

# Post Industrial and Brownfield Land (PIB)

## Habitat Action Plan

Doncaster Local Biodiversity Action Plan  
January 2007



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## 1. Introduction

1.1 Waste land, derelict land, post industrial, disused or brownfield land are terms given to sites that have, in the recent past, been used for some previous development purpose, but are now existing without any formal use. The vast majority of such sites are within urban areas, although they are also frequently located on the fringe of urban areas, e.g. where industrial land meets agricultural land. Whilst frequently referred to as 'brownfield' such land is often considerably vegetated and it is difficult to determine when a brownfield site is no longer 'brown.' Similarly, derelict land is defined as that which has no use without modification, but once a site has developed significant wildlife value it could be argued that the land has a use without requiring any further modification. The terminology is confusing and varies in its interpretation. However defined, Post Industrial and Brownfield Land is of considerable importance to biodiversity, particularly in its typical urban setting. It is often commented that an urban brownfield site can hold significantly more biodiversity than a large-scale arable field in the countryside that has lost its field margins and hedgerows and is never left unproductive and fallow.

1.2 Kendle and Forbes (1997)<sup>1</sup> list heterogeneity, low fertility, structural complexity and restricted access as the main characteristics of Post Industrial and Brownfield Land that make it so valuable for urban nature conservation. A number of other characteristics can be added to this list, some of which may be present on one brownfield site yet not on others, such as physical disturbance, which in some way contradicts the restricted access characteristic suggested by Kendle and Forbes. But it is in fact the great variety found from site to site that adds to the biodiversity value of Post Industrial and Brownfield Land.

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<sup>1</sup> Kendal, T. and Forbes, S. (1997) *Urban Nature Conservation*. E & FN Spon, London.

**Heterogeneous**

1.3 A great range of physical and chemical characteristics can exist within a single site, and also between different sites in close proximity. Varying characteristics include, soil pH, soil contaminants, topography, fertility, drainage and sunlight and shade. As a result brownfield sites can exhibit community types existing together that are never normally found in the same location, such as the co-existence of saline and fresh water bodies.

**Low Fertility**

1.4 Sites typically have sparse vegetation cover, and low fertility enables plant species with a poor competitive ability to colonise.

**Structurally complex**

1.5 Large areas of hard standing or rubble are often found next to standing water, vegetated soil piles or rough grassland. This range in structure enables animals to feed, breed, bask and shelter all in the same site.

**Physical disturbance**

1.6 Post Industrial and Brownfield land is often regarded as an enticing wild space to human visitors; such sites are frequently used as impromptu adventure playgrounds by children and teenagers. The damage and destruction commonly associated with trespass e.g. ripping down of young trees, bonfire lighting and riding of scrambler bikes across sites, may however in some instances, add to the diversity of a Post Industrial and Brownfield Land. This damage effectively halts succession, returning the damaged area to a state of primary colonisation, and some species thrive on such disturbance. The aptly named bonfire moss (*Funaria hygrometrica*) has found its niche in the ashes of a bonfire scorch, but will soon disappear as other plants take hold. The tall rosebay willow herb (*Chamerion angustifolium*) is also known as 'fireweed' because it is often one of the first plants to appear after a fire.

1.7 Children and teenagers might also bring materials such as corrugated sheeting and plywood onto a site to provide roofing for dens. Whilst creating

an eyesore, these extra materials can increase the amount of refuge for small animals. A corrugated metal sheet for example is an excellent basking platform for a small reptile.

1.8 This type of disturbance is only beneficial at a low intensity. Some sites can become so heavily and continuously used by motorbikes for example, that opportunity for plants to re-colonise are not available and the substrate becomes very compacted.

### **Restricted access**

1.9 Post Industrial and Brownfield sites are often surrounded by private land and in many cases surrounded by continued industrial uses. This restricts the amount of regular human disturbance on the site such as dog walking.

