A Green Infrastructure Strategy for Swindon 2010-2026

Revised Consultation Document

Swindon Borough Council

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February 2011

Prepared on behalf of Swindon Borough Council.

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Foreword

Swindon is home to a wealth of green-spaces, both within the town and reaching into the beautiful countryside surrounding the town and villages. Our open-spaces are knitted into the fabric of the town, greatly treasured by local people and widely enjoyed by visitors. They are part of our everyday lives: where we work, do business and learn, the way we travel around, where we play, celebrate and spend our leisure time. They play host to precious wildlife, are part of our cultural heritage and sit in a landscape shaped over the centuries. In short our parks, green-spaces and surrounding countryside play a major role in enriching our quality of life, environment and economy.

We are now asking more and more of our open spaces and countryside as Swindon continues to expand. At the same time our green-infrastructure also has a critical role to play in facing up to the uncertainties and implications of climate change. There is now recognition in policy terms that enhanced 'green infrastructure' is needed to support Swindon's future growth and ambitions: in the same way that we need new roads, schools and other community facilities.
In response, plans are needed to set out priorities and locations for networks of green-spaces across the Borough and linkages across neighbouring authority areas as part of Swindon's regeneration and growth.

This current version of Swindon's Green Infrastructure Strategy incorporates feedback from initial consultation work carried out in late 2009, and subsequent changes in planning legislation. I am pleased that this work has now been completed and hope you agree with me that Swindon's Green Infrastructure Strategy, as detailed in this report, sets out an ambitious vision for a network of green spaces, protected sites, nature reserves and green links across the Borough and beyond.

I am grateful to all the organisations and agencies that have helped to shape this strategy and look forward to working with them in the future to help turn these plans into reality.

Councillor Keith Williams

A Green Infrastructure Strategy for Swindon

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Section: 1

Purpose and Scope of Swindon's Green Infrastructure Strategy

1.1 Green Infrastructure (GI) and its importance for Swindon

Green Infrastructure is the interconnected network of parks, woodlands, waterways and open spaces that help sustain Swindon's environmental health, economy, and quality of life.

Planning for, and enhancing Swindon's Green Infrastructure is an essential part of realising the long term aspirations embedded within **Swindon's Community Strategy** and the medium term priorities set out in **One Swindon:**

Green Infrastructure provides:

- Natural and tranquil spaces for recreation, quiet contemplation and social interaction with far reaching benefits for health and well being
- Attractive places for people to work in and businesses to invest
- Venues where people and communities come together for celebration and as a source of civic pride
- Places where people work together to shape their local communities.
- Places to explore, play and learn
- Routes for walking and cycling for leisure or commuting
- Productive areas for food, wood products, and energy crops.
- Opportunities for tourism and land and leisure based businesses.
- Places for wildlife to thrive and natural systems to function
- A sense of place and cultural landscape

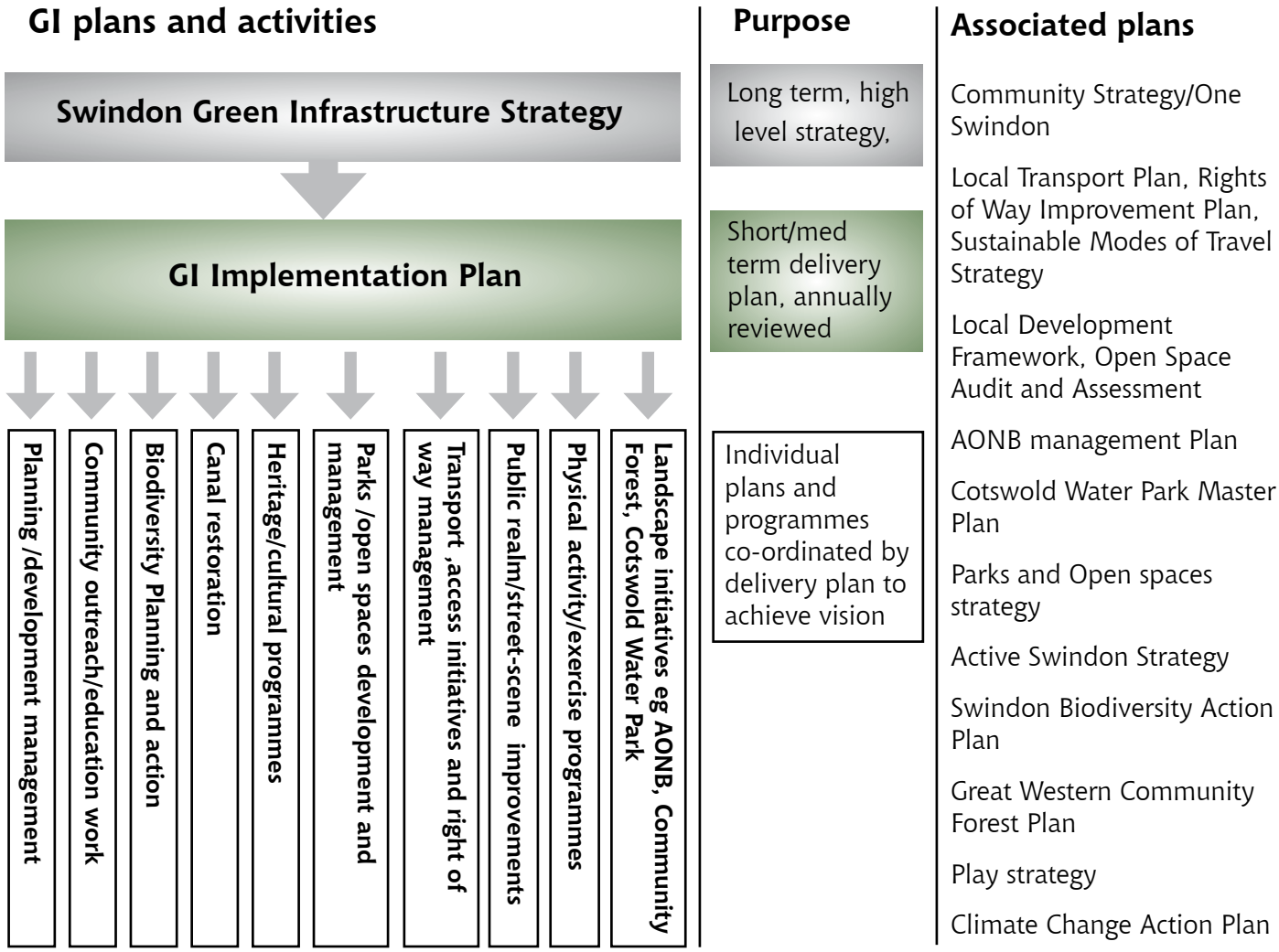
1.2 Purpose of the GI Strategy

Swindon's GI Strategy sets out to:

- Prioritise the planning, development of and investment in green infrastructure in Swindon to 2026
- Present a shared vision for the development of a strategic green infrastructure network across the Borough of Swindon and reaching into neighbouring areas.
- Highlight the means by which organizations, communities and partnerships, can work to create and sustain a fit for purpose green infrastructure network across the area.
- Consolidate the essential role green infrastructure will play in the sustainable development of Swindon.

The GI strategy will be used to:

- Provide the basis for a coordinated approach to the creation and sustained management of green infrastructure across Swindon and its neighbouring authorities
- Support and guide the production of local development plan documents, particularly a Green Infrastructure Supplementary Planning Document for Swindon and master plans associated with major development areas.
- Provide a framework for the development of other localised green infrastructure plans.
- Act as a reference document to other key strategies such as community plans, sustainability strategies, local transport plans, and climate change action plans.
- Act as a basis for a rolling 3 year GI delivery plan:



1.3 The need for a GI strategy

1.3.1 Increased demand on GI from Swindon's continued growth

The Swindon Borough Core Strategy[1] sets out the long-term spatial vision for the Borough to 2026. The Core Strategy identifies the overall level of development required over the period 2006-2026 including provision for an additional 25,000 homes, together with the improvements in infrastructure required to support that scale and distribution of development.

1.3.2 A new impetus for GI Planning

The recent shift towards spatial planning within a statutory framework offers an unprecedented opportunity to take a more strategic and proactive approach to GI planning.

The role that GI will play in Swindon's sustainable growth is being embraced within the emerging Local Development Framework. Swindon's Core Strategy recognises the important role GI will play in Swindon's continued growth.

This GI strategy has been written in response to these, and other, local plans and policies. Moreover, the need for a GI strategy to cover Swindon and its neighbouring areas has been strongly endorsed by a local partnership including neighbouring local authorities, government agencies, local interest groups and organisations.[2]

1.3.3 Past and present green infrastructure development in Swindon

Swindon has a good track record of planning and developing GI:

- The imperative for green spaces in relation to regeneration and new development has been reflected in land use planning policies and other strategies at least since 1945.[3]
- Many organisations including local authorities, local health organisations, charitable bodies, government agencies, local communities and businesses have played, and continue to play leading roles in the creation, management and celebration of open spaces across the Swindon area.
- On a strategic scale, for the past 15 years, Swindon has hosted the Great Western Community Forest initiative. Community Forest plans may be considered as fore-runners of GI strategies.

[1] Revised proposed submission document, SBC, 2011
[2] SBC (2007) Stakeholder groups outcomes reports (unpublished)
[3] Davidge W.R (1945) Planning for Swindon 1945. Post War Planning Sub-Committee

1.4 Scope of Swindon's GI strategy

1.4.1 Geographical coverage

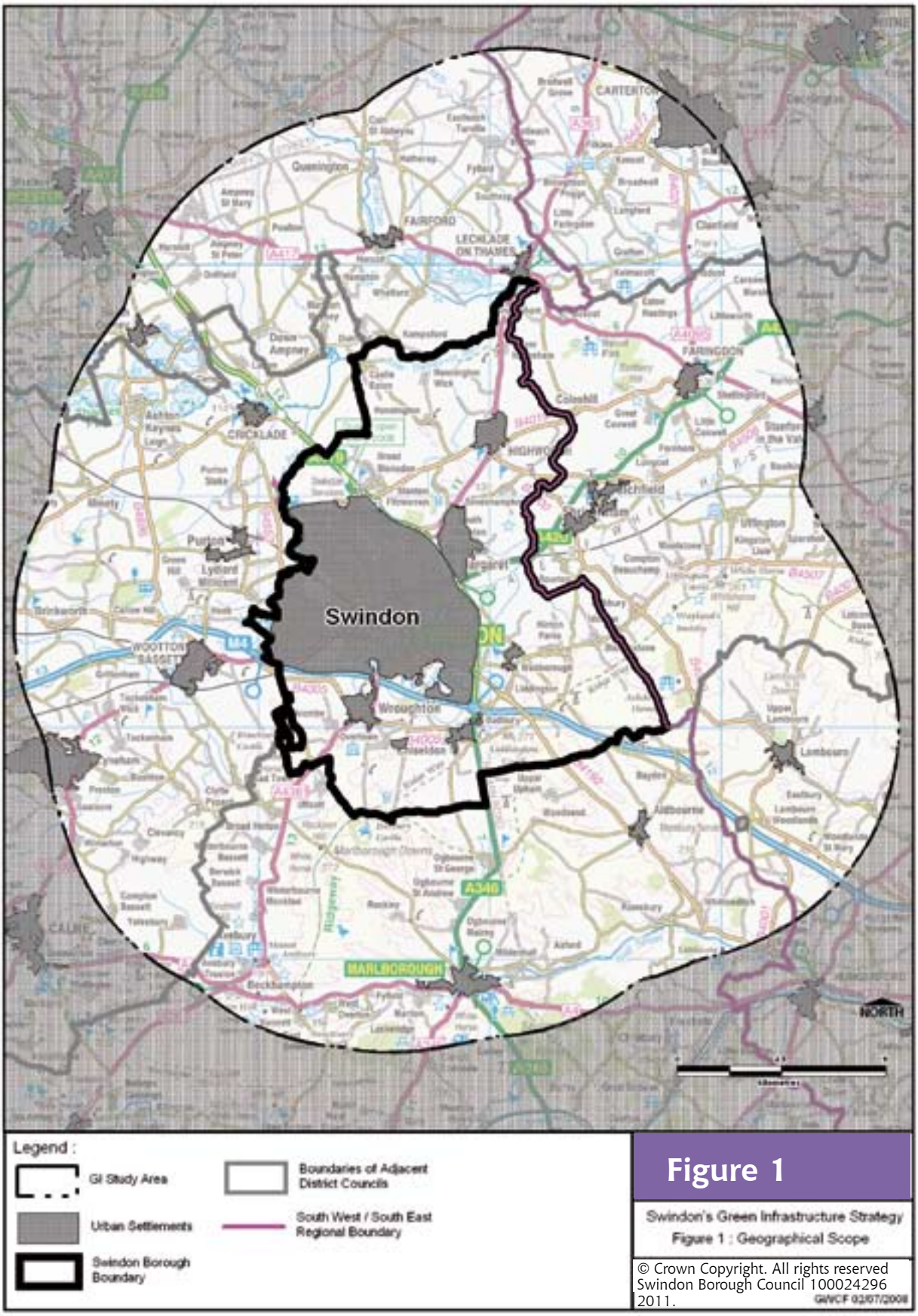


Figure 1

Swindon's Green Infrastructure Strategy
Figure 1 : Geographical Scope

In presenting the spatial context for a GI network, this strategy covers the full extent of Swindon's local authority area. Recognising the demand placed on a wider GI network by Swindon's changing and growing population, the strategy also considers neighbouring areas to a nominal 10km radius from the Borough's boundary as illustrated in Figure 1.

The need to look beyond Swindon Borough's boundaries is a principle implicit within the definition of GI and is an approach strongly supported by stakeholders. The 10km radius is based on criteria defined within Natural England's Accessible Natural Greenspace Standards. The focus of this strategy however remains on Swindon, and how and where GI networks link with the borough.

1.4.2 Types of GI considered

GI assets considered within this strategy include:

- Nature reserves
- Country parks and town parks
- Linear 'green' routes
- Semi-natural greenspaces
- Water courses and other 'blue infrastructure'
- Rights of way and other designated cycle/ pedestrian routes including long distance trails.
- Amenity green spaces
- Play areas, sports pitches, allotments and cemeteries
- Historic parks and areas of archaeological and heritage landscape importance

1.5 GI planning process

A core team of officers based within SBC, primarily from the Forward Planning and Great Western Community Forest teams have led on the development of the strategy: an approach endorsed at an initial GI stakeholder meeting. The roles of the GI team have included:

- literature review data collation and analysis including establishing a methodology for analysis of gi provision.
- coordination of stakeholder involvement.
- sustainability appraisal, conformity with planning policy.
- drafting and production of the GI strategy document.

Several stakeholder group meetings have been held to provide input from a wide range of expertise, to tap into local knowledge, and to provide coverage across geographical and administrative boundaries.

Beyond stakeholder group meetings, a number of face-to-face discussions have taken place to provide greater detail on function specific elements of GI planning e.g. covering biodiversity, health etc. A workshop session of Swindon's Local Policy Forum[4] also considered GI provision across Swindon and its sub-region.

[4] A Local Policy Forum has been established in Swindon to enable local community and other key stakeholders to play and influential role in progressing the documents that will make up the Local Development Framework.

Section: 2

Establishing a sense of place

2.1 Overview

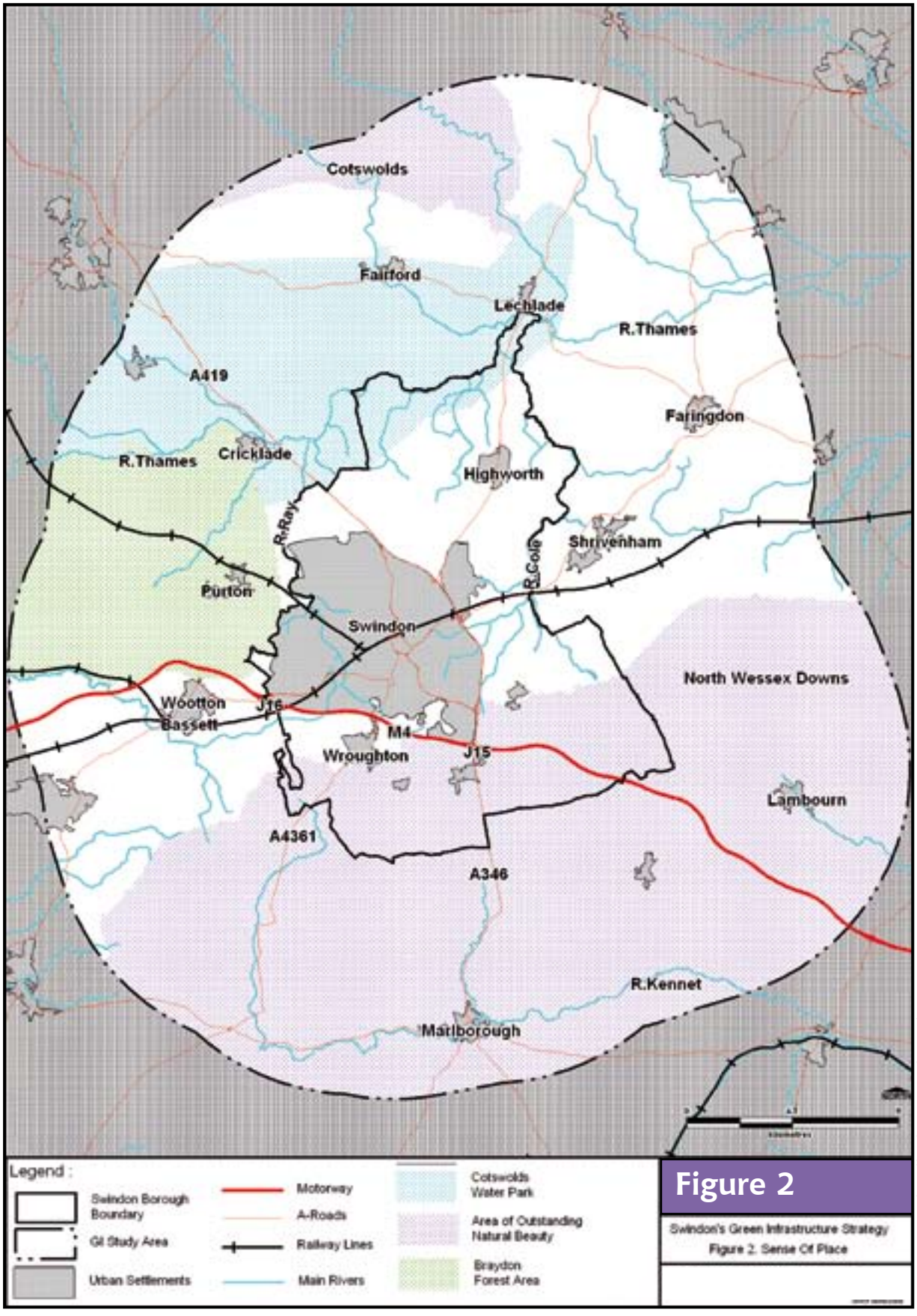


Figure 2

Swindon's Green Infrastructure Strategy
Figure 2. Sense Of Place

The area considered within Swindon's GI strategy covers some 480 sq miles and, away from Swindon Town, is largely rural in nature. It is an area of contrasting landscapes and is of both national and international importance with regard to landscape heritage. To the north and south of the Swindon lie two Areas of Outstanding Natural Beauty. Farmed land varies between large-scale arable units, prevalent across the chalk downlands, to more pastoral dairy and mixed farming along the clay vales into Oxfordshire and Wiltshire.

Reflecting the contrasting landscape, the area is rich in biodiverse habitats including ancient woodlands within the Braydon Forest, chalk grasslands of the downlands, lowland neutral grasslands of the clay vales and river corridors particularly associated with the upper reaches of the River Thames and its tributaries.

Extensive sand and gravel extraction continues across an area of 10,000ha of the upper River Thames catchment in North Wiltshire, Swindon & South Gloucestershire. The resulting Cotswold Water Park is Britain's largest, and still expanding, water park for formal and informal sports and recreation.

Swindon town lies in the centre of the study area. With a current population of 175,000 the town is economically prosperous and, sitting along major road and rail corridors, is set to expand considerably over the coming years. Smaller market towns and villages include Wroughton and Highworth within the Borough of Swindon, Wootton Basset, Purton and Cricklade in Wiltshire and Shrivenham, Watchfield and Faringdon in Oxfordshire.

2.2 Social context

2.2.1 Swindon profile

Swindon Borough has a population of around 200,000 people, including about 175,000 in the town of Swindon, about 8,000 at Highworth, and 7,000 at Wroughton[5].

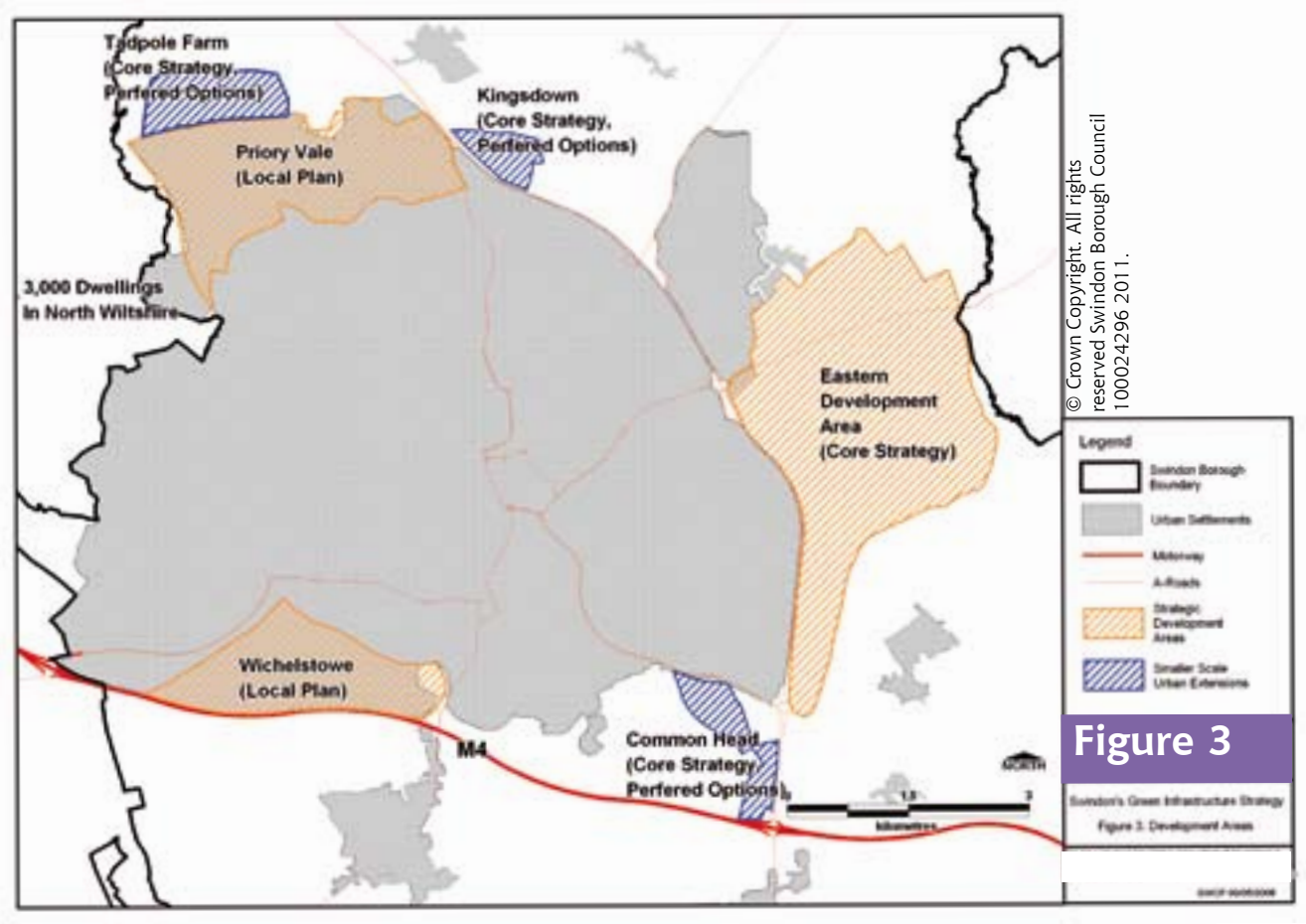
Swindon is at the centre of a sub-region that extends beyond its administrative boundaries into surrounding districts. The town owes its existence to the dynamism of Isambard Kingdom Brunel, who created a new town for the Great Western Railway in the 1840s. New Swindon was built on Brunel's vision, technological innovation, and creative design. Swindon has a post-war history of confident and continuous growth. It has transformed itself from a town dominated by the railway industry into one with a prosperous economy with a mix of modern industries.

Swindon has a thriving economy with several major UK and international companies having their head office or major operations in the borough with a low unemployment figure of 2.3%.

Whilst the Borough is economically prosperous there remain areas of need and issues to address relating to a poor external image of the town. Educational attainment and aspirations of young people continue to be a high priority including reducing the number of young people not in education, employment or training. There are also challenges around inequality and disadvantage with recent investment being channelled in the more disadvantaged wards. Swindon's teenage pregnancy rate is higher than the national average but other health issues such as death rate from smoking, adult obesity figures and incidents of heart failure are either lower or on a par with national figures. The Borough benefits from relatively low levels of crime and yet at the same time the population has historically held the perception that crime levels are high.

[5] Swindon Core Strategy (revised proposed submission document, 2011)

2.2.2 Swindon's regeneration and urban expansion



On the basis of new economic projections described in the Swindon Borough Core Strategy and to meet locally derived demand for new housing, about 25,000 additional houses are required in Swindon for 2006-2026.

To complement development in the urban area, additional housing is allocated at Tadpole Farm, Commonhead and the Proposed Eastern Villages.. Limited development is proposed at the remaining settlements to support the viability of local services and facilities, particularly Highworth and Wroughton.

Work is currently underway on the Wichelstowe development area, which will include around 4500 homes and associated facilities.

Furthermore, housing development in Wiltshire, immediately adjacent to the north-west of Swindon Town, is underway at Moredon Bridge with further proposals being put forward at Ridgeway Farm.

Swindon Town Centre will be the focus for new and enhanced leisure, cultural and tourism proposals in the Borough. The Town Centre 'retail core' will be the focus of new retail and hotel proposals. Regeneration objectives for Swindon's Central Area are detailed in the Central Area Action Plan.[6]

[6] Swindon Borough Council (2007) Swindon's Central Area Action Plan

2.2.3 An historic perspective on the development of Swindon's green-spaces

As early as 1945, the importance of green space in relation to urban growth was recognised in Swindon's post war re-development and expansion plans.[7] The 1945 plans also introduce the idea of an inter-connected 'park belt' with a particular focus around the River Ray and River Cole corridors with connections to Coate Water.

These principles were further detailed in 1968 expansion studies including the principle of 'open space structure' with a focus on connectivity through the development of a 'River Ray Water Park'.

The application of these and other principles of urban green-space planning can be seen today in the extent of Swindon's open space network.

[7] Davidge W.R (1945) Planning for Swindon 1945. Post War Planning Sub-Committee

2.2.4 Administrative boundaries

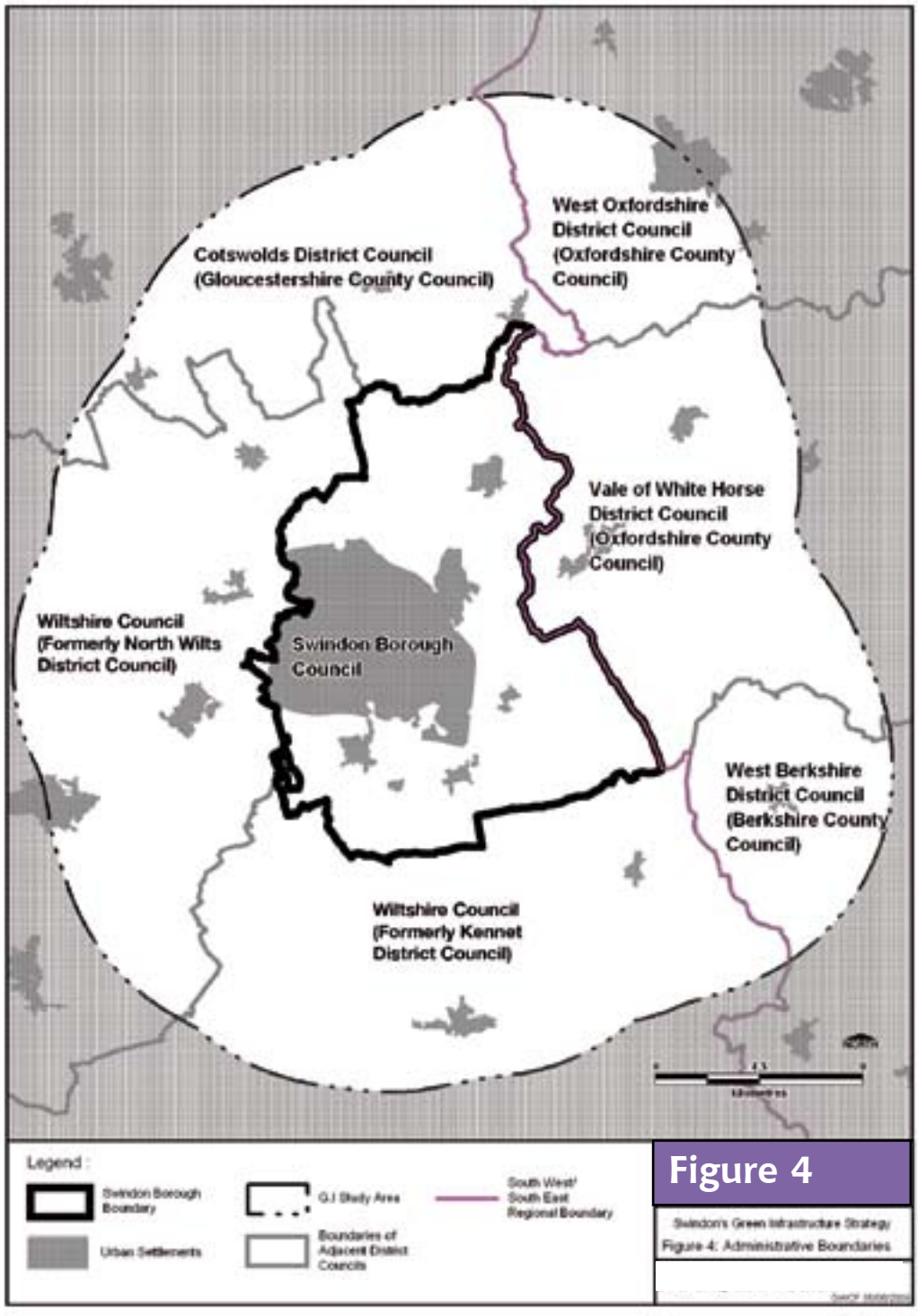


Figure 4

Local authority administrative boundaries (district and unitary) covered by the GI strategy are shown on figure 4.

District authorities within Wiltshire recently merged with Wiltshire County Council to become one council. As such Wiltshire Council came into being on 1st April 2009.

Swindon Borough Council's eastern boundary, largely contiguous with the River Cole also marks the boundary between the South West and South East regions of England.

2.3 Landscape and environmental context

2.3.1 Landscape character

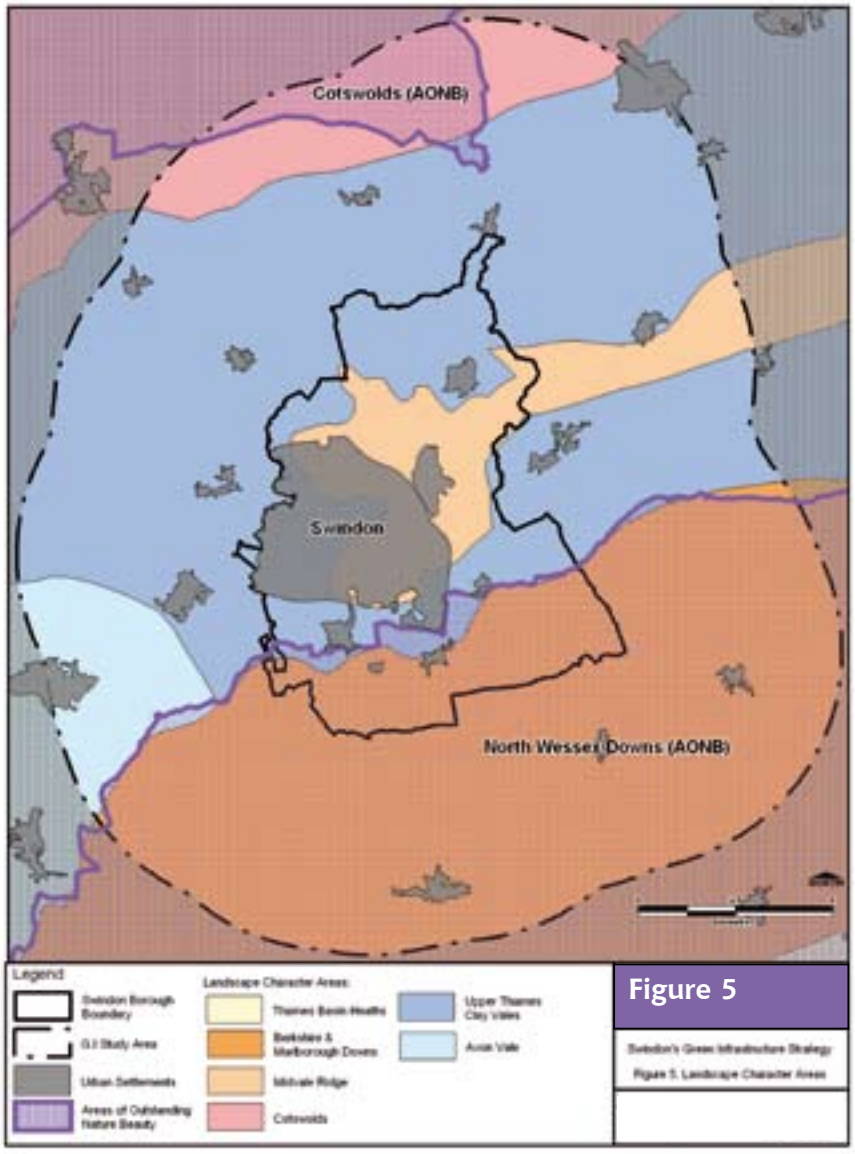


Figure 5

The rich and diverse landscape character across the wider Swindon area is represented by five character areas.[8] In order of prominence these are:

- Upper Thames Clay Vales
- Cotswolds
- Mid Vale Ridge
- Berkshire and Marlborough Downs
- Thames and Avon Vales

Further detail is available at a district level for Swindon and North Wiltshire.[9]
The area overlaps with two designated Areas of Outstanding Natural Beauty: the Cotswolds and the North Wessex Downs.

[8] Countryside Character Volume 7 & 8: 'South East & London' & 'South West', Countryside Agency 1999.

[9] Swindon Borough Council; Landscape Character Areas SPG (2004). P 1-2

2.3.2 Main Rivers and water bodies

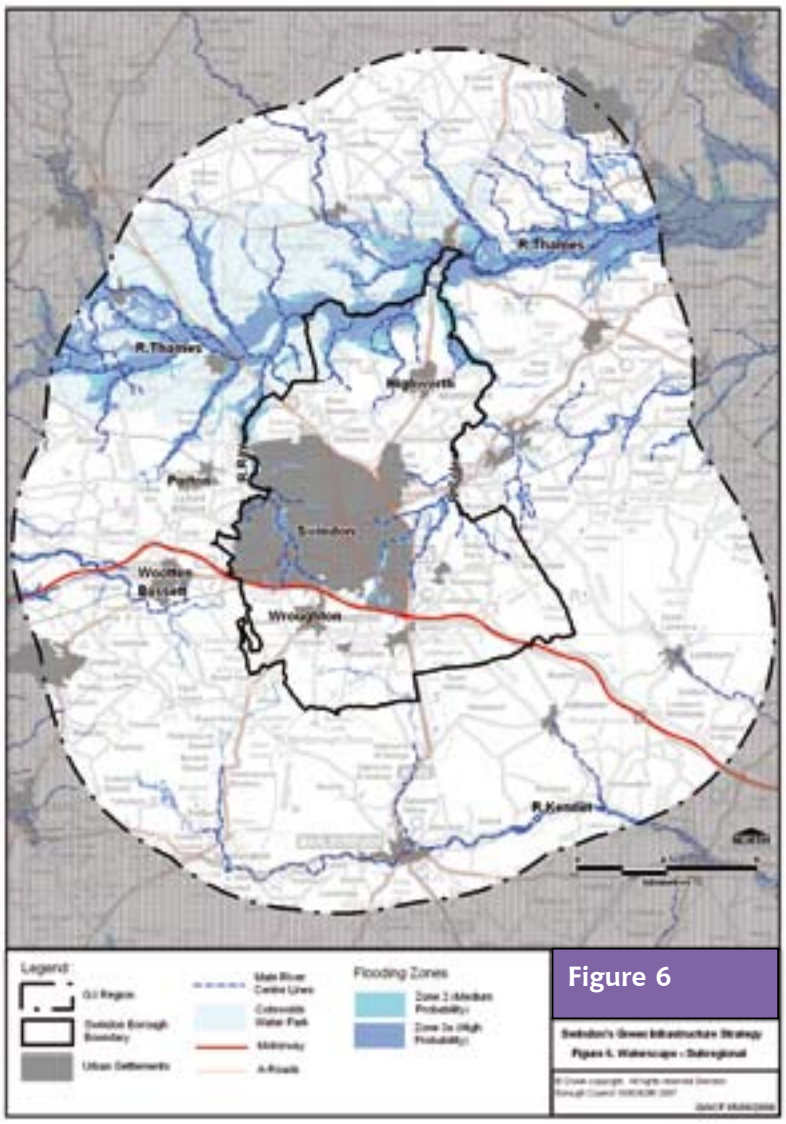


Figure 6

2.3.2.1 Main River catchments

The study area sits largely within the catchment of the Upper River Thames. Main tributaries to the Thames include the River Ray and River Cole, both fed from smaller tributaries emerging from spring lines along the chalk escarpment of the North Wessex Downs.

To the south, the River Kennet rising at Uffcot / Avebury is fed by tributaries of the River Og and Aldbourne.

