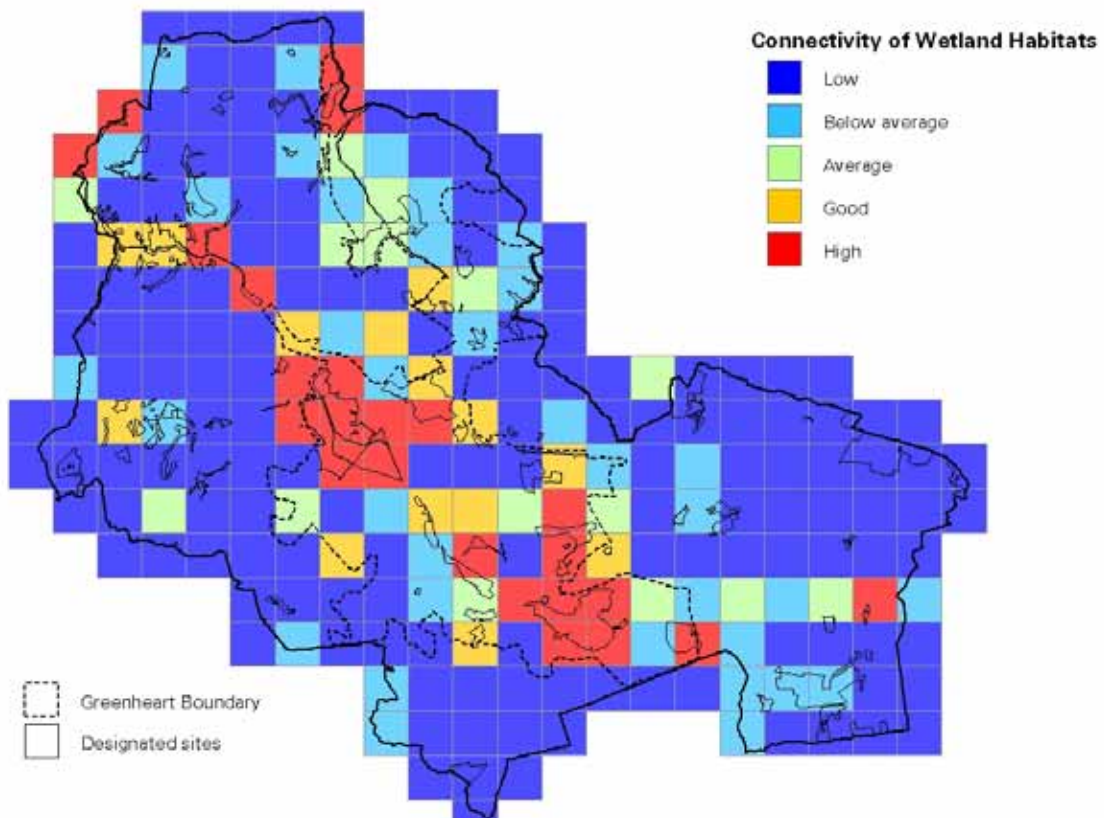


6.0 KEY LINKAGES IN WIGAN (AREAS OF OPPORTUNITY)

Wetlands

- 6.1 The key to Wigan's biodiversity is in its wetland habitats, which support a huge variety of species of which wetland birds are a particularly valuable feature.
- 6.2 Connectivity of wetland habitats, including standing waters, water corridors and reedbeds, is presented in *Figure 44* as the occurrence of wetland habitats per km² across Wigan, relative to the mean hectarage of wetland habitats across the Borough. The primary wildlife corridor in Wigan is illustrated clearly in the figure.
- 6.3 It is of no great surprise that this primary corridor, which runs diagonally through the centre of Wigan from the northwest to the south east, also incorporates a significant number of designated sites. This confirms the importance of Wigan's wetland habitats, not just to the Borough but to the region and in some instances to the country. For example, Wigan is the only district in Greater Manchester to support the bittern, a species of international conservation concern.