## **2. Description**

### **Plants**

2.1 Plants found on brownfield land in its early stages of dereliction, tend to be the pioneer bryophytes and ephemeral species such as poppy's, docks and mayweeds. A typical brownfield site will be host to species such as common centaury (*Centaureum erythraea*), viper's-bugloss (*Echium vulgare*), foxglove (*Digitalis purpurea*), blue fleabane (*Erigeron acer*), herb robert (*Geranium robertianum*), soapwort (*saponaria officinalis*) and **common cudweed** (*Filago vulgaris*). Whilst many typical brownfield plants are considered 'weeds', they are extremely important for the biodiversity that relies upon them. Teasel (*Dipsacus fullonum*) is an excellent larder of seeds for small birds such as the goldfinch (*Carduelis carduelis*), often seen in good numbers on Bentley Triangle, and rosebay willowherb is the main foodplant of the elephant hawk moth (*Deilephila elpenor*), for example. Typical garden escapes include lupin (*Lupinus spp*), Canadian fleabane (*Conyza Canadensis*), bladder senna (*Colutea arborescens*), everlasting pea (*Lathyrus latifolius*) and **lesser snapdragon** (*Misopates orontium*).

2.2 Species of orchid can often be found on wasteland sites, with the bee orchid (*Ophrys apifera*) being the flagship species of the wasteland. Other orchid species commonly found include the southern marsh orchid (*Dactylorhiza praetermissa*), early marsh orchid (*D. incarnate*) and common spotted orchid (*D. fushii*). Orchids are suited to, and regularly found on brownfield sites because they produce great numbers of seed, which are carried long distances by the wind. A number of the orchid species are also able to tolerate levels of contamination, salinity and a lack of nutrients. Some species are also adapted to low light situations. However, whilst there are brownfield site tolerant species, there are also many specialist orchid species that are only found in historic habitats such as unimproved species rich grassland or fens.

2.3 Spoil heaps of various substrates can bring a rare and uncharacteristic seed bank to a site and can also introduce different substrate types that allows unusual flora to grow. Spoil heaps could consist of pulverized fuel ash (PFA) such as the large re-vegetated heaps at Thorpe Marsh, limestone waste or heavy metal contaminants such as lead, for example.

2.4 PFA has high salinity levels, which is suited to the halberd-leaved or spear leaved orache (*Atriplex prostrate*), a plant recorded from several brownfield sites in the borough, including Cementation Pond SSI 3.18 (Site of Scientific Interest) by the railway line at Bentley and also an area of wasteland at Denaby Main.

2.5 Plants tolerant of metal contamination are known as metallophytes. Blotched monkey flower (*Mimulus luteus*) is a copper tolerant species recorded at a site just outside the borough boundary near Bawtry, and the lead tolerant **spring sandwort** (*Minuartia verna*) otherwise known as leadwort, is recorded at Levitt Hagg landfill site.

## Invertebrates

2.6 Increased survey work in recent years on Post Industrial and Brownfield Land has revealed the importance of this habitat type for a number of rare invertebrate species. Post Industrial and Brownfield land offers the important structural diversity needed by invertebrate species at different stages of their life cycles, with foodplants, bare substrates, waterbodies and shelter all found within a typical brownfield site.

2.7 Gibson (1998)<sup>2</sup> states that 12-15% of our nationally scarce and rare invertebrate species are found on artificial habitats, and that this percentage is likely to be an underestimate. National Biodiversity Action Plan invertebrate species of artificial habitats are listed by Gibson as:

- Bumblebees - *Bombus ruderatus* and ***B.subterraneus***.
- Aculeate hymenoptera - *Cerceris quadricincta*, *C.quinquefasciata* and *Osmia parietina*.
- Beetles - *Harpalus froelichi*, *H.obscurus*, *Psylliodes sophiae* and *Mycetophagus quadriguttatus* (Hairy Fungus Beetle Family).
- Moths - toadflax brocade (*Calophasia lunula*), striped lychnis (*Cucullia lychnitis*), Brighton wainscot (*Oria musculosa*) and four-spotted (*Tyta luctuosa*).