To the south-west, Hancock's Water and Brinkworth Brook form tributaries feeding into the complex catchment of the Upper Bristol Avon.[10]

2.3.2.2 Cotswold Water Park

The Cotswold Water Park covers more than 40 square miles or 10,000 hectares in the Upper Thames catchment in North Wiltshire, Swindon & South Gloucestershire. For over 50 years the area has been subjected to sand & gravel extraction. It is a large, complex and rapidly changing area and to July 2007, 145 lakes (approximately 1200 ha) have been formed through extraction. Continued extraction will see the extent of water bodies expand significantly.[11]

[10] Environment Agency (2000) Upper Thames Environmental Overview LEAP

[11] Scott Wilson (2008) Strategic Review and Implementation Plan for the Cotswold Water Park

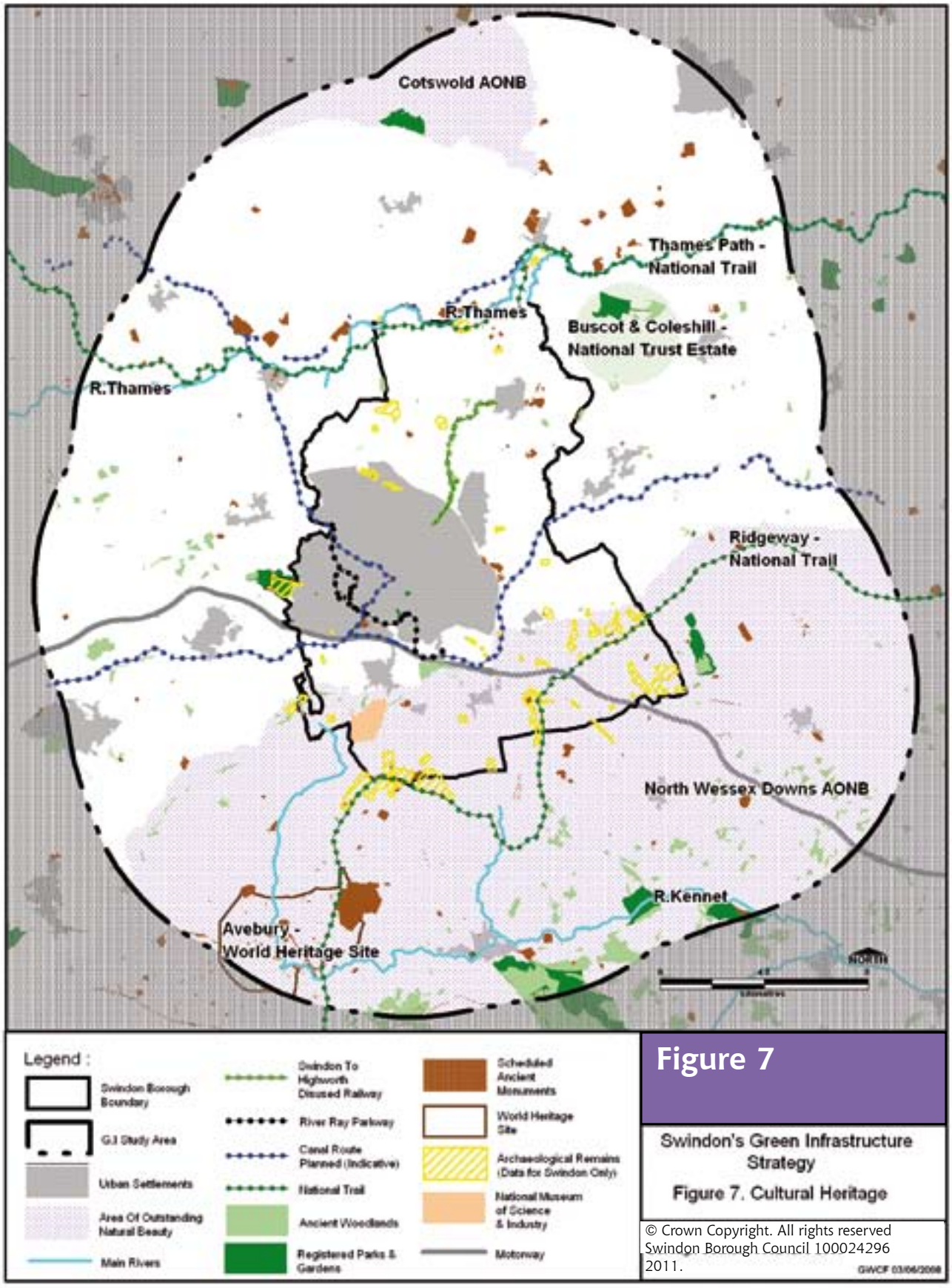


Figure 7

Swindon's Green Infrastructure Strategy

Figure 7. Cultural Heritage

GWCF 03/06/2008

The landscape in and around Swindon is steeped in historical and cultural heritage: from the prehistoric landscape of the downs to the post-industrial heritage of Swindon Town. Swindon, with its roots as a mediaeval agricultural settlement, also shows extensive signs of Roman occupation, for example at Groundwell Ridge, and and Stanton Park.[12] [13]

To the south, the North Wessex Downs is an ancient landscape with first strong evidence of human occupation dating back to the late Neolithic and Bronze Age. In the wider landscape, rural character has been inherited from past land-use in the form of historic field patterns, woodland clusters associated with the former Braydon royal hunting forest, and ridge and furrow grasslands particularly pronounced to the north west of Swindon

Smaller towns and villages across the area boast their own rich archeological and historical heritage.[13] Historic parklands are conserved at Buscot and Coleshill, and Lydiard Park.

Particularly important in GI terms, are artifacts from the industrial and post industrial ages such as features associated with canals, dismantled railway lines, and the WW2 airfield at Wroughton.

2.3.3.1 Canal Network

The historic line of the Wilts and Berks Canal runs to the south of Wootton Basset, Swindon and beyond to Abingdon. The historic line of North Wilts Canal also forms a spur linking the Wilts and Berks to the Thames and Severn north of Cricklade. Some sections of the canal network have been restored under the auspices of the Canal Trusts, and are currently 'in water'.

2.3.4 Biodiversity

The diversity in landscape character across the area sets the context for a diversity of habitats. UK Biodiversity Action Plan (BAP) priority habitats include chalk grasslands, neutral grasslands, lowland broadleaf woodlands and rivers and wetlands.[14] The latter is particularly associated with the River Thames and its tributaries: the River Cole and River Ray. The Braydon Forest, with its extensive ancient woodlands lies to the west of Swindon

Such habitats support rich assemblages of wildlife from the common-place to the rare and endangered. Swindon alone, is known to provide refuge for 23 UK biodiversity priority species such as the European otter, brown hare, and great crested newt.[15]

The Cotswold Water Park contains eighteen Sites of Special Scientific Interest (SSSI) two of which are now Special Areas for. The area nationally important for wintering and breeding birds.[16]

[12] Wiltshire County Archaeology Service (2000, 2004)
[13] Wiltshire County Archaeology Service (1999)
[14] United Kingdom Biodiversity Action Plan. Biodiversity: The UK Steering Group Report – Action Plans, HMSO, 1995
[15] Wiltshire Wildlife Trust (2005) Swindon BAP, Appendix 5
[16] Scott Wilson (2008) Strategic Review and Implementation Plan for the Cotswold Water Park

2.3.5 Landscape initiatives

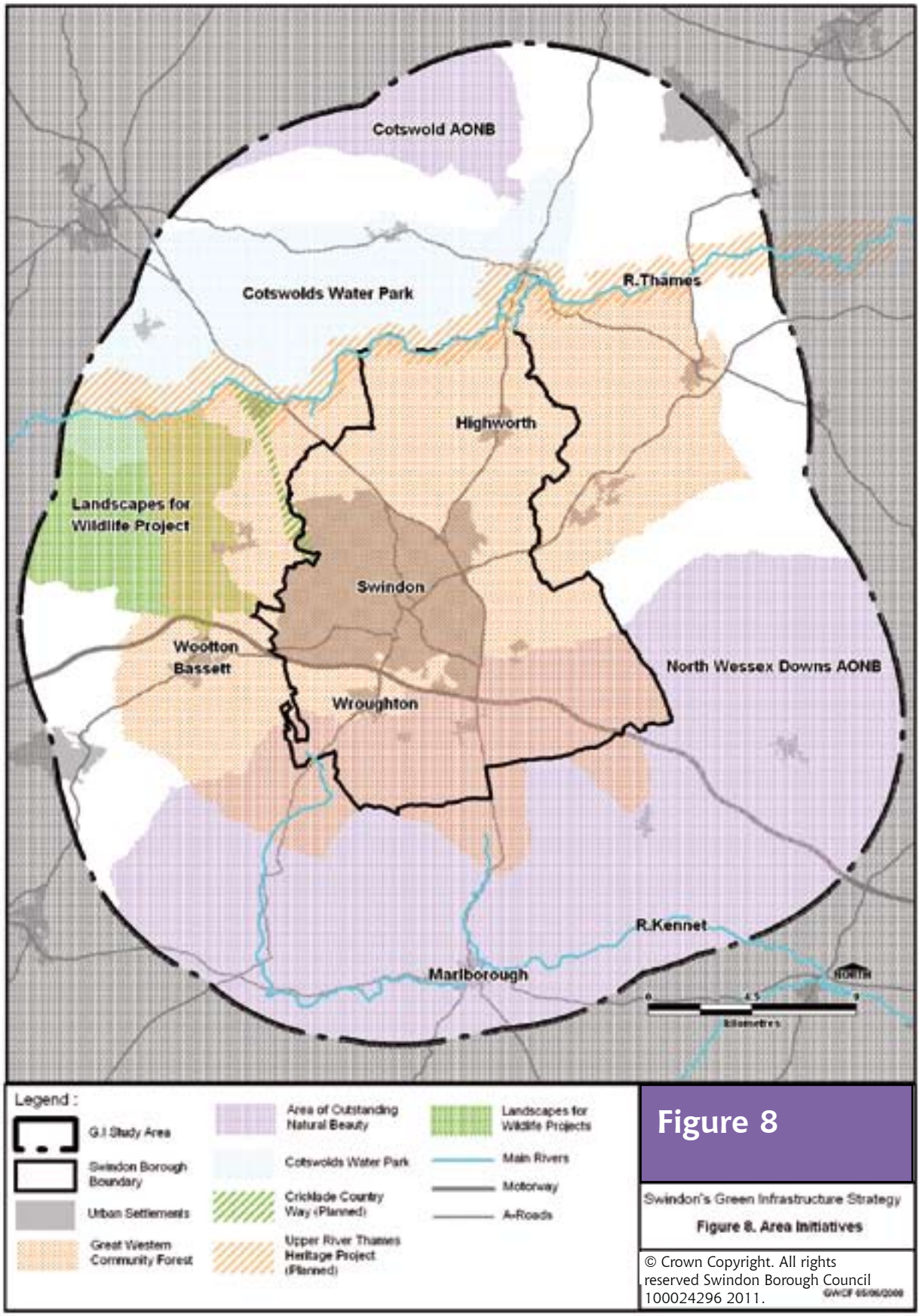


Figure 8

Swindon's Green Infrastructure Strategy

Figure 8. Area Initiatives

2.3.5.1 Great Western Community Forest

Initiated in the early 1990's, the Great Western Community Forest is one of England's 12 Community Forests where local people and organisations are working together to create a better environment. GWCF is creating high-quality environments for local people by diversifying land-use, revitalising derelict landscapes, enhancing biodiversity and providing new opportunities for leisure, recreation, cultural activity, education, healthy living and social and economic development. GWCF continues to play a crucial role in contributing to sustainable development in Swindon, the urban fringes and in the varied and beautiful surrounding countryside.[17]

2.3.5.2 Rebuilding Biodiversity in North Wilts

Wiltshire Wildlife Trust's Landscapes for Wildlife Project aims to expand and link together scattered areas of land that is rich in wildlife in the ancient royal hunting Forest of Braydon in North Wiltshire.

This is part of the vision of sustainably rebuilding the landscape into one that is vibrant with wildlife. Covering nearly eight thousand hectares of land, the project is taking a targeted approach to restoring and recreating habitats, so that wildlife will be more able to survive the changes and uncertainties that it could face in the future. [18]

[17] Great Western Community Forest (1994 & 2002) Forest Plan
[18] Wiltshire Wildlife Trust (n/d) Landscape for Wildlife Project: Rebuilding Biodiversity in North Wiltshire. http://www.wiltshirewildlife.org

2.4 Economic context of landscape and GI

2.4.1 Land-use and farming

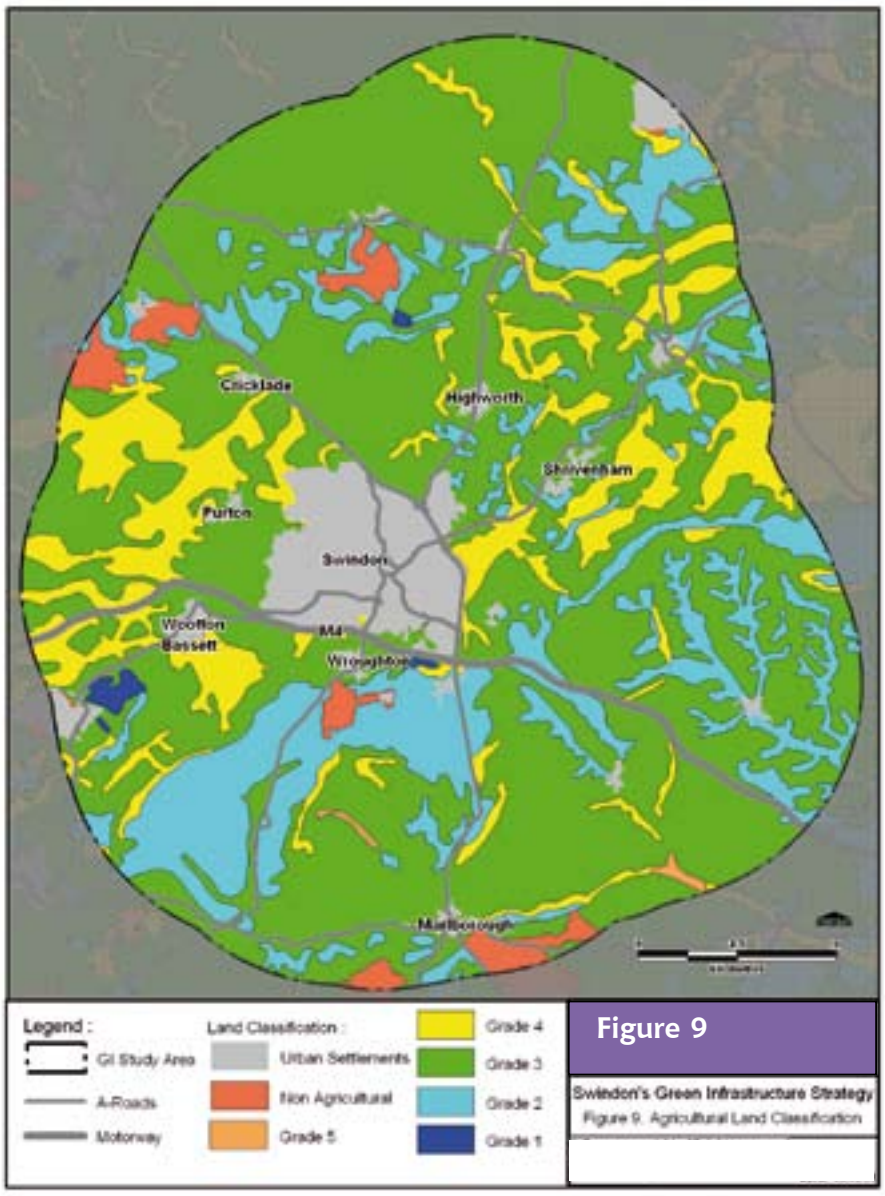


Figure 9

Agriculture is the dominant land-use in the area. Reflecting the tradition of dairy farming in areas close to Swindon, farm size is generally small with increasing numbers of holdings falling within the 'other' category of farm type supporting pony paddocks and mixed agricultural use. [19]

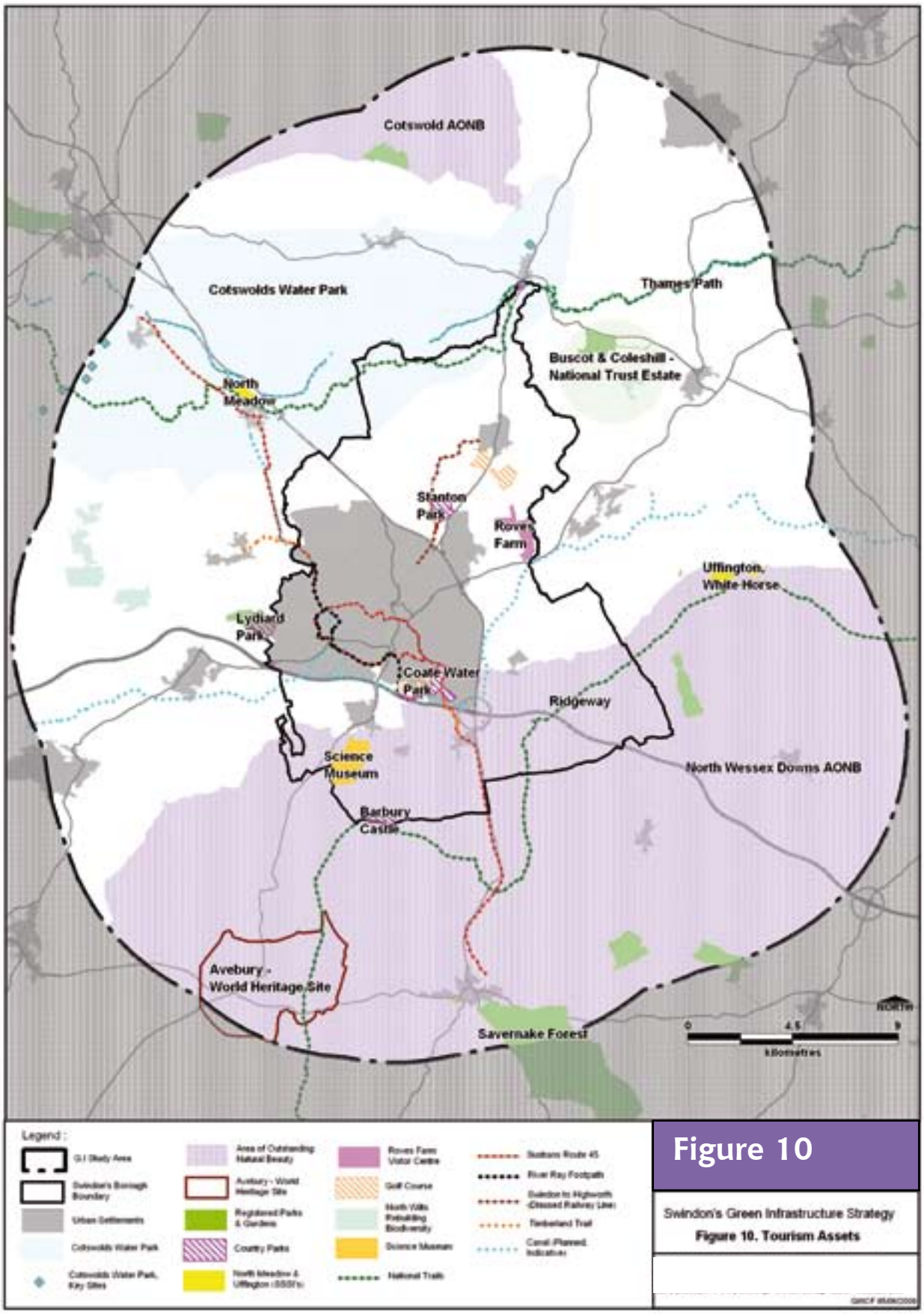
Across the wider area there is a mixed picture of agriculture with a rough 50/50 spilt between pasture and arable land. [20] Smaller scale farm holdings on the urban fringe and clay vales give way to larger arable units on the down-lands of the North Wessex Downs AONB.

The Lambourn area of the North Wessex Downs is noted as the second most important centre for the race-horse industry in Britain employing over 800 people directly. [21]

Whilst gradually increasing, tree cover across the area remains low relative to the national average: woodland across the Borough of Swindon covering approximately 4% of the land area, compared with 7% for neighbouring Wiltshire and 7.7% nationally. Woodland generally comprise broadleaf tree species although there is some commercial growing of poplar and cricket bat willow.

[19] Kernon Countryside Consultants (2007). Cricklade Country Way. Green Infrastructure Survey. Great Western Community Forest
[20] DEFRA (2007) Agricultural Survey http://www.defra.gov.uk
[21] North Wessex Downs (2004) North Wessex Downs Management Plan

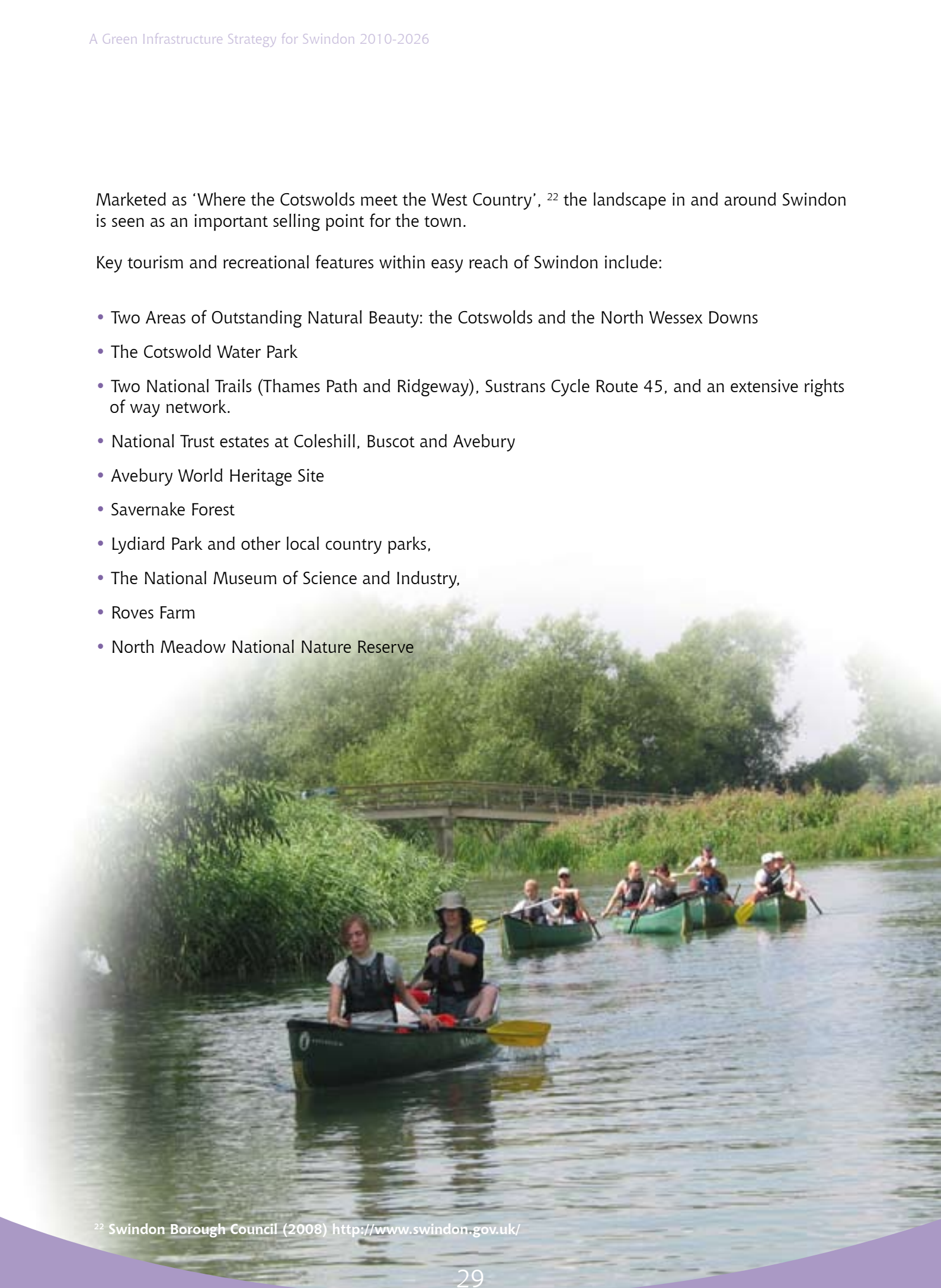
2.4.2 Landscape and tourism features



Marketed as 'Where the Cotswolds meet the West Country', [22] the landscape in and around Swindon is seen as an important selling point for the town.

Key tourism and recreational features within easy reach of Swindon include:

- Two Areas of Outstanding Natural Beauty: the Cotswolds and the North Wessex Downs
- The Cotswold Water Park
- Two National Trails (Thames Path and Ridgeway), Sustrans Cycle Route 45, and an extensive rights of way network.
- National Trust estates at Coleshill, Buscot and Avebury
- Avebury World Heritage Site
- Savernake Forest
- Lydiard Park and other local country parks,
- The National Museum of Science and Industry,
- Roves Farm
- North Meadow National Nature Reserve



[22] Swindon Borough Council (2008) http://www.swindon.gov.uk/

Section: 3

Swindon's GI: a summary of issues and opportunities

Section 3 provides a summary of the issues and opportunities relating to existing and proposed GI across Swindon. Further detailed analyses of the respective functions and benefits of GI, together with map-based illustrations, are referenced in appendix C.

3.1 Access, recreation and health

Appendix C1, Figures C1 to C14 & C27

Obesity and physical inactivity cost England £2.5 billion and £8.2 billion respectively. Increasing access to the natural environment can play a vital role in efforts to increase activity and reduce obesity.

One in four people each year will visit a doctor because of a mental health problem. Being more active and having more contact with the outdoors reduces stress and can prevent and reduce depression and anxiety. The NHS spent £6.5 billion on mental illness in 2002/03. Local authorities spent £1.4 billion and informal carers contribute an equivalent of £3.9 billion.

Source: Natural England, www.naturalengland.org.uk

Open spaces in and around Swindon provide far-reaching opportunities for people to enjoy a range of formal and informal activities, to play, to meet, to contemplate and to celebrate.

As measured against locally adopted standards, Swindon generally has a good level of access to a diverse range of open spaces both within and outside the Borough. However there are significant gaps in availability of recreational open spaces at the local level. These gaps are amplified if access to naturalised open space is considered using nationally available standards. To some extent, access to open spaces is limited in places of particular socio-economic need i.e. in areas where most benefits may be gained from regular access to high quality, semi-natural green-spaces.

Strengthening the connectivity between existing neighbourhood, borough-wide and strategic scale recreational open spaces will help to create an improved and extensive GI network across Swindon Town: meeting guideline criteria provided by nationally available standards for access to semi-natural open space. Swindon's Country Parks and particularly Coate Water Country Park will continue to form major 'hubs' within Swindon's GI networks.

There is considerable variation in the quality of recreational open spaces across the study area. A greater understanding of the quality and fitness of purpose of open spaces across Swindon, and the wider area, is needed, as a basis for the development of a borough-wide Parks and Open Spaces Strategy.

Swindon's Play Strategy (2007) recognises the primary role that the parks and other open spaces have in providing opportunities for play. Fears around personal safety and the need for more adult supervision are seen as significant barriers to play.

The development planning process will continue to play a major role in addressing deficiencies in the quantity, quality and accessibility of open spaces in-line with local standards and wider GI needs. Master plans and indicative plans for strategic development areas in Swindon (Wichelstowe and Eastern Development Area) incorporate expansive areas allocated for green-spaces which will contribute to the strength and reach of existing GI networks.

Strategic linear routes provide links between Swindon and its surrounding high quality landscape. Plans for the upkeep, improvements to, and creation of strategic routes are detailed in a number of existing documents including the National Trail strategies and the Great Western Community Forest Plan. The River Ray Parkway is a strategically important green-way running through Swindon although it is currently disjointed and does not fulfil its potential.

Extensive rights of way and urban cycle networks in and around Swindon provide good connectivity to local open spaces and the wider countryside. Local Transport Plans and Rights of Way Improvement Plans detail the priorities for improvements to the networks particularly relating to gaps in the network, together with issues of quality and awareness raising. The demands and needs of particular users e.g. people with disabilities, cyclists and horse riders need to be better understood and incorporated into future strategy development including local transport plans, rights of way improvement plans, parks and open spaces/leisure strategies, and future revisions of this GI strategy.

Green routes and the urban cycle network offer good opportunities for walking and cycling to work and school although health and safety concerns remain a major barrier to increased use. Travel plans for schools and places of work offer a means to promote the use of green-routes for walking and cycling, although existing plans do not reflect this potential. Development of a Sustainable Modes of Travel Strategy for Swindon presents an opportunity to incorporate 'green routes' into wider thinking.

Unlocking the potential of GI to deliver a full range of 'quality of life' benefits can only be realised through the active engagement of local people in the planning, creation, care, and celebration of their open-spaces and linear routes.

Continued and renewed support is needed for existing local groups and community based initiatives which aim to care for, promote the use and increase the sense of ownership of GI.

The Great Western Community Forest initiative continues to provide opportunities for local communities to be involved in the planning, creation, care and enjoyment of woodlands and open spaces across Swindon town and into the wider countryside.

The Case for Trees

Increasing greenspace and tree numbers is likely to remain one of the most effective tools for making urban areas more convivial

- **Trees are a key part of our armoury to combat climate change**
- **Trees mean a more robust countryside with enhanced flora and fauna**
- **Trees create and sustain community wealth**
- **Trees strengthen and improve people's lives**

Source: Forestry Commission, The Case For Trees, 2010

3.2 Conserving wildlife habitats and species

Appendix C2, Figures C15 to C20 & 21

"If we don't give our wildlife enough room to manoeuvre, collapse in biodiversity is inevitable. For decades we have been slowing the decline in biodiversity by protecting small oases of wildlife as an emergency measure. Now, in the face of climate change, it is essential that we link these oases and restore our ecosystems and natural processes at a speed and on a scale that we would once have felt was impossible."

Stephanie Hilborne, Chief Exec, The Wildlife Trusts

A diversity of semi-natural habitats across the wider landscape and reaching into urban Swindon provide refuge for a wealth of wildlife from nationally prioritised habitats and legally protected species to the more common-place and locally valued.

Individual sites, currently designated as important for wildlife, need to be protected and actively managed including statutory protection of species and their associated habitats. Local Biodiversity Action Plans (LBAPS) continue to provide the basis for a coordinated approach to nature conservation describing the extent, detail and priorities of work needed to protect and enhance wildlife within LBAP territories.

Creating a functional network of habitats over the landscape scale is a priority for regional and sub-regional conservation efforts: recognising pressure from climate change and lack of viability in longer term of fragmented habitats. As such Strategic Nature Areas (south-west region) and Conservation Target Areas (south-east region) are a focus for proposals for a strategic GI network, in line with LBAP objectives.

The vision for landscape change captured within the Great Western Community Forest Plan, is for rich mosaic of habitats set within a strong framework of woodland planting. The target of 30% woodland cover across the extent of the GWCF territory is consistent with, and provides a basis for, a landscape scale approach to nature conservation.

Whilst SNAs and CTAs have a largely rural focus, Swindon's urban area presents a barrier to wildlife movement across the wider network. GI within the urban setting should seek to create a more diffuse landscape for wildlife movement across the town by:

- enhancing strategically important green corridors running through the town and proposed development areas
- enhancing and improving connectivity within existing wildlife 'hot-spots' within the town and urban fringe areas
- improved connectivity between identified corridors and hot spots through local connective corridors/linking features
- providing a greater patch work of habitats across the town, recognising the importance of, local greenspace, green roofs and gardens.
- Increasing tree cover.

The regeneration of Swindon's Central Area and urban expansion plans over the next decades present significant opportunities for a net gain in biodiversity: conserving priority habitats and species and improving connectivity across strategic networks.

3.3 Conserving landscape heritage and local distinctiveness

Appendix C3, Figures 7, C9, C19, C21 & C22

Swindon enjoys a rich historical and cultural legacy reflected in the landscape in and around the Borough. Historic landscape features form key elements of existing GI across Swindon and in many cases are also closely associated with the built environment.

A large number of features and sites across the study area are formally designated on the basis of their historical importance; internationally, nationally and locally. Statutory and policy measures, particularly development control policies, continue to provide protection for noted sites and features. Many sites warrant a greater degree of protection than they currently enjoy through an increased scheduling of ancient monuments. 'Undiscovered' archaeology on sites, or in areas, where archaeological interest has been noted requires further investigation.

The great diversity of landscape heritage across Swindon is best understood through existing landscape characterisation and assessment studies. Plans for creation of new, and management of existing GI need to show consideration for landscape character and local distinctiveness. A number of existing plans and initiatives across Swindon and its wider area reflect this principle and have a particular focus on conserving landscape heritage and local distinctiveness. These include:

- Areas of Outstanding Natural Beauty (North Wessex Downs and Cotswolds)
- Ridgeway and Thames Path National Trails
- Avebury World Heritage Site Management Plan
- Upper River Thames Heritage Project
- Great Western Community Forest

Ambitious plans are in place for the restoration of the historic canal network, linking the Wilts and Berks Canal, with the Thames and Severn canal via Swindon. Feasibility studies are currently being undertaken for routing the canal through the centre of Swindon. A link to the past is also provided by Swindon's dismantled railway network: which now provide important walking and cycling routes across Swindon with the potential to create a new recreational link via the historic railway branch line between Swindon and Highworth.

3.4 Opportunities for Education

Appendix C4, Figures C23 & C12

Forest School is an inspirational process that offers children, young people and adults, regular opportunities to achieve, and develop confidence and self-esteem through hands on learning experiences in a local woodland environment.

The benefits to children attending Forest Schools have been shown to be:

- **improved physical and motor skills;**
- **improved language and communications skills;**
- **improved social skills, including team working;**
- **improved knowledge and understanding of the environment;**
- **increased self-confidence and self-belief; and**
- **increased motivation and concentration.**

Sources: Forest Education initiative, www.foresteducation.org, Liz O'Brien and Richard Murray, A Marvellous Opportunity to Learn, Forestry Commission, 2007.

Grounds within schools, and other educational centres, continue to provide the main opportunities for outdoor education across Swindon. However, there are significant barriers to the use of school grounds particularly regarding their quality/fitness for purpose, the financial resources needed for their upkeep and the resources for the training and continual professional development of staff. These constraints also apply to the use of other nearby open spaces together with additional health and safety concerns.

The value of outdoor education in Swindon is recognised through a number of programmes such as eco-schools, healthy schools and forest schools. Such activities can help to deliver Government led initiatives such as the sustainable schools frameworks and the learning outside the classroom manifesto.

The Forest Schools approach to outdoor education, led by the Great Western Community Forest, is becoming well embedded in schools across Swindon. Increasing the reach and sustaining Forest Schools and other programmes requires high level 'buy-in' from key decision makers such as head teachers and governors as well as closer integration with the national curriculum.

Outdoor education facilities and services are provided by a number of organisations and businesses within easy an 'day trip' of all Swindon schools. There appears to be good demand for these services where the quality of facilities and the services on offer can justify the additional expenses for schools associated with travel and staffing costs.

Away from school-based education, wider educational and training activities based around green-spaces and the land-based sector are provided by a range of organisations including further education colleges, businesses, local authorities, charitable and 'environmental' 'bodies.

3.5 Environmental services and climate change adaptation

Appendix C5, Figures 6, C20 & C24

Green infrastructure has an important role in supporting the adaptation of people who live in towns and cities to a changing climate. Depending on location, type and extent, it provides shade, cooling and wind interception and an insulation role in the winter. Green infrastructure can also potentially mitigate risks from climate change-induced reductions in air and water quality; and it can provide a buffer for habitats and species, whilst contributing to attainment of sustainable urban drainage and controlling upstream water flows to reduce flood risk.

Source: Benefits of Green Infrastructure, Forestry Research, 2010

Flood risk

The main approaches for management of flood risk in the Swindon area, acknowledging impacts of climate change, fall under two headings:

To the north of Swindon, the undeveloped natural flood plain of the upper River Thames is seen as the most important asset in managing flood risk:

- Maximising the capacity of the flood plain to retain water
- Managed flooding of some areas of the natural flood plain
- Preventing development that compromises the capacity of the flood plain to retain water.

Closer to, and running through Swindon Town, the flood plains of the **River Cole, River Ray and their tributaries** are vital to managing flood risk. The development planning process is the main means to address issues of flood risk through the effective location, layout and design of new development. As well as the protection and layout of open spaces within new developments, measures such as sustainable urban drainage systems and green roofs need to be incorporated as part of wider GI networks to help in the 'climate proofing' of new developments with respect to flood risk.

A strategic flood risk assessment for Swindon, [23] carried out in accordance with national planning guidelines PPS25 gives a more detailed view of flood risk and its management across Swindon.

Local climate control

Protection of existing green-space and creation of new green spaces can also help to off-set increases in temperature associated with the 'heat island effect' in urban areas. Whilst no local studies are available for Swindon, research elsewhere has shown that an increase of 10 % in green-space across urban areas would offset temperature increases projected as a result of climate change. The heat island effect may potentially be most felt in Swindon town centre where the amount of green-space is currently very limited. Creation of green roofs and an increase in tree planting across the town centre as re-development progresses could provide significant increases in 'cooling surfaces' across the town centre.

Air pollution

There are currently no Air Quality Management Areas declared within Swindon. However, design and management of GI should take into account the positive impacts vegetation, and specifically trees, can have in ameliorating pollutants at a localised level: with subtle changes such as proximity of planting to school playgrounds or the mix of deciduous and evergreen species having significant impacts on health and other benefits.

[23] Halcrow (2008) Swindon Borough Council Strategic Flood Risk Assessment

3.6 Supporting the local economy

Appendix C6
Figures 10 & C25

Surrounded by some of the most beautiful countryside in Great Britain, the landscape around Swindon makes a positive contribution to the overall image of the town attracting people and businesses as well as providing direct economic benefits.

Major outdoor attractions within easy reach of Swindon include :

- Two Areas of Outstanding Natural Beauty: the Cotswolds and the North Wessex Downs
- The Cotswold Water Park
- Two National Trails (Thames Path and Ridgeway), Sustrans Cycle Route 45, and an extensive rights of way network.
- National Trust estates at Coleshill, Buscot and Avebury
- Avebury World Heritage Site
- Savernake Forest
- Lydiard Park and other local country parks,
- The National Museum of Science and Industry,
- Roves Farm
- North Meadow National Nature Reserve

[24] Swindon Borough Council (2007) Swindon's Economic Development Vision and Framework

Farming in the area, in common with the national picture continues to under-go change. The potential for farm diversification through the development of GI, particularly in the urban fringe, has been noted in the urban fringe action plan for southern Swindon. Recently there has been an upsurge in interest in land use for energy following the introduction of feed-in-tariffs last April, and the imminent launch of the Renewable Heat Incentive e.g. sites for solar energy wind turbines, and biomass.

Local businesses, including major employers, are continually seeking opportunities to sponsor GI related work in meeting their corporate-social responsibility agendas and more specifically in trying to address issues of climate change. However, a lack of available green space within the town centre and major employment areas is currently undermining the quality of retail and working environments across the Town. The development planning process will help to re-dress these deficiencies and specifically the Central Area Action Plan calls for an increase in green-space and tree cover throughout the town-centre retail area.

More broadly, the potential economic benefits of GI, both direct and indirect, are far reaching and can be derived across all functions of GI. National, regional and localised studies have, to varying degrees, ascribed significant monetary value to some of these benefits although a comprehensive picture for the Swindon area is not available. Quality of environment and the benefits of GI are implicit across all of the four building blocks identified within Swindon's Economic Development Framework: business creation and growth, image and culture, regenerating and creating places, skills and labour market.[25] However the economic benefits of GI in Swindon need to be better understood and quantified to help inform the Borough's emerging economic strategy in more detail.

[25] Swindon Borough Council (2007) Swindon's Economic Development Vision and Framework

Section: 4

Proposals for enhanced Green Infrastructure across Swindon

4.1 Vision

Swindon's green infrastructure will provide attractive and inspirational environments in which people want to live, work, learn and play; in which communities thrive and businesses want to invest.

Swindon's green infrastructure will play a key role in Swindon's sustainable growth and regeneration.