Figure 44: Wetland Connectivity (standing waters, water corridors and reedbeds)



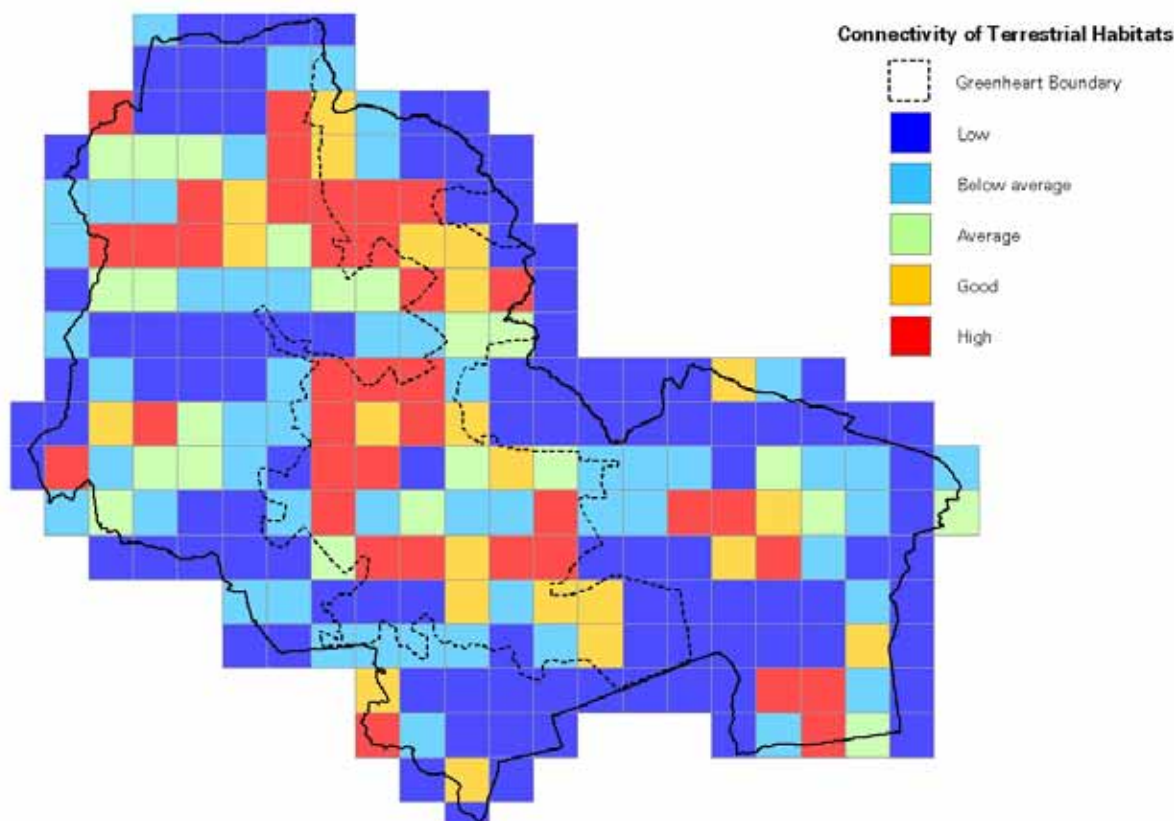
- 6.4 This key wildlife corridor follows the lines of the Leeds-Liverpool canal, as it forms a Y across the Borough, becoming the Bridgewater Canal in the south. This corridor also contains the greatest densities of ponds and areas of extensive standing waters, such as Pennington Flash, Wigan Flashes and the Abram Flashes. The wildlife value of this artery is reflected in the large numbers of Grade A SBI sites lying within or adjacent to the corridor. Sections of the canal itself are also designated for nature conservation.

- 6.5 The Hey Brook Corridor is an important water corridor, flowing through four SBIs and the overlapping Abram Flashes SSSI.
- 6.6 Wigan's resource of lake and lakeside habitats would appear relatively stable and well protected by means of designation and land ownership. The greatest opportunity for these extensive areas of standing water is therefore represented by the control and/or promotion of positive management to maintain open water areas and balanced marginal habitats. Opportunity to improve water quality may arise through management of lands within Wigan's assets surrounding the lakes to reduce run-off and nutrient enrichment. Similar opportunity may be presented within the Greenheart Regional Park and surrounding designated sites through the planning system, where new developments have means to improve water control systems.
- 6.7 Ponds naturally follow successional stages becoming gradually shallower and more scrubbed with age. Management is often recommended to reverse or delay this process to maintain open water. Although beneficial for certain species groups, intervention management may be detrimental to other specialist, more rare or localised species. Where management is not necessitated by human use of a pond, for educational, recreational or water storage purposes for example, the greatest opportunities to improve the pond resource lie with pond creation and water quality improvements to maintain a balance of water habitats for wildlife.
- 6.8 Offsetting the loss and degradation of the pond stock can be tackled by various means, including development control, Section 106 agreements and refinement of the Council's own land-management procedures and practices. Initiatives such as Pond Conservation's Important Areas for Ponds project, which has been piloted in Wales and is due to be extended across the UK, will identify areas with significant numbers of high quality ponds, thereby focussing conservation effort to these areas improving linkages and providing a framework to deliver the Pond Habitat Action Plan. The Million Ponds Project is another national initiative, run by Pond Conservation, which aims to create an extensive network of new ponds across the UK. Other initiatives such as the Greenheart Regional Park also present opportunities to promote habitat improvement surrounding important pond or lake areas and to promote pond creation.
- 6.9 Control of invasive species and raising public awareness as to the introduction and spread of inappropriate commercial varieties such as parrot's feather and fairy moss (*Azolla caroliniana*) would also contribute to the long-term enhancement of the ponds and lakes in Wigan.
- 6.10 Wigan supports probably the most significant reedbed areas within Greater Manchester. The greatest proportion occurs within SBIs, the Greenheart and on Council owned land. This represents a significant opportunity to maintain and extend the existing reedbed resource in Wigan, through management and habitat restoration or creation. The use of reedbeds for water quality improvements could be promoted for new developments, both of a large and smaller scale.