***Bombus subterraneus*** and *Mycetophagus quadriguttatus* are both recorded in the Doncaster borough. ***B.subterraneus*** is regularly seen at Arksey. Brownfield sites are often highly suitable for aculeate hymenoptera, with bare ground, a variety of substrates and spoil heaps that are suitable for burrowing. The **sand tailed digger wasp** (*Cerceris arenaria*) and a number of species of solitary bees, including the blue mason bee (*Osmia coerulescens*) and red mason bee (*Osmia Rufa*) and the uncommon (*Osmia leaiana*) are all recorded in the Doncaster borough. The abundance of anthills within the rough grassland provides an excellent food source for other fauna such as the **green woodpecker** (*Picus viridis*) as well as adding greater habitat variation.

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<sup>2</sup> Gibson, C.W.D. (1998) Brownfield: Red Data. *The Values Artificial Habitats have for Uncommon Invertebrates*. English Nature Research Report No. 273.

2.8 Brownfield sites close to housing can often have a number of garden escapes amongst their flora and this increases the range of flowers available to nectar feeding invertebrates such as butterflies and bees. Typical brownfield site butterflies recorded in Doncaster borough include Meadow Brown (*Maniola jurtina*), Ringlet (*Aphantopus hyperantus*), Peacock (*Inachis io*) and Small Skipper (*Thymelicus sylvestris*). In a study in Leicestershire, Owen (1991)<sup>3</sup> found the larvae of eighteen species of moth feeding on Buddlea (*Buddleja davidii*). The **dingy skipper** (*Erynnis tages*) is typically found on old railway lines.

### **Birds**

2.9 Post Industrial and Brownfield Land in its early successional stages is open and bare or with sparse vegetation, presenting ideal nesting habitat for ground nesting birds such as **skylark** (*Alauda arvensis*), **black redstart** (*Phoenicurus ochruros*), **lapwing** (*Vanellus vanellus*) and **little ringed plover** (*Charadrius dubius*). Typical avian visitors in search of feeding places include **starling** (*Sturnus vulgaris*), jackdaw (*Corvus monedula*) and pied wagtail (*Motacilla alba*), and such species can arrive in large numbers to a brownfield site if it represents the main feeding location for an urban area.

2.10 Scrub and bramble provide good nesting and feeding sites for species such as **willow warbler** (*Phyllocopus trochilus*), blackcap (*Sylvia atricapilla*), lesser whitethroat (*Sylvia curruca*) and **linnet** (*Carduelis cannabina*). Regular garden visitors such as blackbird (*Turdus merula*) and wren (*Troglodytes troglodytes*) will also find valuable habitat on brownfield sites with good structural diversity, along with the now less commonly seen **song thrush** (*Turdus philomelos*).

2.11 Post Industrial and Brownfield Land also provides important hunting ground for the more urban raptors, such as the **kestrel** (*Falco tinnunculus*) and sparrowhawk (*Accipiter nisus*).

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<sup>3</sup> Owen, J. (1991) *The Ecology of a Garden: The First Fifteen Years*. Cambridge University Press. Cambridge, UK.

### Reptiles and amphibians

2.12 With their diversity of habitat structure, Post Industrial and Brownfield sites are suitable for a number of reptile and amphibian species. **Common lizard** (*Lacerta vivipara*), **slow worm** (*Anguis fragilis*) and **great-crested newt** (*Triturus cristatus*) are typical Post Industrial and Brownfield Land species, able to find shelter in rubble, rabbit holes and broken drains, sunny basking spots on old asphalt or concrete platforms, and water bodies for feeding and breeding, all within a small area.

### Other benefits

2.13 The environmental benefits of vegetated Post Industrial and Brownfield Land are not just limited to wildlife habitat. It is also worth mentioning that such sites in an urban setting contribute to noise reduction, act as a pollution sink, assist in flood alleviation by providing an area for surface water to be absorbed back into the ground in an otherwise hard surfaced landscape, reduce temperatures in built up areas, and provide opportunities for recreation (providing that safety, vandalism and ownership issues can be resolved).