Swindon will sit at the heart of a far-reaching network of interconnected green-spaces that:

- **connects and enrich biodiverse habitats**
- **improves access, recreation and tourism opportunities**
- **enhances landscape character and respect local distinctiveness.**
- **helps meet the challenges of climate change**
- **realises the potential of historical and cultural heritage features to contribute to local identity and sense of place.**

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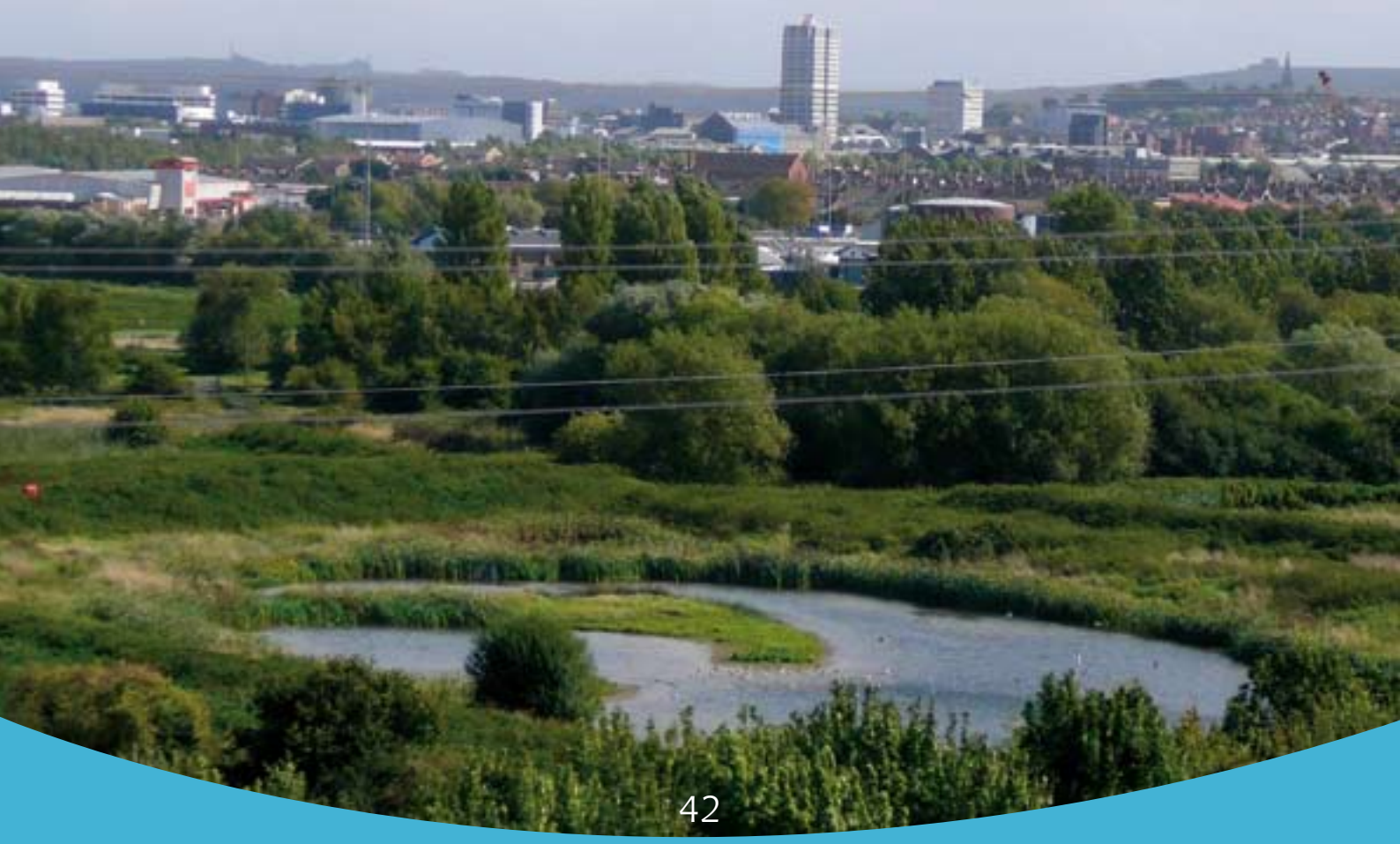


4.2 Key aims and objectives for enhancing GI across Swindon

1) Improve access to, and quality of, parks, open spaces and links to the wider countryside

- Meet existing and revised standards for the provision of local open spaces.
- Improve the quality of open spaces to better meet the needs of Swindon's communities.
- Improve the natural qualities of open spaces.
- Improve access routes and connectivity within Swindon's GI networks.
- Strengthen strategic routes and links to high quality landscapes around Swindon particularly the North Wessex Downs AONB and Cotswold Water Park.

2) Increase the level and diversity of community participation in the planning, development and enjoyment of Swindon's green infrastructure.

- Increase community participation in the development and management of GI.
- Develop community based outdoor programmes focussed on particular needs e.g. relating to health, diversity.
- Increase use of outdoor spaces for formal and informal education.

3) Strengthen the network of bio-diverse habitats across Swindon.

- Protect most valued habitats and species from destruction, damage and neglect.
- Improve semi-natural habitats and habitat connectivity within Swindon's urban GI networks.
- Create a greater patch-work of semi-natural habitats across the town.
- Develop landscape scale biodiversity programmes in-line with national and regional priority areas.

4) Ensure GI plays a central role in Swindon's sustainable and economic growth.

- Create high quality and integrated GI networks in new development and regeneration areas, including the street scene.
- Accelerate the rate of woodland creation, tree planting and extent of woodland management across the town and wider borough.
- Increase green-space cover across the town centre.
- Manage flood risk through the effective location, layout and design new developments.
- Better exploit the recreation and tourism offer of Swindon's GI and wider landscape.
- Develop local food, farming and biomass initiatives.
- Protect trees, biodiverse habitats, species and historic features from destruction, damage and neglect.

5) Improve the integration of GI into Swindon's local transport priorities

- Ensure GI within development and regeneration areas forms an integral part of transport networks and travel plans.
- Seek opportunities to incorporate GI within road safety, safer routes to school and other highways schemes.
- Develop and promote greener, more attractive, and better connected walking and cycling routes as an alternative to driving.

6) Improve the integration of GI into Swindon's strategic priorities

- Establish a strategic lead body for GI with clear reporting lines to the Community Strategy/ One Swindon.
- Improve communications between those with a role in the development, management and use of GI.
- Develop an effective monitoring and evaluation framework to ensure successful implementation of the GI strategy.

4.3 Proposed GI networks across Swindon

Figures 15, 16 and 17

Inter-connected GI networks based around existing resources are proposed at three spatial scales: Strategic, sub-regional and local urban/peri-urban. Collectively, they will provide a focus for investment in GI across the Borough. Swindon Town sits at the centre of the network which reaches through the town and into the surrounding countryside.

Developing these networks will include protection and enhancement of existing resources or the provision of new and replacement facilities. Each of the corridors and clusters making up the network are described in detail in appendix D.

4.3.1 Strategic Corridors

(Figure 15, appendix D1) provide connectivity over a landscape scale of regional, if not national, importance.

The three corridors identified at the strategic scale are:

- The Upper River Thames:
- The Ridgeway
- The River Ray/Sustrans Cycle Route 45.

4.3.2 Sub-regional corridors

(Figure 16, appendix D2) are more focused on the connection between Swindon Town and its surrounding countryside reaching into neighbouring local authority territories. It is recognised that other sub-regional networks run across the study area, but where they are not coincidental with Swindon Borough or its boundaries, they are not illustrated within this strategy.

Six sub-regional corridors are proposed:

- Swindon to Highworth
- The Braydon Forest
- The River Cole corridor
- The Wilts and Berks Canal to Wootton Basset
- Wroughton to Barbury Castle

4.3.3 Local clusters

(Figure 17, appendix D2) sit within, or on the edge of Swindon town, and provide local facilities and services within easy reach of the majority of Swindon's residents and visitors to the town.

Five areas are identified, based on existing networks or those proposed within strategic urban expansions areas:

Existing clusters:

- Sevenfields to Stanton Park
- Coate Water and the Lawns
- The River Ray Parkway: Mouldon Hill to Mannington Rec.

Planned networks

- Wichelstowe
- The Eastern Development Area.

The local clusters illustrated in Figure 17 highlight the gap between green-spaces in the north and south of the town: particularly around Swindon's central area. Regeneration of the town centre presents significant opportunities to strengthen the network through initiatives such as the Green-spine, and restoration of the canal (see section 6.2.2).

Figure 15

Swindon Green Infrastructure Strategy
Figure 15. Illustrative Strategic GI Network

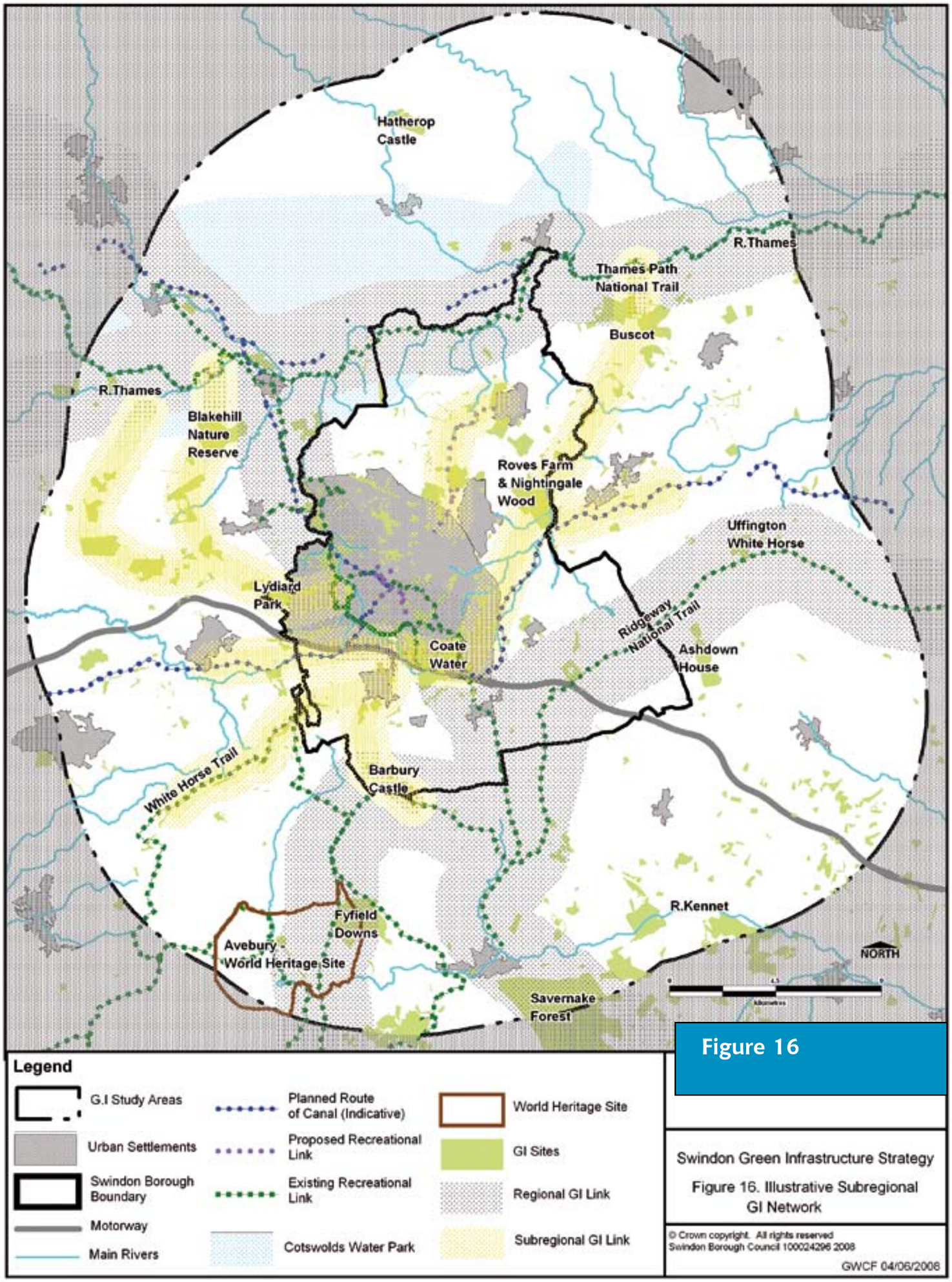


Figure 16

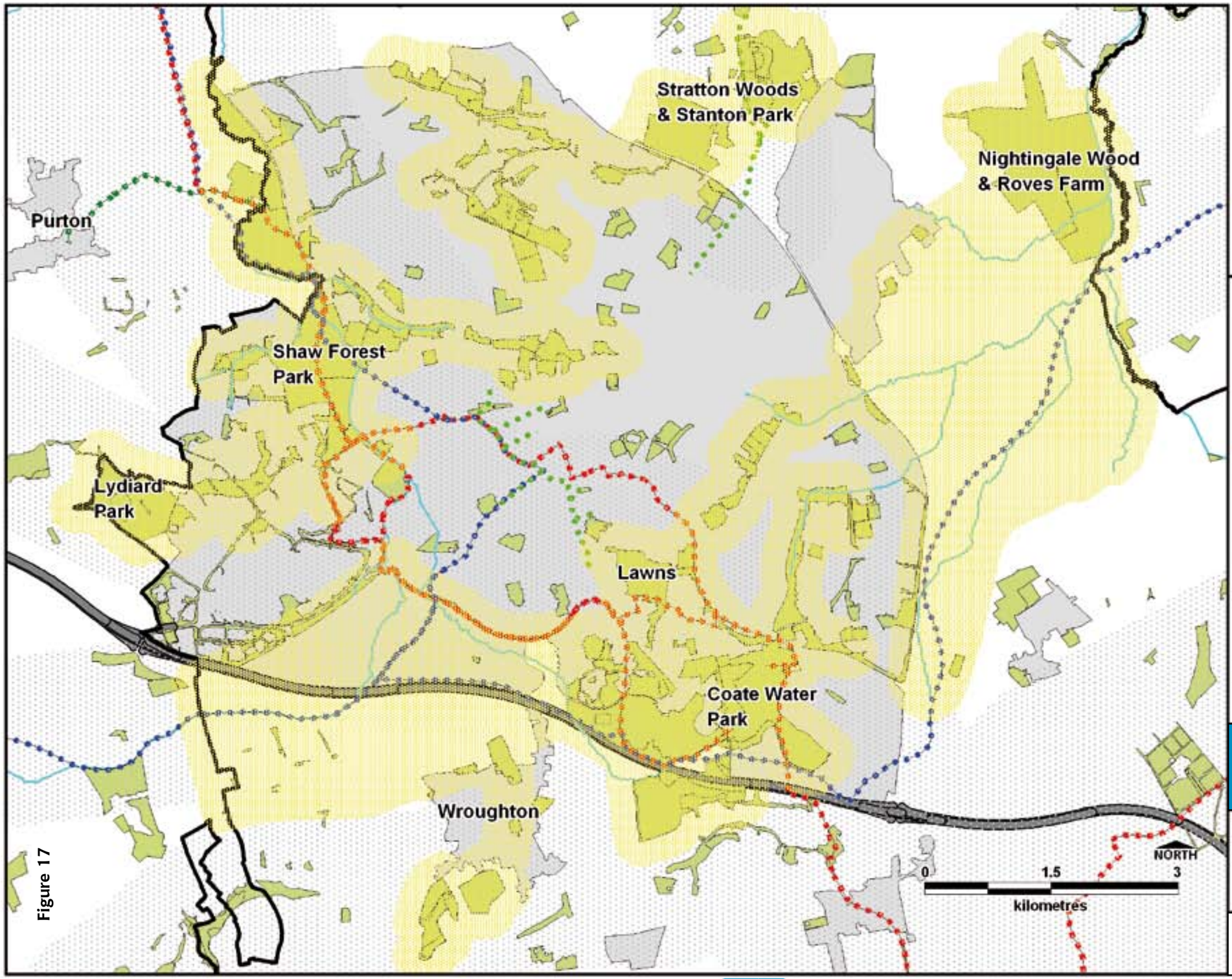


Figure 17

Legend

- Swindon's Borough Boundary
- Urban Settlements
- GI Sites
- Canal Route Proposed (Indicative)
- Recreational Corridors Proposed (Indicative)
- Existing Recreational Corridors
- Main Rivers
- Local GI Clusters
- Regional / Subregional GI Corridor

Figure 17

Swindon's Green Infrastructure Strategy

Figure 17. Illustrative Local GI Clusters

4.4 Visualising GI networks

The boundaries of Swindon's GI networks described in section 5.3 are largely illustrative and are not 'hard-edged'. Whilst core features within networks can be clearly defined, the opportunities to link other features in the wider landscape and in general to enrich the landscape setting will continually evolve and need to be responsive to change.

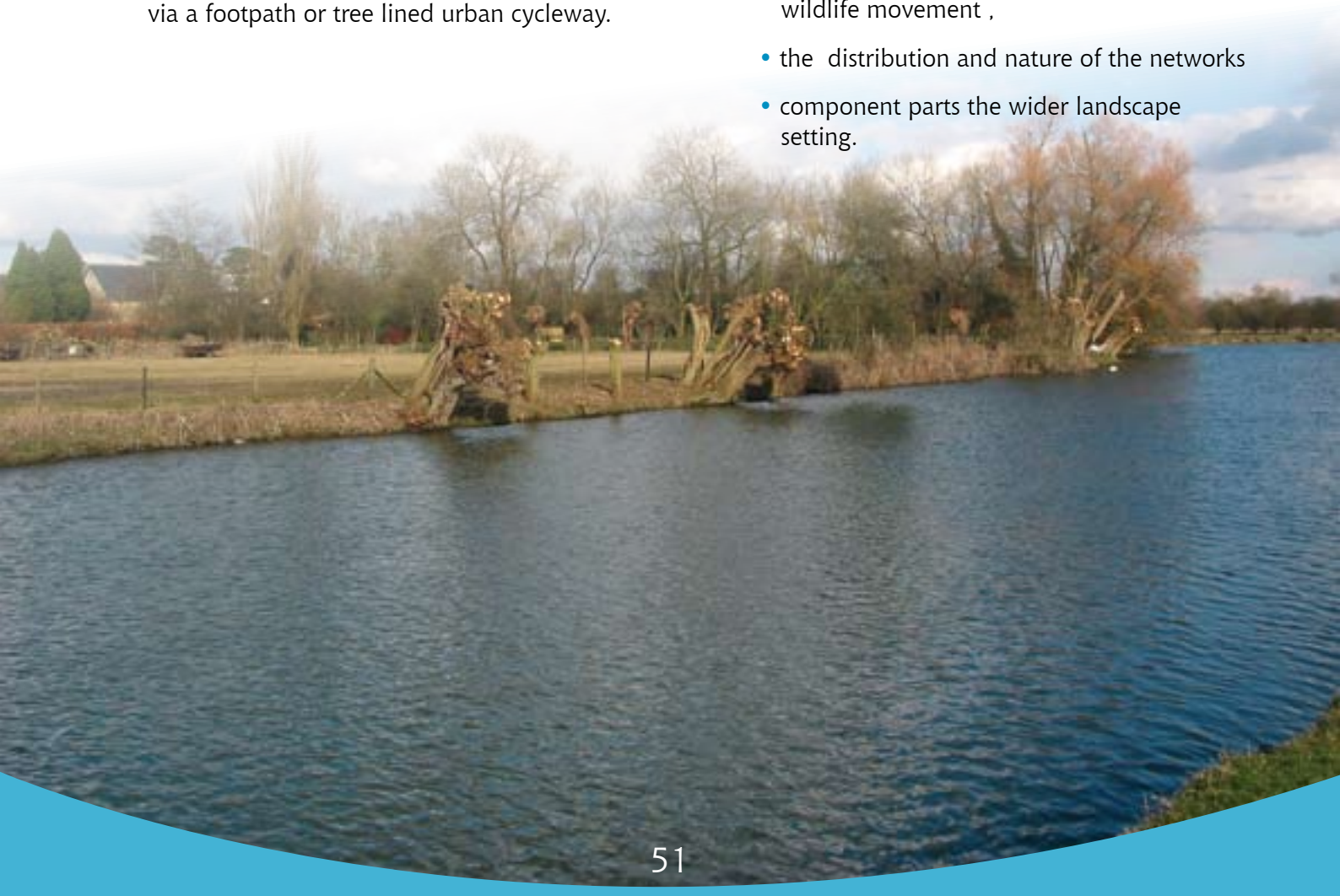
In trying to visualise GI networks, it is useful to consider a number of characteristics:

- **Variation in scale.** GI corridors and networks comprise sites (or hubs), linking features and their broader landscape setting. Both hubs and linking features will vary greatly in character and scale: from the large to the fine 'grained'. For example, hubs may be country parks such as Coate Water or nature reserves such as North Meadow linked via strategic green-ways such as Sustrans cycle route 45 or natural features such as the River Thames. At a local level a hub may be a school's grounds or local play area linked via a footpath or tree lined urban cycleway.

- **Limits to multi-functionality.** Whilst GI networks, as a whole, are multi-functional (i.e. they provide a range of services and benefits), individual features within such networks may have a primary function such as nature conservation or protection of archaeology and access, for example, may be restricted.

- **Mixed land-ownership.** Land ownership throughout networks will vary and not all sites or all parts of a corridor or network will necessarily be publicly accessible. Away from urban Swindon, the land through which corridors run is largely in private ownership as farmed land, whilst sites within the networks are predominantly, but not solely, in public ownership or owned by charitable organisations.

- **'Fuzzy edges'** The extent of a particular network or width of a corridor will vary -
  - depending on the key functions being considered e.g. walking or cycling or wildlife movement ,
  - the distribution and nature of the networks
  - component parts the wider landscape setting.



4.4.1 A case study to help visualise GI networks

Figures 11 and 12

A local case study, the Cricklade Country Way, serves to illustrate the varying nature and extent of GI networks:

The Cricklade Country Way[26] project is seeking to create a recreational corridor linking urban Swindon and the Saxon town of Cricklade, the Cotswold Water Park and the River Thames. The key project elements include:

- 5 miles of restored North Wilts canal, canal basins, moorings and marina
- 5 miles of restored steam railway
- a new country park at Mouldon Hill on the edge of Swindon
- 17 miles of new and improved cycle-way and towpath/walkways
- a public art trail
- a new visitor centre at Cricklade
- new community woodlands and wider wildlife
- habitat and access improvements
- associated outreach work including
- educational and skills training

The wider reach of the CCW corridor, away from these core features, are illustrated in figures 11 and 12, considering biodiversity and recreation opportunities respectively.

[26] Great Western Community Forest (2007) A Green Infrastructure Plan for the Cricklade Country Way

Figure 11

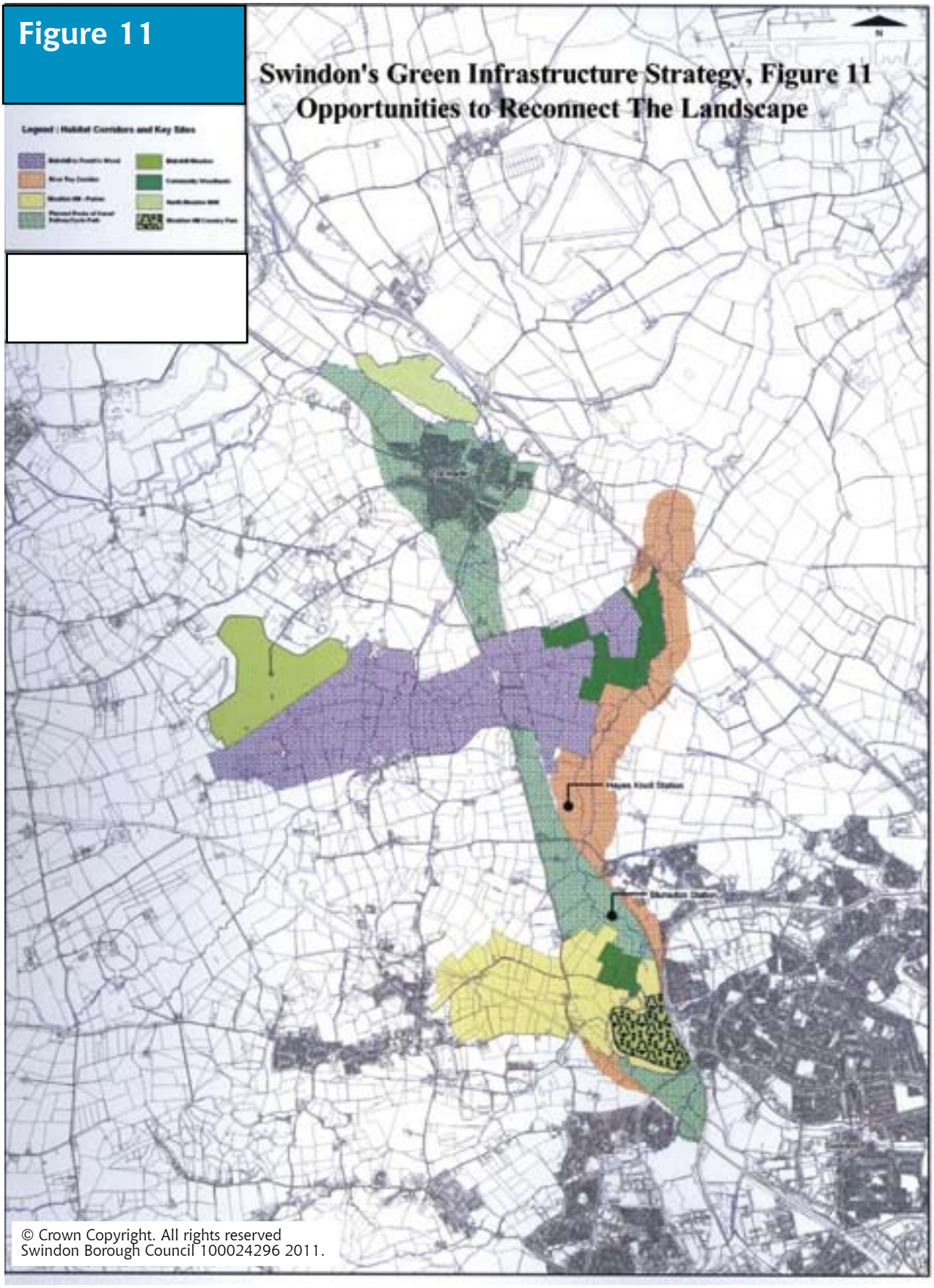
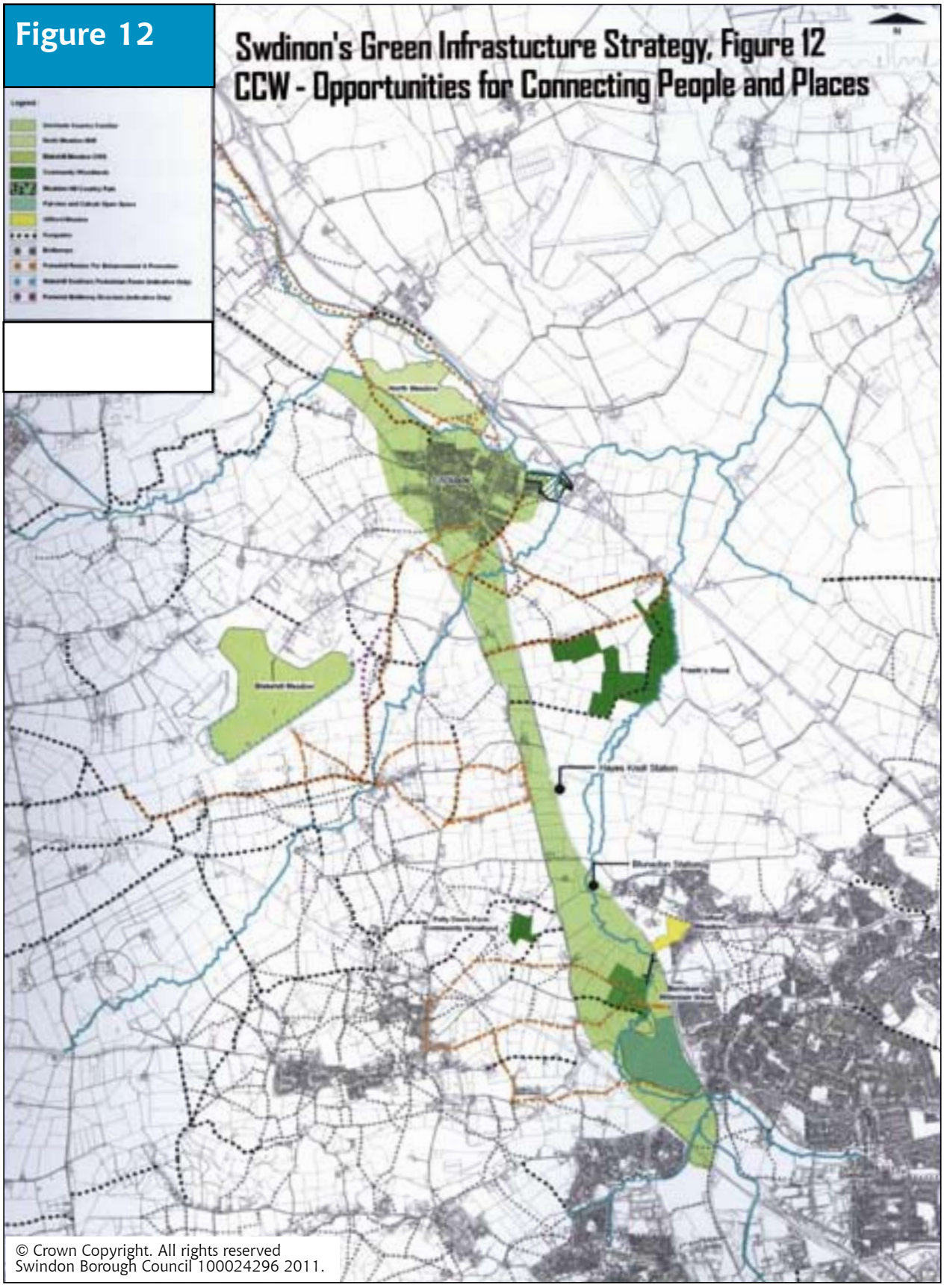


Figure 12



4.5 Generic principles underpinning the planning and delivery of G

A number of general principles and objectives apply to the planning, design, creation and management of GI networks across Swindon:

- **Protection and conservation:** GI should contribute to the conservation and enhancement of landscape character, historic landscape features and biodiversity.

- **Multi-functionality** across sites and networks should be enhanced where appropriate. However for some areas, a primary role such as protection of wildlife or archaeological features will necessarily take precedent.

- **Responsive to change:** GI networks, whilst centred around existing assets and networks need to evolve over time. Networks will need to change to meet the needs of growing and changing communities, to meet the challenges of climate change and other pressures, and be responsive to opportunities to create new GI assets of strategic or local importance.

- **Fitness for purpose:** design, creation and management of GI should be based on an ever increasing understanding of the needs of local communities, local ecosystems, local economy and wider sustainability issues particularly in response to climate change.

- **Quality is key:** high standards of design, construction and on going management need to be maintained to ensure GI remains fit for purpose and poor quality does not undermine the benefits it seeks to promote.

- **Connecting people and place:** Providing GI networks alone is not sufficient to achieve a full range of benefits and sustain high quality sites and links: the connection between people and place needs to be made at the earliest stage possible. It is essential that local people have the means and support to make the most of, and take an active role in the planning, creation and care of GI. This implies the need for intervention programmes e.g. outreach work, community based activities, and education initiatives.

- **Trees and woodlands** have a particularly important role to play: not only in creating a strong landscape framework for GI networks but in themselves providing a range of functions and benefits from supporting wildlife, to providing wood products, biomass and controlling climate. Increasing tree cover generally throughout the urban street-scape and specifically within the town centre will be particularly beneficial. Targets set out in the Great Western Community Forest Plan provide the basis for increasing woodland and tree cover across Swindon Borough and into neighbouring areas.

- **The farming and land-based sector** has a key role to play in the developing the GI network away from urban Swindon. Opportunities should be sought to work closely with farmers and land-owners and support farm diversification initiatives where appropriate.

- **GI assets outside of identified networks** provide vital services and require statutory protection, supportive policies and investment:
  - local sites remain important in meeting localised need and standards of provision.
  - Bio-diverse sites outside network remain important for wildlife and may include protected species
  - Sites of historic importance require protection and management

Section: 5

Investing in, and enhancing GI across Swindon

This section provides an overview of the means by which Swindon's GI will be enhanced through partnership working, new investment and strategy/policy development. Further detail, together with an implementation plan and the means to monitor and evaluate progress will be provided in a subsequent GI Implementation Plan .

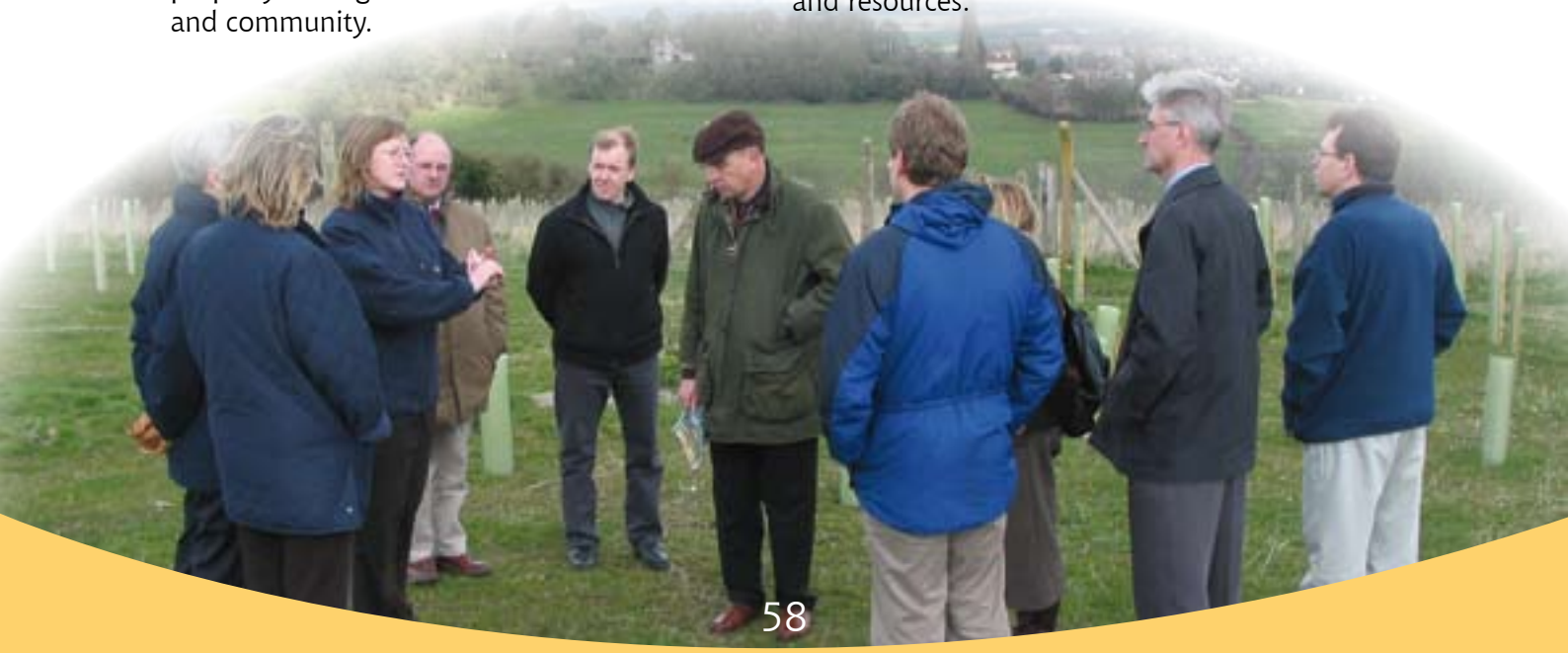
5.1 Working through partnerships

The need for a partnership approach to the planning, development and management of GI is implicit within the definition of GI and the breadth of interest it encompasses. The principles and practice of delivering GI through partnership working, across functions and administrative boundaries, is well established in Swindon, particularly through the work of the Great Western Community Forest.

A wealth of organisations, initiatives and individuals have an active role to play in GI planning and delivery:

- Central and Regional Government: Natural England, Forestry Commission, Environment Agency, Highways Agency:
- Health agencies
- Local authorities including Parish Councils: development planning and control, landscape and countryside, heritage and conservation, rights of way and highways, parks and property management, street scene, education and community.
- Charitable sector e.g. National Trails, Sustrans, Canal Partnerships, Wildlife Trusts, Woodland Trust, National Trust, BTCV, Ramblers
- Business sector including developers
- Farmers and landowners
- Local communities and interest groups e.g. ramblers, cycle groups, site based groups,
- Existing local partnership and area based initiatives: Great Western Community Forest, North Wessex Downs AONB, Cotswold Water Park.

Delivery and sustaining the GI network will be founded on the success of existing initiatives. However, the purpose of this GI strategy is not simply to re-state the case for existing work but to identify priorities for investment, and identify gaps and future demands for GI given the growth agenda across Swindon: where new initiatives and new investment are needed, or better coordination and re-focus efforts of existing work and resources.



5.1.1 The Great Western Community Forest

The key aim of all of England's Community Forests is summarised as: "To develop multi-purpose forests which will create better environments for people to use, cherish and enjoy.[27] "Multi-purpose forestry includes the provision of a diverse natural environment (including woodland, grassland, wetland, hedgerows, ponds and rivers) and a broad range of associated uses including agriculture, sport, recreation, tourism, public art, development of wood products and health promotion.

The GWCF Forest Plan sets out a long term vision for a multipurpose forest around Swindon to support the town's sustainable growth. As such, GWCF objectives are closely aligned with those underlying GI planning and focus on realising environmental, social, and economic benefits. An established GWCF team and partnership is in place to continue take a community based approach to planning and delivery of GI initiatives.

[27] Great Western Community Forest (1994, revised 2002) Forest Plan

5.1.2 A local case study on delivering through partnership: Figure 18

Case Study, River Mead/ Shaw Forest Park/ Mouldon Hill/ Canal

The River Ray Corridor is a strategically important network in the north west of Swindon Town; it connects urban Swindon to its rural fringes and settlements through four major open spaces and associated links. The network is a good example of creating and developing GI through partnership working, multiple funding streams, community involvement and ownership.

River Ray Parkway

The River Ray Parkway is an off-road 'greenway' for walkers and cyclists running between Mouldon Hill and Coate Water Country Park following the line of a dismantled railway. The establishment of the River Ray Parkway was initiated by Swindon Borough Council, Sustrans, Swindon Bike Group, and Community Programme in the 1980's and officially opened as a greenway in 1991.

Sustrans Route 45

Sustrans Route 45 runs along the River Ray Parkway and links Swindon, National Cycle Network. Sustrans volunteers and BTCV have been involved in upgrading and maintaining Route 45 and working with the Great Western Community Forest to establish a walking trail, sponsored by Timberland UK and the Primary Care Trust, connecting Swindon to Purton.

Purton Woods

Purton Woods is a Woodland Trust Site planted 10 years ago on agricultural land donated to the Woodland Trust through a legacy, and funded by North Wilts District Council and a Woodland Grant Scheme (WGS). The 'Tree for All' programme in 2005 saw hundreds of school children and members of the community planting over 6000 trees, organised by the Great Western Community Forest working with the Woodland Trust.

River Ray

The River Ray, designated as a Country Wildlife Site, is a key habitat and linking feature within the network. Restoration work has been carried out on a 1.2km stretch of the river involving re-meandering and other habitat improvements. The project was led by the Wiltshire Wildlife Trust working closely with Swindon Borough Council, the Environment Agency, Thames Water and local communities and volunteers.

Thames Water Lagoon, Nature Reserve

The River Ray runs to the east of the Thames Water Lagoon. The lagoon area is designated as a County Wildlife Site, and is owned and maintained as a nature reserve by Thames Water.

Rivermead

Rivermead, owned and managed by Swindon Borough Council is a wildlife rich open space incidental with the development of Rivermead industrial estate . The site provides easy access to a wildlife rich green space for local residents and business employees alike.

Mouldon Hill Country Park

Mouldon Hill is a newly developing Country Park serving the north-west of the Town. Over time the site will be up-graded with facilities and services for the expanding community within the area. Plans for the Park, , include a canal basin and moorings as part of the North Wilts Canal and a statin and terminus for the Swindon to Cricklade Steam railway:

Shaw Forest Park

Owned and managed by Swindon Borough Council, Shaw Forest Park (49.4 Ha) is a closed landfill site transformed over the last 13 years into Swindon's only urban forest. The Park is a flagship for the Great Western Community Forest who have organised high profile community events on the site since the early 1990's.

