotis mystacinus*), **brown long eared** (*Plecotus auritus*), **natterer's** (*Myotis nattereri*) and **brandt's bat** (*Myotis brandtii*) are typically found in caves, but other species will also occasionally be found. The **pipistrelle** (*Pipistrellus* spp.) can often be found at cave entrances, for example. Cliff face crevices and cavities formed by erosion are also known to be used by roosting bats, with the **noctule bat** (*Nyctalus noctula*) commonly found hibernating in deep and narrow rock crevices, for example.

2.3 An enormous range of tiny creatures have adapted to the cave environment. The delicate and finely balanced ecosystem of caves and tunnels, consisting of predominantly specialist species, survives because of minimal intrusion by humans.

2.4 The cave entrance is an amazing environment with wide ranging conditions that swing to each extreme on a seasonal or even daily basis. In the hot summer cave entrances exude cool air, which condenses as it falls from the entrance to create the damp conditions ideally suited to bryophytes and ferns, yet the winter reverses this phenomenon with warm moist air rising from the cave mouth<sup>1</sup>. Such a phenomenon is well known at Dragon's Cave in the Don Gorge, hence its local name. Travelling further into a cave or tunnel finds more stable conditions, but as stabilization occurs the conditions become more extreme, with the lack of light being an obvious excluding factor to the majority of species. The Keeper of Environmental Records at Doncaster Museum and Art Gallery, Doncaster Naturalists Society and the Don Gorge Bat Group have noted a number of invertebrate species inhabiting the caves and tunnels of the Don Gorge. A mosquito (*Culex pipiens*), a crane-fly (*Limnoa nubeculosa*), the drone fly (*Eristalis tenax*) and the heleomyzid fly (*Heleomyza serrata*) are some of the diptera species found at varying distances into tunnels within the Don Gorge<sup>2</sup>. Lepidoptera species are also frequently found hibernating in tunnels and caves, with the herald moth (*Scoliopteryx libatrix*), peacock (*Inachis io*) and small tortoiseshell (*Aglais urticae*) being most commonly encountered<sup>3</sup>. The cave spider (*Meta menardi*) is only recorded from Don Gorge railway tunnels or pipe tunnels in the Doncaster Borough, and is usually found with the hibernating herald moth (*Scoliopteryx libatrix*).

---

<sup>1</sup> Howes, C.A. (1999) Notes on the 'Threshold Faunas' in Caves and Tunnels within the Magnesian Limestone of the Don Gorge, Doncaster. Naturalist 124: 37-41

<sup>2</sup> Howes, C.A. (1999) Notes on the 'Threshold Faunas' in Caves and Tunnels within the Magnesian Limestone of the Don Gorge, Doncaster. Naturalist 124: 37-41

<sup>3</sup> *ibid*

2.5 A number of invertebrate taxon demonstrate a phased zonation of range from the tunnel entrance to some considerable depth. Spiders and woodlice are marked examples, where individual species are found within different light and humidity zones from the entrance to the virtual darkness several metres within the tunnel or cave.

2.6 Craggs and to some extent the entrances of caves also provide an important habitat for specialist limestone plants, particularly bryophytes and ferns. Calcareous grassland species find sanctuary in the undisturbed steeper slopes of the gorge when plateau areas have been subject to agricultural intensification. Nesting birds find use of crevices and the immediate cave entrances, again benefiting from the relative lack of disturbance. The raven (*Corvus corax*) and **peregrine falcon** (*Falco peregrinus*) are typical crag nesters, and **house martins** (*Delichon urbica*) are also increasingly using craggs to nest as availability of nest sites on dwellings reduces with modern architecture.

### **3. National status**

3.1 Nationally caves and crags appear wherever significant rock exposures are present. Probably the most well known are the limestone areas of the Peak District National Park, the Yorkshire Dales and the rugged limestone areas of Devonshire. Caving groups have spent many years mapping caves and hold some valuable information on cave systems.

3.2 The Limestone Research Group (LRG) is chaired by Professor John Gunn and is currently based at the University of Huddersfield, located within the Division of Geographical Sciences. The LRG has been undertaking important research for the last 20 years and is regularly commissioned by Natural England (formerly English Nature) to investigate processes and potential issues surrounding limestone Sites of Special Scientific Interest (SSSIs).