2.14 Disused railway lines are often particularly diverse brownfield sites, because of their linear form. Disused railway lines commonly support various woodland, hedgerow, scrub and grassland habitat types, and also often some sort of water feature such as natural ponds or man-made ditches or delves. Where they continue over long distances, disused railway lines can be a vital vein of habitat corridor linking into otherwise isolated wildlife sites. Seed dispersal assisted by train movement during the railway line's operational life, can often result in some unusual plants growing in unexpected locations on disused routes. Oxford ragwort (*Senecio squalidas*) is a typical railway line plant, along with the recently discovered York ragwort/groundsel (*Senecio eboracensis*). Footpaths and bridleways are often created on these derelict linear routes, thus ensuring people benefit from close contact with nature.

### 3. National status

3.1 Central government guidance is now heavily focused on sustainable development, and new development is consequently being steered towards land that has previously been developed. This is a sustainable use of land, preventing unnecessary development in the countryside and keeping new development close to existing services and public transport. Planning Policy Statement 3 (PPGS 3) has set a target of at least 60% of all new housing to be located on previously developed land.

3.2 This re-use of Post Industrial and Brownfield Land can therefore be in direct conflict with the conservation of urban biodiversity. However, it is important to note that PPS3 specifically excludes the following from previously developed land that should be used to meet the housing targets:

*'land that was previously developed but where remains of any structure or activity have blended into the landscape in the process of time (to the extent that it can reasonably be considered as part of the natural surroundings), and where there is a clear reason that could outweigh the re-use of the site – such as its contribution to nature conservation.'*

3.3 Planning Policy Statement 9 (PPS 9) – Biodiversity and Geological Conservation, also makes specific mention of previously used land, stating that:

*'Where such sites have significant biodiversity or geological interest of recognised local importance, local planning authorities, together with developers, should aim to retain this interest or incorporate it into any development of the site.'*

3.4 It should be noted that gardens are currently officially classified as brownfield land in a development control context. Garden habitats are more closely related to Urban Greenspace and have therefore been included in the Urban Greenspace Habitat Action Plan. Brownfield sites are not usually classed as public open space, and this consequently means that potentially an excellent resource for informal recreation and play in close proximity to wildlife is not being utilised.

3.5 The wildlife value of Post Industrial and Brownfield Land is being realised in the urban centres of our major cities, and Local Authorities around the country, steered by the Mayor of London and Natural England's (formerly English Nature's) London Area Team, are enhancing development with the requirement for 'brown roofs.' These mimic a brownfield site by being covered in rubble such as crushed concrete or brick. This is then colonised naturally by plants in the same way that a brownfield site on the ground would slowly develop. It is hoped that a suitable development in the Doncaster Borough will pioneer this initiative for the area.

#### **4. Local status**

4.1 Whilst the national guidelines aim for at least 60% of new housing to be developed on brownfield land, Regional Planning Guidance has set a provisional target for Doncaster Borough of 70% of the new housing requirement up to 2016 to be accommodated on brownfield land.

4.2 Doncaster Metropolitan Borough Council has currently placed a moratorium on any Greenfield residential development. This has been imposed to ensure that the brownfield targets for new residential development are met before any greenfield land, currently allocated for housing, is put forward for development. In addition to this, the Local Authority has produced an urban potential study, which identified the brownfield resource of the borough that could potentially be used to accommodate the new housing requirement for the borough over the next decade. Doncaster's urban potential study listed 110 sites, totalling 99.7 ha of 'brownfield' land, i.e. previously developed, vacant and derelict land and buildings. It is therefore essential that biodiversity information is obtained from all sites that are considered to be potential development sites.