5.2 Investing in GI

5.2.1 Funding

Significant benefits of partnership and community based working include opportunities it presents to both pool resources and gain access to wide range of funds. The cross cutting nature of GI in delivering social, environmental and economic benefits is also a great advantage in levering funding from a wide range of sources.

Funding streams currently being used, often in combination, to help deliver GI work in Swindon and the wider sub-region include:

- HLF and Big Lottery.
- Landfill tax credits
- charitable trusts such as the Esmee Fairburn and Tubney Trusts.
- European funding such as LEADER.
- Agri-environment schemes such as the English Woodland Grant Scheme and Environmental Stewardship Schemes.
- Business sponsorship
- Government and local government awards and grants
- Council Tax
- Developer contributions
- Direct income

Investment in GI will need to be continually found from these and new sources of funding via a range of organisations and initiatives. Increased investment in new or upgraded facilities places additional financial burden for their upkeep. Quality of GI is paramount and mechanisms need to be secured to ensure sufficient resources are invested for on-going management and maintenance of GI assets.

5.2.2 Development planning and control

5.2.2.1 Planning conditions and developer contributions

Swindon's continued expansion not only drives the need for environmental improvements but also represents a major opportunity for investment in GI. This investment is currently delivered through planning conditions and developer contributions for 'on-site' and 'off-site' GI as dictated by local plan policies and associated supplementary planning guidelines for the Great Western Community Forest, Archaeology, Open Space, Trees, together with a Nature Conservation guidance note. The Developer Contributions for Residential Development (Development Control Guidance Note) sets out the Council's requirements for developer contributions for open space provision and Great Western Community Forest.

A GI Supplementary Planning Document is being developed alongside this strategy to integrate existing planning guidance notes into one 'umbrella' document as part of Swindon's Local Development Framework.

Clearly the impact of Swindon's growth places great demand on GI beyond the borough and the challenge remains of how the benefits of developer contributions for GI can be spread beyond Swindon Borough's own boundary.

5.2.2.2 Major urban extensions and central area regeneration

Master plans for Swindon's major urban extension area at **Wichelstowe** include extensive GI networks both within the development site and off-site landscape enhancements, the latter to be developed through offices of the Great Western Community Forest.

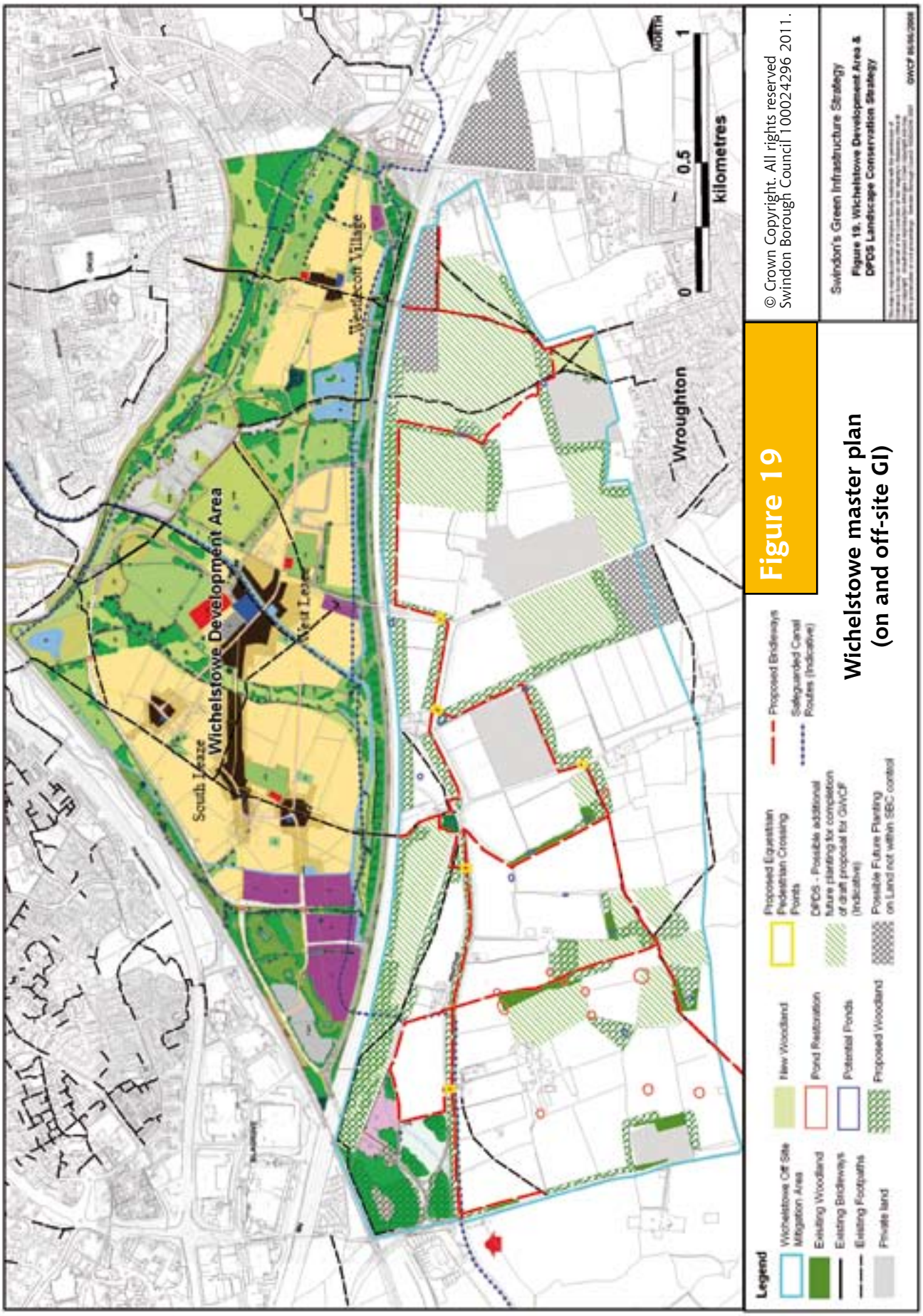
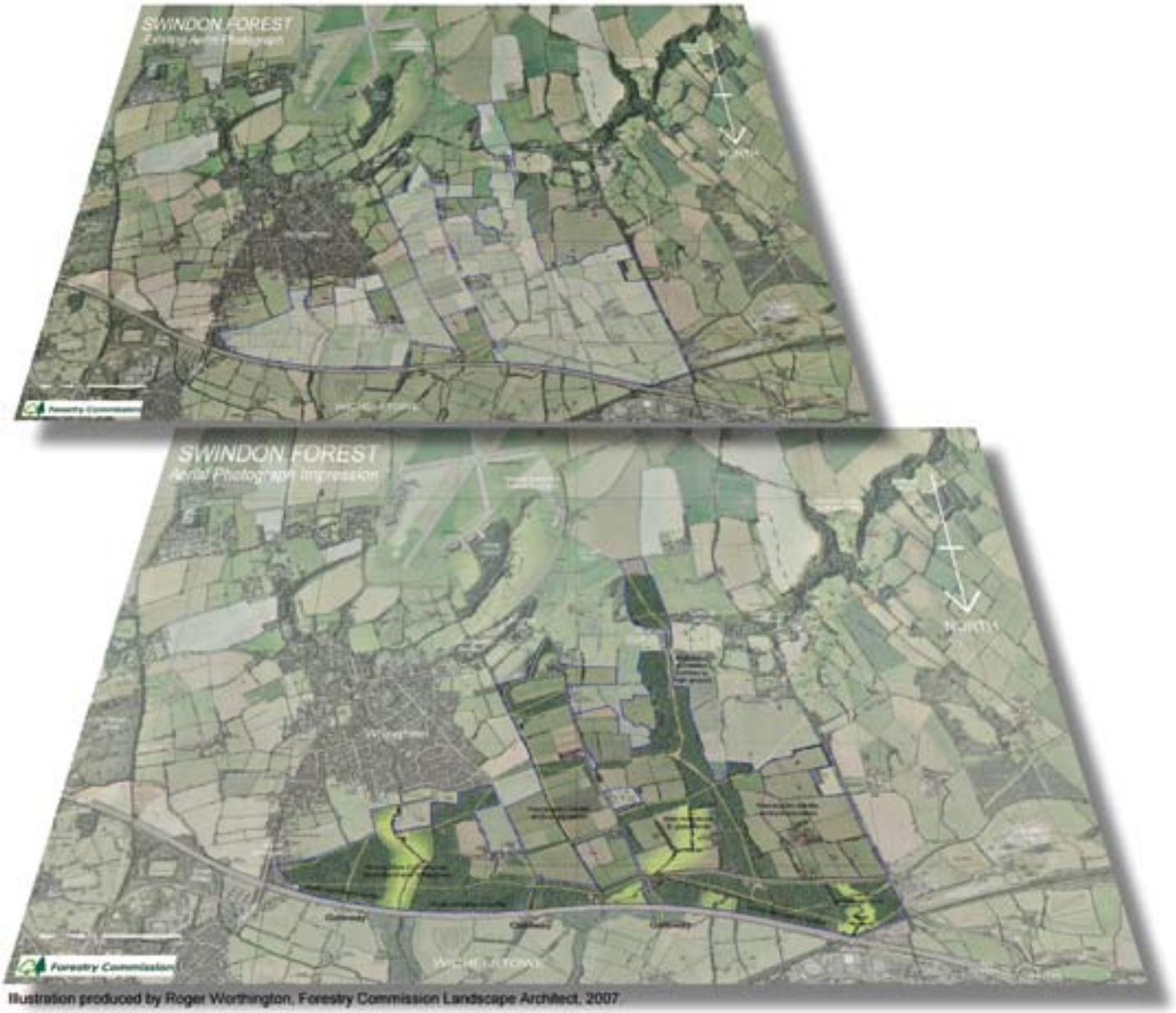


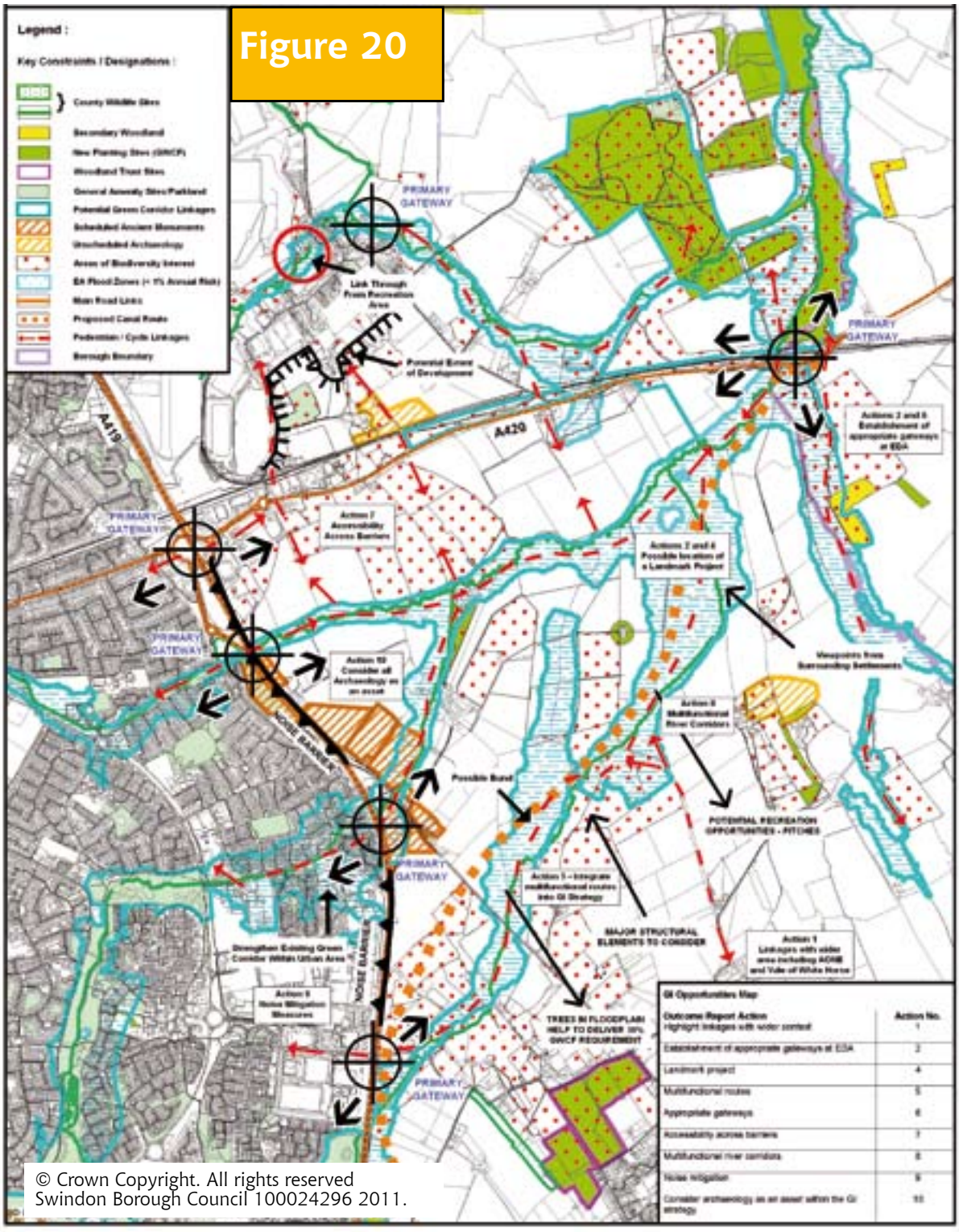
Figure 19

Wichelstowe master plan (on and off-site GI)

Fig19a. Wichelstowe off-site mitigation area: potential GI improvements, before and after. (Illustration only).

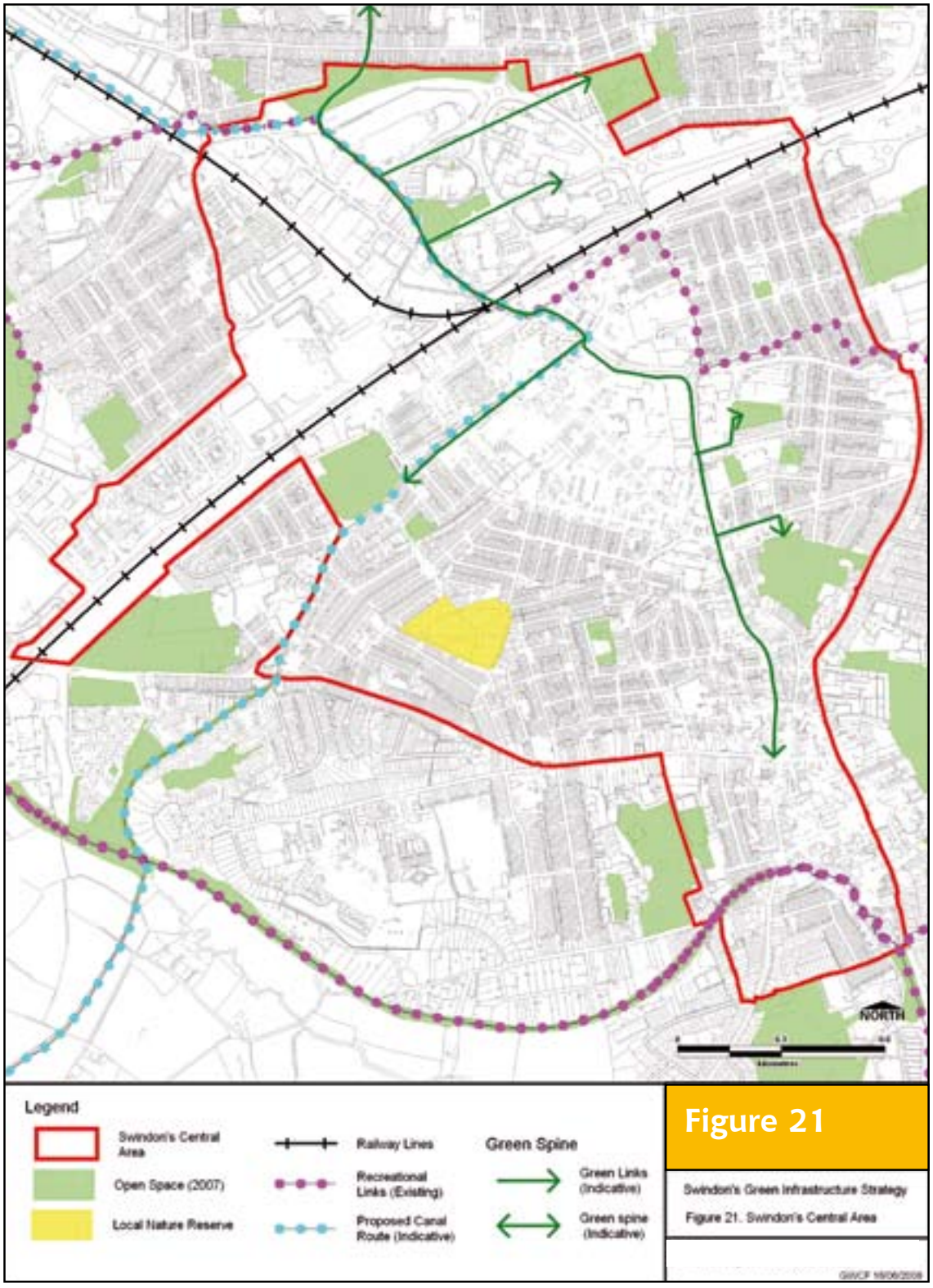


Stakeholder workshops and subsequent discussions have also been used to inform GI master plans for Swindon's proposed expansion to the east of the town (figure 20).



Swindon's Central Area Action Plan (CAAP) details proposals for regeneration of Swindon Town centre and the wider central area of the town. The CAAP includes policies and proposals on green roofs, enhancing GI through Central Swindon and re-instatement of the canal through Swindon. Improvements to the GI within the town centre is focused around the development of a Green-Spine with enhanced links to existing parks and open spaces. (Figure 21).

Figure 21: Swindon's Central Area Action Plan, illustration for the green spine and GI



Green roofs have a particularly important role to play within Swindon's Town Centre where opportunities for creating new green-spaces are limited and where the benefits of enhanced GI could be far-reaching. Figure C20 illustrates the potential for creating a network of Green roofs across Swindon Town centre (based on a methodology developed in London).[28] Further detail is given in Swindon' sustainable design guide.[29]

[28] Greater London Authority (2008) Living Roofs and Walls, Technical Report : Supporting London Plan Policy
[29] Swindon Borough Council (2007) Swindon's Sustainable Building Design and Construction SPD

5.3 Setting the policy and strategic framework

5.3.1 Local plans and strategies

If GI is to play a central role in Swindon's sustainable growth it is essential that GI planning is integrated with, and supports other key local plans and strategies and ultimately the Community Strategy and its delivery plan: One Swindon. Moreover, the delivery of components of the proposed GI network and wider GI is dependant on plans and activities embedded within other key documents such as, Swindon's Biodiversity Action Plan, the Great Western Community Forest Plan, North Wessex Downs AONB Management Plan, Cotswold Water Park, National Trails strategies etc: as illustrated in section 1.2 of this document.

5.3.2 National and regional policy

GI planning now comprises an important strand of Government's wider sustainable social and regeneration policy. Whilst not exhaustive, a recent review of England's Forestry Strategy (2006) describes many of the Government policy priorities that may be delivered through GI. These include:

The Urban White Paper (2000)
Living Places – Cleaner, Safer, Greener (2002)

- Highlights the contribution of high-quality, well-designed and well-managed public environments

Sustainable Communities: Building for the future (2003).

- Sets an agenda for growth, regeneration and improved quality of life. It provides the foundation for evolving work on green infrastructure and regeneration.

Rural Strategy, 2004

- Ensuring social inclusion and addressing rural exclusion.

Citizen Engagement and Public Services: Why Neighborhoods Matter' Discussion Document (2005)

- Sets out a vision for a 'new localism' that includes creating greater opportunity for effective neighbourhood action everywhere, empowering communities to improve local services and create safer communities, and creating a menu of options for neighbourhood action.

Securing the Future, the UK Sustainable Development Strategy (2005)

- Includes measures to enhance local environmental quality, health and wellbeing, social justice, environmental equality and people's satisfaction with the places in which they live.

Planning Policy Guidance 17 (PPG 17) Planning for open space, sport and recreation.

Planning Policy Guidance 15: Planning and the historic environment

Planning Policy Statement 9 (PPS 9) Biodiversity

Natural England's Countryside In and Around Towns[30] provides a vision for the urban fringe based on widespread consultation with organisations and individuals across England. Ten key functions are identified to enable urban areas to evolve in harmony with their environment.

The Sustainable schools framework and the learning outside the classroom manifesto.

[30] Natural England (2005) Countryside In and Around Towns (CIAT)

Appendices

Appendicies Contents

Appendix A: Understanding the functions of GI

A more detailed consideration of the potential benefits to be derived from GI

Green Infrastructure's role in conserving biodiversity

The rebuilding of functional ecological networks is a key principle underlying the planning of green infrastructure networks. The rationale behind this approach is based on the recognition that small, isolated areas of wildlife habitat whilst having intrinsic value are unable to withstand pressure for change, particularly climate change. At the global level, a recent report published by the IPCC (2007) has underlined the potentially devastating impact climate change is projected to have on bio-diversity at a global scale. Sir Nicholas Stern, Head of the Government Economics Service and Adviser to the Government on the economics of climate change and development published his report on Climate Change on Oct 31st 2006 the Stern Report quotes:

"Protecting natural systems could prove particularly challenging. The impacts of climate change on species and biodiversity are expected to be harmful for most levels of warming, because of the limited ability of plants and animals to migrate fast enough to new areas with suitable climate (Chapter 3). In addition, the effects of urbanisation, barriers to migration paths, and fragmentation of the landscape also severely limit species' ability to move. For those species that can move rapidly in line with the changing climate, finding new food and suitable living conditions could prove challenging. Climate change will require nature conservation efforts to extend out from the current approach of fixed protected areas. Conservation efforts will increasingly be required to operate at the landscape scale with larger contiguous tracts of land that can better accommodate species movement. Policies for nature protection should be sufficiently flexible to allow for species' movement across the landscape, through a variety of measures to reduce the fragmentation of the landscape and make the intervening countryside more permeable to wildlife, for example use of wildlife corridors or biodiversity islands.[1]"

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As Biodiversity Action Plan (BAP) targets have been developed and refined, recognition has grown of the need to restore ecological health at a landscape scale, and to secure long term environmental sustainability, especially in the face of the growing threat from climate change. This requires conservation planning to look beyond protected areas and discrete wildlife sites, to wider natural processes functioning across landscapes. As such, the South West Regional BAP targets are insufficient by themselves to define this landscape functionality.[2]

Stephanie Hilborne, Chief Exec, The Wildlife Trusts states:
"If we don't give our wildlife enough room to manoeuvre, collapse in biodiversity is inevitable. For decades we have been slowing the decline in biodiversity by protecting small oases of wildlife as an emergency measure. Now, in the face of climate change, it is essential that we link these oases and restore our ecosystems and natural processes at a speed and on a scale that we would once have felt was impossible'.[3]

[1] Stern, N (2006) Stern Report: The Economics of Climate Change
[2] South West Observatory (2005) South West Nature Map
[3] The Wildlife Trust (2006) A Living Landscape – a call to restore the UK's battered ecosystems, for wildlife and people.

The contribution of trees & woodlands

The particular contribution trees and woodland make in the context of GI has is well documented as recognised in England's Forestry Strategy which states that:

"Woodlands and forests can provide timber, enhance the beauty of the countryside, revitalise derelict and degraded landscapes, reduce pollution, improve health, and enhance wildlife habitats. Woodlands can also generate employment, provide opportunities for sporting and recreational activities, and improve the quality of life in and around towns and cities by screening development and improving the setting for housing and industry. Few other land uses can boast such a diverse range of benefits"[4]

Furthermore, people have a natural affinity with trees, creating an immediate and recognisable 'sense of place'.[5]

Extensive work by the former National Urban Forestry Unit has helped to raise awareness of the importance of tree particularly in an urban setting. Their publication 'Trees Matter' provides a more comprehensive summary of the importance of trees in sustainable urban living and mirrors the functions and benefits of GI more generally.[6]

The Great Western Community Forest Plan, and the continued work of the Forest team and wider partnership, is built on this recognition that woodland and trees have a special role to play in our lives.

Broader consideration of the functions and benefits of GI		
GI benefit: Improvements to quality of life covering: • Health and well being • Community cohesion • Crime and Safety • Social inclusion		
How can GI contribute	**What scale does it operate on and some criteria for assessment**	**Key characteristics of GI important in delivering benefits**
Greenspaces and linear routes provide opportunities for play, outdoor sport, recreation, social interaction and quiet contemplation.	Local to sub-regional although the need for regular contact suggests local provision of higher priority. Access to Natural Greenspace Standards indicate catchment scales for sites ranging from the local (300m) for sites of 2ha or less to, 10km for larger scale sites (500 ha +) Adopted local plan standards to a hierarchy of open spaces for general recreation, allotments, outdoor sports and play facilities. Tranquillity zones mapped by CPRE.	Proximity/accessibility/linkage Particularly for 'in need' people/ communities: Regular use key to health benefits derived Naturalness/diversity of green spaces Quality/provision of facilities, services, information. Community involvement Tranquillity

[4] Forest Commission (2006) England's Forestry Strategy 'A new focus for England's Woodlands

[5] Vaughan, J, England's Community Forest (2005) Submission to Royal Commission on environmental pollution.

[6] National Urban Forestry Unit (2005) Trees Matter! Bringing lasting benefits to people in towns

Broader consideration of the functions and benefits of GI

How can GI contribute	**What scale does it operate on and some criteria for assessment**	**Key characteristics of GI important in delivering benefits**
GI can provide an attractive and safe alternative to motorised travel (for 'off road' walking or cycling) to and from: - work - school - local facilities - town centre	Cycling distance (max): to work estimated at 5km max. (DTR), to secondary schools: 3.2km. Walking distance to work: 3 km or less, to primary schools: 600m, to secondary schools: 3.2km.	Regular use key to health benefits Landscape quality/ naturalness/ diversity Accessibility/linkage Information and quality of routes.
Provides environmental services: - pollution control - climate control e.g. off-set heat island effect - flood control	Scales for heat island effect/ climate control (see London study): - Indoor climate and street canyon 1-10m - Neighbourhood scale, sub-urban variations of climate 10 to 1000 m. - City/Metropolitan scale 1-50 km. Flood control: local to sub-regional (River Catchment areas). Extent of floodplains adjusted for climate change projections. Presence or absence of Air Quality Management zones.	Land use morphology. Tree cover: - Extent of transpiring surfaces - Pollutant deposition surface area - Shade provision Flood catchment profiles as detailed within Catchment Flood Management Plans. Strategic flood risk assessment gives more detail for Swindon including consideration of ground water/surface flooding.

GI Benefit: Conservation of wildlife habitats and species		
How can GI contribute	**What scale does it operate on**	**Key characteristics of GI important in delivering benefits**
Greenspaces provide a variety of habitats for wildlife in their own right.	Local to sub-regional/national/ international Minimum dynamic areas for individual habitat types determine potential viability of habitats in longer term. Localised habitats provide refuge for protected species	Type, size, quality of habitat Management regime Surrounding land-use Diversity of habitats across a wider area/ degree of isolation of habitats Presence of threatened species
GI networks (ie hubs and links) help overcome issues of isolation/fragmentation of habitats, providing a more permeable landscape across which more mobile species can move.	Local to sub-regional and beyond. Strategic Nature Areas (SW) and Conservation target Areas (SE) mark existing areas of landscape scale importance.	Distribution patterns of habitats across the wider landscape. Eg size, type of habitat, degree of Isolation/clustering, Permeability of surrounding landscape to wildlife movement Quality of habitats Management regimes Presence/quality of connective features between areas of noted biodiversity interest e.g. Linear green spaces, River corridors, canal routes
Provides opportunities for education/ awareness raising of biodiversity issues	Local to sub-regional	LLocation w.r.t. to target population eg schools Presence of services: - Staff/initiatives - on-site facilities - information Quality of services

GI Benefit: Climate change adaptation and mitigation		
How can GI contribute	**What scale does it operate on**	**Key characteristics of GI important in delivering benefits**
Provides environmental services: - pollution control (air, noise) - climate control e.g. off-set heat island effect - flood control - Provides sinks for carbon - Provides sources of renewable energy (biomass)	Pollution, climate, flood control: see quality of Life above Carbon Sinks: local to global NB benefits to be derived considered small at the local to national scale. Sources of renewable energy: local to sub-regional to 50km radius	See quality of life above. Carbon sinks: vegetation cover, particularly extent and state of woodland cover/re-forestation. Renewable energy: vegetation type i.e . woodland, src, miscanthus: extent, distribution, accessibility, management regime. Proximity to end use.
Provides opportunities for biodiversity adaptation	See biodiversity	
Provides an attractive and safe alternative to motorised travel (for 'off road' walking or cycling)	See quality of life above	
Improvements to quality of life e.g. health benefits	See quality of life above	

GI Benefit: Improved education and skills		
How can GI contribute	**What scale does it operate on**	**Key characteristics of GI important in delivering benefits**
High quality/diverse school grounds +other education centres provide direct opportunities for formal education in schools + others	Local to sub-region e.g. within easy distance of travel from schools	Distance/ease of travel from target community Facilities available Safety Services available/skills available Diversity/uniqueness, natural characteristics of outdoor environment partic. woodland cover
Natural greenspaces/ linear routes provide opportunities for general informal education where information, activities and events are available.	Scales consistent with ANGSt criteria/local plan standards for provision	Services available: staff, information, events, activities Site characteristics: Diversity of interest, 'profile', uniqueness Accessibility to population
Natural greenspaces provide a venue and resources for skills training for land based sector Eg- habitat/ecological management craft skills horticulture heritage	Local to sub-regional	Diversity/uniqueness of land-use/ habitats Facilities available Services available

GI Benefit: Increased economic investment [7]		
How can GI contribute	**What scale does it operate on**	**Key characteristics of GI important in delivering benefits**
Provides attractive working environment - Improved staff retention/ relocation - Increased prestige	Local	Proximity to areas of employment. Quality of open space and facilities provided
Improves image of wider area. - more attractive for investment - Increases property value	Regional/Sub-regional	
Provides opportunities for sport, recreation and quiet contemplation - increased tourism - improved quality of life for workforce	Local to sub-regional scale visitor attractions within day trip of Swindon	See quality of life
Provides opportunities for non-motorised travel healthier workforce green credentials - direct links to local businesses (incl rural)	See quality of life	See quality of life
Direct employment opportunities in creation and management of GI	Local to sub-regional	

GI Benefit: Protection of heritage/local distinctiveness		
How can GI contribute	**What scale does it operate on + some criteria**	**Key characteristics of GI important in delivering benefits**
Protection for, and enhancement of cultural heritage features	Local to landscape scale (eg heritage landscape of WHS) Protected and designated areas (SAMs, WHS) Proximity/clustering of features	Appropriate land-use and management of heritage sites Statutory protection Profile, recognition, 'specialness' Sensitivity/fragility/visitor pressure
Provides opportunities for education/ awareness of heritage issues	Local to sub-regional	Availability of information and services

[7] ECTOC (2008) The Economic Benefit of Green infrastructure: A review of the evidence base for the economic vale of investing in G.I

Appendix B. Spatial Analysis of GI provision (methodology)

B.1 Methodology for the analysis of GI

The methodology used within this strategy for the analysis of open-space provision has been derived from greenspace research and emerging GI planning elsewhere in the UK. It also draws heavily on previous research work into the functionality of greenspaces and their role in developing sustainable communities.[8 9]

A four-stage process has been used to develop an understanding of existing and planned GI provision across Swindon and how individual open spaces link to provide a framework for establishing a GI network (table 2).

Table 2: A four-stage process for understanding GI provision

	What does it involve	**How is it done**
Stage 1	Review the functions of GI and how GI can contribute to achieving a range of benefits: social, environmental and economic. This stage helps to define the spatial scale across which the GI network is considered.	Desk based literature review.
Stage 2	Describe the assessment criteria associated with each identified function of GI i.e. what to analyse, why, and how to assess. Consider at this stage the standards, which are to be applied for GI provision.	Desk based review of adopted local open space standards and national guidelines. Literature review Stakeholder discussions
Stage 3	Collate information and map GI provision appropriate to selected assessment criteria for each function/ benefit	Desk based work including collation of available information and expert use of mapping software (GIS) Expert and local knowledge via facilitated stakeholder workshops and face-to face discussions
Stage 4	Analyse existing (and planned) GI provision based on functions/benefits and associated assessment criteria Combine and collate information to give picture of multi-functionality: - priority areas indicating high level of multi-functionality: - sensitive areas where multi-functionality=conflict or single use is a critical aspect of a GI network - indicative areas where interventions may fill gaps in provision /increase multi-functionality.	Desk based analysis. Spatial analysis using mapping software (GIS) Use of score based approach for existing (and planned) gi to indicate areas of greatest/ least functionality See appendix B. Facilitated stakeholder meetings

[8 9] University of Gloucester (2006) Green Infrastructure Planning in Swindon Urban-Rural Fringe.
Land Use Consultants (2004) Making the Links: greenspace and quality of life. Scottish Natural Heritage Commissioned Report

B.2 Understanding the functions and benefits of GI

Planning for GI needs to be based on a thorough understanding of existing GI provision. To help assess such provision, the services, which GI can provide, and the benefits of doing so, need to be stated. Table 3 provides a summary of such functions and associated benefits as adopted from previous research and studies. [10] [11]

Table 3. A summary of functions and benefits to be derived from GI

What can green infrastructure provide	**Potential benefits to be derived from GI**
Open spaces for play, leisure, recreation, social interaction and quiet contemplation	Improvements to quality of life covering: Health and well being ▪ Community cohesion ▪ Crime and Safety ▪ Social inclusion ▪ Equality and diversity ▪ Personal development ▪ Civic pride Economic investment retained or increased including tourism related activities
'Green' routes for non-motorised travel	Improvements to quality of life Reducing CO2 emissions Economic investment retained or increased
Employment opportunities	Improvements to quality of life Employment levels retained or increased Increased economic investment
An attractive and distinct landscape	Improvements to quality of life Increased economic investment Increase in land values
Protection for and enhancement of cultural heritage features	Improvements to quality of life Protection of heritage/local distinctiveness
Wildlife habitats	Improvements to quality of life Increased biodiversity Protection of at risk habitats and species Increased economic investment
Environmental services: - pollution control (water, air, noise) - climate control e.g. off-set heat island effect - flood control - carbon sinks	Improvements to quality of life Increased economic investment Off set causes and mitigate against effects of climate change
Facilities for education and lifelong learning	Improvements to quality of life Improved educational attainment
What can green infrastructure provide	**Potential benefits to be derived from GI**
	Increase in skills capacity for individuals and communities Economic: improved labour productivity

10 University of Gloucester (2006) Green Infrastructure Planning in Swindon Urban-Rural Fringe.

11 Land Use Consultants (2004) Making the Links: greenspace and quality of life. Scottish Natural Heritage Commissioned Report

To better understand GI functionality, detailed consideration needs to be given to how GI benefits are derived, and at what scale(s) they are derived at. Appendix A looks at these benefits in more detail and sets out some of the criteria against which GI provision across Swindon has been assessed in putting this strategy together.

B. 3 Using standards to assess GI provision

B.3.1 Role of standards in GI planning

Recognised standards for open space provision are a useful basis for assessing green infrastructure in relation to community needs.

A range of local standards are currently being used across Swindon and neighbouring local authorities to assess open space provision in line with the requirements of Planning Policy Guidance 17: Planning for open space, sport and recreation (PPG17)

Natural England's greenspace standard is increasingly being adopted and adapted in GI planning work across the UK. The standard is referred to as Accessible Natural Greenspace Standard Plus (ANGst+). [12] Importantly, naturalness is recognised as a measure of quality within ANGsT, and is crucial to realising the full range of benefits attributed to GI.

Swindon's GI strategy uses both ANGsT and Local Plan standards as a means to understand GI provision across the study area.

B.3.2 Swindon's Local Plan Standards

Swindon's Open Space Audit and Assessment, 2004 (OSAA) describes the standards used to quantify and qualify open space requirements. The OSAA provides the evidence base for policies within the Swindon Local Plan (2011) and subsequent open space supplementary planning guidance (2004).[13] As recommended by PPG17, Local Plan standards for open space in Swindon are based on an analysis of quantity, accessibility and quality, criteria for which are summarised below.

Quantity

For the purposes of assessing the overall quantity of provision a standard of 3.2 ha of open space per 1000 population has been adopted, sub divided as shown in table 4 below.

Table 4: Swindon Local Plan, adopted standards for open space provision (quantity)

Category of Open Space	Definition	Requirement
Children's and Teenagers Play Areas	All equipped children's play areas, skateboard parks, outdoor basketball goals and similar facilities.	0.3 Ha (0.75 acres/1000 population)
Outdoor Sports Facilities	Includes all outdoor sports facilities whether naturally or artificially surfaces e.g. playing pitches, bowling greens & tennis courts.	1.6 Hectares (4 Acres/1000 population) of which 1.2 Hectares (3 acres/1000 population) is playing pitches
General Recreational Areas	All areas of public open space which have a significant recreational function but do not fall in the above categories e.g. parks and gardens, amenity areas, accessible wildlife areas.	1 Ha (2.47 acres/1000 population) of which 0.5 Ha should be suitable for children's informal play.
Allotments	An area containing allotment plots which are wholly or mainly cultivated by the occupier for the purpose of producing fruit or vegetables for consumption by himself/ herself and family.	0.3 Ha (0.75 acres/1000 population)

12 English Nature Research Reports (2003) Accessible Natural Green Space Standards in Towns & Cites: A Review and Toolkit for their Implementation, Number 526

13 14 Swindon Borough Council (2004) Open Space and New Housing Development, Supplementary Planning Document.