## 4. Local status

4.1 Fissured crags are present at Barnburgh Cliff Site of Scientific Interest (SSI 6.37) and there are various railway cuttings within the Gorge, with the Pot Ridings Wood cutting being particularly deep and fissured. Old quarries, particularly at Stainton and Braithwell have good limestone cliffs remaining. Levitt Hagg Quarries and Craggs (SSI 2.13) has prominent crags remaining, along with those at Cadeby Rattles (SSI 5.7). Some old naturalized quarries within the Don Gorge are now well vegetated, but craggy features remain at such sites as Hampole Quarry, 'Lady's Valley' at Northcliff Quarry and the horseshoe quarries at Nearcliff Wood. Raven Quarry is now an extremely well wooded site.

4.2 In 1997 the South Yorkshire RIGs Group was commissioned to conduct a survey of potential geological sites in the Doncaster Borough, and consequently 27 sites were designated, all of which are SSIs. The majority of Doncaster's Regionally Important Geological Sites (RIGs) are located within the Don Gorge, and many are within limestone quarries, including Warmsworth Quarry, North Cliff Quarry and Park Nook Quarry (SSI 6.18). DMBC has organised the re-surveying of these sites in 2007, as a basis for producing a Geodiversity Action Plan, which will be separate, although related, to the Biodiversity Action Plan.

4.3 There are 15 tunnels running beneath the railway line within the Don Gorge and the Don Gorge Bat Group has found bat activity in at least 6 of them<sup>4</sup> along with recording a range of invertebrate fauna. The Don Gorge also has three water pipe tunnels, one of which is an extremely important bat roosting site with a significant population of cave invertebrates and certainly warrants further survey work.

---

<sup>4</sup> Howes, C.A. (1996) Bat Studies in the Don Gorge, Doncaster. Report of the Don Gorge Bat Group: Fieldwork Seasons 1990 to 1996. Doncaster Museum and English Nature

## 5. Legal status

5.1 The most important crags and caves are protected nationally for both their geological and biodiversity interest as Sites of Special Scientific Interest (SSSIs). Within the Doncaster Borough Cadeby Quarry is designated as a SSSI for its geological exposures and well-preserved brachiopods and bryozoans within the rock. Within the SSSI boundary limestone grassland and scrub is also protected. The Sprotbrough Gorge SSSI is primarily designated for its limestone woodlands. Its boundary does include some of the caves and crags of the area, but many remain outside this national site. Ashfield Brick Pits SSSI sits on the edge of the Magnesian limestone, and previous clay extraction has revealed geological features of national interest. Whilst the site has been used for landfill, the restoration of the site ensured that the SSSI exposure remained exposed and accessible.

5.2 At a regional and local level, sites are designated as 'Regionally Important Geological Sites (RIGs), where there is significant geological interest. Similarly there are a number of Sites of Scientific Interest (SSIs)<sup>5</sup> within the Don Gorge, designated at a local level for their biodiversity interest.

5.3 With some of the key cave and crag dwelling fauna being the range of British bat species, legal protection is in place for any site that holds roosting bats. The roosting place itself is protected as well as the animals under The Conservation (Natural Habitats &c.) Regulations 1994, and the Wildlife and Countryside Act 1981 (as amended).

---

<sup>5</sup> DMBC, Re-survey of Sites of Scientific Interest in the Doncaster Metropolitan Borough 1996/97, Volumes 1-9

5.4 Minerals Planning Guidance 7: Reclamation of Mineral Workings (MPG7), encourages the reclamation of mineral extraction sites to alternative (i.e. non-agricultural) end uses such as nature conservation, where such reclamation would not affect the quality of the best and most versatile agricultural land. MPG7 advises on the necessary requirements of a reclamation scheme and its implementation. Planning Policy Statement 9: Biodiversity and Geological Conservation includes the conservation and enhancement of geodiversity as well as biodiversity, as a requirement of Local Planning Authorities in their development of plans and policies and development control decisions.