4.3 Hexthorpe Plant Works Railway Sidings (SSI 2.17) is the site of the former British Rail Plant Works and includes concrete trenches that are water filled and rough grassland and scrub, providing ideal amphibian habitat. Balby Little Moor (SSI 2.19) has an interesting mix of garden escapes and disturbed ground species, as well as some rarer metal tolerant plants growing where spoil heaps were once created beside the railway line. Surveys in the late 1980's showed Balby Little Moor (SSI 2.19) to have rare species such as bee orchid (*Ophrys apifera*), bog bean (*Menyanthes trifoliata*) and wild clary (*Salvia verbenaca*) on site. Protected species of birds' **skylark** (*Alauda arvensis*), and **linnet** (*Carduelis cannabina*) were also noted and locally recorded.

4.4 Cementation Pond (SSI 3.18) and Willow Garth Fish Ponds (SSI 3.22) are waterbodies created on former brownfield sites, and Pilkington's Burgy Banks (SSI 3.28) is a site of amazing diversity, that includes the lagoons for the liquid waste of the factory's sheet glass production. Surveys have evidenced notable species such as great burnet (*Sanguisorba officinalis*), blue fleabane (*Erigeron acer*), **darnel** (*Lolium temulentum*), and birds such as hobby (*Falco subuteo*), **grey partridge** (*Perdix perdix*), **little ringed plover** (*Charadrius dubius*), and a 1984 record of a **nightjar** (*Caprimulgus europaeus*). The entomology associated with the Pilkington's Burgy Banks (SSI 3.28) is that of a variant saltmarsh community, muscids *Spilogona aerea* (noted for the first time in Yorkshire) and *Limnospila albitrons* were found on site. The Old Oil Well Site (SSI 9.40c) is a former oil extraction site in Hatfield that has re-colonised with scrub woodland and rabbit grazed grassland, which has developed a diverse plant assemblage. The Old Don Oxbows around the Wheatley Park area have interesting assemblages of sand dune plants growing on the large amount of moulding sand dumped there by previous industry. Both Thorne and Hatfield Collieries have areas of natural colonisation on the spoil that warrant further botanical surveys.

## 5. Legal status

5.1 Post Industrial and Brownfield Land is not covered by any legal protection. Sites of this nature can be designated for local wildlife, and a number of Post Industrial and Brownfield sites are classed as Sites of Scientific Interest (SSIs)<sup>4</sup> within the Doncaster Borough. The Department for Environment, Food and Rural Affairs (DEFRA) has recently published guidance on the selection and management of Local Sites.<sup>5</sup> The guidance emphasizes the importance of local sites for providing habitat linkages and ensuring the colonisation and movement of local biodiversity.

<sup>4</sup> DMBC, Re-survey of Sites of Scientific Interest in the Doncaster Metropolitan Borough 1996/97, Volumes 1-9

<sup>5</sup> DEFRA, 2006. Local Sites – Guidance on their Identification, Selection and Management.

5.2 Post Industrial and Brownfield sites are often designated as Local Nature Reserves for their significant wildlife value and close proximity to people's homes.

5.3 A number of protected species occur on Post Industrial and Brownfield Land and the protection of species and their habitat is applicable irrelevant of the status of the site.

## 6. Links to associated habitats & species

6.1 The Post Industrial and Brownfield Land Habitat Action Plan is linked to the following Habitat Action Plans:

- Urban Greenspace (UG)
- Greenways (GW)
- Rivers, Canals, Oxbows, Major Streams and Subsidence Flashes (RCF)
- Crags, Caves and Tunnels (CCT)
- Limestone Grassland (LG)
- Lowland Heathland / Acid Grassland Mosaic (HAG)

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 **106** species associated with Post Industrial and Brownfield Land.

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

### **Development of Brownfield sites**

7.1 The regeneration of city centres is a major priority for most strategic plans and the retention of brownfield land is not conducive to creating the right city centre image for investment. A number of Local Authorities have written manifesto's to remove dereliction and there is a perception that leaving brownfield land in a derelict state is not 'sustainable.' Yet the conservation and enhancement of biodiversity is an integral part of sustainability and this is just as relevant in an urban setting as it is in the countryside.