Other habitats

- 6.11 The pattern of connectivity for the terrestrial habitats of Wigan was reviewed by applying the same principal of analysis as that for the wetland habitats. The resultant pattern for the terrestrial habitats is slightly less clear (*Figure 45*) than that observed in the wetlands of Wigan. However, there is again a strong central core of connectivity crossing the Borough, with a preponderance of highly connected habitats within the Greenheart.

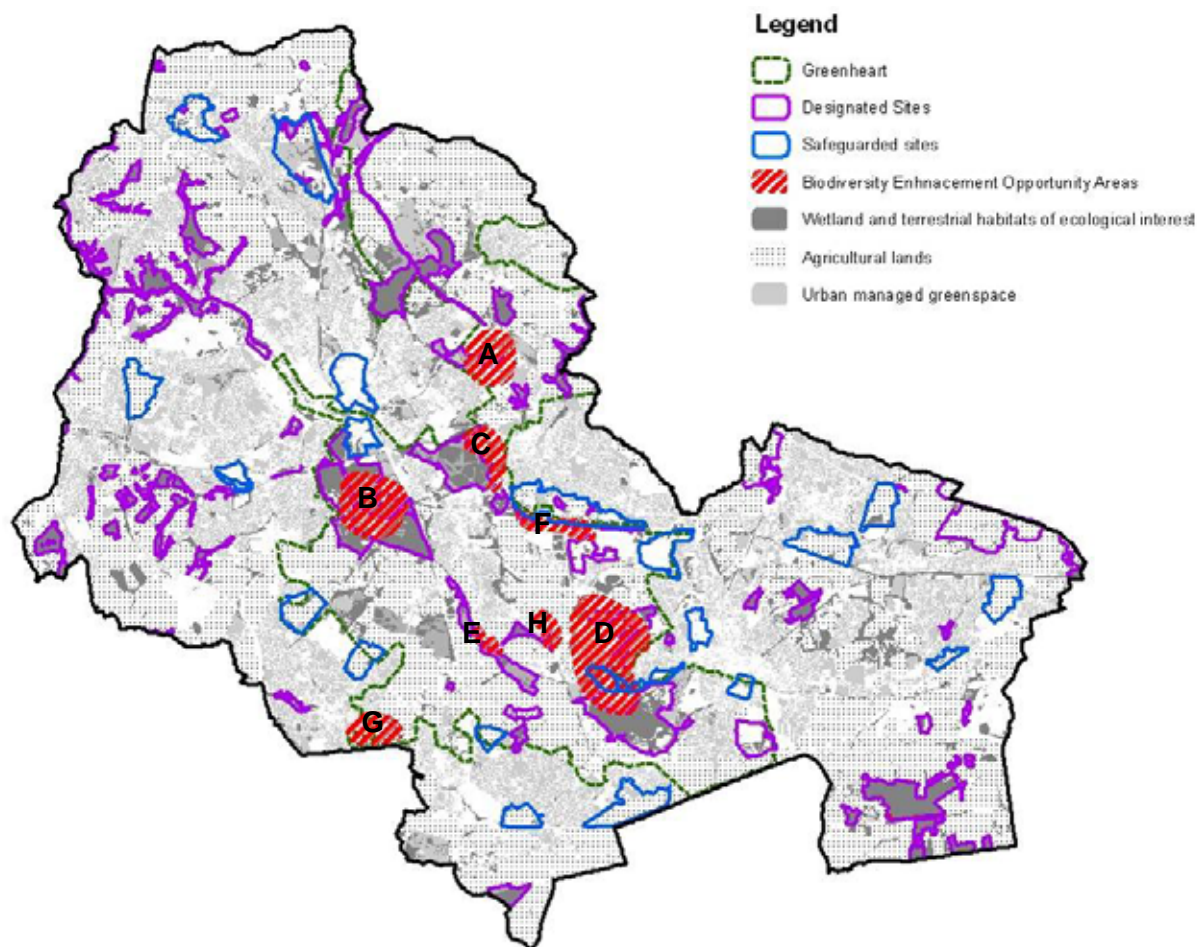
Figure 45: Terrestrial Connectivity (woodland/scrub, mossland, heath and grasslands)