## 6. Links to associated habitats & species

6.1 The Craggs, Caves and Tunnels Habitat Action Plan is linked to the following Habitat Action Plans:

- Limestone Woodland (LW)
- Limestone Grassland (LG)
- Rivers, Canals, Oxbows, Major Streams and Subsidence Flashes (RCF)
- Post Industrial and Brownfield Land (PIB)

6.2 **'A Species Audit of Doncaster Borough'** has been produced as part of the Doncaster Local Biodiversity Action Plan. Species highlighted in bold within the Habitat Action Plans are identified within Doncaster's Species Audit and are conservation priorities. The Audit identifies **17** species associated with Craggs, Caves and Tunnels.

## **7. Current factors causing loss or decline**

### **Quarrying and landfilling**

7.1 Limestone quarrying can sometimes involve blasting of the virgin rock, which obliterates its habitat function and destroys any caves present. One limestone quarry currently uses the blasting method in the Borough. Temporary storage piles can also be placed against crags or caves causing potential degradation, obstruction and loss of habitat function, although those piles can themselves then become valuable wildlife habitat.

7.2 In the past, quarry reclamation schemes have prioritised agricultural and amenity uses rather than biodiversity, which reflected the wider concerns of the day. However, with changing environmental attitudes and the requirement for new approaches to waste management, a reduced dependence on landfill will present opportunities for alternative reclamation schemes (e.g. managed neglect). The guidance in MPG7 provides a basis for emphasising nature conservation within end uses, and consequently the biodiversity value of caves and crags is an important factor in negotiations over the restoration and end use of any site.

### **Destruction of old railway cuttings**

7.3 The Don Gorge has a number of old railway cuttings that no longer provide operational rail routes. The cuttings have exposed limestone and can act as miniature gorges, with a diversity of wildlife from the base of the cutting to the top of the crag.

7.4 At least two bat roosts are known to exist in railway cuttings in the Don Gorge<sup>6</sup>. In the past these abandoned cuttings have been filled with waste and in the same way as quarry landfill, all the biodiversity value has been lost. Some areas have now been developed for residential uses.

### **Crag, Cave and Tunnel maintenance**

7.5 Caves and crags on former quarry sites are often the cause of health and safety concerns and it is common practice to stabilise crags with wire meshing. This can prevent birds and bats using the crags because the meshing is too small to get through.

7.6 Tunnels and caves are also blocked-up because of safety fears, again either preventing animals from continuing to use this habitat or at worst blocking them into the cave or tunnel. Tunnel and cave entrances can also be grilled to prevent unauthorised access, and this can still allow the free passage of animals such as bats if the grill is the correct size for them to move through. However, grills are sometimes used on entrances that do not allow free movement in and out of the cave or tunnel, and as such are likely to result in the bats abandoning the roost site.

7.7 Tunnels are prone to movement in the brick or stonework and it is currently the policy of the main tunnel owners to maintain the tunnels by grouting-up any cracks in brick and stonework. This again can prevent bats using this common roosting situation and could even trap hibernating bats within the wall.

---

<sup>6</sup> Howes, C.A. (1996) Bat Studies in the Don Gorge, Doncaster. Report of the Don Gorge Bat Group: Fieldwork Seasons 1990 to 1996. Doncaster Museum and English Nature

**Climate change**

7.8 The impact that climate change will have on hibernating animals is not known and it is essential that regular survey work takes place to monitor any changes. Caves and tunnels are ideal hibernation sites because of their constantly cool temperature and relatively high humidity. It is feared that climate change may alter the fine balance of cave conditions.

**Vandalism**

7.9 Caves are an attractive playground to youths and also offer a temporary shelter to people in need of a place to sleep. Consequently caves are often subject to fires, which can be fatal for any fauna using the cave.

**Isolation**

7.10 The network of crags, tunnels and caves within the Don Gorge has been considerably reduced as a result of quarrying, landfill and tunnel blocking. In addition, increasing development has severed or reduced habitat corridors in some places. It is important that the existing resource is not further reduced and that the habitat network and its connectivity is protected and restored in the future.