Type of Open Space	Accessibility
Intermediate Play Areas	250 metres (approx. 5 Minutes walking time)
Outdoor Sports Facilities	600 metres for junior pitches (15 Minutes walking time) 20 Minute Drive time for adult sports facilities
Local Open Spaces (1ha)	500 metres
Major Open Spaces: - 2-20 Ha Greater than 20 Ha	 2 Km 5 Km
Allotments	600 metres

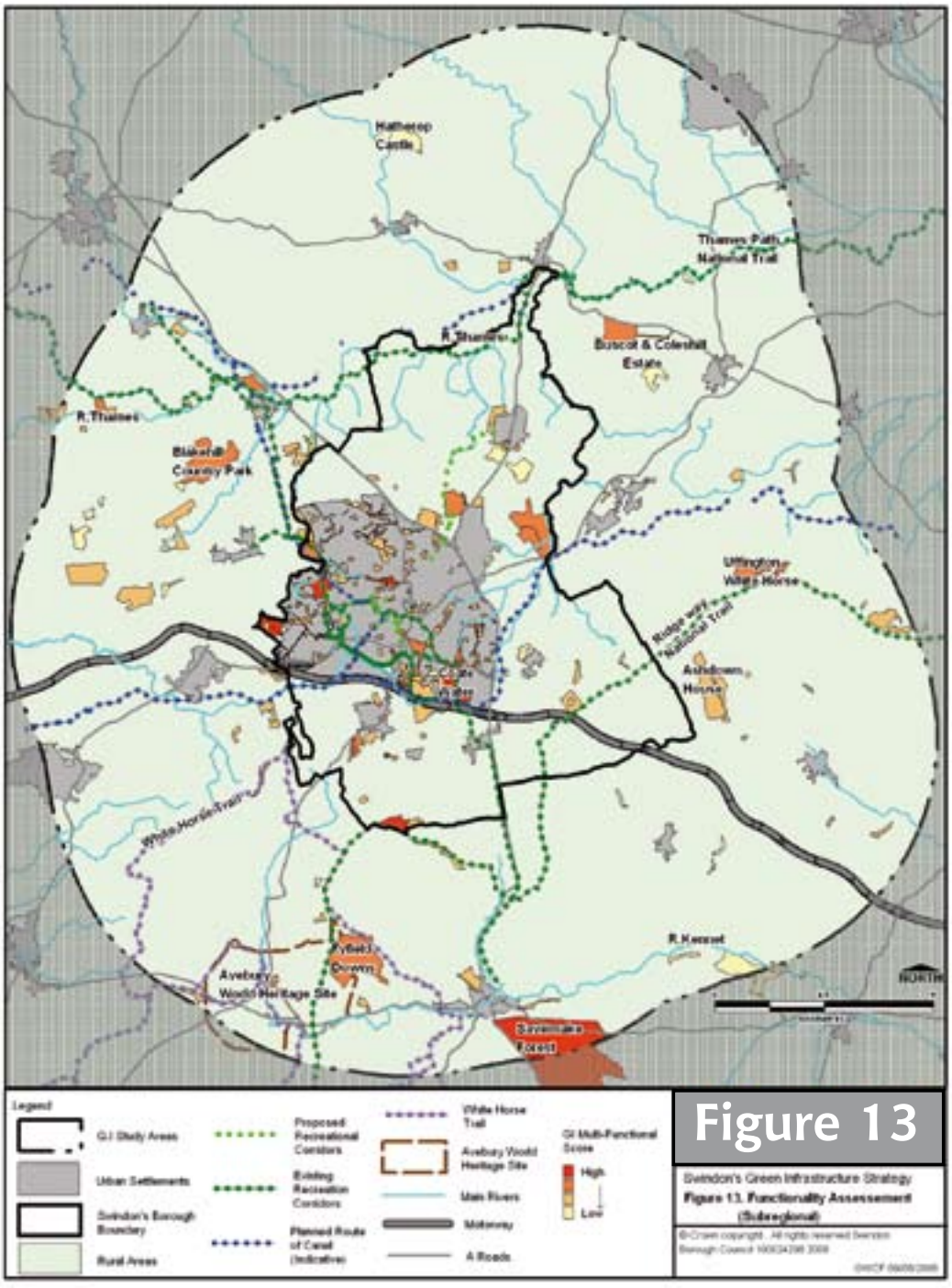
Type of Open Space Provision	Quality Standards
Children's Equipped areas	NPFA Six Acre Standard – Locally Equipped Area for Play and Neighbourhood Equipped Area for Play
Youth and Adult Play Areas	Local standards based on Sport England guidance
General Recreational Areas	Local Standard derived from Green Flag Awards scheme
Allotments	Local standard

B.3.3 Accessible Natural Green-space Standards (ANGSt+)

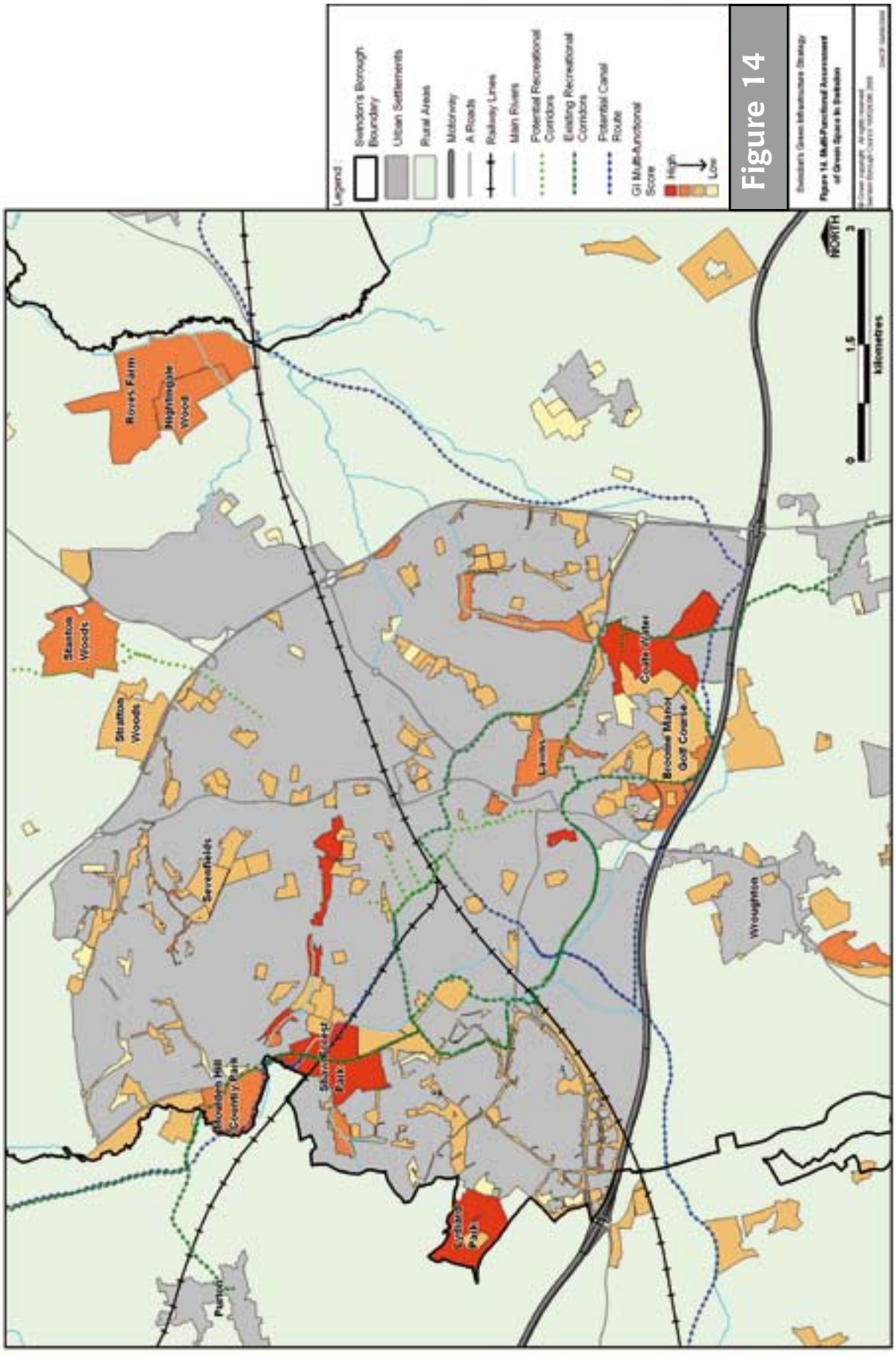
B4 Identifying multi-functional GI networks

The GI networks described in section 4.3 have been derived from an understanding of the multi-functional nature of existing and proposed greenspaces. as illustrated in figures 13 and 14nb figure here. The hierarchy illustrated in these figures is based on a simple scoring system, as set out below, which considers environmental, social and economic functions of GI. It is important to note that assigning a higher or lower score to a green-space does not imply that one space is more valuable than another: direct comparison for example between local play areas and national nature reserves is nonsensical. Rather, the scores act as a useful guide as to where different functions come together in 'hot spots'. The scoring system is also limited in that it is based on review of publicly accessible green-spaces and does not consider for example non-accessible sites or linear features.

Whilst the scoring approach is an aid to the mapping of GI, other quantitative and qualitative has been used to further define the GI networks described in section 4.3: overlaying linear routes, landscape features including strategic nature areas, applying catchment buffers and using local expertise and knowledge via stakeholder workshops.



14 Swindon Borough Council (2004) Open Space and New Housing Development, Supplementary Planning Document.



Social:		**ANGst**		
	Yes (1)/No (0)	**Town-wide**	**Borough-wide**	**Sub region**
Accessible green space	0			
Accessible natural green space	0			
Services available e.g. info, play areas, facilities	0			
Ranger service/on-site staff	0			
LNR	0			
Green flag award	0			
Within catchments for 'in need' areas	0			
Connected to 'greenway'	0			
Noted cultural heritage	0			
Within 500m of school	0			
Education centre on-site	0			
Actively used by local schools (local knowledge)	0			
Active local group	0			
Other specific gi function: play area, allotment, play pitches, cemetery	0			
Within tranquil area	0			
Environmental	**Yes/No**	**National**	**International**	
BAP priority habitat	0			
Wildlife designation	0			
Within SNA/CTA	0			
Within floodplain	0			
Adjacent to designated area	0			
Within urban area	0			
Within AONB	0			
Economic				
Noted as tourist attraction	0			
Within retail area	0			
Within local catchments of industrial/employment area	0			
Connected to long distance trail/ Sustrans route i.e. promoted route for tourism	0			
Cultural Heritage	**Yes/No**	**National (SAMs)**	**International (WHS)**	
Registered park/garden	0			
Is a site of historic/acrcheo importance or contains	0			
In conservation area	0			
Total	0			

Appendix C. Analysis of GI functionality in Swindon

C1 Improving Quality of Life

GI can make a positive contribute to the quality of people's lives:

Greenspaces and linear routes provide opportunities for outdoor sport, play, recreation, social interaction and quiet contemplation.

GI can provide an attractive and safe alternative to motorised travel (for 'off road' walking or cycling) to and from:
- work
- school
- the town centre and local facilities

GI Provides environmental services:
- pollution control
- climate control e.g. off-set heat island effect
- flood control

GI can help protect, and enhance landscape and cultural heritage features

C1.1 Open space provision

Figure C1 overview of open spaces and links

C1.1.1 Applying Local Plan standards

The Open Space Audit and Assessment for Swindon indicates that:

A total of 1017 ha of open space across the borough are publicly accessible recreational open spaces, giving a ratio of overall quantity of provision of 5+ ha per 1000 people. This figure is well above the locally adopted standard of 3.2ha/1000 people

- Overall, Swindon has a reasonably good level of accessibility to a range of open spaces
- On a ward by ward basis many areas have relatively good provision of open space, although some fall below the adopted standard of 3.2ha/1000 population. Figure C2
- There is considerable variation in quality of open spaces across the borough, with many wards categorised as having poor quality local open spaces. [8]

It is noted within the OSAA that the use of straight line distances on a ward by ward basis may mis-represent availability of open-space particularly at a local level.

Play areas, allotments and outdoor sports areas

Swindon's OSAA catalogues the provision of children's play areas, allotments and outdoor sports areas on a ward by ward basis. Provision against adopted standards for these facilities are expressed in the OSAA .

This GI strategy does not consider the provision of play areas, allotments and outdoor sports areas in detail. However, their importance within GI planning is noted and their potential to deliver benefits (eg biodiversity) in addition to their primary purposes (i.e. improving quality of life and food production) is considered within the context of wider GI networks as detailed in section 5.

Church yards and burial grounds

The provision of cemeteries falls outside the scope of the OSAA and are not considered in detail within this GI strategy.

However, church yards and burial grounds perform important roles in the context of GI planning: providing attractive spaces for quiet contemplation and of spiritual significance, wildlife refuges including for protected species (Radnor Street cemetery in Swindon is designated a Local Nature Reserve), and are of great historic and cultural value. It has been noted that urban burial grounds in the 19th century were originally envisaged as public open spaces, and were professionally designed to be attractive places to visit in their own right.[9]

This strategy therefore notes the importance of church yards and burial grounds within the context of GI networks as illustrated in section 5 of this report.

[8] Swindon Borough Council (2004) Open Space Audit and Assessment. P. 8
[9] CABE (2007) Cemeteries, churchyards and burial grounds. http://www.cabe.org.uk/

C1.1.2 Applying Accessible Natural Greenspace Standards (+)

Figure C3: Distribution of accessible semi-natural greenspace

Quantity

Figure C3 shows the distribution of accessible semi-natural green space across the Borough of Swindon and into neighbouring areas as dictated by ANGsT criteria (NB incomplete data set).

Overall, Swindon is well-provisioned against nationally available standards for accessible natural greenspace at around 5 ha per 1000 head of population and generally in-line with findings from the OSAA.

Considering projected population growth and planned green-space provision within strategic urban extensions at Wichelstowe and the EDA, the overall quantity of provision of accessible semi-natural greenspace is likely to remain above 5ha per 1000 people.

Accessibility

Local Open Spaces (2 ha +), catchment area 500m Figure C4

Figure C4 illustrates significant gaps in provision of naturalised greenspace at a local level. Access to local open spaces is also limited in some areas of particular need, and therefore where most benefit may be gained from having access to high quality, semi-natural areas. Figure C4a illustrates gaps in provision of semi-natural open space in relation to areas of 1) Indices of Multiple deprivation and 2) health deprivation.

If the total available open space is considered, as differentiated from semi-natural open space, then gaps in accessibility become very much reduced as illustrated in Figure C4b. This suggests that naturalisation of existing open spaces, as an issue of quality would help to meet, although not altogether address, gaps in local demand. However, experience gained through the Community Forest programme has shown that naturalising existing urban green-spaces can be contentious within local communities and significant investment is required in the planning, development and implementation of such initiatives.

Neighbourhood Open Spaces (20ha +), catchment area 2km: Figure C5

Overall accessibility to sites over 20ha+ across Swindon is very good although some gaps in provision are highlighted to the south of Chiseldon. Very good links between Coate Water Country Park and Chiseldon via Sustrans cycle route 45/the Timberland Trail through a network of woodland and open spaces help to offset this deficit.

Borough-wide scale open spaces (100ha +), catchment area 5km Figure C6

There are some gaps in provision to the south of Swindon. However Coate Water Country Park, lies in close proximity to other areas such as Croft Wood and planned open space and woodland plantings associated with the Wichelstowe Development. Strengthening the links between such areas would see an extensive network of interlinked green-spaces of significance at the Borough-wide scale.

Strategic Open Spaces (500 ha +), catchment area 10km Figure C7

As measured against ANGsT criteria, Savernake Forest is the only truly large accessible natural greenspace within a 10km straight-line catchment of the southern edge of Swindon. However, large areas of open space across Swindon Town such as Coate Water Country Park, Shaw Forest Park, Mouldon Hill, Rivermead are connected via the River Ray Parkway. Strengthening this connection and improving the cohesiveness of these sites would create a GI network of strategic scale significance within easy reach of the majority of Swindon residents.

Cotswold Water Park, whilst only publicly accessible in parts, to a large extent, serves the water based recreation needs of Swindon and offers a broad range of opportunities for outdoor recreation over a large area.

Quality

Swindon's OSAA details the quality of open spaces across Swindon Borough on a ward by ward basis. Figure C8 summarises the assessment of quality of local open spaces across Swindon. For general recreation areas, the OSSA summaries:

Local Open Spaces: Neighbourhood parks appear to vary greatly in quality, with 42% of sites meeting the target for quality ascribed in OSSA. Poorer quality sites lack children's play areas, on site information/ signage and public art.

Town parks: 4 parks were assessed with Queens Parks and Town gardens scoring highly and 2 being classified as poor.

Major open spaces: 63% of major open spaces met the quality target ascribed in the OSSA.

Country Parks: 40% (2 out of 5) meet the quality targets.[10]

These findings are in-line with consultation work carried out across Swindon Borough and other localised studies where the quality of open spaces is consistently identified as a key issue for site users and local communities. Health and safety concerns are often cited during such consultation work including fears over personal security, mis-use and anti-social behaviour feelings of isolation etc.. Safety and personal security issues were also noted as key issues relating to open space provision at recent GI stakeholder group workshops.

Coate Water Country Park is the only site in the study area that has gained the prestigious **Green Flag Award**. The Green Flag, given by the Civic Trust, is recognised as the national benchmark for quality parks and open spaces. Other parks across Swindon with the potential to reach Green Flag standard include the Town Gardens (application pending, 2008), Stanton Park, Lydiard Park, Barbury Castle and Queens Park. Given the assessment criteria for Green Flag, its applicability to other open spaces across Swindon is limited.

Whilst local quality standards adopted for the OSAA assess basic provision of facilities, and the Green Flag considers prestigious sites, further work is proposed (pers comm.) to develop a more widely applicable and in-depth 'Swindon Standard'.

Assessment of provision against the Swindon Standard would provide the basis for the development of the proposed Parks and Open Spaces Strategy for Swindon.

Swindon's Play Strategy (2007) recognises the primary role that the parks and other open spaces have in providing opportunities for play. In doing so, objective 1 of the strategy states a need to improve the 'public realm' to make it as conducive as possible to play for all children and young people. Fears around personal safety and the need for more adult supervision are seen as significant barriers to play.

Tranquillity can be seen as an important quality of open spaces relating to health and well-being. Whilst it may not be appropriate to include tranquillity within open space audits and assessments, the location of parks and open spaces can be mapped in relation to tranquil areas as described by CPRE.[11] Figure C27 illustrates tranquil areas across Swindon and its surrounds.

Access to open spaces for people with disabilities

There is no consistent and comprehensive picture of accessibility on sites across the study area for people with disabilities. Land ownership patterns between private, local authority, charitable organisation, government bodies and NGO's together with the absence of statutory standards for outdoor access are contributing factors.

The Disability Discrimination Act 1995 makes it unlawful to discriminate against anyone on the grounds of his or her disability in connection with employment, public transport, education and the provision of goods and services. Parts II and III of the DDA (1995) apply to service providers' premises, a term that includes land. The DDA does not outline specific standards but requires that reasonable provision should be made. The DDA, 2005 covers all functions of public bodies, not just services, and therefore includes the provision of public footpaths and other rights of way.[12]

In the absence of statutory standards for outdoor access improvements, the Countryside Agency (2005) publication 'By all reasonable means: Inclusive access to the outdoors for disabled people' provides a framework for improving access.

[10] Swindon Borough Council (2004) Open Space Audit and Assessment
[11] Campaign to Protect Rural England (n/d) Tranquil Areas www.cpre.org.uk
[12] Countryside Agency (2005) By All Reasonable Means: Inclusive access for disabled People

The guide is based on a principle of Least Restrictive Access: an approach that aims for the highest standard possible for a particular piece of work. Importantly the approach also sees access as a chain of events that start, for example at home, where a decision to visit a site or routes might be made, and where a visitor returns after experiencing the outdoors. The Countryside Agencies approach is itself based on existing standards, for example, the BT Countryside for All Accessibility Standards.

Consideration of 'Access for all' standards is incorporated into the design process for new/re-developed open spaces through:

- professional best practice for landscape architects,
- planning application process and consideration of supplementary planning guidelines (Swindon),
- demands of funding bodies
- bespoke standards across organisations such as Sustrans, WT, WWT.[13]

Understanding the needs of local community

Existing open space audits, whilst providing baseline information, do not consider in detail, the demand for particular facilities within general recreational open spaces such as cycle routes, trim trails, outdoor arenas for cultural activities etc. Local and professional knowledge however, suggests a significant demand for such facilities particularly relating to cycling and the need to publicise opportunities more widely and consistently. Likewise, issues of equality and diversity need to be better understood in providing and promoting fit for purpose facilities. Research and recommendations put forward by national bodies such as Natural England through their Diversity Review will help to guide this work.

Demand for water-based recreation has also not been comprehensively addressed although Swindon Borough Council employs an angling development officer who works closely with local clubs and the Swindon Fisheries Management Group to develop fishing in Swindon.

Apart from fishing, water based recreation within Swindon, is limited to Coate Water Country Park. However, the Cotswold Water Park is thought to cater for much of the water based recreational demands of Swindon's population (pers. comm.)

Further work is needed to provide a more comprehensive picture of the current and likely future demand of general recreational facilities within parks and open spaces across Swindon, both land and water based.

C1.2 Linear routes and connectivity

C1.2.1 Demand studies

Various studies and consultation exercises undertaken across Swindon consistently show a demand for high quality routes for walking, cycling and horse riding. Evidence of demand can be found in studies such as those undertaken for Swindon's Rights of Way Improvement Plan (SBC, 2007), The Urban Fringe Action Plan for Southern Swindon (Land use consultants, 2005), the Cricklade Country Way GI Plan (GWCF, 2007), The cycling, walking and horse riding demand study for the greater Swindon area (AJT Consultants, 2002) and Swindon's second Local Transport Plan (SBC, 2006). These studies consider recreational and utility use of walking and cycling along both 'green' and 'non green' routes. Issues raised generally fall under the headings of:

- providing more links to the wider countryside and to outlying towns and villages, particularly for cycling and horse riding.
- personal safety and ease of use of networks
- maintenance and quality of facilities, including access for people with disabilities.
- potential conflict between path users eg walkers and cyclists and also concerns over misuse in the urban fringe/countryside in relation to farming
- marketing and promotion of opportunities
- improving linkage and connectivity of the network

[13] Countryside Agency (2005) By All Reasonable Means: Inclusive access for disabled People

C1.2.2 Strategic linear routes

Strategic linear routes (existing and proposed), across the study area are illustrated in Figure C9 and described in the table below.

Route	Summary description	Issues and opportunities	Reference
Sustrans Cycle Route 45 and the River Ray Parkway	National Route 45 of the National Cycle Network will connect Salisbury in Wiltshire with Chester in Cheshire, via Swindon, Cirencester, Gloucester, Worcester and Whitchurch. The route is used by walkers, wheelchair users and horse riders aswell as cyclists The River Ray Parkway is an urban 'greenway' forming a well-used walking and cycling route following the line of a dismantled railway. It is dis-jointed in places across the Town	Route 45 running between Marlborough and the Cotswold Water Park is open and signed. Large sections of the route are off-road through Swindon and south to Marlborough. Sustrans volunteer rangers actively help to Manage the route. Plans for the Cricklade Country Way (see below) include improvements to and re-alignment of the route between Swindon and Cricklade to create more traffic free sections.	www.sustrans.org.uk Greenways user demand study (Environmental Consultants, 2002) A Green Infrastructure Plan for the Cricklade Country Way (GWCF, 2007)
Cricklade Country Way (CCW)	The Cricklade Country Way (CCW) project is seeking to create a recreational corridor linking urban Swindon to Cricklade, the Cotswold Water Park and the River Thames Coincidental with Sustrans route 45 between Swindon and the Cotswold Water Park	Proposals for the CCW include: Creation of 5 miles of the North Wilts canal basins and moorings 5 miles of restored steam railway line Creation of a new country park at Mouldon Hill 17 miles of new and improved cycleway and towpath/walkways New community woodlands and wider wildlife habitat improvements	A Green Infrastructure Plan for the Cricklade Country Way (GWCF, 2007) Great Western Community Forest Plan (GWCF, 1994,2002)

Route	Summary description	Issues and opportunities	Reference
National Trails	The **Ridgeway** runs for 85 trail between Avebury and Ivinghoe Beacon in Buckinghamshire. The route is promoted for walkers, cyclists and horse riders and crosses both the North Wessex Downs and Chilterns AONB The **Thames Path** follows England's best known river for 184 miles from its source in the Cotswolds to London. It is a long distance walking route only for most of it is a public footpath which cannot be cycled.	Issues and objectives for each of the National Trails are described in their relevant management strategies. Objectives fall broadly under the headings of: - administration and funding - route alignment and maintenance - marketing and information - safety, quality of design and facilities - off-trail links - illegal use and conflict issues - monitoring use and demand - protecting ecology and cultural heritage	The Ridgeway National Trail, Management Strategy 2005-2010 (National Trails, 2005) Thames Path National Trail, Management Strategy 2006-2011 (National Trails, 2006)
Swindon to Highworth dismantled railway	**Proposed** off-road recreational and utility walking + cycle link between Swindon and Highworth	A419 is major barrier to cross into Swindon. Much of the route between Stanton Park and Highworth is in private ownership. Recent transport plan studies have indicated the route would not 'stand alone' as a commuter link.	Great Western Community Forest Plan (1994, 2002) Second Local transport plan (SBC, 2006) Greenways user demand study (AJT Consultants, 2002) Swindon to Highworth Cycle Study (Halcrow, 2006)
Canal Network	The line of the North Wilts Canal and Wilts and Berks canal are protected within Local Plan documents	The canal is only 'in-water' in sections. Plans and activities of the Canal Trusts ultimately seek to complete the re-instatement of the canal network across the area. Feasibility studies are currently underway looking at the route of the canal through Swindon Town	Swindon Central Canal Route Study (Halcrow, 2007)

C1.2.3 The public rights of way and urban cycle network

Extensive public rights of way networks (PROW) run across Swindon and into neighbouring authorities. They represent a major recreational resource and are considered as a significant part of local heritage.[14] Figure C10 illustrates the extent of the PROW network across Swindon alone.

The importance of the PROW in improving quality of life is recognized within Swindon's Local Transport Plan (2006-2011): "Swindon is surrounded by beautiful countryside, which needs to be accessible to those living in the town. At the same time, those living within rural towns and settlements need to be able easily to access facilities within the town. Transport must address those particular needs, as well as working to open up the rural fringe through footpaths, cycle ways etc, whilst conserving the environment".[15]

Over the course of Swindon's second Local Transport Plan (2006 to 2011), Rights of Way improvement planning will be incorporated into local transport planning so that full integration can take place from 2010 onwards.

Rights of Way Improvement plans (ROWIPs) are in place for Swindon, Wiltshire and Oxfordshire. ROWIPs are strategic documents required by the Countryside and Rights of Way (CROW) Act 2000 and set out the policies and practices with regard to PROW of the constituent highways authorities across the area. Individually and collectively, the ROWIPs address a broad range of issues and set out actions to exploit the social and economic potential of the PROW network.

One means to assess the condition of PROW is measured through annual Best Value Performance Indicators (BVPI 178) samples. The indicator is the total length of rights of way, which are found to be easy to use, as a percentage of the total length of all rights of way. Easy to use means:

- Signposted or waymarked where they leave the road and to allow users to follow the path.
- Free from unlawful obstructions and other interference, (including overhanging vegetation) to the public's right of passage.
- Surface and lawful barriers (e.g. stiles, gates) in good repair and to a standard necessary to enable the public to use the way without undue inconvenience.

ROWIPs for Swindon, Wiltshire and Oxfordshire include targets for improvements to the PROW as measured for BVPI178. These are shown in the table below.

Swindon Borough Council' commitment to PROW is reflected in corporate Promise 25: "we value the importance of our rural environment and will improve access to the countryside by ensuring that 90% of rural footpaths and cycleways reach the Government's target of easy to use by 2010."[16]

Recent work undertaken in Oxfordshire[17] has mapped availability of PROW on a 1km grid basis. The exercise has helped to illustrate gaps in provision of a connected network and will help to inform future actions within Oxfordshire's ROWIP as well as other access based initiatives.
The study indicates:

- poor connectivity around the Swindon/ Oxfordshire boundary
- poor connectivity of the bridleway/byway network across large parts of Oxfordshire including poor linkage to settlements such as Shrivenham, Watchfield and Faringdon

Swindon's urban cycle network (UCN) as shown in figure C11 measures some 152 Km (Approx.), large sections of which are categorized as traffic-free. The urban cycle network provides good local connectivity, linking into local green spaces and following green corridors such as: Hreod Burna Corridor and Richard Jeffries Parkway.

Local Authority	Baseline BVPI178	Target BVPI 178
Swindon	85% (2005/06)	90% by 2010
Wiltshire	69.2% (2006/07)	80% by 2010/11
Oxfordshire	63% (2006)	No target set ?

[14] Swindon Borough Council (2007) Swindon's Rights of Way Improvement Plan
[15] Swindon Borough Council (2006) Local Transport Plan (2006-2011)
[16] Swindon Borough Council (2005) Councils 50 promises – Swindon 2010
[17] Oxford County Council (2007) Oxfordshire Rights of Way Assessment

Review work undertaken as part of the development of Swindon's second Local Transport Plan has highlighted the need for schemes that address recreational cycling as well as utility cycling. As such, key actions within the LTP will address both recreational and utility needs, falling broadly under the headings of:

- completion of missing links in the UCN
- improving quality of routes including signage and cycle parking facilities
- marketing, community engagement and awareness raising
- improving links between the UCN and outlying settlements[18]

It is important to note an increased emphasis within the LTP is placed on improving the "on road" environment for cyclists rather than providing further extensive lengths of "off road" facilities.

C1.2.4 Green links to schools, employment area and local facilities

Schools

The objectives of Swindon's School Travel Plan Strategy[19] are to increase levels of walking, cycling and public transport use; to improve levels of health and fitness; and to reduce levels of parking at school sites thus improving the local environment and quality of life. Swindon Borough Council's School Travel Plan coordinator is working with schools and other partners through the School Travel Partnership to promote the uptake of school travel plans, to help meet the Governments target that all schools should have such a plan by 2010.

School travel plans (STPs) promote walking and cycling routes to schools with safety and convenience being paramount. Attractiveness and quality of routes is also promoted within the travel plans as part of encouraging walking and cycling and realising health and social benefits. Typically, infrastructure improvements proposed within STPs focus on maintenance and quality of existing facilities such as safe crossing points, drop kerbs and management of overgrown vegetation etc..

Green networks have the potential to provide safe and attractive routes to school. Figure C12 helps to give an overview of the location of schools in relation to existing green networks within urban Swindon and smaller settlements within the Borough. Individual STPs are needed however, to identify the relevance of the green networks to individual school communities and how they can be best exploited as safe, convenient and attractive routes. Approximately 75% of schools within Swindon currently have STP's in place. Whilst some schools acknowledge the presence of off road walking and cycle links, none have championed the improvement and promotion of 'green' routes as a key opportunities within their STPs. Health and safety concerns are cited when considering off-road links: sense of isolation, poor lighting, fear of bullying and anti-social behaviour, personal safety.

Section 508A of the Education and Inspectors Act (2006) places a duty on local authorities to promote the use of sustainable travel and transport (to schools). The duty falls under 4 main headings:

- Assessment of the travel and transport needs of children within the authorities area
- An audit of sustainable travel and transport infrastructure within the authority that may be used when travelling to and from school
- A strategy to develop the sustainable travel and transport infrastructure
- The promotion of sustainable travel.[20]

The development of a borough-wide strategy, or 'Sustainable Modes of Travel Strategy' (The Education (School Information)(England) Regulations 2002) could help to provide a strategic picture of the role of GI in providing safe and convenient routes to schools across Swindon.

Recent discussions regarding the development of new schools within Swindon's proposed Eastern Development Area have highlighted opportunities to co-locate schools together with other facilities eg leisure facilities along key green routes.

[18] Swindon Borough Council (2006) Local Transport Plan (2006-2011)
[19] Swindon Borough Council (2007) Sustainable School Travel Strategy: Progress and Development
[20] Education and Inspectors Act (2006) Available: http://www.opsi.gov.uk

Workplace

Swindon Borough Council's second Local Transport Plan sets out a clear objective relating to travel awareness: to promote travel choice and increase opportunities for travel by public transport, cycling and walking. In response to this objective, the work of the Borough's Travel Awareness Officer focuses on promoting the development of travel to work plans (TtWPs) .

TtWPs centre on raising awareness of alternatives to car use: incentivising (and removing dis-incentives to) the use of public transport, car-sharing and cycling/walking to work. Priorities within individual TtWPs are dictated by local circumstance eg proximity to public transport links. Whilst generally promoting walking and cycling to work, existing plans for businesses within Swindon do not explicitly identify priority walking and cycling links for improvement or promotion. New TtWPs in Swindon are being delivered through the planning system ie they are requirement of planning conditions.

Figure C13 illustrates green corridors and links in relation to major employment areas. Work undertaken as part of Swindon's Greenways's studies[21] specifically looked at businesses within close proximity of the River Ray Parkway. The study noted the importance of this route as a walking and cycling link to local businesses.

C1.3 Community engagement

Figure C14 (SBC only)

Exploiting the full potential of GI to contribute to quality of life is dependant on communities having a strong connection with their local environment. This is a principle embedded within the aims and objectives of the Great Western Community Forest and is reflected in the plans and activities of various organisations under the broad umbrella of community forestry.

Away from informal recreation and excluding sporting activities, Figure C14 whilst not exhaustive, gives an indication of the extent of community based activities based around the care and enjoyment of local open spaces across Swindon

Within the study area, there are a large number of local, community based groups directly involved in the planning, care and management of open spaces and linear routes Community activities are supported as appropriate by organisations such as local authorities, the Wiltshire Wildlife Trust, Great Western Community Forest, BTCV, Sustrans, The National Trails, the National Trust, other charitable organisations and NGOs.

A number of high profile and large scale events are regularly held in parks and open spaces across Swindon, where the setting and quality of the open space is a significant factor. Good examples include the Swindon Mela, events at Lydiard Park and the annual Forest Festival. Away from Swindon, Avebury WHS is one of the principle sites in the UK for a calendar of pagan ceremonies. Smaller scale and other organised activities such guided walks, public tree planting events and other outdoor activities are held on a regular basis through-out the year by a number of organisations and local groups.

Several initiatives across Swindon have worked, and continue to work with particular sectors of the community, encouraging often 'hard to reach' groups to make more use of open spaces. Targeted along socio-demographic lines, such as age, ethnic and cultural diversity, health and income, schemes often aim to address particular issues: health and well-being, social inclusion, criminality etc. Examples in Swindon include Active Swindon and TWIGS/ LEAVES.

The success of such community action and engagement is manifest in the number of groups and individuals who demonstrate a strong sense of ownership of their local open spaces and environment. This sense of ownership is evident in the success of the on-going work of local groups and organisations such as the GWCF, Wiltshire Wildlife Trust, Swindon Rangers, and BTCV. More broadly, the high value placed on open-spaces in Swindon by local communities is reflected within Swindon's Community Strategy.

[21] AJT Consultants (2002) Cycling, Walking and Horse Riding Demand Study for the Great Swindon Area

GI can also help to prevent an erosion of community identity by helping to preserve the character and special identity of towns and villages as expressed as a key objective within the Great Western Community Forest Plan. This includes using landscape enhancements as a means to buffer existing settlements against urban expansion: an approach being used in Swindon where landscape mitigation work, required as a condition of the Wichelstowe development, will see large areas of woodland planted together with open spaces between Wroughton and the southern edge of the town.

C2 Conservation of wildlife habitats and species

GI contributes to the conservation of wildlife habitats and species:

- By providing a variety of habitats as refuges for wildlife
- GI networks (i.e. hubs and links) help overcome issues of isolation/ fragmentation of habitats, providing a more permeable landscape across which more mobile species can move.
- Outdoor spaces provide opportunities for education/ awareness raising of biodiversity issues (Section C1.3)

C2.1 Wildlife habitats

Figure C15 illustrates the distribution sites of noted ecological importance across the study area. Following a hierarchy of classification these sites include a candidate Special Area of Conservation, 2 National Nature Reserves, 64 Sites of Special Scientific Interest, 4 Local Nature Reserves and over 125 County Wildlife Sites.

UK BAP priority habitats[22] represented in the area include:

- Lowland mixed deciduous woodland
- Neutral grassland meadow
- Lowland calcareous grassland
- Standing water
- Ponds
- Hedgerows
- Rivers
- Traditional orchards
- Wet woodland
- Wood Pasture and Parkland

Condition and appropriate management of noted areas remains an issue. Figure C16 gives an overview of the condition of Sites of Special Scientific Interest as categorised by Natural England.[23]

Whilst conservation efforts largely focus on habitat protection and enhancement, where available, information and action plans are in place for species of note and those receiving statutory protection. Across Swindon, protected species include water voles, otters, bats, great crested newts and white-clawed crayfish.

C2.2 Local Biodiversity Action Plans

Local Biodiversity Action Plans (LBAPs) are in place for Swindon, Wiltshire, the Cotswold Water Park, and Oxfordshire. LBAPs are plans which include actions to address the needs of the UK priority habitats and species in the local area, together with a range of other plans for habitats and species that are of local importance or interest.

A four stranded approach is typically adopted within LBAPs:
- protection of the best areas for wildlife
- enhancement of wildlife across wider landscape scale, recently termed 'rebuilding biodiversity'
- protection and enhancement of populations of particularly important species.
- Involvement of people in the process of wildlife conservation.

C2.3 Rebuilding Biodiversity

Whilst diverse in their nature, individual habitats across Swindon are fragmented and isolated in the wider landscape.[24] This is an issue being addressed within the landscape scale approach to nature conservation, recently termed rebuilding biodiversity, which has gathered pace over recent years. It is an approach based on the recognition that wildlife will struggle to survive in a small number of protected isolated sites (typified by habitat distribution across Swindon) over the long term: with climate change pressures being particularly pertinent.

[22] United Kingdom Biodiversity Action Plan. Biodiversity: The UK Steering Group Report – Action Plans, HMSO, 1995
[23] Natural England (2008) SSSI Condition Survey www.english-nature.org.uk
[24] Wiltshire Wildlife Trust (2005) Swindon BAP

For South-West England (SW), the landscape scale approach to Nature Conservation is based on the South West Nature Map.[25] Nature Map identifies a pattern of Strategic Nature Areas (SNAs) across the region. SNAs are described as a large tract of landscape containing a mosaic of habitats and other land uses sympathetic to wildlife, amongst which multiple patches of a given priority habitat, each of at least a defined minimum area, occur at a prescribed concentration necessary to allow ecological functionality for constituent biodiversity across the entire landscape tract. SNAs are not statutory designations; rather they are means to prioritise actions to improve biodiversity.[26]

To the east of Swindon (South-east region) Conservation Target Areas (CTAs) have been mapped, again identifying those priority areas for nature conservation based on the landscape scale approach.

Figure C17 illustrates the distribution of SNA's and CTA's across the wider Swindon area.

A local example of the rebuilding biodiversity approach to conservation work is the Wiltshire Wildlife Trust's Living Landscapes Project in North Wiltshire as described in section 2.3 of this report.

C2.4 Biodiversity in Swindon Town

Figure C17 helps to illustrate Swindon urban area's strategic position in relation to the network of the more rural SNA's and CTA's.

Whilst the town is particularly rich in wildlife, as noted at the Swindon BAP Forum (2008), the urban area presents a barrier to wildlife movement across the wider landscape. Figure C18 indicates gaps in the urban 'green network' particularly running south-west to south-east across town

Conserving wildlife within the town and increasing the permeability of the town to wildlife movement are two principles adopted within the Swindon BAP. Enhancements to key green corridors, particularly river corridors, overcoming major barriers such as the motorway and trunk roads, and the creation of ecologically functional networks within the town, are all means to address issues of fragmentation and isolation.

More generally across the town smaller incidental green spaces, gardens and green roofs can contribute to the creation of a more 'diffuse landscape' for wildlife movement. Given the constraints of creating new green-spaces across the town centre, the "tree-scape" will play a particularly important role in the urban landscape.

C2.4.1 Urban expansion, town centre regeneration and green roofs

Urban regeneration, strategic and other urban extensions planned within Swindon provide an opportunity beyond statutory protection to conserve and enhance biodiversity.

Swindon's Central Area occupies a strategically important position within the urban green-space network. At the same time, green spaces within the central area are very limited in extent and particularly poorly connected to other open spaces and green corridors as shown in Figure C19. Proposals for the creation of a green-spine through the central area and the restoration of a canal link through Swindon both have the potential to improve habitat connectivity through the Town Centre Figure 21. There appear to be few other opportunities to increase the amount of green space across the central area of Swindon: plans for the redevelopment of the public realm being centred around 'hard' landscaping with the exception of retaining and improving tree cover in these areas. Increasing tree cover in general across the central area provides an opportunity to increase vegetative cover and thereby an increase in wildlife habitats. An initial study[27] following a recommended methodology developed in London.[28] Figure C20 illustrates the potential to increase green space across the town centre through the creation of a network of green roofs: increasing the area of greenspace from 3.3 Ha to 7.7 Ha.