- 6.12 This pattern of connectivity identifies secondary wildlife corridors across the borough, feeding into the main central corridor. Secondary corridors can be seen through Shevington in the northwest, through Tyldesley and Astley to the east and through Highfield, Orrell and Longshaw to the west although these latter corridors may be restricted to a degree by the M6 corridor.
- 6.13 Connectivity in the terrestrial landscape is primarily achieved between Wigan and surrounding districts to the north (through Standish and Haigh) and south (through Golborne and through Astley and Bedford), although the latter corridors are restricted in some respect by the A580 and, further south, by the M62 corridor.
- 6.14 These patterns of connectivity also re-emphasise the important role that the Greenheart plays in maintaining Wigan's wildlife interest, not only providing key linkages between Wigan's primary habitats but also across the wider landscape to the north (through Standish and Haigh and through Shevington) and south (through Pennington and through Astley and Bedford), although the latter corridors are restricted in some respect by the A580 and, further south, by the M62 corridor.

- 6.15 An appraisal of the opportunities presented by the Greenheart Regional Park in contributing to safeguarding and improving Wigan's diversity has been made in addition to appraisals of potential threats to Wigan's biodiversity posed by the possible future development within safeguarded sites. Results of the individual biodiversity appraisals of the Greenheart and the safeguarded sites (as identified in the Preferred Options), are presented at *Appendix 6*.
- 6.16 Eight biodiversity enhancement opportunity (BEOA) areas were identified in the Greenheart appraisal, summarised in *Figure 46* below and presented in more detail at *Appendix 6* (at Drawing G1771.002). Selection of BEOAs focused on sites where historical data indicates the presence of a priority habitat but where more recent data indicates the habitat may be in decline. Alternatively, these habitats may have been absent or lie within previously developed land, but now appear to be naturally regenerating. In both these scenarios available data indicates suitable conditions for the restoration or enhancement of significant priority habitat areas.
- 6.17 BEOAs have been prioritised to those primarily within Council ownership or control and also within the Greenheart. This would allow Section 106 Agreements to be established with potential developers within Strategic Sites, where restoration or enhancement is sought to offset for unavoidable loss within a Strategic Site.
- 6.18 In summary, the BEOAs are distributed across the Greenheart in locations where offsetting measures, to prevent net losses of important habitats, could be targeted to maximise biodiversity gain:
- **Area A** - An area of heathland/acid/neutral grassland mosaic located to the north of Kirkless Lane (now threatened by scrub encroachment and nutrient enrichment). Also, relatively large areas of Council-owned grassland located around the Recycling centre and associated landfill site, which had previously been mapped as acid grassland but have since become more neutral in character. Some of the landfill site has already been planted with broadleaved trees. These areas lie close to Kirkless SBI.
 - **Area B** - The area of open mosaic habitat which occurs at the ex-colliery directly south of Turner's Flash, which is considered likely to meet the Priority habitat definition. However, permission to survey the land is still required. Management of this area could potentially improve its value for wildlife further. Also, the area of Council-owned grassland (previously acid grassland) to the north of Turner's flash has potential for management. A small area of heathland is present at grid reference SD58396 03376. If acid grassland is restored at this site, the spread of heathland could also be encouraged.
 - **Area C** - The area of Council-owned landfill to the east of Amberswood Common (sparse Purple Moor grass has been recorded here, though the grassland is largely species-poor neutral). Also, the area of Council-owned neutral grassland to the east of this landfill, which is next to an old colliery site, and was recorded as acid in the 1986 Phase 1 survey. It still retains some areas of acid grassland and marshy habitat, although parts are being developed into football pitches.