## **Caving**

7.11 The exploration of caves is a popular recreation activity, and there is a large network of local caving groups around the UK. Cavers will venture deep into the cave system and subsequently problems can occur during the hibernation period, as a group of cavers in an enclosed space with numerous torches can significantly increase the cave temperature and therefore potentially awaken bats from hibernation. Summer roosts can also be disturbed by noise if large groups of cavers are exploring in a roosting area. Most caving clubs adhere to codes of practice covering the conservation of caves and their contents, both living fauna and geological features. The most concerning threat is that from those cavers who are not visiting caves as part of an organized club excursion. Natural England is currently working with local caving groups across the country to raise awareness of the importance of caves for biodiversity and geological conservation, and is consequently benefiting from the wealth of new information cavers can provide on local cave systems.

## **8. Current local action**

### **Research & Monitoring**

8.1 The Don Gorge Bat Group undertakes annual surveys of Don Gorge tunnels, but these have been hampered in recent years by entrance grilling on some tunnels. The Group also makes records of invertebrate fauna encountered. Doncaster Naturalists Society and the Keeper of Environmental Records at Doncaster Museum have also undertaken a range of surveys.

8.2 The Keeper of Environmental Records at Doncaster Museum has published a number of scientific research papers concerning the Don Gorge.

8.3 Funding from the Big Lottery's Transforming Your Space initiative has enabled the further development of the Biological Records Centre at Doncaster Museum. The biological data collected as part of the project, particularly botanical information for local sites, species and habitats has enhanced the modern dataset. Historical biological information has also been transferred to the database.

### **Links to other Strategies & Plans**

8.4 The Don Gorge Strategic Management Plan has been produced on behalf of the Don Gorge Strategic Partnership, a body of key organisations and stakeholders active in the Don Gorge. The Plan includes a series of time-framed action plans for key issues including; visitor management, access and recreation; geological, biological, archaeological and heritage interest; management of the river and banks; and species and habitat management.

### **Communications & Publicity**

8.5 There is a publicly available guide booklet to the caves and pot-holes in the Doncaster area.

### **Habitat Creation & Restoration**

8.6 Quarry restoration schemes have become more focused on nature conservation over the last 15 years, and schemes are now submitted that incorporate natural colonisation, calcareous grassland seeding and limestone woodland planting, to enhance and expand the existing biodiversity resource.

8.7 Under the Review of Mineral Planning Permissions as required by the 1995 Environment Act, the conditions attached to the planning permission for Cadeby Quarry, run by Lafarge, is due for review at the end of 2008. This may provide an opportunity to revisit the reclamation scheme and ensure appropriate biodiversity enhancement and habitat creation is included.

### **Safeguarding & Management**

8.8 Funding from the Big Lottery's Transforming Your Space initiative has enabled the development of a range of biodiversity initiatives, including the resurvey of the Borough's SSI's, research projects, production of site management plans and the provision of resources (equipment, educational, activity and promotional materials) to help raise awareness and encourage participation in the management and enhancement of local biodiversity. A number of management plans have been produced for sites within the Don Gorge.

### **Advisory**

8.9 DMBC has introduced a programme of continuous professional development based around a series of in-house seminars and training sessions on planning related issues, including 'Protected species' and 'Trees and Hedgerows'. The Environmental Planning Team has produced a suite of Supplementary Planning Documents, providing guidance on: Planning for Trees and Hedgerows, Nature, Sustainable Construction and Landscape Planning on Development Sites in Doncaster.

## 9. Objectives, targets & proposed actions

Please refer also to the Generic Actions in the LBAP Introduction and Overview Document.

Objective	Target	Ref	Action	Lead Partners	Costs	Category
1) To ensure the protection and maintenance of existing crag, cave and tunnel sites.	Continuous.	1.1	Prevent depletion of crag, cave and tunnel habitats resulting from development and/ or the delivery of statutory functions by:	DMBC, Natural England (NE)	Staff costs	Advisory/ Safeguarding & Management
			<p>1) Having regard to the protection and enhancement of habitats when considering the allocation of sites, in line with the approach set out in PPS9 and the priorities set out in the LBAP.</p> <p>2) Having regard to the assessment, retention and enhancement of habitat types when formulating and making Development Control Policies and decisions, in line with the approach set out in PPS9 and the priorities set out in the LBAP.</p>			
			3) Providing advice to Development			