7.2 The debate as to whether it is better to develop on a greenfield or brownfield site is continual and the right answer is always going to be based on site specifics rather than a general rule. Biodiversity issues and opportunities must be considered at each individual site and also in a strategic spatial planning context to ensure that a coherent network of urban brownfield sites remains.

7.3 The brownfield site resource is inherently cyclic in nature. Sites will become unused, develop natural features and then eventually be re-used as others then become available for species colonisation. This continuum and site network connection needs to be maintained to allow species to thrive and move within and beyond the urban environment, and also to keep a continual supply of newly colonised brownfield sites. Without such a supply, the older sites will succeed to woodland and scrub, and the diversity of habitats will eventually be lost.

### **Public Action**

7.4 Some local residents will value the presence of a 'wild place' next to their homes, whilst others will see them as an eyesore or hazard. Consequently brownfield sites can often be transformed, with all good intentions, into formal green spaces.

### **Non-native invasive species**

7.5 Whilst a number of non-native species have become an established part of our environment, and some are even considered of nature conservation concern due to their rarity, the majority of non-native species are detrimental to our native wildlife because they upset the balance of plant communities and successional patterns. There are a number of non-native species that are particularly invasive and vigorous. These species often take hold on Post Industrial and Brownfield Land, where their growth usually remains unchecked and their ability to completely dominate an area makes them very damaging to our native wildlife.

### **Demolition of buildings**

7.6 Post Industrial and Brownfield Land very often has abandoned buildings, which can be beneficial for urban wildlife. Old buildings provide nesting sites, south facing walls for plants and invertebrates to colonise and roosting sites for a number of the more urban bat species. After time these abandoned buildings are demolished because they have not been maintained and consequently become unsafe. This habitat is generally not replaced on brownfield sites, and dwelling houses no longer provide the crevices they used to for nesting **house sparrows** (*Passer domesticus*) or hibernating lacewings, because they are better built and maintained and people are perhaps less tolerant of wildlife sharing their homes.

### **Garden encroachment**

7.7 Brownfield sites that adjoin residential gardens are often regarded as 'no mans land' and consequently are unofficially claimed and incorporated into gardens. Gradual encroachment can start with using the land as storage or adding a gate to provide an exit from a garden onto the site, and can eventually result in its complete 'gardenisation' and fencing off to enclose it into the existing domestic curtilage. The dumping of garden waste on local brownfield sites increases nutrient levels in the soil, thus reducing botanical diversity.

### **Natural succession**

7.8 Whilst each site is different, in many instances the greatest biodiversity value of a brownfield site is likely to be in its early stages, before it becomes covered by woodland and scrub. Small woodland patches upon Post Industrial and Brownfield land will greatly add to its wildlife value because woodland provides an additional habitat type, but a site will eventually succeed to woodland across its entire area if colonisation by trees is not kept in-check. The typical lack of management on a brownfield site means that woodland cover can occur unnoticed. Urban woodland is of course extremely important, both for wildlife habitat and as a sink for city pollution, therefore a balance needs to be achieved to ensure that woodland succession is arrested on those sites where early stage colonisation offers the most biodiversity interest.

## **8. Current local action**

### **Safeguarding & Management**

8.1 Balby Little Moor (SSI 2.19) is now managed by a partnership of Doncaster Metropolitan Borough Council and local residents.

8.2 Doncaster Metropolitan Borough Council is currently running a green bin scheme pilot, and intend to rollout the scheme to the entire Borough in the near future. This should help to address the problem of tipping of garden waste on brownfield land, as well as relieving landfill pressures.