Away from central Swindon, master plans for the development of strategic urban expansion areas at Wichelstowe and the Eastern Development Area both incorporate extensive networks of green-space with a strong focus on biodiversity, centred around river and stream corridors. These are described in more detail in Section 6 of this strategy.

[25] South West Observatory (2005) South West Nature Map
[26] Wiltshire Wildlife Trust (2005) Rebuilding Biodiversity in the South West
[27] Swindon Borough Council (2008) Green Roofs SPD Draft (emerging 'Swindon Central Area Action Plan)
[28] Greater London Authority (2008) Living Roofs and Walls, Technical Report: Supporting London Plan Policy

C3 Protecting and enhancing landscape heritage and local distinctiveness

C3.1 Pre-history to post industrial heritage of Swindon

The depth and wealth of landscape heritage represented across Swindon and its surrounding landscape is in Figure 7, section 2 and Figure C21.

Avebury World Heritage Site, largely managed by the National Trust, embraces a landscape of immense historical importance including the monumental features of the henge enclosure, Silbury Hill and West Kennet Long Barrow. Also highly distinctive in the **North Wessex Downs** landscape are the numerous bronze age round barrows, which together with iron age hill forts at Badbury and Liddington are clustered around **the Ridgeway**, known as Britain's oldest road. The downs are also noted for their collection of 'white horses' etched into the chalk escarpments including the ancient white horse at Uffington and the more recent at Broad Hinton and Hackpen Hill. A number of strategies and initiatives are in place which describe, and seek to conserve and celebrate, these internationally important areas:

- Avebury WHS Management Plan[29]
- North Wessex Downs Management Plan[30]
- Ridgeway National Trail[31]

The majority of the 345 **Scheduled Ancient Monuments** (SAMs) to be found across the wider study area form, or are closely associated with, green-spaces in rural, urban or peri-urban settings. SAMS are legally protected under the Ancient Monuments and Archaeological Areas Act (1979) as nationally important sites and monuments. Any works that would affect a SAM require Scheduled Monument Consent, granted by Government through DCMS and English Heritage.

Several SAMs lie within or on the fringe of Swindon Town. These include the extensive and well preserved remains of a Roman Villa at Groundwell Ridge at Blunsdon St Andrew.[32] Previously threatened by development, the area of land in which the remains are preserved was bought by Swindon Borough Council in 1999 and now forms a key green-space within Swindon's Northern Development Area. The site of the Roman settlement of Durocornovioum lies along the line of the A419 at Wanborough Figure C21. Strategically important, particularly in the context of Swindon's planned urban expansion, the site is recognised both as a key development constraint and an opportunity for GI provision as described in preliminary master plans for Swindon's Eastern Development Area[33]. The SAM within Swindon's Wichelstowe development will the preserved within the GI network proposed for the development area.[34]

Archaeological remains of lesser importance are detailed on the Wiltshire Sites and Monuments Record (SMR) and illustrated, for Swindon Borough, in Figure C21. Discussions held with stakeholders in preparation of this GI strategy indicate that many of these sites are of sufficient importance to merit SAM status.

The survival of buried archaeological remains can be difficult to predict with certainty.[35] The development planning process as detailed in PPG16 affords some protection for, as yet, unidentified archeological remains:

"Developers should in all cases include as part of their research into the development potential of the site, which they undertake before making a planning application, an initial assessment of whether the site is known or likely to contain archaeological remains"[36]

[29] English Heritage (2008) Avebury World Heritage Site Management Plan
[30] North Wessex Downs (2004) North Wessex Downs Management Plan
[31] National Trails (2005) The Ridgeway National Trail, Management Strategy 2005-2010
[32] English heritage (2005) Groundwell Ridge: A wonderfully well-preserved Roman villa saved form destruction-giving us access to Swindon's past. National Monuments Record centre, Kemble Drive Swindon.
[33] Swindon Borough Council, unpublished
[34] DPDS (2003) Swindon Southern Development Areas, Document 10 Landscape and Conservation Strategy Statement
[35] Swindon Borough Council (2004) Archaeology, Supplementary Planning Guidance
[36] Swindon Borough Council (2006) Local Plan

Conservation areas across Swindon are illustrated in figure C19. Whilst largely focused on the built environment, other characteristics conservation areas including trees and green spaces need to be considered in their designation:

"Conservation areas vary greatly, but certain aspects will almost always form the basis for a coherent assessment: the topography - for example, thoroughfares and property boundaries - and its historical development; the archaeological significance and potential; the prevalent building materials; the character and hierarchy of spaces; the quality and relationship of buildings in the area and also of trees and other green features.[37]

Conservation area status also makes special provision for trees in conservation areas which are not the subject of tree preservation orders. Subject to a range of exceptions, (including small trees and ones that are dead, dying or dangerous), anyone proposing to cut down, top or lop a tree in a conservation area is required to give six weeks' notice to the local planning authority. (Planning Policy Guidance 15: Planning and the historic environment). Listed building status also includes consideration of the landscape setting.

Three **Historic Parks and Gardens of Special Historic Interest** (English Heritage's Register of Parks and Gardens) lie within Swindon Borough: Queens Park, Town Gardens and Lydiard Country Park. All 3 parks are owned and managed by Swindon Borough Council and given a grade II status. Lydiard Park has recently undergone extensive restoration with support from the Heritage Lottery Fund. Other historic parks and gardens lying within the study area include the extensive and grade 11* listed sites at Buscot (owned and managed by the National Trust) and Tottenham House/Savernake (managed by the Forestry Commission).

Although inclusion of an historic park or garden on the English Heritage's register in itself brings no additional statutory controls, registration is a material consideration in planning terms (Planning Policy Guidance Note 15).

In registering such sites, English Heritage also seeks to increase awareness of their value and encourage those who own them, or who otherwise have a role in their protection and their future, to treat these special places with due care.[38] Many, if not all, of the sites across the study area are considered to be under sympathetic management.

The **River Thames**, navigable to Lechlade and closely associated with the canal network, provides a rich historical legacy:

- Associated settlements
- Built features along the river and canals many of which are listed eg bridges, locks,
- World War II stop line evident in the anti-tank gun pill boxes lining the River.
- Wider cultural significance providing inspiration for the arts and craft movement, Pre-Raphealite artists, many literary allusions and photographic collections[39]
- Historical and on-going management of North Meadow,

These and other cultural assets of the upper River Thames are described in detailed within landscape strategy for the Upper River Thames Heritage Project.

The historic lines of the **Wilts and Berks, 'Cotswolds' and North Wilts Canals** are illustrated in figure 7 (section 2) in water in sections, Ambitious plans are in place for the restoration and re-connection of the canal network across the area including the feasibility of restoring the link through Swindon as part of central area regeneration, re-creation of sections in major development areas such as Wichelstowe, and lines protected in local plan policies.

The **dismantled railway line** which once formed part of the Midland & South Western Junction Railway, now provides the basis of the River Ray Parkway Figure C9: a strategically important 'green-way' owned an managed by Swindon Borough Council and forming part of Sustrans Cycle Route 45.

[37] Planning Policy Guidance 15: Planning and the historic environment
[38] English Heritage (2008) www.english-heritage.org.uk
[39] Peters et all, (2005) The Upper Thames Heritage Project (Archaeology). University of Birmingham

The railway heritage of the River Ray Parkway is interpreted along the line of the route. The work of the Swindon and Cricklade Railway Society has seen sections of the line restored as a recreational steam railway to the north of Swindon. Plans for the Cricklade Country Way include completion of the steam railway link between Swindon and Cricklade. The remains of the Swindon to Highworth railway line is also visible in parts and has been proposed as another strategically important 'green-way' within the Great Western Community Forest Plan.

Imaginative plans for the re-development of **NMSI site at Wroughton** have been produced which will see the re-housing and re-presentation of the museum exhibits whilst recognising and preserving the historic importance of the site as a former World War II air base covering some 550 acres.

C3.2 Landscape character

The Landscape Character Network advocates the use of Landscape Character assessments in GI planning: 'A key principle of green infrastructure planning is that it should utilise the existing character of the landscape and enhance the sense of place. Landscape Character Assessment is an important tool to guide the planning and design of Green Infrastructure'.[40] In addition, principles proposed for GI planning by the University of Gloucestershire[41] include 'respect for the site' and 'local distinctiveness' which indicate the need to show consideration for local landscape character and local distinctiveness in GI planning.

The rich and diverse landscape character across the wider Swindon area is represented by five character areas.[42] In order of prominence these are:

- Upper Thames Clay Vales
- Cotswolds
- Mid Vale Ridge
- Berkshire and Marlborough Downs
- Thames and Avon Vales

The key issues to be addressed in conserving the landscape of a particular character area are summarised the respective character area statements.[42]

Finer detail is provided at a district level for Swindon[43] and North Wiltshire.[44] The North Wilts landscape assessment makes particular note of extensive remains of the medieval ridge and furrow field systems, which form part of the **Cricklade-Purton Area of Special Archeological Significance** (North Wilts Local Plan to 2011). The extent of ridge and furrow grassland was also described in a recent study for the Cricklade Country Way[45] as illustrated in Figure C22.

The study area overlaps with two designated Areas of Outstanding Natural Beauty: the Cotswolds and the North Wessex Downs. The primary purpose of AONB designation is to conserve and enhance the natural beauty of the landscape (National Association of AONBs). The respective management plans for each of the AONBs in the study area detail the plans, policies and means for their protection.

C4 Improved education and skills

The value of outdoor education in Swindon is recognised through a number of programmes across such as eco-schools, healthy schools and forest schools (Figure C23). Such initiatives can help to deliver the Government's requirement of sustainable schools framework and the learning outside the classroom manifesto.[46]

Grounds within schools and other educational establishments continue to provide the main opportunities for outdoor education across Swindon although significant barriers to their use remain particularly regarding the financial resources needed for the upkeep of school grounds and resources for the training and continual professional development of staff. In attempting to overcome such barriers, embedding outdoor learning into school's national curriculum activities requires high level 'buy-in' from key decision makers such as head teachers and governors.

[40] Landscape Character Areas (2006) Workshop: Landscape Character and Green Infrastructure. www.landscapecharacter.org.uk
[41] University of Gloucester (2006) Green Infrastructure Planning in Swindon Urban-Rural Fringe.
[42] Countryside Character Vol. 7&8:'South East & London' & 'South West', Countryside Agency 1999.
[43] Swindon Borough Council; Landscape Character Areas SPG (2004). P 1-2
[44] White Consultants; North Wiltshire Landscape Character Areas (2004)
[45] Kernon Countryside Consultants (2007). Cricklade Country Way. Green Infrastructure Survey. Great Western Community Forest
[46] Department of Education and Skills (2006) Learning Outside the Classroom - MANIFESTO

The Forest Schools approach to outdoor education, led by the Great Western Community Forest, is increasingly being adopted in Swindon. Forest School is an inspirational process offering children, young people and adults regular opportunities to achieve, and to develop self-confidence and self esteem through hands on learning opportunities in a local outdoor environment. 28% of schools across Swindon have members of staff trained as Forest School leaders and together with other individuals and organisations form a Woodland for Activity network.

The majority of schools across the area are within easy reach of open spaces, which suggests a readily available resource for outdoor learning. (Figure C12). However, constraints to the use of school grounds apply to the use of external green-spaces also exacerbated by increased health and safety concerns.

Away from the immediate school environment, good facilities and services are needed for schools to justify associated travel costs. There are many such opportunities across the area provided by organisations such as Swindon's Ranger Service, charitable bodies such as the Wiltshire Wildlife Trust, and the private sector such as at Roves Farm.

Beyond school-based education, wider 'outdoor' activities and training opportunities, utilising local greenspaces are provided by a range of organisations including BTCV, the Scouts, Duke of Edinburgh awards scheme etc.

C5. Environmental services and climate change adaptation and mitigation

GI can contribute to climate change adaptation and mitigation by providing:

Environmental services, primarily:
- pollution control (air, noise)
- climate control e.g. off-set heat island effect
- flood control

Opportunities for biodiversity adaptation (Appendix A)

Attractive and safe alternative to motorised travel for 'off road' walking or cycling (Appendix C1)

Opportunities for improvements to quality of life e.g. health benefits (Appendix C1, C4) NB PPS1

C5.1 Flood Control

Figures 6, section 2 and C24 illustrate level 2 and level 3 floodplains across the study area and Swindon respectively.

A strategic flood risk assessment for Swindon[47] carried out in accordance with national planning guidelines PPS25 gives a more detailed view of flood risk and its management across Swindon, including the mapping of increased flood risk associated with climate change. Relevant to GI planning, the SFRA indicates that through the development planning process, for areas of medium and high probability of flooding:

- developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development, and the appropriate application of sustainable drainage techniques.

- create space for flooding to occur by restoring functional floodplain and flood flow paths and by identifying, allocating and safeguarding open space for flood storage.

The Catchment Flood Management Plan for the Thames Region[48], provides a strategic overview of managing the long-term flood risk within a catchment over the next 50 to 100 years. The CFMP covers the fluvial part of the River Thames basin and its tributaries. The main approaches for management of flood risk in the Swindon area as described within the CFMP fall under two headings:

[47] Halcrow (2008) strategic flood risk assessment for Swindon
[48] Environment Agency (2007) Thames Region Catchment Flood Management Plan, summary document

For the River Thames: Undeveloped natural flood plain

The flood plain is our most important asset in managing flood risk:

- Maximising the capacity of the flood plain to retain water in these areas can have many advantages for people and the natural environment.
- Managed flooding of some areas of the natural flood plain will reduce the risk to some communities.
- preventing development that compromises the capacity of the flood plain to retain water. Future maintenance work on river channels should aim to increase the capacity of the flood plain.[48]

In addition, sustainable construction policy[49] notes that green roofs "will be positively considered as a flood risk management measure in the development planning context".

C5.2 Pollution control

Local air quality monitoring across Swindon has consistently shown from that tolerances of pollutant levels have not been exceeded. The most recent review has flagged up local issue for NOx pollutant in the Kingshill area.[50] Further afield neighbouring authorities areas have declared Air Quality Management Areas's (AQMA) although these lie outside the study area for this strategy eg in Abingdon.

Where AQMA action plans are in place elsewhere in the UK eg Camden, the role of green spaces and particular tree cover has been noted but land-use planning for greenspace have not been part of amelioration measures: the focus falling on cutting pollutant emission. However, urban/peri-urban trees are seen as having positive impact in ameliorating pollutants and this can be felt at can be at subtle levels/localised levels. The design of urban and peri-urban tree planting to improve the to lessen the adverse noise, pollution and wind-buffering from vehicles (urban screening) has been widely considered in Europe and the US.

"Work on pollutant uptake indicates that current designs of the urban environment and of specific developments might be significantly improved in the extent to which they remove pollutants from urban air.

Quite subtle changes such as proximity of planting to school playgrounds or the mix of deciduous and evergreen species might have rather significant impacts on health and other benefits…there are also potential benefits in trapping spray drift and other aerosols through windbreak incorporation in agriculture, roadside and industrial sites."[51]

C5.3 Climate control

Recent research in Manchester[52] has highlighted the importance of green-spaces and vegetated surfaces across urban environments in off-setting the heat island effect typically experienced in towns and cities. The urban heat island effect is felt whereby air temperatures in built up areas may be several degrees warmer than in the countryside. The modelling work carried out in the study suggested a 10% increase in vegetated cover within high density built up areas could off-set temperature rises expected as a result of climate change up to 2080. The research work also suggests responses to this opportunity include:

- Greening roofs in areas with a high proportion of buildings, for example in town centres.
- Preservation of existing green cover
- Opportunities to create new green-spaces through regeneration and urban development programmes. i.e the use of spatial planning of GI to 'climate proof' new developments in the Growth Areas.
- Creatively making the most of all opportunities, for example through the greening of roofs, building façades, and railway lines, street tree planting, and converting selected streets into greenways.

[49] Swindon Borough Council (2007) Swindon's Central Area Action Plan
[50] Swindon Borough Council (2006) Local Air Quality updating and Screening assessment
[51] Forest Research, Forestry Commission (n/d) Determining the benefits of woodland on air quality
[52] Gill et al (2007) Adapting Cities for Climate Change: The Role of the Green Infrastructure

Localised benefits of GI in moderating climate are also noted in the Manchester study:

- enriching the green cover in critical locations, for example the planting of shade trees in city centres, schools and hospitals.
- The importance of mature trees for the roles they play in providing shade and intercepting rainfall. Also, in times of drought they may provide a cooling function.

Work undertaken[53] in usefully summarises the urban climate scales needs to be acknowledged in considering urban heat island management policy, as illustrated in the table below.

The link between policy and urban climate scales:
Source: Greater London Authority (2008) Living Roofs and Walls, Technical Report : Supporting London Plan Policy

Physical Scale	Policy Scale	Urban Climate Scale
Individual Building /Street (façade and roof construction materials, design and orientation).	Building regulations and Building Control Urban design strategy Local Development Framework	1 – 10 m. Indoor climate and street canyon
Urban Design (arrangement of buildings, roads, green space)	Urban Design Strategy Area Action Plan Local Development Framework	10 – 1000 m. Neighbourhood scale, sub-urban variations of climate
City Plan (arrangement of commercial, industrial, residential, recreational and greenspace)	Sub Regional Spatial Strategy Regional Spatial Strategy	1 - 50 km. City/Metropolitan scale, UHI form and intensity.

The London study also describes the potential for the creation of green roofs and the planting of trees and vegetation as options for reducing the heat island effect within the city.

Whilst no local studies appear to exist for Swindon regarding temperature profiles and the use of vegetation for climate control, the principles contained within the Manchester study, and those proposed in London could be usefully applied to the Swindon context. Swindon's Core Strategy preferred options paper[54] notes the role of green roofs within the sustainable design and construction, as alleviating the urban heat island effect.

Further investigation of the role of green-roofs across Swindon is currently being investigated in order to put together detailed guidance document. Initial investigation suggests a paucity of the extent of vegetated surfaces particularly across Swindon Town Centre and green roofs could substantially increase vegetated surface cover across the town centre (Figure C20).

C6 Economic benefits of GI

The far-reaching economic benefits of GI have been described in studies elsewhere in the UK, particularly in north-west England where work by Ecotec (2008) provides a comprehensive appraisal of the potential economic gains of GI, ascribing economic value to eleven key benefits of GI:

- Climate Change adaptation and mitigation.
- Flood alleviation and Water Management.
- Quality of Place.
- Health and Well-being.
- Land and Property values.
- Economic growth and Investment
- Labour productivity.
- Tourism.
- Recreation and leisure.
- Land management and biodiversity.
- Products from the land.[55]

[53] Greater London Authority (2008) Living Roofs and Walls, Technical Report : Supporting London Plan Policy
[54] Swindon Borough Council (2008) Core Strategy – Preferred Options

"The Green Infrastructure of the North West already supports a wide and diverse range of jobs and businesses – worth up to £2.6bn GVA and 109,000 jobs as well as underpinning the quality of the Region as a place to live, work and do business in."[55]

In the South-west, the region's environmental capital is seen providing a strong basis for promoting the South West. Our environmental 'capital' is a key asset with the region enjoying, for example, the highest proportions of designated land, heritage coastline, and listed monuments of any of the English regions.[56] Protecting natural resources and enhancing our environment is a cross cutting these within the RE with green infrastructure being seen as a means to increase integration between environmental, social and economic regeneration.

More locally, GI related studies have also highlighted economic potential of landscape and green-spaces for example, through the Great Western Community Forest, and Cricklade Country Way studies.

Swindon's economic development framework promotes culture and environment as a means to making Swindon an attractive place to live and is one of the strands within Swindon's SMART approach to economic growth: addressing issues such as up-skilling, raising educational attainment, providing, solutions to climate change, creating a destination for people to enjoy etc. Further and more detailed local work however is required to gain a better and more comprehensive understanding of the contribution GI can and does make to the economic well-being of the Borough.

C6.1 An attractive environment in which to do business

Sitting between two areas of outstanding natural beauty, within easy reach of the River Thames and a largely rural hinterland, Swindon Town is surrounded by a diverse and beautiful landscape. Whilst no detailed studies are available, anecdotal evidence through the work of the Great Western Community Forest suggests high quality landscapes particularly to the south of Swindon are greatly valued by local businesses. The wider landscape and major parks in Swindon are also promoted as a key selling point within Swindon's Conference venue guide.[57]

Local businesses are also continually seeking opportunities to sponsor GI related work in meeting their corporate-social responsibility agendas and more specifically in trying to address issues of climate change. Sponsorship typically takes the form of funding or staff volunteer time to support community based activities such as tree planting, community based 'green' events including Forest Festival, wildlife habitat restoration schemes etc.. Major private sector employers including Honda, Nationwide, Castrol, Innogy, Thames Water have supported the work of organisations such as the Wiltshire Wildlife Trust, BTCV and the Great Western Community Forest in this way.

Plans for the regeneration of Swindon's town centre highlight the importance of GI in providing an attractive retail and residential environment.[58] The action plan notes the importance, of the treescape in addition to existing green-spaces and proposes the development of a green-spine and other improved connecting features.

Figure C25 uses adopted standards for green-space provision to illustrates the accessibility of local semi-natural green-spaces in relation to major employment areas. The figure clearly shows a paucity of local open-spaces for employees to enjoy across significant areas of employment including the town centre.

[55] ECOTEC (2008) The Economic Benefits of Green Infrastructure: A review of the evidence base for the economic value of investing in Green Infrastructure

[56] SWRDA (2006) Regional economic strategy for South West England 2006-2011

[57] Tourist Information Centre (2006) Swindon's Conference Directory

[58] Swindon Borough Council (2007) Swindon's Central Area Action Plan

C6.2 Tourism

Marketed as 'Where the Cotswolds meet the West Country',[59] the landscape surrounding Swindon is seen as an important selling point for the Town. Swindon's urban and peri-urban greenspaces are also actively promoted:
"Swindon, surrounded by some of the most beautiful countryside in Great

Britain, is a thriving town rich in industrial heritage, visitor attractions, the arts, parks and gardens, shopping and leisure facilities. The fascinating blend of old and new makes Swindon a great choice for a day out or a short break"[60]

Major tourism attractions and features are illustrated in figure 10 section 2. Published and projected visitor numbers (visits per year) for some of the key 'green' tourist attractions within easy reach of Swindon include:

Lydiard Park: 400,000
Ridgeway and Thames Path
Cotswold Water Park eg Keynes country park 200,000
Buscot and Coleshill 25,000-30,000
Roves Farm
Coate/Stanton/Barbury: 610,000
Avebury 250,000 visits/yr
White Horse Hill 250,000
Cricklade Country Way (projected)
Science museum, Wroughton: 500,000 visitors/yr (projected)

The Cotswold Water Park is Britain's largest and still expanding water park and is increasingly being recognised as a major tourist destination for formal and informal sports and recreation. As the amount of accommodation within the Water Park increases and the area is promoted as a tourist destination the next ten years is likely to see more development proposals such as new water sports centres, angling venues, new retail outlets and activities for families. The lakes are used for fishing (64), holiday accommodation (23), nature reserves (18), inland beach (1), park (3), hotel (1), sailing / windsurfing (9), water skiing (10), water ski-tow (1), corporate hospitality (1) lakes with no after use (32).

C6.3 Creating and managing GI

Employment through development, management and use of GI provides many and a diverse range of jobs (although as yet un-quantified) across Swindon and its surrounding landscape: including private, charitable, and local authority estate/ farm management, up-keep of rights of way and recreational routes, waterways management, canal and railway restoration, protected landscapes management, organisations and initiatives such as Community Forest, Wiltshire Wildlife Trusts, Woodland Trust, National Trust, BTCV.

Creation and management of GI can also provide opportunities for farm diversification into areas such as recreation and education, woodlands and biomass. Roves Farm to the east of Swindon is a very good example whereby a local farmer has established an education and visitor centre within easy reach of Swindon and is currently developing plans for renewable energy generation.

The importance of the horse racing industry has been noted within the North Wessex Downs AONB. More broadly, the growth in the number of pony paddocks and horse ownership around Swindon has been noted in several studies.[61] Further work is needed to understand the economic potential and needs of horse riding in the area.

[59] Swindon Borough Council (2008) Core Strategy – Preferred Options
[60] Swindon Borough Council (2006) Swindon, Official Visitor Guide 2006/2008
[61] Kernon Countryside Consultants (2007). Cricklade Country Way. Green Infrastructure Survey. Great Western Community Forest & AJT Consultants (2002) Cycling, Walking and Horse Riding Demand Study for the Great Swindon Area

Appendix D: Creating GI networks across Swindon

D1 Strategic Networks

(Section 5.5 Figure 15, C17)

The Upper River Thames corridor

Main features and characteristics

The Upper River Thames Corridor comprises the River Thames and its associated floodplain. The river, navigable to Lechlade, is a major recreational asset for both formal an informal recreation. The Thames Path National Trail runs alongside the river.

The river and its floodplain form a contiguous chain of Strategic Nature Areas: noted particularly for neutral grassland, floodplain meadow, and standing water. Protected species closely associated with the river include otter and water vole. The National Nature Reserve at North Meadow is of international importance as one of the finest examples of lowland meadow in Britain. Protected as a Special area of Conservation, the meadow supports Britain's largest population of snake's head fritillary. The flowers create a spectacle, which draws visitors from across the world.

To the west of Lechlade the landscape is undergoing wide-scale change as the Cotswold Water Park expands in lieu of gravel extraction. The Water Park itself is a site of national significance for water based tourism and recreation. As the UK's largest inland body of open water, the Park is also of international importance for biodiversity.

The surrounding landscape is rich in history and of wider cultural significance closely connected with the River Thames, including the historic settlements of Cricklade and Lechlade, National Trust's Buscot estate, the river itself as a navigation and defence line during Second World War, Kelmscot Manor and the pre-Raphaelite artists.

The historic lines of the Thames and Severn Canal and the North Wilts Canal meet north-west of Cricklade and connect to the Thames navigation at Lechlade.

Protecting and enhancing the Upper River Thames Corridor	
Activities and Initiatives	**Planned work/ further information available**
Continued expansion of the Cotswold Waterpark as a centre of national and regional of importance for tourism, recreation and biodiversity Upkeep and enhancements to Thames Path National Trail. Restoration of the North Wilts canal and Thames and Severn canal network forming a junction with the River Thames at Lechlade. Protection, restoration and celebration of the landscape heritage associated with the River Improving accessibility to and use of the River Thames for recreation and tourism. Protection and enhancement of biodiversity using Strategic Nature areas as a focus for a landscape scale restoration. Increase woodland cover to provide a strong framework within the surrounding landscape Protection and management of the Thames floodplain as a main approach to managing flood-risk Management of Buscot and Coleshill estates	Scott Wilson (2008) Strategic Review and Implementation Plan for the Cotswold Water Park Cotswolds Water Park Society (2007) Cotswolds Water Park Biodiversity Action Plan 2007-2016 National Trails (2006) Thames Path National Trail, Management Strategy 2006-2011 GWCF (2007) Upper River Thames Heritage Strategy Thames Water Way Alliance (2006) Thames Waterways Plan (2006-2011). South West Observatory (2005) South West Nature Map Local Biodiversity Action Plans (Swindon Wiltshire, Gloucester) GWCF (2002, 2004) Forest Plan Environment Agency (2007) Catchment Flood Management Plan for the Thames Region National Trust www.nationaltrust.org.uk

The River Ray Corridor and Sustrans Route 45

Main features and characteristics

Sustrans cycle route 45 forms part of the national cycle network connecting Swindon with Cricklade and the Cotswold Water Park to the north and Marlborough and Savernake Forest to the south. Large sections of are currently off-road and provide good opportunities for recreation and commuting.

To the north of Swindon, and starting at Mouldon Hill Country Park, plans for the development of the Cricklade Country Way will see the re-instatement of the North Wilts canal, and the Swindon to Cricklade steam railway running alongside an improved section of off-road cycle track and set within a much strengthened wooded landscape.

As the corridor passes through Swindon, the River Ray Parkway, a multi-use green-way, links major open spaces at Mouldon Hill Country Park, Berriman's Wood, Shaw Forest Park, Rivermead and through to Coate Water Country Park. The Parkway is disjointed and difficult to navigate in sections in the Great Copse and Mannington areas.

Coate Water Country Park a 'green flag' country park is a major hub at the southern end of River Ray Parkway. Also designated as a SSSI and local nature reserve, Coate Water is part of a chain of Strategic Nature Areas stretching south-west across the North Wessex Downs AONB. Burderop Woods SSSI is also part of the same chain of SNAs. Whilst largely inaccessible to the public, Burderop Woods remain the largest and most significant ancient semi-natural woodland in Swindon Borough.

The River Ray, as a main tributary to the River Thames rises to the south of Swindon and discharges into the Thames. The River Ray has been identified as a county wildlife site and supports protected species including otters. The Ray is also part of the Strategic Nature Areas embracing Shaw Forest Park/Rivermead complex and connecting to Freeth's Wood and meadows to the north.

The corridor as it passes through Swindon is under enormous pressure from development with planned extensions to the north of Swindon at Tadpole Farm and Moredon hill, and Wichelstowe and Commonhead to the south.

South of Coate Water and crossing the M4 motorway cycle route 45 continues connecting through the North Wessex Downs AONB to Chiseldon, Marlborough and Savernake Forest. Savernake Forest, owned by the Earl of Cardigan and his family Trustees, is Britain's largest privately owned Forest (c.4500 acres), is a SSSI and registered Historic Park as well as a major visitor attraction.

Protecting and enhancing the River Ray Corridor and Sustrans Route 45	
Activities and Initiatives	**Planned work/ Further information available**
Creation and Development of the Cricklade Country Way connecting north-west Swindon to Cricklade and the Cotswold Water Park Development of Mouldon Hill as a new Country Park on the north-west of Swindon. Ensuring new development areas protect and enhance key GI assets and improve connectivity throughout the corridor Protection of, and enhancements to, Coate Water Country Park as major open space Enhance the River Ray Parkway as a major strategic green way running through Swindon Protection and enhancement of biodiversity using Strategic Nature Areas as a focus for a landscape scale restoration	Great Western Community Forest (2007) Cricklade Country Way GI Plan Mouldon Hill Country Park Landscape Master Plan, Swindon Local Plan, Cricklade Country Way Swindon Local Plan, Core Strategy, Master Plan for Wichelstowe. Parks and Open Space Strategy (emerging), Landscape master plan for Coate Water (in draft) GWCF (2002, 2004) Forest Plan Detailed plans for the River Ray Parkway need to be prepared.

Protecting and enhancing the River Ray Corridor and Sustrans Route 45	
Activities and Initiatives	**Planned work/ Further information available**
Management and improvements to Sustrans cycle route 45 Flood plain management, flood risk management. Management and upkeep of Savernake Forest Increase woodland cover in line with the objectives of the Great Western Community Forest.	Cricklade Country Way Plans, Sustrans National Cycle Network Thames region catchment flood management plan, Swindon strategic flood risk assessment Forestry Commission GWCF (2002, 2004) Forest Plan

The Ridgeway

Main features and characteristics

As a National Trail, the Ridgeway is promoted as a strategic long distance route for walkers and cyclists as well as providing more local opportunities for informal recreation

The Ridgeway crosses the stunning scenery of the North Wessex Downs, an ancient landscape and protected as an Area of Outstanding Natural Beauty. Distinctive in the landscape and clustered around the Ridgeway are numerous bronzes age burial mounds or round barrows, together with Iron Age hill forts at Barbury, Liddington and Ashdown House.

Major visitor attractions of national and international historic importance lie along the line of the Ridgeway: White Horse Hill at Uffington, Ashdown House Barbury Castle, and Avebury World Heritage Site.

Avebury World Heritage Site itself embraces a landscape of immense historical importance spanning over 6 millennia and including the iconic sites of the Avebury Henge enclosure and Silbury Hill.

Contiguous Strategic Nature Areas, described predominantly for their potential to host herb rich chalk grassland, follow the scarp of the North Wessex Downs. Designated areas for wildlife within the SNAs include Barbury Castle Local Nature Reserve and Fyfield Down National Nature Reserve. The latter contains Britain's largest collection (25,000) of naturally deposited sarsen stones supporting unusual assemblages of wildlife. The source of River Kennet chalk stream is attributed to Silbury Hill within the Avebury WHS.

Protecting and enhancing the Ridgeway corridor	
Activities and Initiatives	**Planned work/ further information available**
Conservation and management of the Avebury World Heritage Site. Management of Barbury Castle Country Park as a country park, local nature reserve Conservation and management of Ashdown House. Conservation of the River Kennet Upkeep and enhancements to Ridgeway National Trail.	Avebury World Heritage Site Management Plan (English Heritage) Site management plan, Swindon Parks and Open Spaces Strategy (under development) National Trust www.nationaltrust.org.uk Action for River Kennet www.riverkennet.org/agm_2006.php

Protecting and enhancing the Ridgeway corridor	
Activities and Initiatives	**Planned work/ further information available**
Landscape scale restoration of chalk grassland and associated habitat framework within identified SNAs and CTAs Management of protected sites and habitats in line with statutory and policy requirements. Protection and management of the North Wessex Downs Area of Outstanding Natural Beauty.. Increasing woodland cover in line with Great Western Community Forest Objectives	Ridgeway management Strategy (2005-2010) (also see ROWIP for Swindon) SW nature map, Local Biodiversity Action plans SMR, SSSI /NNR/LNR designations. North Wessex Downs (2004) North Wessex Downs Management Plan Great Western Community Forest (2002) Forest Plan

D2 Sub-regional networks (Figure 16)

Swindon to Highworth Corridor

The corridor follows the line of the dismantled railway connecting Swindon Town to Highworth. The dismantled railway, designated as a County Wildlife Site, has been proposed as a strategically important greenway in existing plans including the Great Western Community Forest Plan, Swindon's Greenways study and Swindon Local Transport Plan.

The landscape along the corridor is undergoing extensive landscape improvements including large scale woodland planting and hedgerow enhancement schemes on private land.

Highworth Countryside Park (or Pentylands) envelops the western edge of Highworth with nearby Wrag barn golf course to the south of Highworth

The south of the corridor is anchored around Stratton Woods, owned and managed by the Woodland Trust and Stanton Country Park owned and managed by Swindon Borough Council. Stanton Park, a designated Local Nature Reserve includes Stanton Great Woods, one of the few easily accessible ancient semi-natural woodland within Swindon. Feasibility studies are currently being carried out for the expansion of Kingsdown crematorium, which sits between Stratton Woods and Stanton Park.

The A419 trunk road forms a major barrier the between the southern end of the corridor and Swindon's urban green-space and cycle network.

Plans have been approved for the development of the 'Triangle site' as a major employment area at the southern end of the corridor and off-site landscape mitigation measures are being planned in-line with the aims of the Great Western Community Forest in relation to the development.

Protecting and enhancing the Swindon to Highworth Corridor	
Activities and Initiatives	**Planned work/ further information available**
Further development of Highworth Countryside/Nature Park.	Great Western Community Forest Plan (2002), Detailed plans need to be developed.
Creation of off-road cycling, walking and horse riding route following, the line of the dismantled railway between Swindon and Highworth.	Great Western Community Forest Plan, Swindon Local Transport Plan
Strengthening the link between, and facilities at Stratton and Stanton as major publicly accessible woodland	Great Western Community Forest Plan (2002), Detailed plans need to be developed.
Protection and management of habitats along the dismantled railway line as a County Wildlife Site.	Great Western Community Forest Plan, Swindon Local Transport Plan
Creation of a cycle and walking link crossing the A419 to link into greenspace network of north-east Swindon.	Detailed plans need to be developed.
Wider landscape improvements and increase in woodland planting in line with the objectives of the Great Western Community Forest	Proposals being developed, management plans for Stanton Park (SBC) and Stratton Woods (WT)
	Swindon BAP, Wiltshire and Swindon biological records centre
	Proposals and feasibility studies currently being scoped by the Great Western Community Forest
	Great Western Community Forest Plan (1994,2002)

The Braydon Forest

The ancient woodlands of the historic royal hunting forest of Braydon form a network of Strategic Nature Areas linking to the Upper River Thames corridor,

Major sites in the network include:

Blakehill Nature Reserve, a former World War 11 airfield and an extensive area of lowland grassland owned and managed by the Wiltshire Wildlife Trust.

Somerford common, owned and managed by the Forestry Commission is a key area for butterfly and moth conservation

Webb's Wood, owned by the Forestry Commission and noted for butterflies.

Ravensroost is a Wiltshire Wildlife Trust nature reserve, which includes the largest area of semi-natural woodland in the Braydon Forest, together with wildflower-rich hay meadows and fields, which are being restored to benefit wildlife.

Lydiard Park, owned and managed by Swindon Borough Council.

An extensive network of public footpaths and bridleways connect between the sites and to Purton, Wootton Basset and Swindon.

The area is home to Wiltshire Wildlife Trust's living landscapes project, Rebuilding Biodiversity in North Wiltshire: a landscape scale restoration initiative aimed at creating an ecologically robust network of wildlife habitats.

Protecting and enhancing the Braydon Forest	
Activities and Initiatives	**Planned work/ further information available**
Protection and conservation of key sites and habitats, access improvements and provision of educational facilities at Blakehill	Site management plans
Protection and enhancement of biodiversity using Strategic Nature Areas as a focus for a landscape scale restoration.	Wiltshire Wildlife Trust's living landscapes programme.
Improvements to the rights of way network to promote better access between and to sites, Swindon, local settlements and to the Cricklade Country way	E.g. Cricklade Country Way Green Infrastructure Plan.
Woodland creation and management in line with objectives of the GWCF.	GWCF (1994, 2004) Forest Plan
Upkeep and management of Lydiard Park	Lydiard park Management Plan

River Cole Corridor and the Wilts and Berks Canal to Shrivenham

The River Cole, a main tributary to the River Thames, runs between Swindon and the Upper Thames corridor via Roves Farm and the National Trust estates at Buscot and Coleshill. The River has previously undergone major restoration works at Coleshill involving re-meandering and other naturalisation of the channel and associated riparian habitats. The river, also noted as a County Wildlife Site is only accessible in parts via the public rights of way network.

The River, its tributaries, and associated floodplain are helping to define the network of greenspaces being incorporated into plans for Swindon's Eastern Development Area (see section 6.2 for further detail). The western boundary of the EDA is marked by the A419, which acts as a major barrier to green-space linkage back into Swindon. West of the A419 and within urban Swindon, the green spaces along the Richard Jeffries Parkway provide a valuable link to Coate Water Country Park which sits at the southern end of the corridor.

Roves Farm is a 166 hectare, working, mixed, open farm with a visitor centre open to the general public which also caters for school groups. Plans for renewable energy and heat generation at the farm are being actively pursued. Roves Farm also sits alongside the Forestry Commission owned Nightingale Woods: an extensive and newly developing woodland and key site within the Great Western Community Forest. The Roves Farm/ Nightingale Woods complex has been identified as a Strategic Nature Area detailed within the South-west Nature Map.

The historic line of the Wilts and Berks canal connects the southern edge of Swindon with green-spaces to the south of Shrivenham. The line of the canal is protected within Swindon local plan policy.

Protecting and enhancing the River Cole Corridor and the Wilts and Berks Canal to Shrivenham	
Activities and Initiatives	**Planned work/ further information available**
Master Plans for Swindon's Eastern Development Area, will determine the GI networks within the EDA and will be centred around the River Cole and its tributaries. Restoration of the Wilts and Berks canal through the EDA and extending to Shrivenham. Protection and enhancement of biodiversity using Strategic Nature Areas and Conservation target areas as a focus for a landscape scale restoration Protection and enhancement of the River Cole (county wildlife site) as a wildlife corridor. Management and development of Roves Farm and strengthening of its link with Nightingale woods. On-going Management of Nightingale Woods Increasing woodland cover in line with the objectives of the Great Western Community Forest On-going management of the Buscot and Coleshill estates.	EDA master plan (under development) Wilts and Berks Canal Trust South West Observatory (2005) South West Nature Map Wiltshire Wildlife Trust (2005) Swindon Biodiversity Action Plan Forestry Commission http://www.forestry.gov.uk/ GWCF Forest Plan (1994, 2002) National Trust www.nationaltrust.org.uk

Wilts and Berks Canal to Wootton Basset

Extending from the southern edge of Swindon's Wichelstowe development, significant sections of the Wilts and Berks have been restored along its line to Wootton Bassett.