Objective	Target	Ref	Action	Lead Partners	Costs	Category
			<p>Control and Developers on appropriate types of survey i.e. ecological, geological, hydrological, survey techniques, the interpretation of survey results and methods of incorporating habitat retention and enhancement into development proposals (for both designated sites and non-designated features of biodiversity value, as identified in the LBAP.</p> <p>4) Having regard to the priorities set out in the LBAP in the interpretation of UDP/LDF policies (and any supporting SPGs/SPDs)</p> <p>5) Providing technical advice on the severity, implications and nature of suspected breaches in planning control (either conditions or unauthorised development).</p>			

Objective	Target	Ref	Action	Lead Partners	Costs	Category
			<p>6) Awarding appropriate site protection through designation, based upon routine environmental monitoring and assessment.</p> <p>7) Ensuring that all Partners and relevant landowners, service providers and operational contractors are informed of the existence and importance of crags, caves and tunnels (both designated and non-designated sites).</p>			
	Continuous.	1.2	Continue to collect and maintain up-to-date, standardised, biological data using the Museum's Local Record Centre. Promote and initiate appropriate management, monitoring and the exchange of environmental data, to ensure the maximum level of site protection is awarded and habitat	DMBC, Don Gorge Strategic Partnership (DGSP), Yorkshire Water (YW), Rail operators, Don Gorge Bat Group (DGBG),	Staff costs and volunteer time. Other costs to be evaluated	Future Research & Monitoring

Objective	Target	Ref	Action	Lead Partners	Costs	Category
			condition is maintained.	Doncaster Naturalists' Society (DNS), NE		
	By 2008.	1.3	Expand DMBC's Environmental Planning protected species protocol to include LBAP habitats and species.	DMBC	Staff costs	Advisory
	Craggs, caves and tunnels to be included in all relevant BAPS by 2008.  A tunnel working group in place by 2008.	1.4	Work with other influencing authorities (rail operators, water companies) to ensure that craggs, caves and tunnels are included in their corporate BAPS. Set up a tunnel working group of interested parties.	DGSP, DMBC, YW, Rail operators, DGBG	£1536	Advisory/ Safeguarding & Management
	An invitation letter for further discussion and a liaison meeting before 2008.	1.5	Initiate a programme of awareness raising regarding the maintenance of tunnels and the need for bat licences to undertake work that has the potential to affect a bat roost. Agree a way forward for future maintenance programmes that protects and enhances tunnels for bats and other cave/tunnel dwelling fauna.	DMBC, Rail operators, YW, British Waterways (BW), DGBG, DGSP	£896	Advisory/ Safeguarding & Management

Objective	Target	Ref	Action	Lead Partners	Costs	Category
	Tunnel survey complete by 2009.	1.6	Undertake a tunnel survey to accurately map all tunnels in the Don Gorge and assess any management needs. Liase with a working group of authorities and landowners to address any adverse impacts such as blocking up entrances.	DMBC, YW, Rail operators, BW, DGBG, DGSP	£4000 (Consultancy costs)	Future Research & Monitoring
	Complete, with management recommendations by 2010.	1.7	Initiate an invertebrate survey of a sample of caves and tunnels in the Don Gorge, to inform management requirements for cave and tunnel dwelling invertebrate specialists.	DMBC, DNS, DGSP	£4800 (Consultancy costs)	Future research & Monitoring
	By 2009.	1.8	Initiate a sample survey of known caves and fissures, in partnership with archaeological investigative surveys, and map potential sites for further investigation.	DMBC, NE, DGSP, ARCUS - (Archaeological Research & Consultancy at the University of Sheffield)	£6000 (Consultancy costs)	Future research & Monitoring
	By 2008.	1.9	Commission the resurvey of the borough's 27 RIGs, to include the	DMBC	£20,000 (Consultancy costs)	Future Research & Monitoring