Figure 46: Key areas of opportunity and locations of safeguarded sites



- Area D - Council-owned grassland within the area of Bickershaw Colliery. This may form the Priority habitat open grassland mosaic on previously developed land, and could potentially be managed as habitat for wildlife. Also, to the south of this site lies a large area of Council-owned grassland which was once a site for spoil tipping, but shows some level of diversity in patches.
- Area E - Along the Leeds-Liverpool Canal east of the Dover Bridge there is likely to be acid grassland on colliery spoil (although permission to access the track that runs along the canal is required). Remote survey with binoculars indicated that acid grassland was present, but may be suffering from nutrient enrichment and scrub encroachment.
- Area F - Heathland along the dismantled railtrack (and public footpath) south of Forshaws Tip, which is at risk of being shaded by trees. Also, the large area of colliery spoil tipped land to the north and east of Barlows Farm, some of which retains acid grassland and small patches of heather. However, these are all on privately-owned land.

- **Area G** - Ashton Heathland is currently being restored by the Ashton Heath Residential Group, an associate group of BCTV. However, there has been some difficulty in re-establishing Ling heather. The restoration project could benefit from opportunity represented by land within the Council's control. Areas of Council-owned neutral grassland (un-surveyed but mapped as neutral in the 1986 Phase 1 survey) lie to the north of this heathland, which could also potentially be managed to improve species diversity and contribute to a larger and more functionally viable and diverse ecosystem that will be less vulnerable to public pressures.
 - **Area H** - To the west of Bickershaw and directly east of Park Lane Colliery is an area of bare ground on private land near to a disused shaft, which may be interesting but un-surveyed due to access issues. Potential areas of marshy grassland lie to the east, again un-surveyed.
- 6.19 In addition to the eight biodiversity enhancement opportunity areas, Commons land to the east of Leigh Road has been highlighted as potential land for redevelopment. A small section of this to the north is Council-owned, and holds potential for restoration of acid grassland on areas of colliery spoil if offsetting of other development is required.
- 6.20 Council-owned areas around and to the south of Westwood Park Gardens (east of Westwood Flash SBI) are also due to be developed, however, there may be some potential for restoration within and around the developed areas, to be incorporated within the planning design. Another possibility is that materials could be recovered from the mounds of Pulverised Fuel Ash and used elsewhere, to encourage the creation of calcareous habitats (further discussion can be found at the appraisal for Westwood in *Appendix 6* - site ref 015).

7.0 RECOMMENDATIONS FOR BIODIVERSITY OBJECTIVES AND POLICY TARGETS

- 7.1 To summarise Wigan's biodiversity interest, the habitats mapped within the Borough have been confirmed as, or have the potential to qualify as, the following priority habitats:
- Ponds (UKBAP and GMBAP)
 - Rivers (UKBAP)
 - Canals (GMBAP)
 - Reedbed (UKBAP, GMBAP, Wigan BAP)
 - Lowland raised bog (UKBAP)
 - Mossland (GMBAP, Wigan BAP)
 - Lowland deciduous woodland (UKBAP)
 - Wet woodland (UKBAP)
 - Traditional orchards (UKBAP)
 - Upland oak woodland (UKBAP)
 - Native woodland (GMBAP)
 - Wood pasture and parkland (UKBAP)
 - Grasslands (GMBAP)⁹
 - Lowland heath (UKBAP)
 - Urban managed greenspace (GMBAP)
 - Hedgerows (UKBAP)
 - Arable field margins (UKBAP)
- 7.2 The Greenheart Regional Park should be the focus of biodiversity improvements and environmental management, especially within SSSIs, SBIs, Biodiversity Enhancement Opportunity Areas and any wetland habitats falling outside these areas.
- 7.3 Water levels and water quality are vital characteristics of many of Wigan's prime biodiversity assets and are therefore fundamental to the Borough's biodiversity targets. All efforts should be made in land management, policy and conservation activities to ensure that water levels and quality are preserved and where ever possible, improved, across the Borough.
- 7.4 A monitoring framework is suggested for the management of designated sites and priority habitats, habitat creation targets, linking with the Wigan Biodiversity Action Plans, targets for safeguarded land and targets for urban and agricultural landscapes.

⁹ *As discussed in Section 5, it is unlikely that grasslands in Wigan will fit criteria for individual UKBAP priority grassland habitats, but many of the grasslands identified will likely be included in the combined regional BAP priority of Grasslands, which includes species rich neutral and acid grasslands, marshy grassland and important grasslands on previously developed land.*

- 7.5 Detailed discussion with planning officers, the Wigan Biodiversity Partnership, Greater Manchester Ecology Unit, Council land managers and representatives of the major landowners and funding bodies is needed to resolve:
- Feasibility;
 - Precise target-setting (measures and timeframes);
 - Mechanisms for implementation and monitoring.