The line of the canal runs to the south of Studley Grange landfill site. Following completion of tipping operations, site plans include restoration into mixed farmland and woodland.

Existing woodlands within the corridor include the Woodland Trust's Monks rest, and private woodland at Great Chaddington Farm. Both woodland are around 10 years old and accessible to the public.

The lane-side verges leading to Great Chaddington Farm are noted as County Wildlife Sites and have historical importance as grazing pasture for sheep. Morningside Farm, until recently owned by North Wilts District Council is also noted as a County Wildlife Site.

South of Wootton Basset, Brynards Hill open space and the adjacent Templars Firs, provide a significant open space on the southern edge of Wootton Bassett.

Protecting and enhancing the Wilts and Berks Canal corridor to Wootton Basset.	
Activities and Initiatives	**Planned work/ further information available**
Restoration of the Wilts and Berks canal. Open space provision and off-site landscape enhancements for the Wichelstowe development Maintain and improve access to Chaddington woods and Monks Rest woodland Increase woodland cover in line with objectives of the Great Western Community Forest Management of and enhancements to open spaces to the south of Wootton Basset: Templars Firs and Brynards Hill. Restoration of Studley Grange Landfill site	Wits and Berks Canal Trust Wichelstowe Nature Conservation Management Strategy (see section 6.2 figure 19) Woodland Trust GWCF Forest Plan (1994,2002) NWDC open space audit and assessment Restoration plans for Studley Grange Landfill site

Wroughton to Barbury Castle

Planned green-links between the Wichelstowe development area and Wroughton follow the line of the 'Wroughton Brook', which continues through the village linking other local green-spaces.

Extensive woodland network is beginning to develop to the south of Wroughton stretching up onto the North Wessex Downs. Privately planted woodland to the south of Wroughton links to newly planted woodland at the Science Museum and Clouts Wood (Ancient Semi-natural woodland). Clouts Wood and adjacent Markham banks SSSI were recently acquired by the Wiltshire Wildlife Trust. and form part of the wider Strategic Nature area identified along the downland scarp.

Recent tree planting work at the NMSI site is part of large scale plans for the creation of a large scale visitor attraction and re-housing of museum stock.

To the south of the Museum and on the second tier of the down-land is Barbury Castle, Iron Age hillfort, Country Park, Local Nature Reserve, sitting along the Ridgeway National Trail.

Protecting and enhancing the Wroughton to Barbury Castle corridor	
Activities and Initiatives	**Planned work/ further information available**
Off-site landscape enhancements for the Wichelstowe development at Blackhorse Farm Protection and enhancement to the green link through Wroughton following the line of the brook Development of the National Museum of Science and Industry Improvement to row links between Science museum and Barbury castle Protection, management and enhancement to Barbury castle Protection and enhancements to Clouts Wood and Markham Banks Protection and enhancement of	See section 6.2, Figure 19 Vision for Wroughton (2008) National Museum of Science and Industry No further information at present. Site management plans for Barbury Castle. Wiltshire Wildlife Trust www.wiltshirewildlife.org

D3 local urban and peri-urban networks

Existing Networks

Existing GI networks across Swindon Town are centred around major public open-spaces, predominantly under the ownership and management of Swindon Borough Council as detailed in the table D3.1.

Table D3.1: Local GI networks	**Illustration**
River Ray Parkway- Mouldon Hill to Mannington Rec	Figure D1
Coate Water and the Lawns	Figure D2
Sevenfields and Groundwell Ridge	Figure D3
Stratton Woods and Stanton Country Park	Figure D4

Objectives for the protection and enhancement of Swindon's urban GI networks reflect the generic principles for GI planning outlined in section 5.3 of the main strategy document and include to:

- Ensure major open spaces and other green-spaces are of high quality and fit for purpose: based on an increased understanding of community needs.
- Create new areas of GI to meet local standards of provision.
- Create a new country park at Mouldon Hill.
- Improve inter-connectivity of open spaces:
- Protect and manage best areas for wildlife: bringing county wildlife sites into active management and achieving, where possible, favourable status for sites of special scientific interest.
- Protect and celebrate sites of historical/cultural importance.
- Enhance wildlife habitats throughout the urban network associated with key sites and their interconnecting greenspace/linear links:
    - o Recognising the importance of Swindon's "Street- scene", incidental open spaces and gardens.
    - o Focussing on key green corridors such as the Hreod Burna brook, Richard Jeffries Parkway, and canal routes
    - o Naturalising existing open spaces where appropriate
    - o Increasing green-space across the town through the creation of green-roofs
    - o Increasing tree-cover in-line with objectives of the Great Western Community Forest.
- Ensure local people have opportunities to be involved in the planning, care, use and celebration of local open spaces.

Appendices Figures

Appendices Figures

Appendices Figures	Title
C1	Recreational Links and Sites
C2	Local Open Space - Accessibility
C3	Distribution of Semi Natural Green Space
C4	Angst Gap analysis of accessible semi natural site of 2 Ha+
C4.A1	IMD overall (2007) & Gap analysis of accessible semi natural sites of 2 Ha+
C4.A2	Health and Deprivation (IMD 2007) & gap analysis of accessible semi natural sites of 2Ha + (angst)
C4.B	Angst Gap analysis of open space sites of 2Ha+
C5	Angst Gap analysis of accessible semi natural sites of 20Ha+
C6	Angst Gap analysis of accessible semi natural sites of 100Ha+.
C7	Angst Gap analysis of accessible semi natural sites of 500Ha+
C8	Quality of Local Open Space (Open Space Audit 2004)
C9	Strategic Linear Routes
C10	Swindon Town centre Bridleway and footpaths
C11	Urban Cycle Network
C12	Schools and Green spaces
C13	Employment and retail
C14	Community Map
C15	Sites of Ecological Importance
C16	SSSI Condition Survey
C17	Strategic Nature Areas and Conservation Target Areas
C18	Gaps in Local GI Clusters
C19	Swindon Central Area (Existing)
C20	Potential Green Roofs (Swindon's Town Centre)
C21	Cultural Heritage - Borough
C22	CCW Indicative extent of ridge and furrow grassland
C23	Educational Outreach
C24	Waterscape Borough
C25	Retail and Employment (Local Level Angst assessment)
C26	Agricultural Schemes
C27	Tranquil Areas
D1	River Ray Parkway
D2	Coate Water and The Lawn
D3	Sevenfields
D4	Stratton Woods and Stanton Park

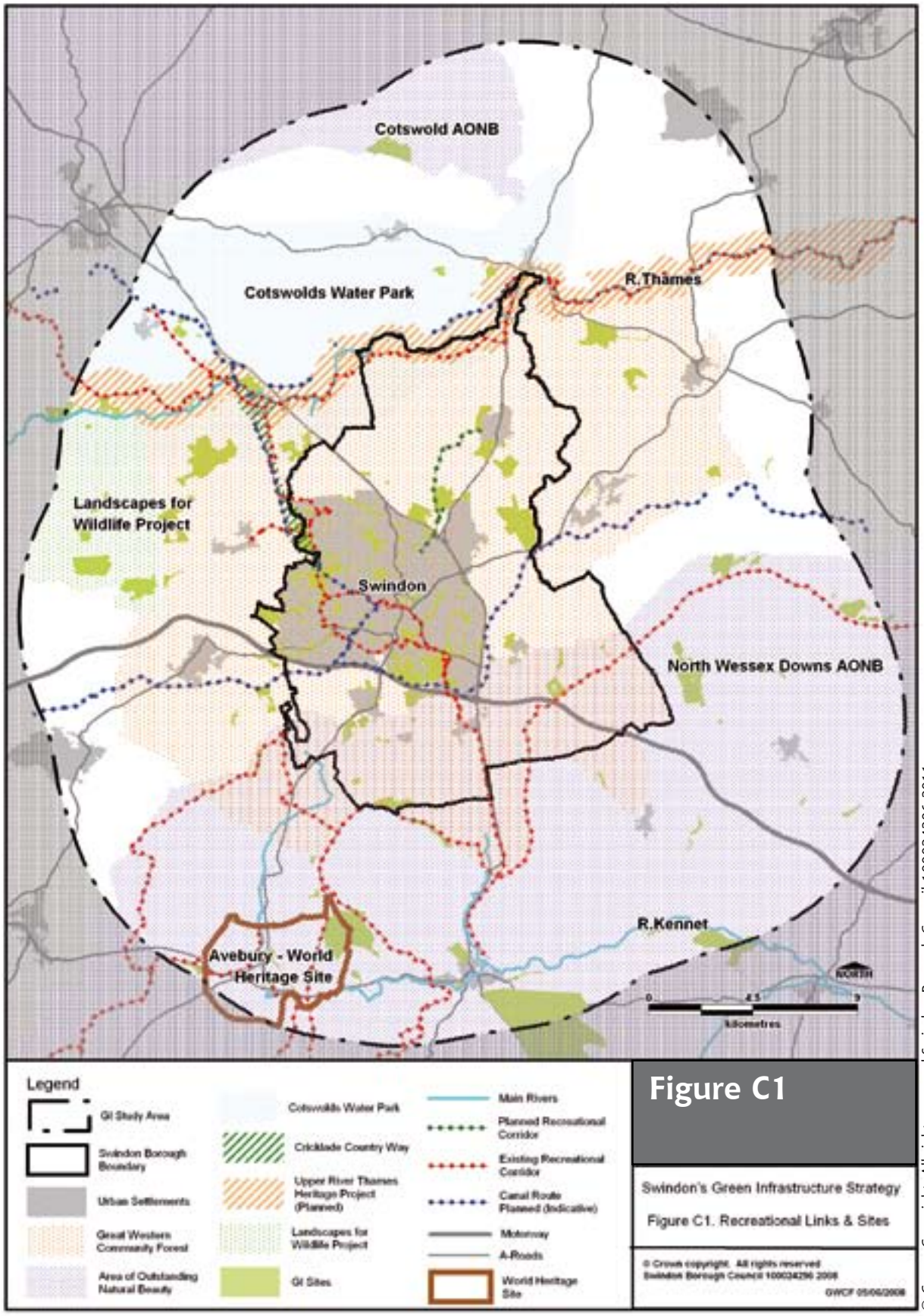


Figure C1

Swindon's Green Infrastructure Strategy

Figure C1. Recreational Links & Sites

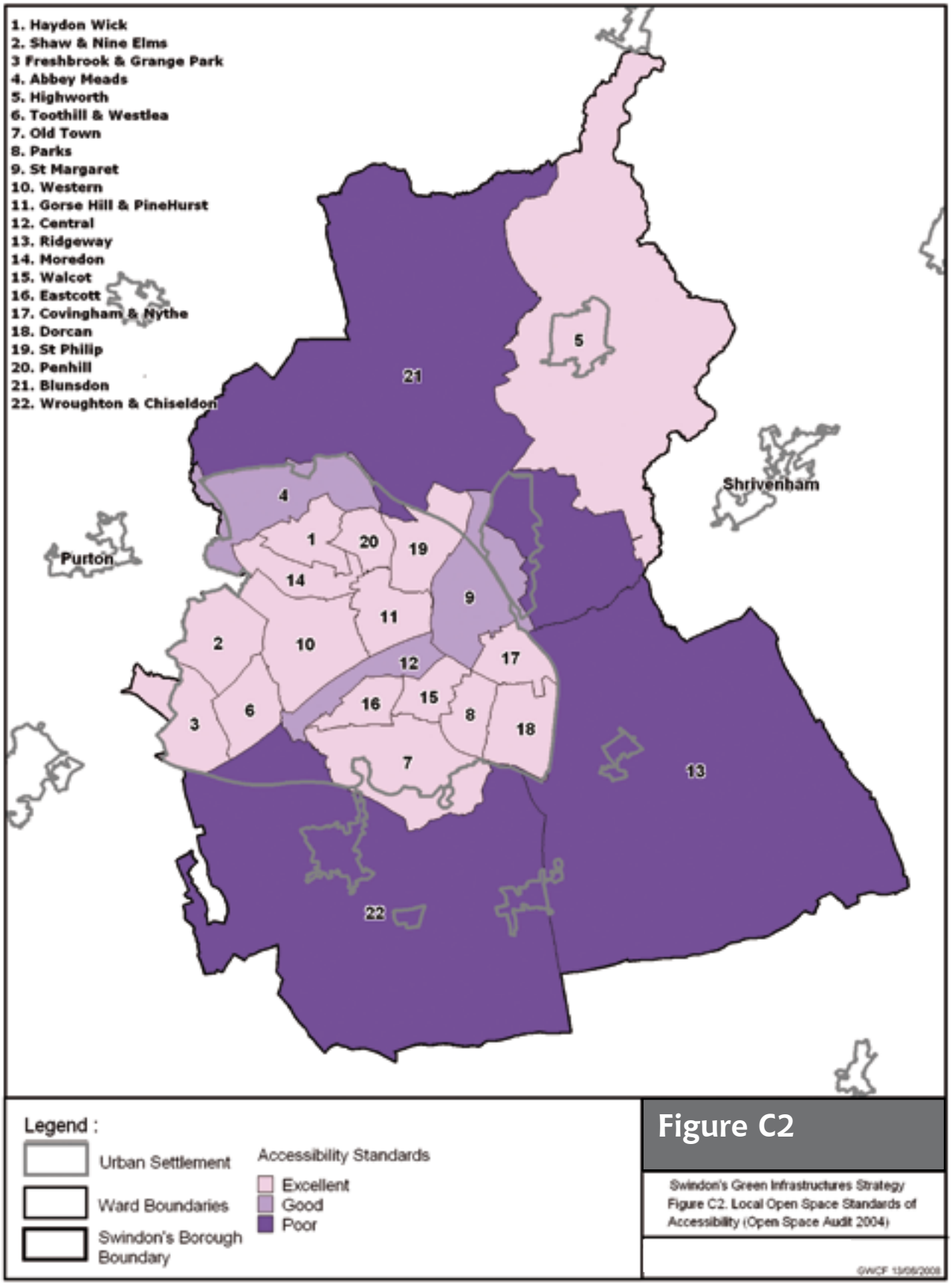
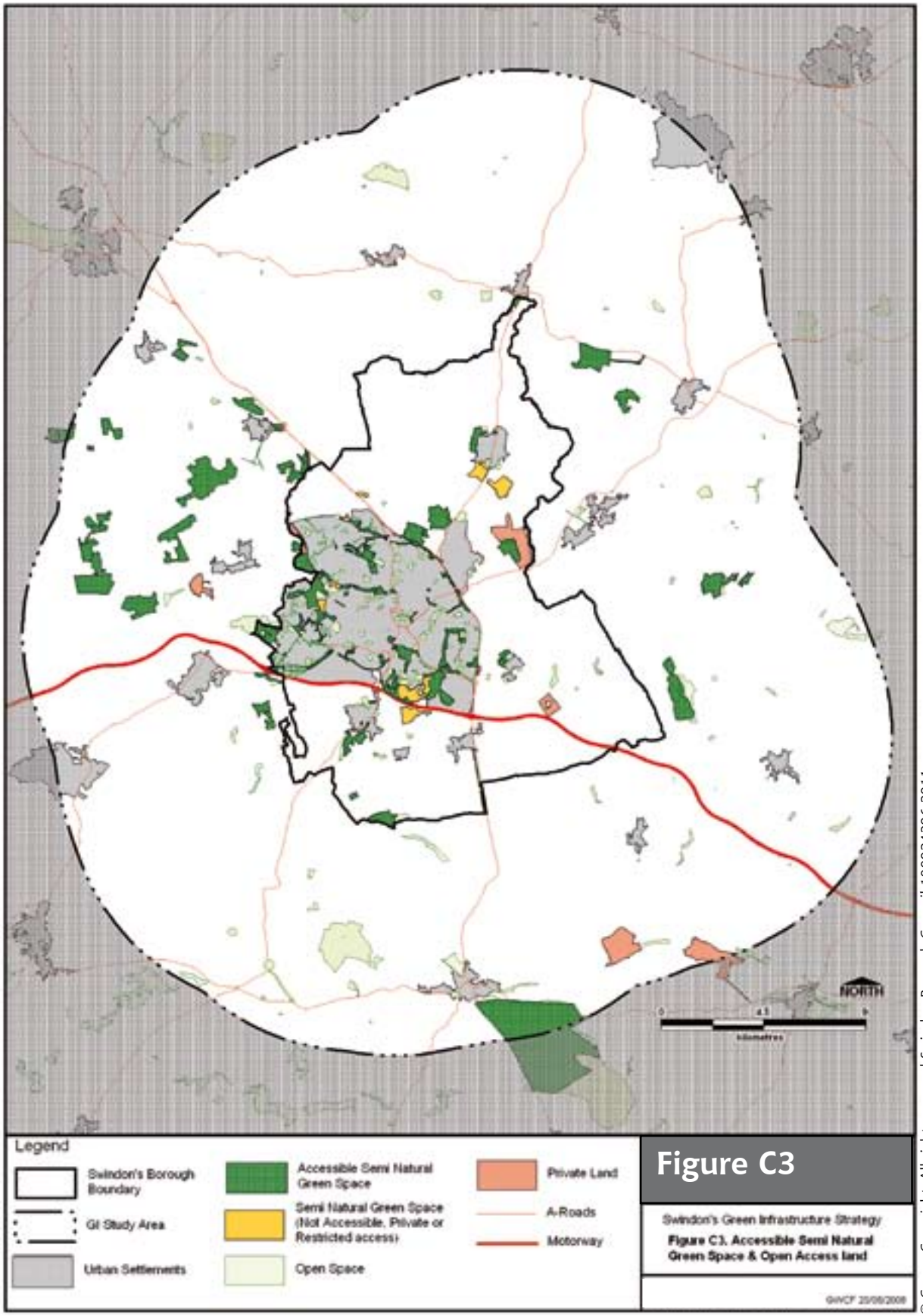


Figure C2

Swindon's Green Infrastructures Strategy
Figure C2. Local Open Space Standards of Accessibility (Open Space Audit 2004)



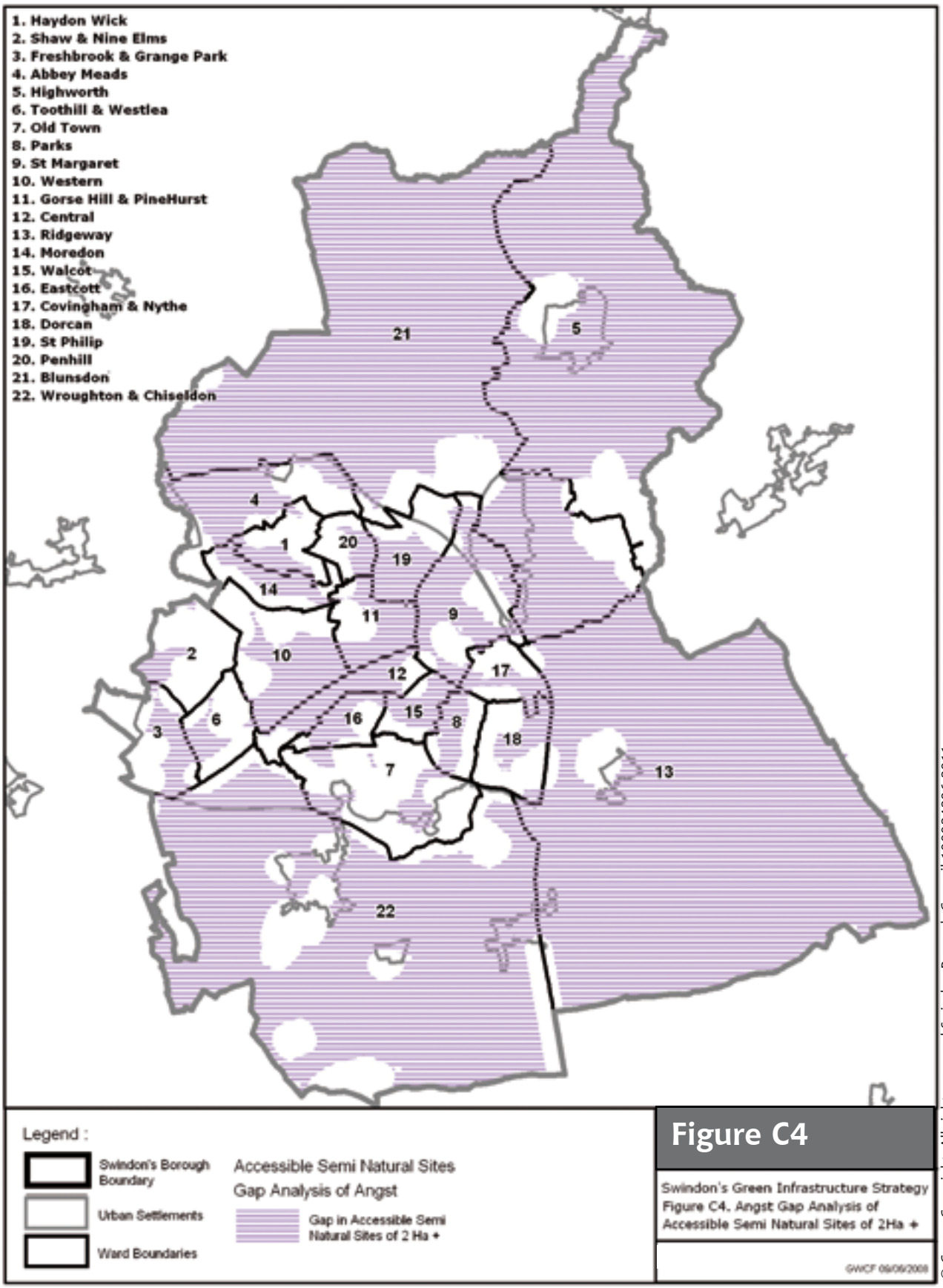


Figure C4

Swindon's Green Infrastructure Strategy
Figure C4. Angst Gap Analysis of Accessible Semi Natural Sites of 2Ha +

GWICF 09/06/2009

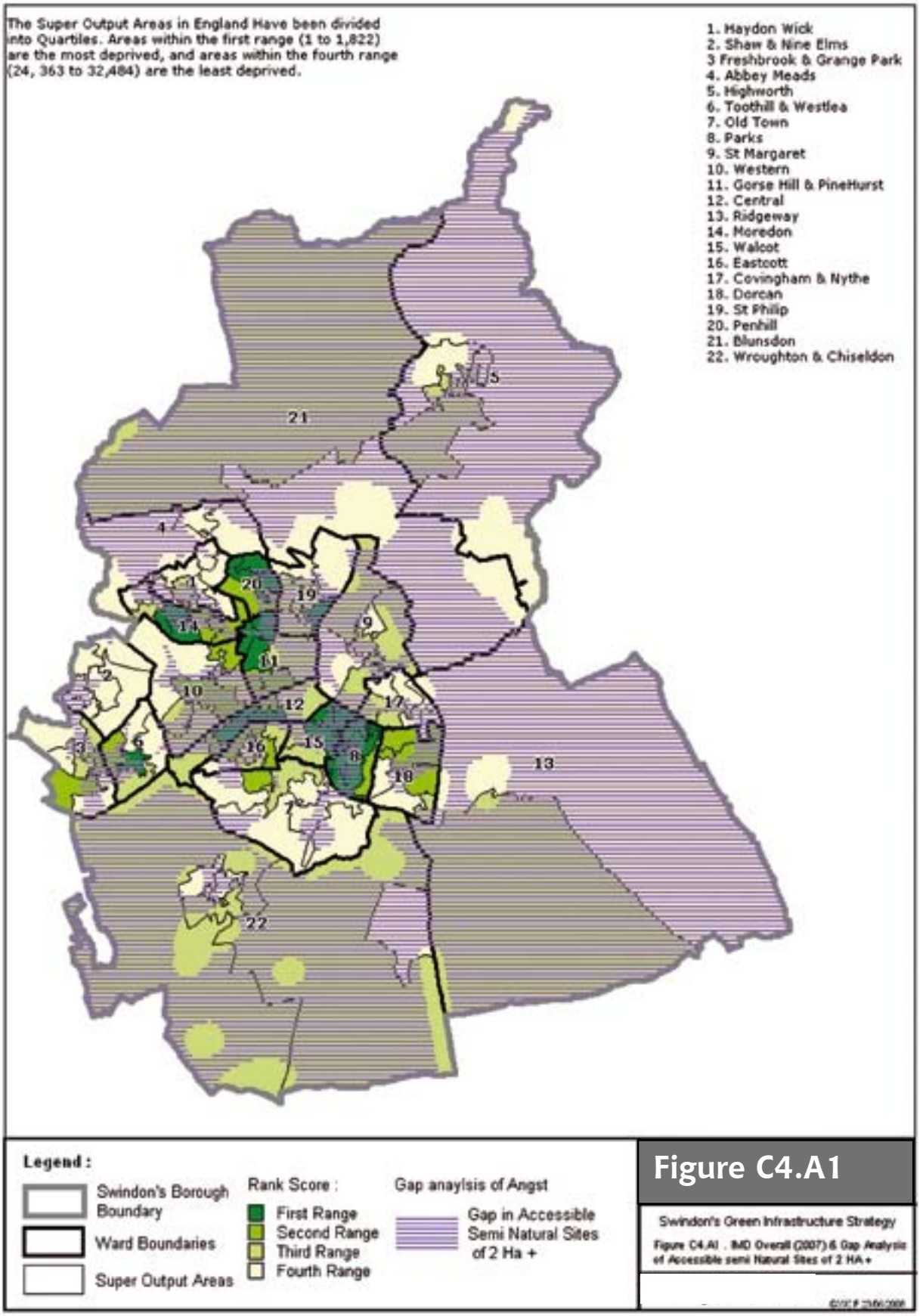
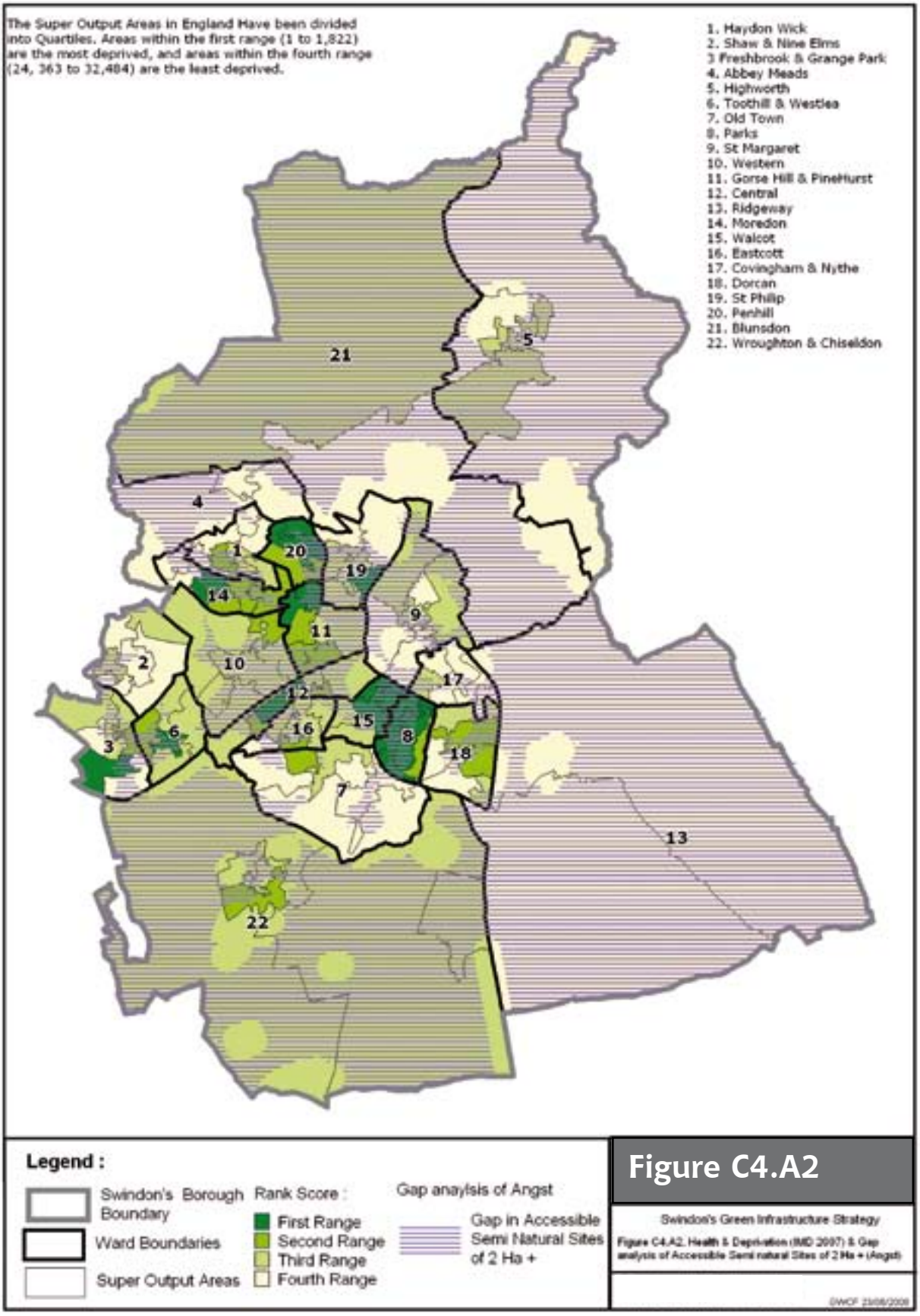
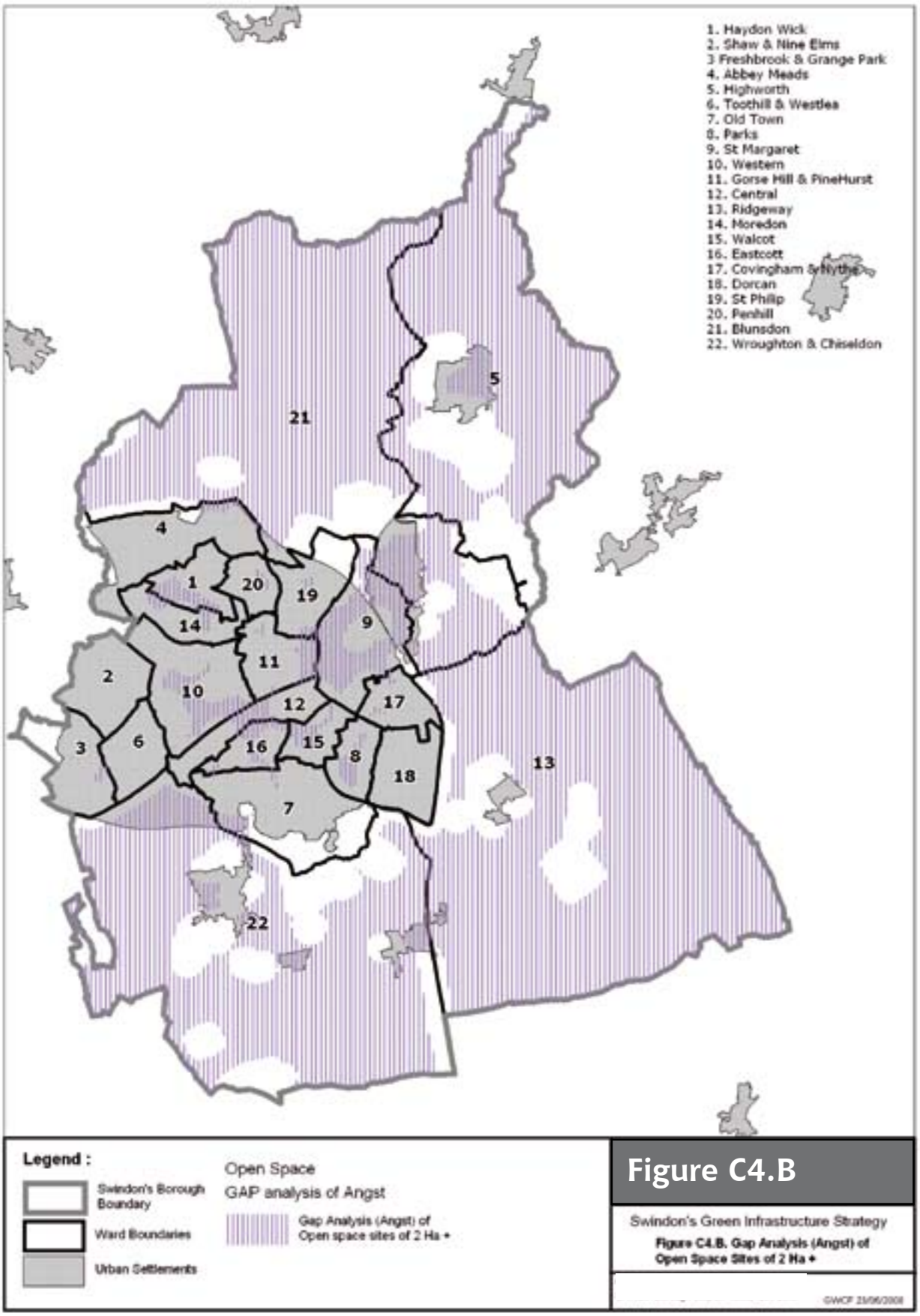


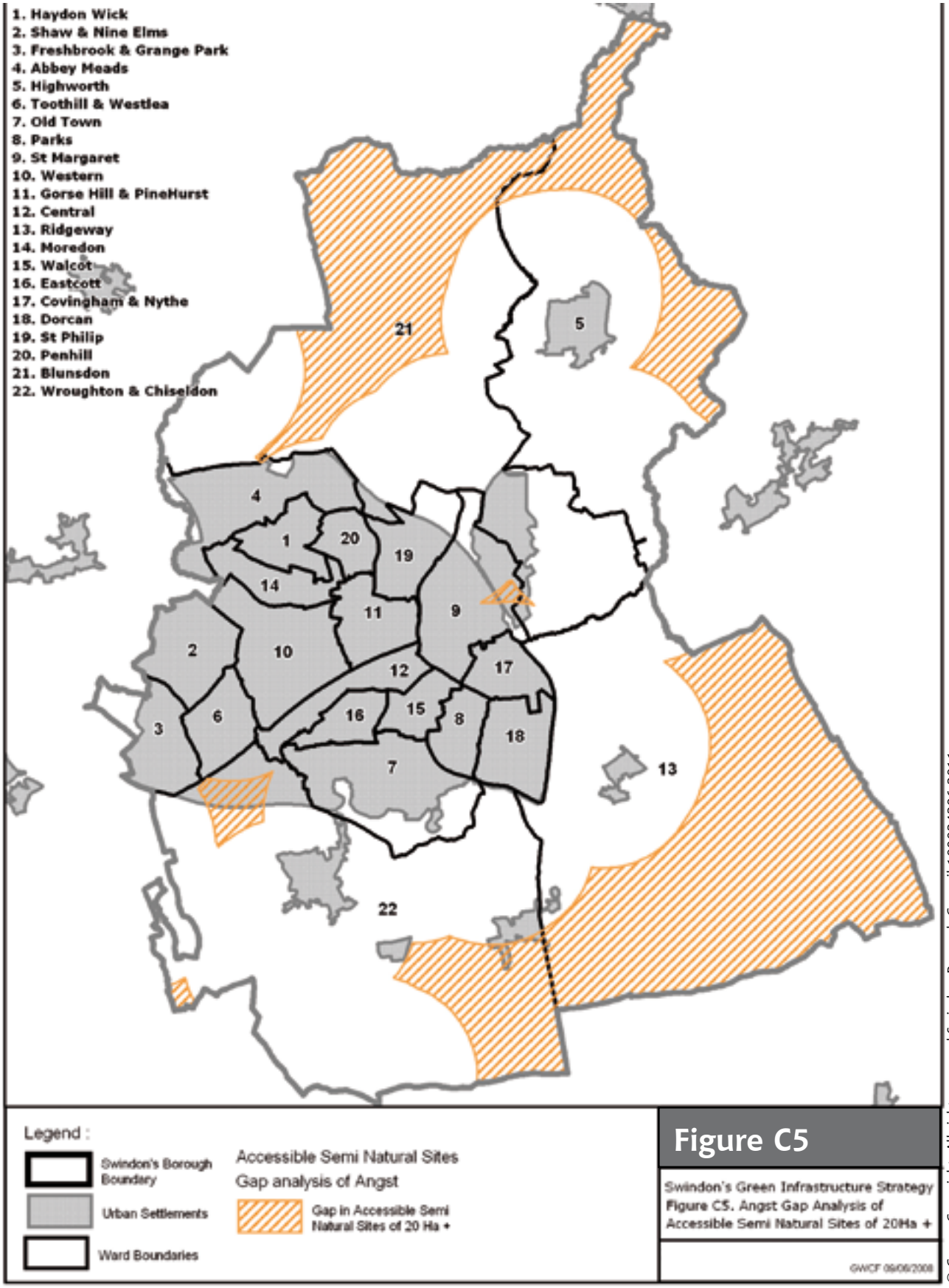
Figure C4.A1

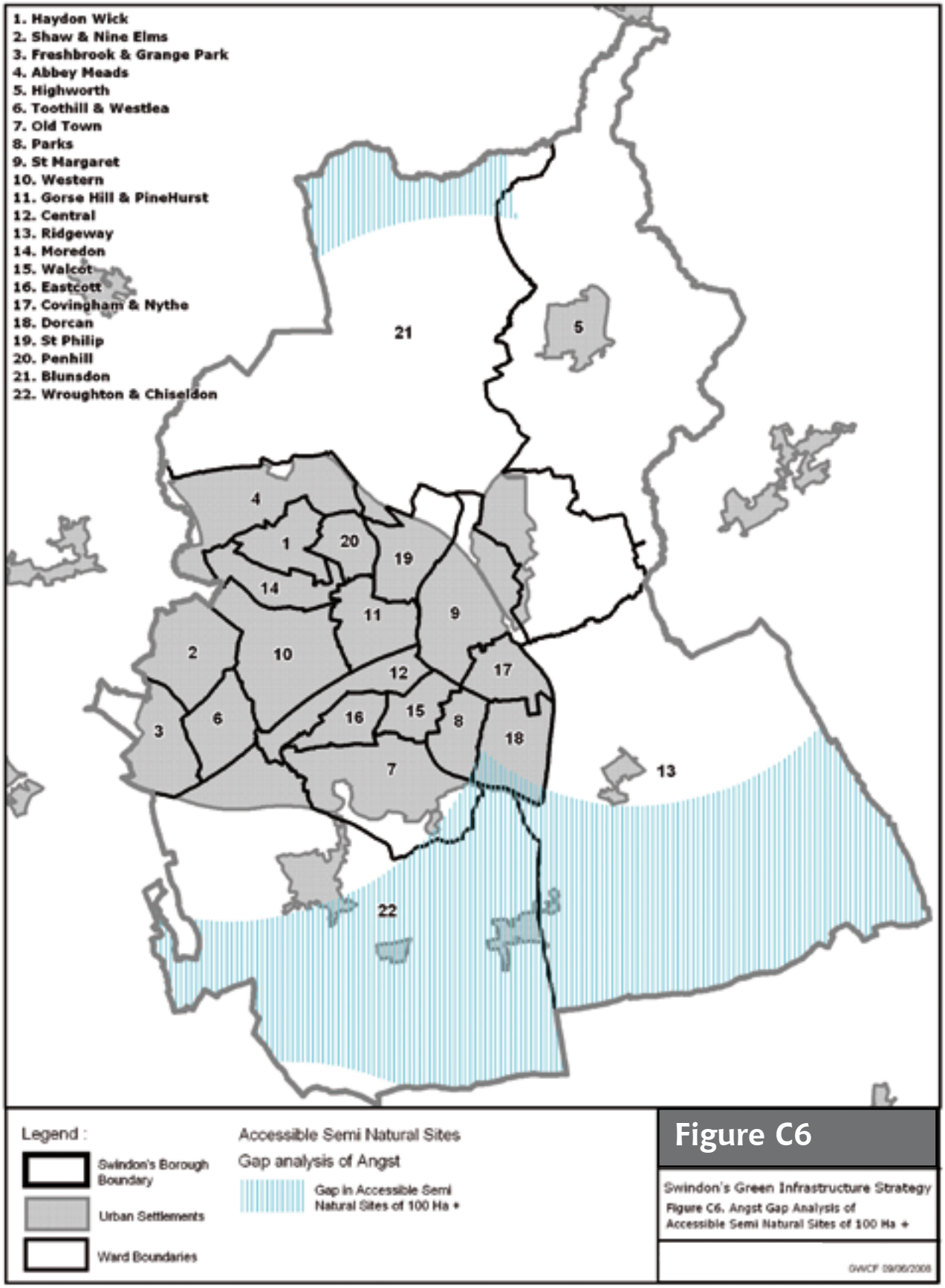
Swindon's Green Infrastructure Strategy

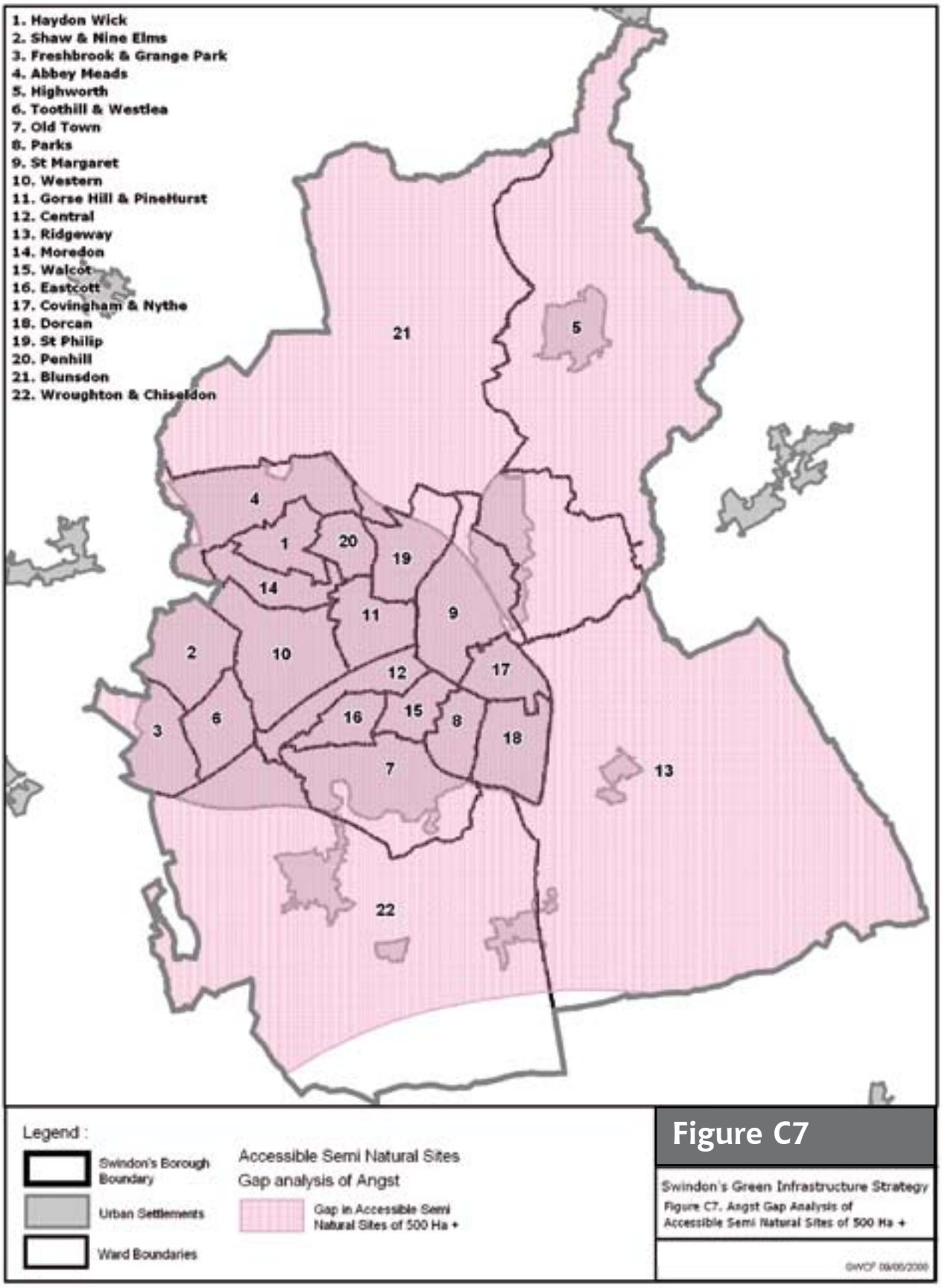
Figure C4.A1 . IMD Overall (2007) & Gap Analysis of Accessible semi Natural Sites of 2 HA +