### **Habitat Creation and Restoration**

8.3 The Doncaster Borough currently has three green roofs either existing or to be completed in the near future.

### **Advisory**

8.4 DMBC's 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 & Overview document.

Objective	Target	Ref	Action	Lead Partners	Costs	Category
1) To ensure the protection and maintenance of existing post industrial and brownfield sites of importance to biodiversity.	Continuous.	1.1	Prevent loss of biodiversity associated with Brownfield land resources by: 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.  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.	DMBC, Natural England (NE)	Staff costs	Advisory/ Safeguarding & Management

Objective	Target	Ref	Action	Lead Partners	Costs	Category
			<p>3) Providing advice to Development Control and Developers on appropriate types of survey i.e. ecological and/or hydrological, 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 BAP 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 Brownfield Land (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 condition is maintained.	DMBC, NE, Doncaster Naturalists' Society (DNS)	Staff costs and volunteer time. Other costs to be evaluated	Future Research & Monitoring

Objective	Target	Ref	Action	Lead Partners	Costs	Category
	By 2008.	1.3	Expand DMBC's Environmental Planning protected species protocol to include LBAP habitats and species.	DMBC	Staff costs	Advisory
	By 2010.	1.4	Audit all brownfield sites that are not currently SSIs in the Doncaster Borough and check against SSI criteria. Designate new sites that meet the SSI criteria.	DMBC	£20,000 in consultancy fees plus Staff time	Future Research & Monitoring/ Safeguarding & management
	Continuous.	1.5	Assess potential for setting up management agreements for local authority brownfield sites with high biodiversity value to local wildlife/community groups.	DMBC	Staff costs and volunteer time	Safeguarding & Management
2) To restore degraded sites and ensure appropriate management of post industrial and brownfield land.	Plans and effective management on 2 sites by 2009.	2.1	Produce management plans and initiate effective management programmes on the most important brownfield SSI sites, with particular emphasis on preventing woodland succession.	DMBC, DNS	£1000 per plan = £2000	Safeguarding & Management

Objective	Target	Ref	Action	Lead Partners	Costs	Category
	2 survey days on brownfield sites by 2008.	2.2	Organise survey days on post industrial and brownfield land to increase knowledge of local wildlife interest on such sites.	DNS, NE, DMBC	Staff costs and volunteer time	Future Research & Monitoring/ Advisory
	Green bin scheme in place by end of 2007.	2.3	Initiate a green bin scheme throughout the Doncaster Borough, in line with national schemes currently in place, to reduce the amount of unauthorised dumping of garden waste and contribute to the Mayor's Zero Waste targets.	DMBC	To be evaluated	Safeguarding & Management/ Communications & publicity
	Continuous.	2.4	Identify all brownfield sites where Priority Species are known to be present and implement appropriate specialist management schemes to benefit these species.	DMBC, NE, Private landowners	To be evaluated	Species Management & Protection
3) To create new sites with brownfield features and create complementary	1 new brown roof and 1 new green roof by 2010.	3.1	Creation of new brown and green roofs in new development. Promote the south Yorkshire green roof initiative with developers.	DMBC	Developer costs	Advisory/ Habitat Creation & Restoration

<b>Objective</b>	<b>Target</b>	<b>Ref</b>	<b>Action</b>	<b>Lead Partners</b>	<b>Costs</b>	<b>Category</b>
habitat linked to existing post industrial and brownfield land.	Continuous.	3.2	Ensure the retention of a network of brownfield sites that are important for urban wildlife, and the creation of new corridors linking sites where brownfield land is to be re-developed leaving remaining sites isolated.	DMBC	Staff costs	Safeguarding & Management
4) Raise public awareness of the importance and special characteristics of post industrial and brownfield land.	Interpretation boards on 2 brownfield sites by 2009.	4.1	Interpretation to be placed on important accessible brownfield sites to advise the public of their special value and explain why they are left in a wild state.	DMBC	£3500 per board = £7000	Communications & Publicity
	By 2009.	4.2	Run a community involvement initiative to encourage care for local brownfield sites.	DMBC	To be evaluated	Communications & Publicity
	Continuous.	4.3	Work in partnership to ensure that biodiversity value of sites remains when they are subjected to improvement for community benefits.	DMBC, All partners	Staff costs	Safeguarding & Management