Management of Designated Sites and Priority Habitats

- 7.6 Monitoring objectives for designated sites and overarching objectives for Wigan's biodiversity priority habitats are recommended as follows:
- (i) All SSSIs in favourable condition;
 - (ii) >80% of SBI's being managed for nature conservation; and
 - 95% of Council-owned SBIs
 - 95% of SBIs with reedbeds, mosslands, rivers and canals
 - (iii) >80% of the following priority habitats being managed for nature conservation:
 - Reedbeds
 - Rivers and Canals
 - Standing Water
 - Mosslands & Raised bog
 - Ancient and wet woodland
 - Heath
- 7.7 Monitoring targets can probably be achieved using existing knowledge, supplemented by questionnaire to landowners. A five-yearly monitoring cycle is appropriate. This links to Defra targets for Local Wildlife Sites.

Priority Habitats protected by SBI designation

- 7.8 Monitoring objectives for biodiversity priority habitats contained within SBI designations are recommended as follows:
- (i) 95% of the existing resource being included in SBIs for the following habitats:
 - Reedbeds
 - Mosslands
 - (ii) >75% of the existing resource being included in SBIs for the following habitats:
 - Standing Water
 - Water corridors
 - Important grasslands (definitions still need clarification)
 - Ancient and wet woodlands
- 7.9 *Table 2* summarises the baseline position. Performance is good in most categories.

Habitat Creation

- 7.10 Further work is needed to set targets and timeframes for creation of priority habitats. The following habitats should be included:
- Ponds - to achieve a density of >10/km² in each 1km grid square;
 - Marshy/wet/floodplain grassland - especially around existing protected mosslands and reedbeds; and
- 7.11 Where opportunities arise within the post-industrial landscape areas of the Borough, consideration should be given to the viability of heath restoration/creation. However, these areas are highly fragmented and the potential to restore or create fully viable heath systems may no longer be available, in which case effort for habitat creation schemes should be focussed upon the priority habitats above.

Wigan's Biodiversity Action Plan

- 7.12 Objectives and targets set out in Wigan's Biodiversity Action Plans can be complemented by biodiversity focussed efforts targeting the following:
- Key linkages for wetlands and terrestrial habitats defined and illustrated on Ordnance baseplan;
 - Biodiversity Enhancement Opportunity Areas (BEOAs) defined and illustrated on Ordnance baseplan; and
 - Specific policies for linkages, BEOA's and Greenheart's biodiversity included in BAP and thereby linked to the Local Development Framework
- 7.13 Linkages and BEOAs can be mapped on the basis of the grid-square figures shown in this document, especially in Chapters 4 and 6.

Evidence Base

- 7.14 Present data on grasslands and woodlands does not allow accurate estimation of priority types such as marshy grassland, wet woodland etc.
- 7.15 To fill these data gaps, targeted borough-wide monitoring surveys are needed for grasslands and woodlands in particular, in order to identify the location, distribution and classification of priority types.

Strategic Sites and Future Development

- 7.16 The Strategic Site forms presented at Appendix 6 provide an overview of the biodiversity potential of the major safeguarded sites.
- 7.17 There should be a presumption that all habitats discussed in this review are of priority status unless proven otherwise.

- 7.18 All safeguarded land should be subject to ecological survey and design for biodiversity should be included within development proposals.
- 7.19 Where proposed land use changes or management changes, in safeguarded sites and other areas across the Borough, have the potential to affect national, regional or local priority habitats, survey should quantify the extent and quality of the habitat. If national or regional priority habitats are confirmed, these should be protected and preserved with linkages to other semi-natural habitats.
- 7.20 If locally important habitats are identified, these should be protected and preserved with linkages to semi-natural habitats where possible. If this is not possible, the net habitat resource should be maintained through the restoration of existing but degraded habitats or the creation of new habitats. Restoration or creation of new habitats should concentrate on key areas of opportunity to extend, buffer or strengthen linkages between national and regional priority habitats, identified in the preceding section.
- 7.21 For any significant development, a BREEAM assessment should be carried out to ensure "Very Good" Rating, with the Land Use and Ecology section being mandatory.
- 7.22 BREEAM assessment can stimulate thinking about how to incorporate biodiversity protection and enhancement. Further discussion with development control managers will be needed on how to incorporate this into the planning application process and on thresholds of significance so the requirement does not burden householders.