Objective	Target	Ref	Action	Lead Partners	Costs	Category
			identification of any management issues. Pursue adoption of the study as an SPD, linked to a specific policy within the LDF.		costs)	
2) To restore degraded sites and ensure appropriate management of crags, caves and tunnels.	Continuous.	2.1	Identify sites where priority species are present and implement appropriate specialist management schemes to benefit these species.	DMBC, DGSP, DGBG, DNS	To be evaluated	Species Management & Protection
	All new quarry applications.	2.2	New quarry applications for limestone sites to include reclamation schemes that protect and enhance crags, caves and tunnels for biodiversity and geological conservation.	DMBC, quarry operators, DGSP	Developer costs	Species Management & Protection
	All reviewed restoration schemes.	2.3	Reviewed restoration schemes for existing limestone quarry sites to include the protection and enhancement of crags, caves and tunnels for biodiversity and geological conservation.	DMBC, quarry operators, DGSP	Developer costs	Species Management & Protection
	All new planning applications	2.4	New planning applications and	DMBC, quarry	Developer	Future Research

Objective	Target	Ref	Action	Lead Partners	Costs	Category
	and all revised permissions on limestone sites with crags and caves potential.		renewed/revised permissions to require appropriate geological and ecological surveys of limestone sites with the potential to hold crags and caves, and to check for the presence and value of caves and crags.	operators, DGSP	costs / staff time	& Monitoring
3) To create 2 new cave/tunnel sites and create 5 ha of complementary habitat linked to existing crags and caves.	2 new artificial cave or tunnel schemes by 2010	3.1	Artificial caves and tunnels to be included in habitat creation schemes.	DMBC, DGBG, DGSP	Developer costs	Species Management & Protection
	5 ha of new complementary habitat linked to existing crags and caves to be created by 2010.	3.2	In the vicinity of existing cave sites habitat creation should be beneficial to cave fauna, e.g. woodland, hedgerows, limestone grassland, and managed primarily for wildlife.	DMBC, DGSP	£5000 per ha = £25,000	Species Management & Protection
	5 tunnels with extra habitat provision by 2009.	3.3	Liaison with tunnel working group to inform the provision of extra crevice habitat in tunnels (addition of planks, corrugations, specialist bat boxes or bricks etc to tunnel walls and possibly blocking one end of any double ended tunnels).	DMBC, DGBG, YW, Rail operators, BW, DGSP	£1500	Species Management & Protection

<b>Objective</b>	<b>Target</b>	<b>Ref</b>	<b>Action</b>	<b>Lead Partners</b>	<b>Costs</b>	<b>Category</b>
4) Raise public awareness of the importance and special characteristics of crags, caves and tunnels.	By 2008.	4.1	Form a liaison with the main local caving groups and local specialists to advise on the protection of cave ecology and geology and gain any new information on the cave systems of the Don Gorge area.	DMBC, DGSP	Staff / volunteer time	Advisory/ Future Research & Monitoring
	Continuous.	4.2	Work in partnership with the Don Gorge Strategic Partnership to develop projects and management initiatives relating to biodiversity in the Don Gorge.	DMBC, DGBG, DNS	Staff / volunteer time	Communications & Publicity/ Safeguarding & Management
	By 2008.	4.3	Meeting between Don Gorge Strategic Partnership and Doncaster Biodiversity Action Partnership to assess compatibility of LBAP and DG Strategic Management Plan.	DBAP/DMBC, DGSP	Staff / volunteer time	Communications & Publicity/ Safeguarding & Management
	Continuous.	4.4	Liaison with Regional RIGS partners to ensure that DMBC has up to date information on designated RIGs in the Doncaster borough.	DMBC, South Yorkshire RIGs partners	Staff / volunteer time	Communications & Publicity/ Safeguarding & Management

## **10. Indicative Habitat distribution & Opportunities map**

The map for Craggs, Caves and Tunnels is based on the geology of Doncaster borough and shows the distribution of Dolomite Limestone, as supplied in a digital geological map by the British Geological Survey.