Agricultural Land and Gardens

- 7.23 At least 75% of agricultural land should be brought into management under an Environmental Stewardship scheme, or an equivalent long-term management plan
- 7.24 It should be noted that some urban fringe agricultural land is not eligible for Defra's support (e.g. equestrian centres or short-term tenancies on land held by owners who aspire for development), but it may be possible through appropriately timed interventions using the planning system to secure management agreements.
- 7.25 Wildlife Gardening Awareness campaigns in areas where the garden resource is critical to Wigan's biodiversity (e.g. in the wildlife linkage areas, in areas that emerge through the Greater Manchester Ecological Framework and adjacent SBIs).

Council-owned Land

- 7.26 All Council-owned land should be subject to biodiversity audit, including:
- Identifying existing priority habitats;
 - Reviewing management practices to improve biodiversity;
 - Identifying and implementing habitat creation; and
 - Opportunities to partner with local community/wildlife groups.

- 7.27 Priority should be given to Council land in the Greenheart and in SBIs. Other priorities should include the major Council-owned urban and country parks, woodlands, schools and colleges. A simple proforma should be devised in conjunction with land managers, recognising there are safety and amenity issues.

Partnership-working and public awareness

- 7.28 In seeking biodiversity improvements, other green infrastructure benefits such as human access to nature, tourism, flood management should be incorporated. This can best be achieved through partnerships with owners such as the Environment Agency, Forestry Commission, Woodland Trust, British Waterways etc.
- 7.29 This is an area where agreement of priorities and targets is also needed within the Wigan Biodiversity Partnership. Areas for action might include:
- Broadening membership and participation in the Wigan Biodiversity Partnership;
 - Links to landowning and recreational and community groups which own or use priority habitats e.g. farmers, equestrians, anglers; and
 - Awareness-raising, especially with gardening and allotment enthusiasts.

8.0 REFERENCES

Legislation

Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora 1992

also known as the Habitats Directive

Countryside and Rights of Way Act (2000)

also known as the CROW Act

Council Directive 92/43/EEC on the Conservation of Wild Birds (as amended by 97/49/EC)

also known as the Wild Birds Directive

Natural Environment and Rural Communities Act 2006 (c. 16)

Planning and Compulsory Purchase Act 2004 (Commencement No 1) Order 2004

Protection of Badgers Act 1992 Chapter 51

Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971

Statutory Instrument 2010 No. 490 The Conservation of Habitats and Species Regulations 2010

also known as the Habitats Regulations

Statutory Instrument 1997 No. 1160 The Hedgerows Regulations 1997

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, July 2007

The Bern Convention on the Conservation of European Wildlife and Natural Habitats 1979,
also known as the Bern Convention (or Berne Convention), which came into force on June 1, 1982

The Convention on the Conservation of Migratory Species of Wild Animals

also known as the Bonn Convention or CMS

Wildlife and Countryside Act 1981 Chapter 69, as amended (including by Statutory Instrument 2008 431 Wildlife and Countryside Act 1981 (Variation of Schedule 5) (England) Order 2008)

Guidance

Cowley, M & Vivian, B (2007) *The business of biodiversity: a guide to its management in organisations* The Institute of Environmental Management and Assessment Best Practice Series Vol 10 November 2007

Defra (2002) *Working with the Grain of Nature - A biodiversity strategy for England*. Defra, London

Defra (2004) *Life Support - Incorporating Biodiversity into Community Strategies* Defra, London

Defra (2006) *Local Sites: Guidance on their Identification, Selection and Management* Defra, London

Defra (2006) *Working with the Grain of Nature - Taking it forward: Volume 1 Full Report of Progress under the England Biodiversity Strategy 2002-2006* Defra, London

Defra (2007) *Guidance for Local Authorities on Implementing the Biodiversity Duty* Defra, London

- Defra (2007) *Securing a healthy environment: An action plan for embedding an ecosystems approach*, Defra, London
- Department for Communities and Local Government (2008) *The North West of England Plan Regional Spatial Strategy to 2021*, CLG, London
- Department for Communities and Local Government (2009) *Plan Making Manual* <http://www.pas.gov.uk/pas/core/page.do?pageId=109798>
- Department for Communities and Local Government (2009) *Planning Together: Updated practical guide for local strategic partnerships and planners*, CLG, London
- ECOTEC (2007) *The policy framework for Green Infrastructure in England's Northwest (as of December 2007) and the opportunities for Green Infrastructure to contribute to sub-regional economic growth*. A report commissioned by The Mersey Forest for Natural Economy Northwest
- English Heritage, Countryside Agency, English Nature Environment Agency (2005) *Environmental Quality in Spatial Planning Incorporating the natural, built and historic environment, and rural issues in plans and strategies* http://www.english-heritage.org.uk/upload/pdf/Envir_Quality.pdf
- Greater Manchester Biodiversity Project
http://www.gmbp.org.uk/site/index.php?option=com_content&task=view&id=9&Itemid=27
- Greater Manchester Ecology Unit (2008) *An Ecological Framework for Greater Manchester* unpublished report for the Association of Greater Manchester Authorities
- Jerram, R. & Beard, M. (1998) *Lancashire Plains and Valleys Natural Area: A Nature Conservation Profile*. A report prepared for English Nature
<http://www.naturalareas.naturalengland.org.uk/Science/natural/profiles%5CnaProfile13.pdf>
- Joint Nature Conservation Committee (2007) *Handbook for Phase 1 Habitat Survey - A technique for environmental audit. Revised reprint 2003, reprinted 2007*. JNCC. Peterborough
- Maslen Environmental (2007) *The Mossland Project - The Vision*, unpubl report for Natural England and Partners
- Natural England (2008) *The State of the Natural Environment*, Natural England, Peterborough
- Northwest Regional Development Agency, North West Regional Assembly, Government Office for the North West and Environment Agency (2006) *Rising to the Challenge: A Climate Change Action Plan for England's Northwest 2007-09* NWDA, Warrington
- Office of the Deputy Prime Minister (2005) 'Government Circular: Geological and Biological Conservation - Statutory obligations and their implications within the planning system' ODPM circular 06/2005, DEFRA circular 01/2005 ODPM, London
- Office of the Deputy Prime Minister (2005) *Planning Policy Statement 9: Geological and Biological Conservation*, ODPM, London
- Office of the Deputy Prime Minister (2006) *Planning for Biodiversity and Geological Conservation: A Guide to Good Practice* ODPM, London
- Office of the Deputy Prime Minister (2009) *Planning Policy Statement 12: Local Spatial Planning (2009)* ODPM, London

- OXFORD, M. (2005) *Framework for Biodiversity. Integrating Biodiversity into Local Development Frameworks*. Association of Local Government Ecologists
- Regional Biodiversity Steering Group (1999) *Wild about the North West: A Biodiversity Audit for North West England*, unpubl
- The UK Steering Group (1995) *Biodiversity - The UK Steering Group Report: Meeting the Rio Challenge* HMSO, London
- Tomlinson, R. (1997) *The Urban Mersey Basin Natural Area: A Nature Conservation Profile*. A report prepared for English Nature
<http://www.naturalareas.naturalengland.org.uk/Science/natural/profiles%5CnaProfile26.pdf>
- URBED (2004) *Biodiversity by Design: A guide to sustainable communities* unpublished report for the Town and Country Planning Association, London
- UK Biodiversity Partnership (2007) *Conserving Biodiversity - The UK Approach*, Defra, London
- UK Biodiversity Partnership UK Biodiversity Action Plan
<http://www.ukbap.org.uk>
- UKBAP National Trends Report 2005 - excel spreadsheet available from
<http://www.ukbap.org>
- Wigan Biodiversity Action Plans
<http://www.wigan.gov.uk/Services/Environment/NaturalEnvironment/Biodiversity.htm>
- Wigan Council (1984) *Wigan Nature Conservation Strategy*, unpubl
- Wigan Council (1989) *The Mosslands Strategy*, unpubl
- Wigan Council (1991) *Wigan Nature Conservation Strategy*, 2nd edition, unpubl
- Wigan Council (2006) *Third Annual Monitoring Report*, Wigan Council
<http://www.wigan.gov.uk/pub/planning/ThirdAnnualMonitoringReport/>
- Wigan Council (2007) *Wigan Local Development Framework: Biodiversity and Nature Conservation Topic and Issue Paper 1* Wigan Council Environment Services Department, Wigan
- Wigan's Biodiversity Strategy* unpubl by Wigan Council
<http://www.wigan.gov.uk/NR/rdonlyres/A395EF4E-DD87-433E-8B89-9EE40941AD94/0/Biodiversity49Kb.pdf>
- Thomas, P. & Walker, M (2004) *Mosslands of Northwest 1 (Merseyside, Lancashire and Greater Manchester) Site and extent of surviving acid mossland habitats* unpublished report