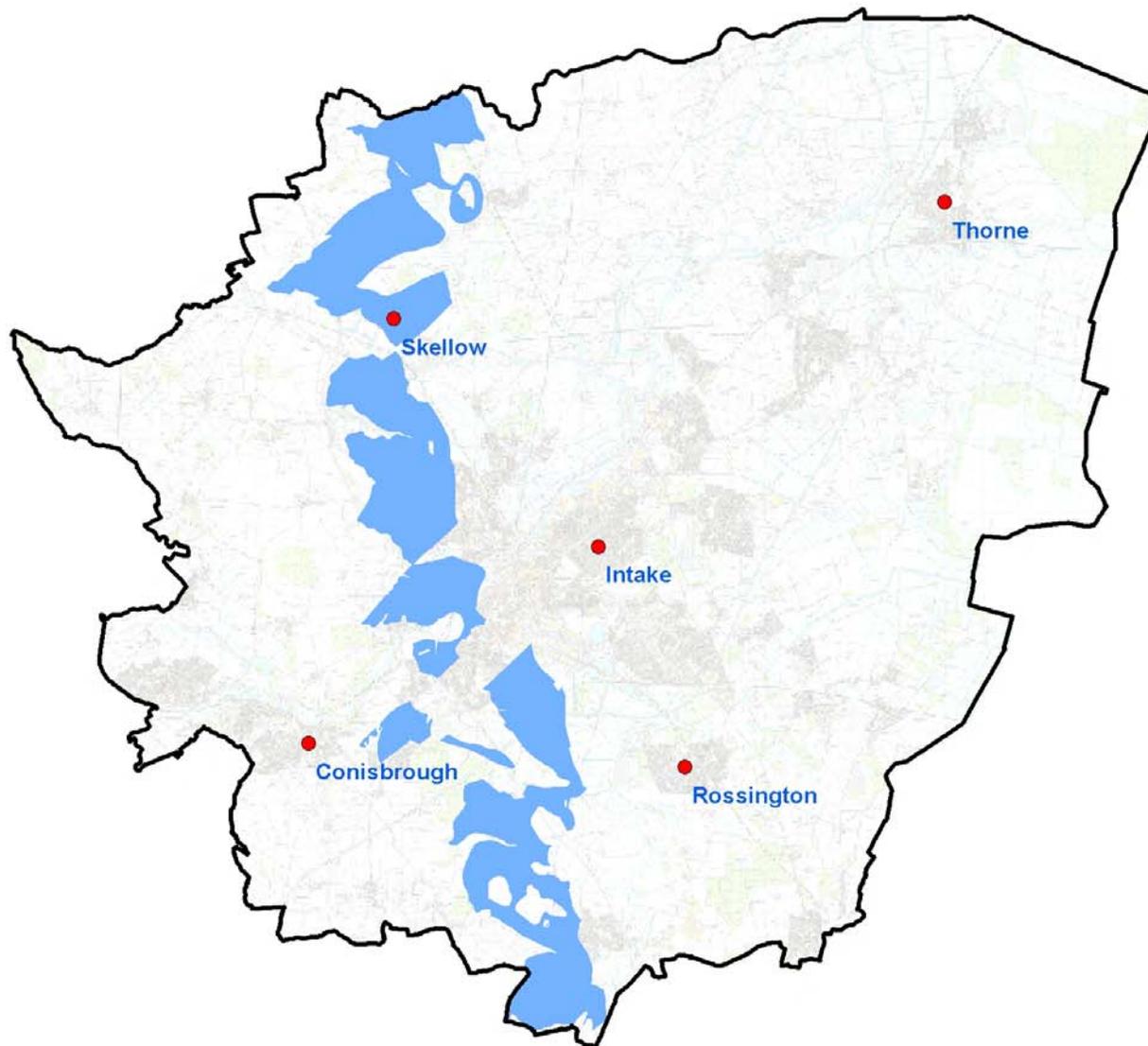
## Crags, Caves and Tunnels

DATE: January 2007  
 SCALE: 1:160,000  
 DRAWING NO: HAP/1/CCT



**LEGEND**

- Doncaster Borough Boundary
- Village
- Dolomitic Limestone



Environmental Planning  
 Spatial Planning and Economic Development  
 Directorate of Development  
 2nd Floor  
 Danum House  
 St Sepulchre Gate  
 Doncaster  
 DN1 1UB

**NOTE**

This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. (100019782) (2007)