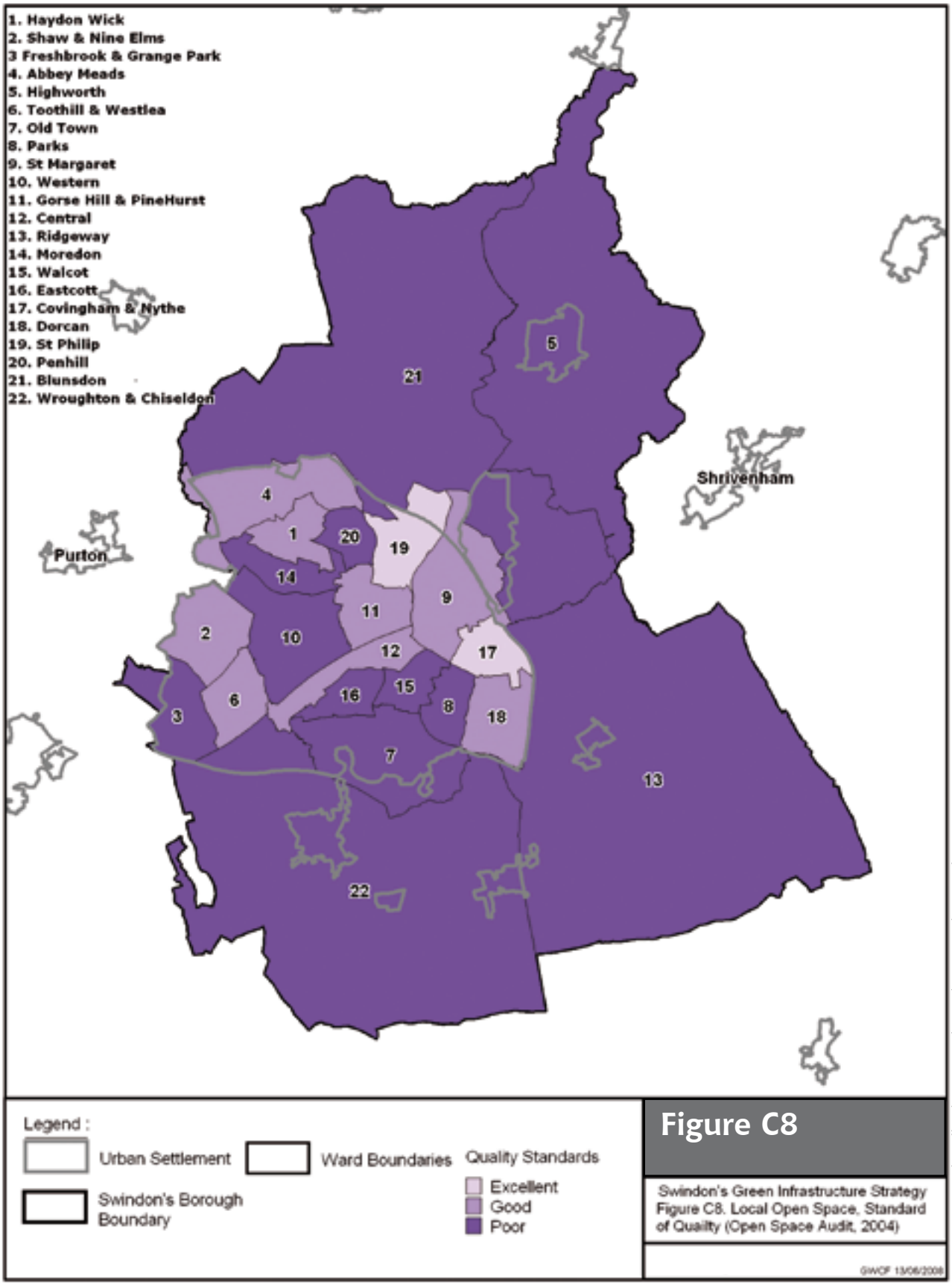
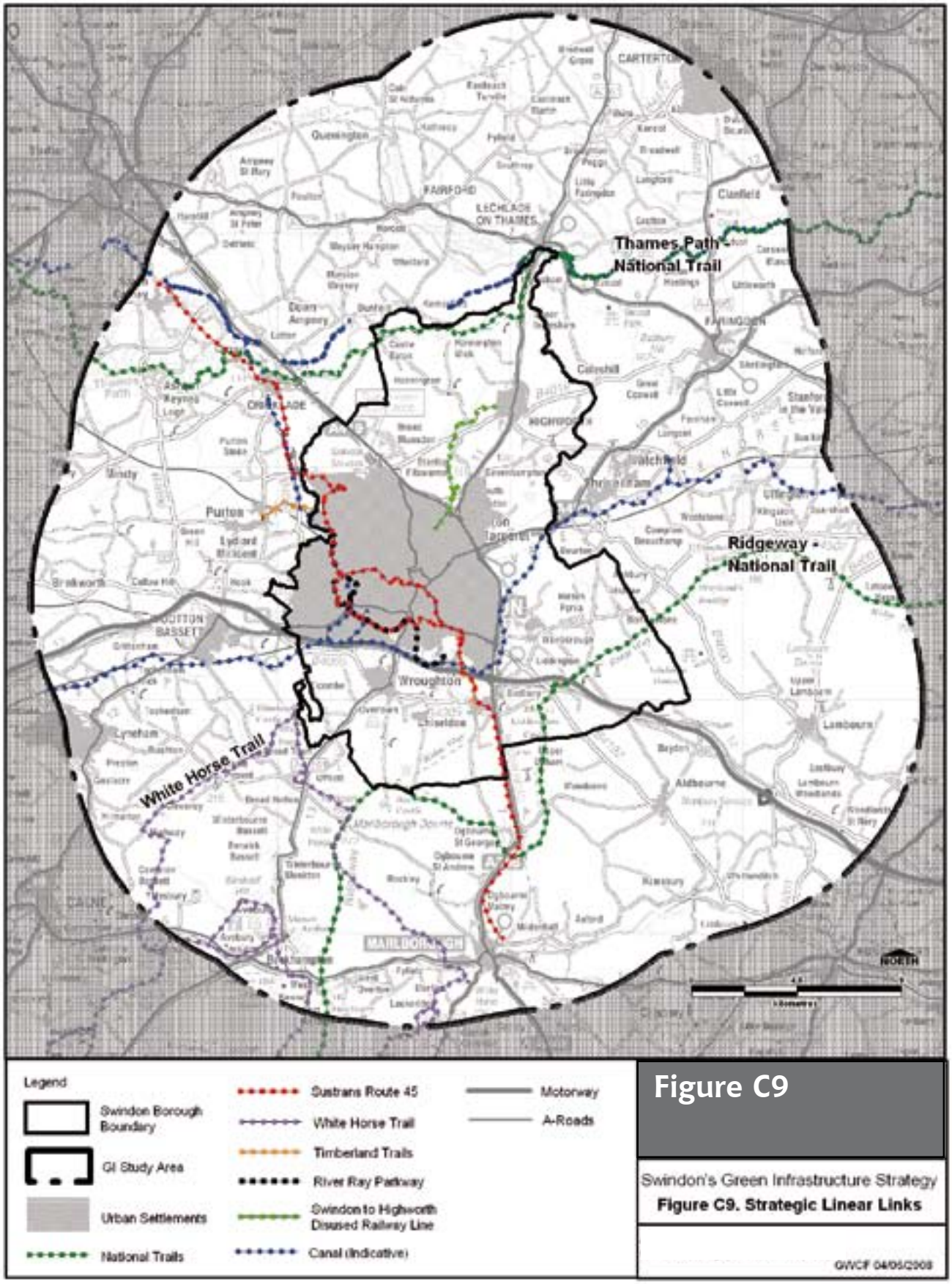
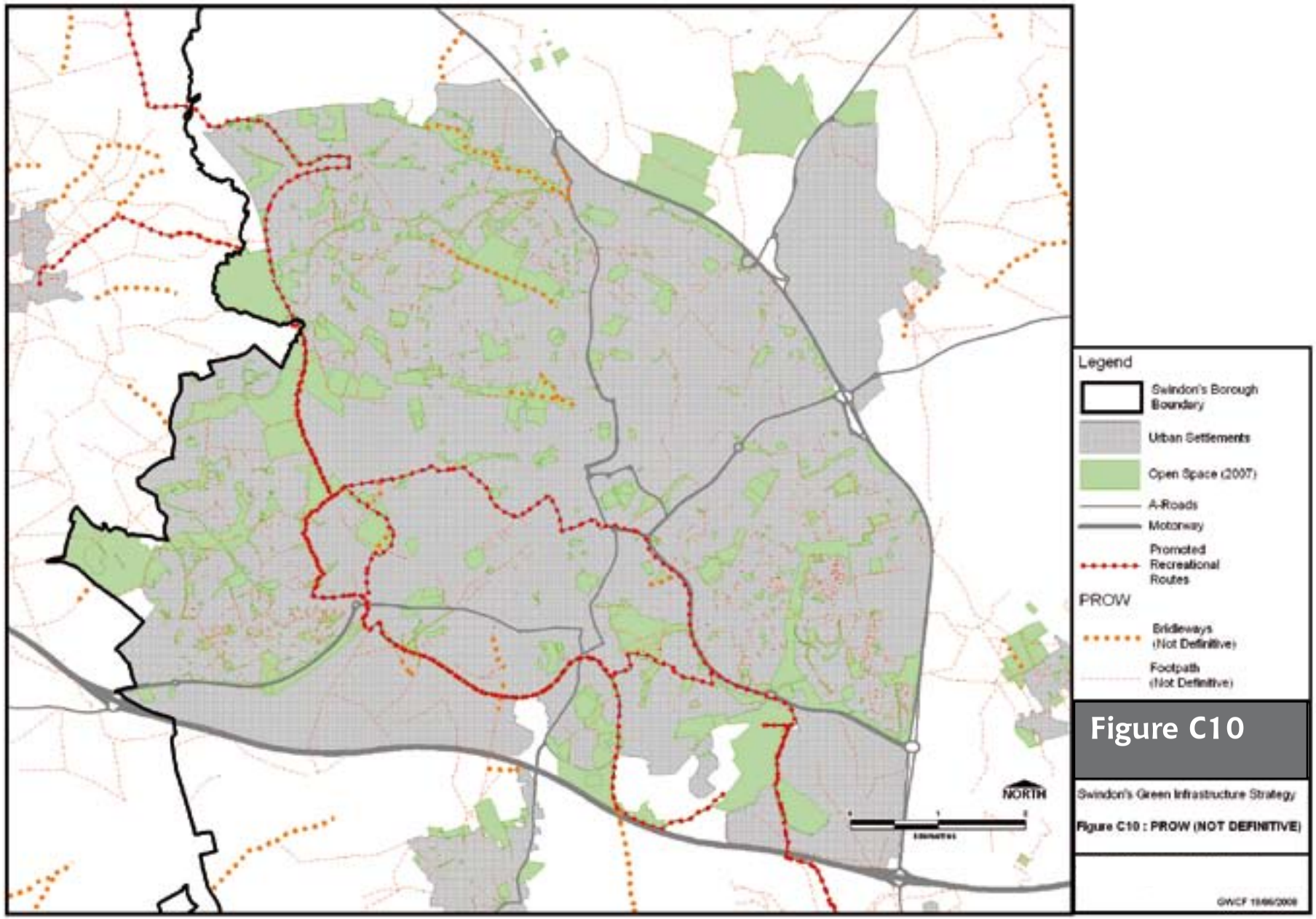


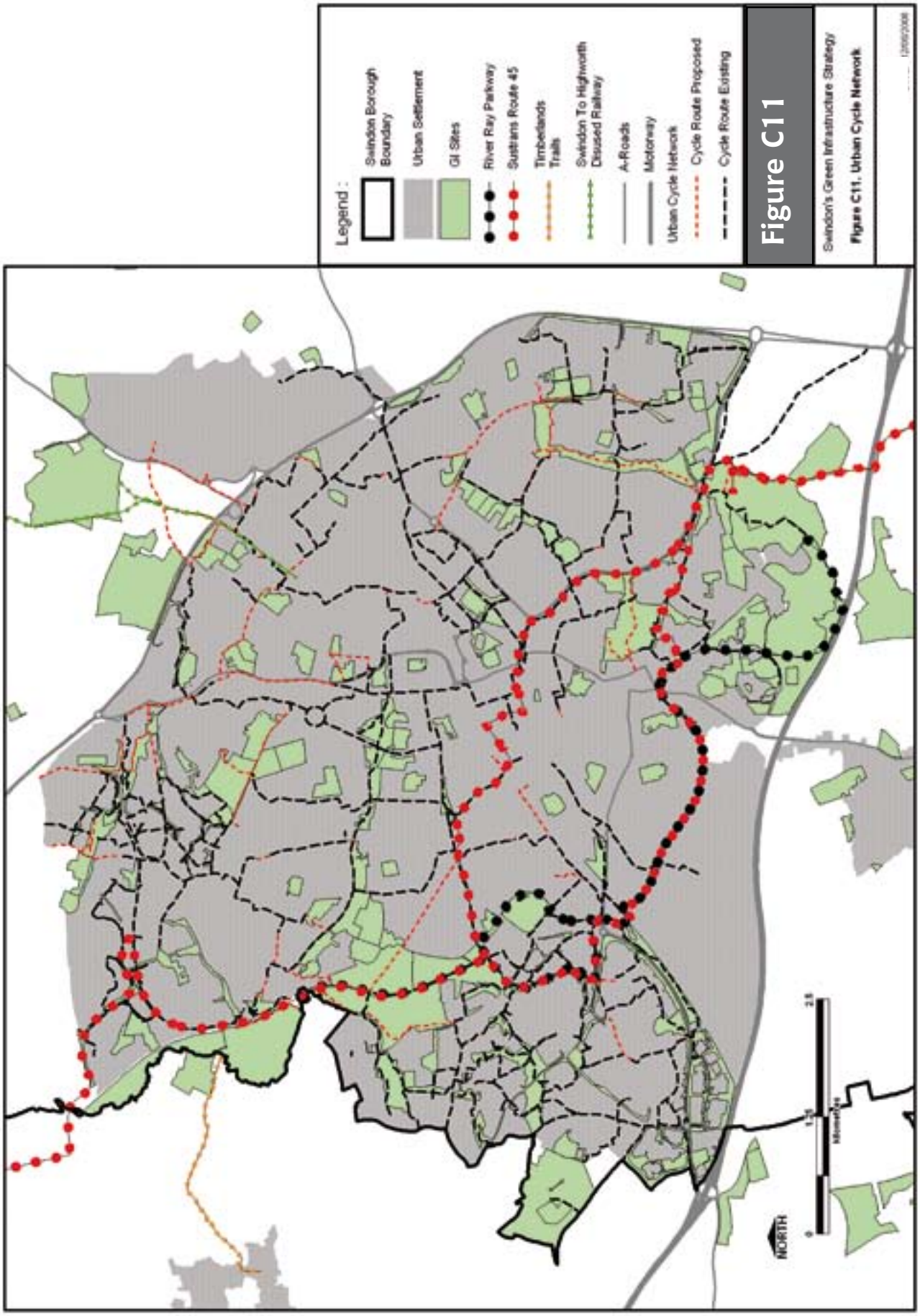
Figure C8

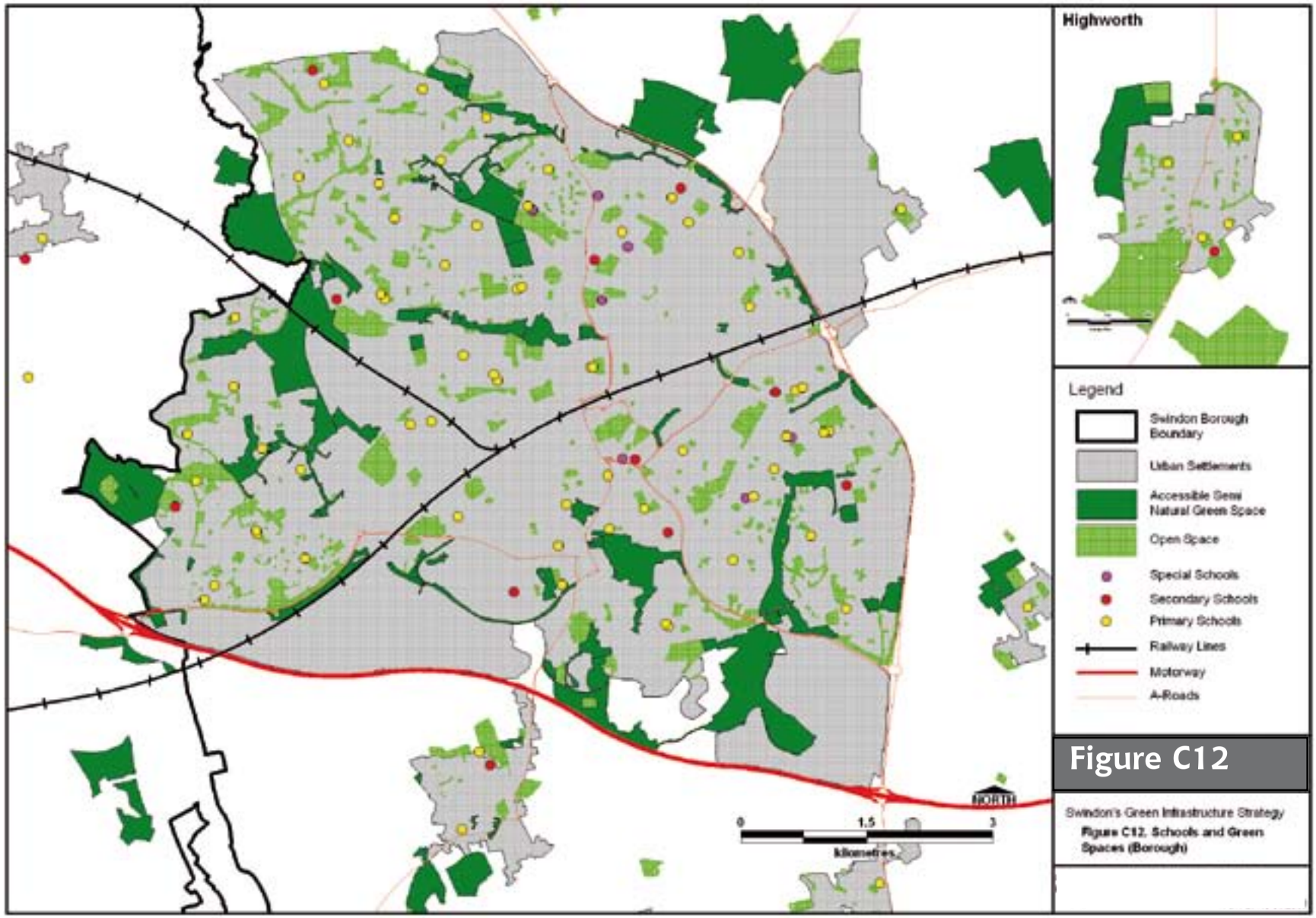
Swindon's Green Infrastructure Strategy
Figure C8. Local Open Space, Standard of Quality (Open Space Audit, 2004)

GWCF 13/08/2008









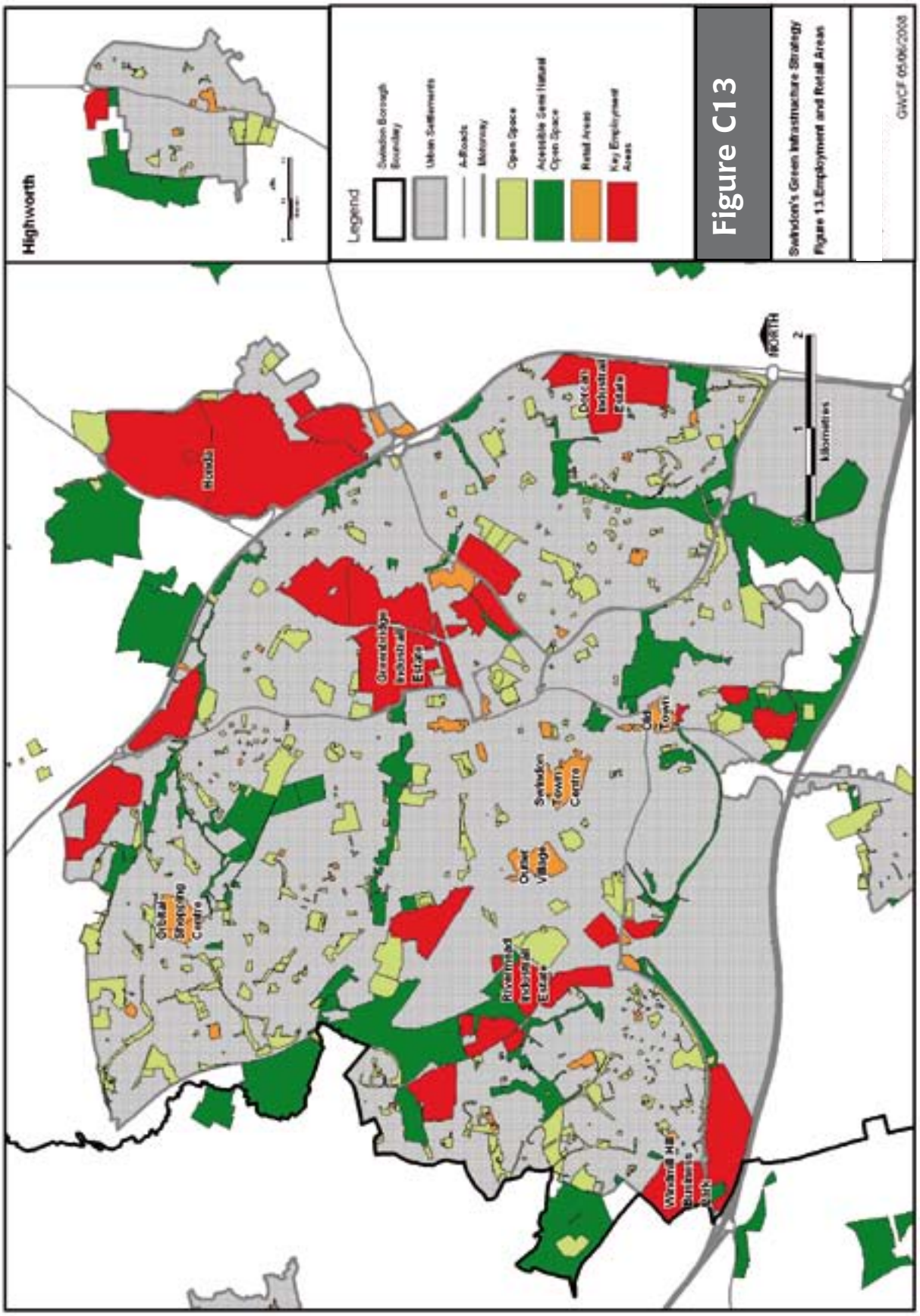
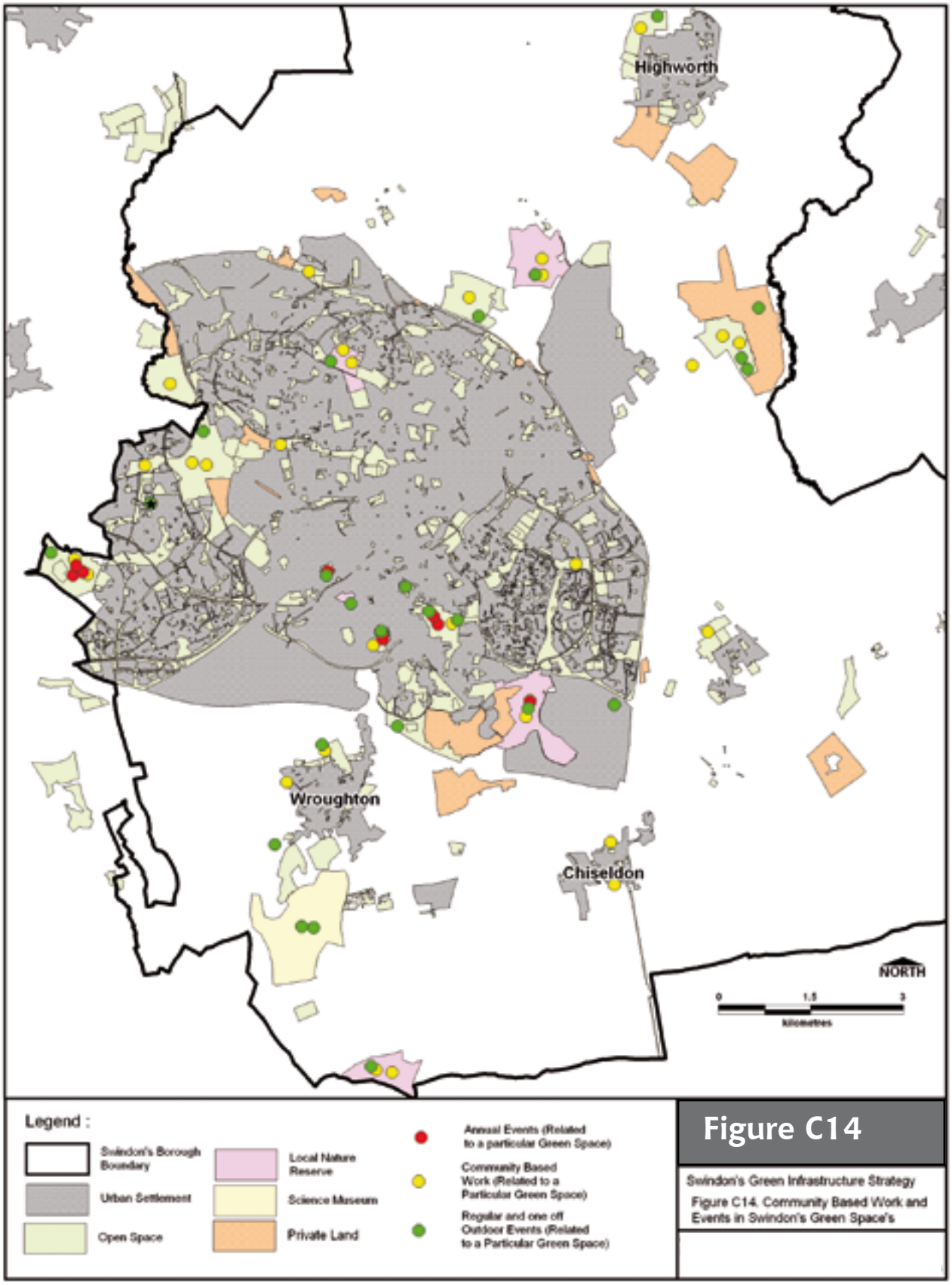


Figure C14



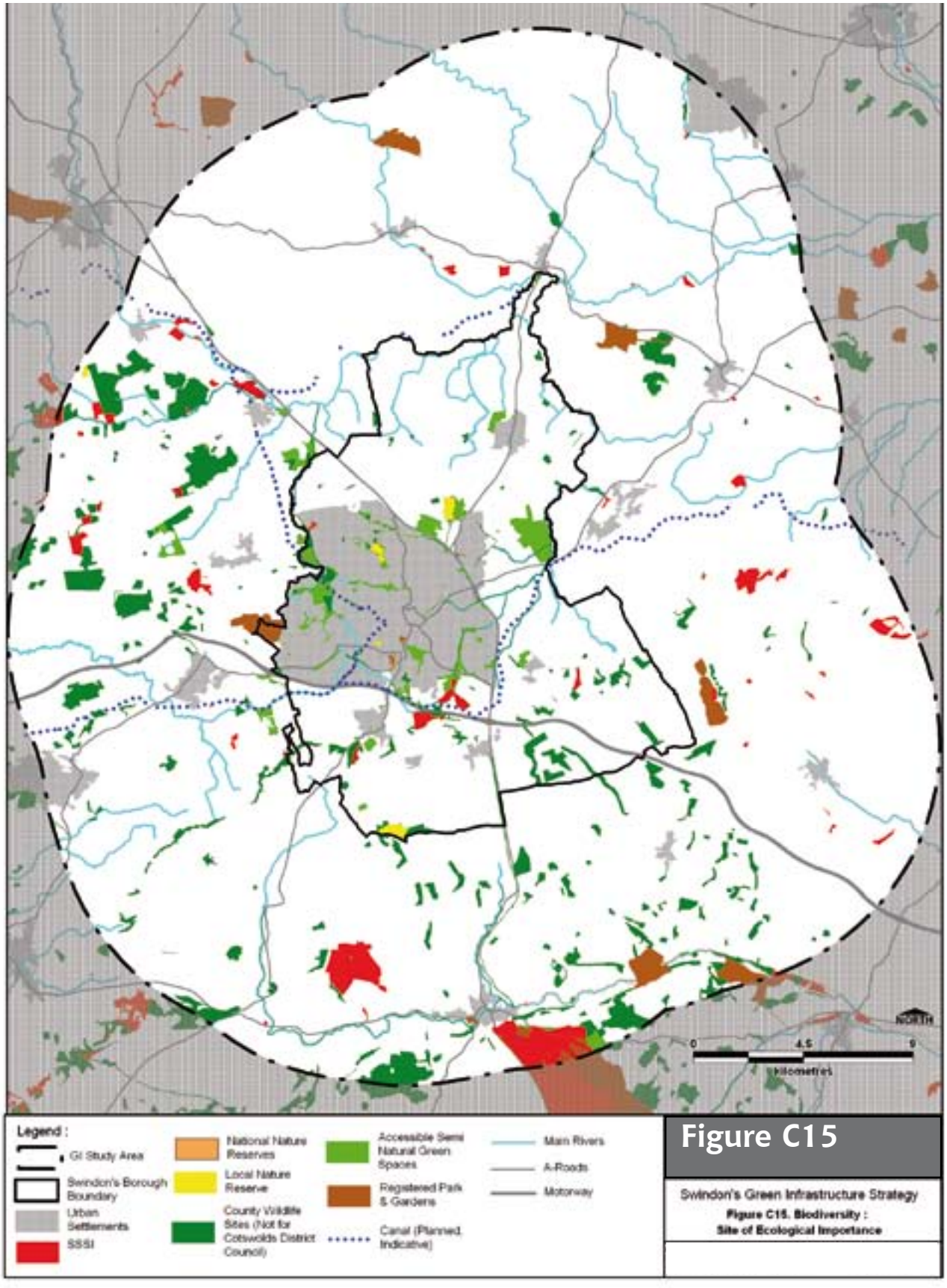


Figure C15

Swindon's Green Infrastructure Strategy

Figure C15. Biodiversity : Site of Ecological Importance

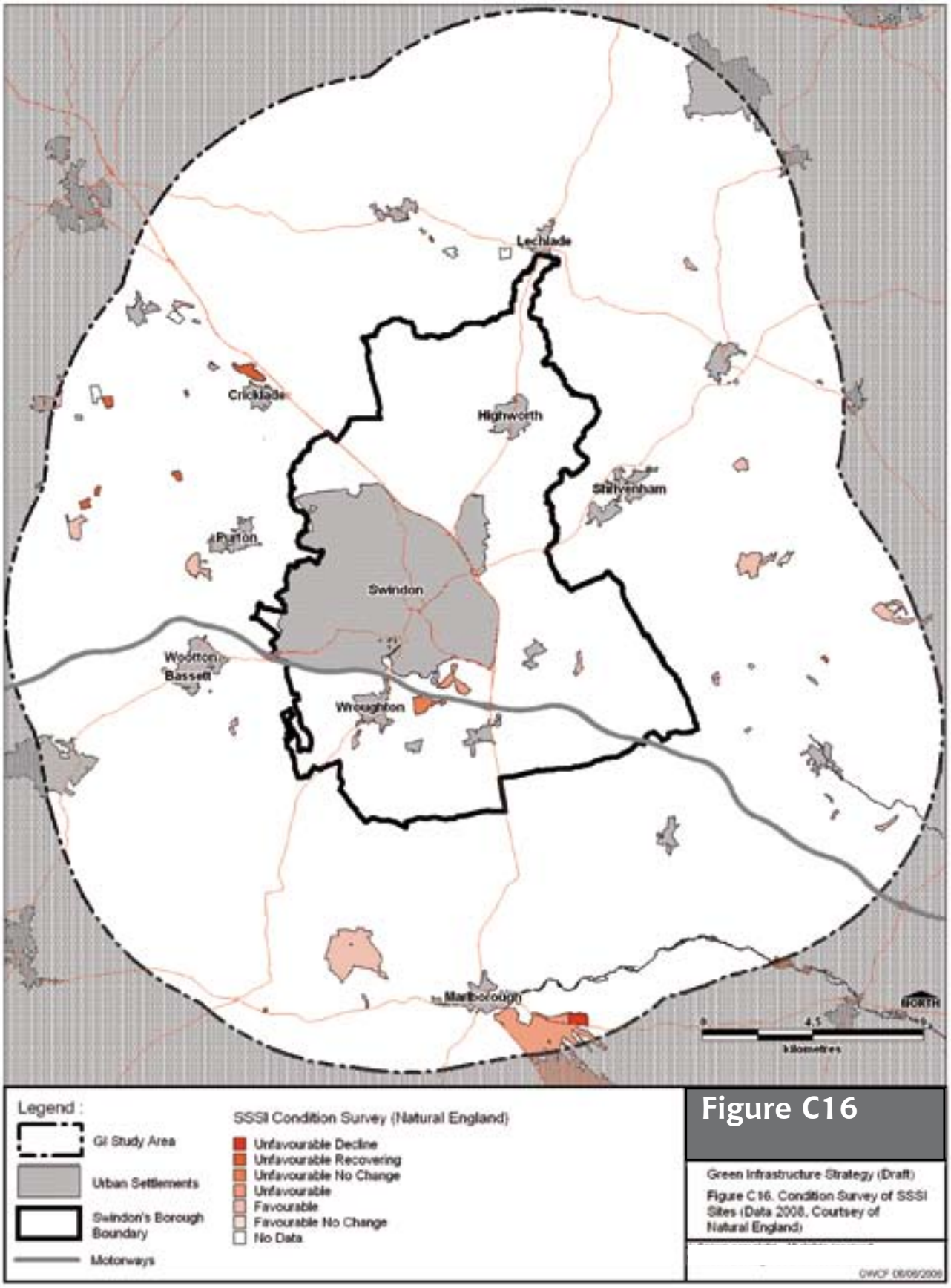


Figure C16

Green Infrastructure Strategy (Draft)

Figure C16. Condition Survey of SSSI Sites (Data 2008, Courtesy of Natural England)

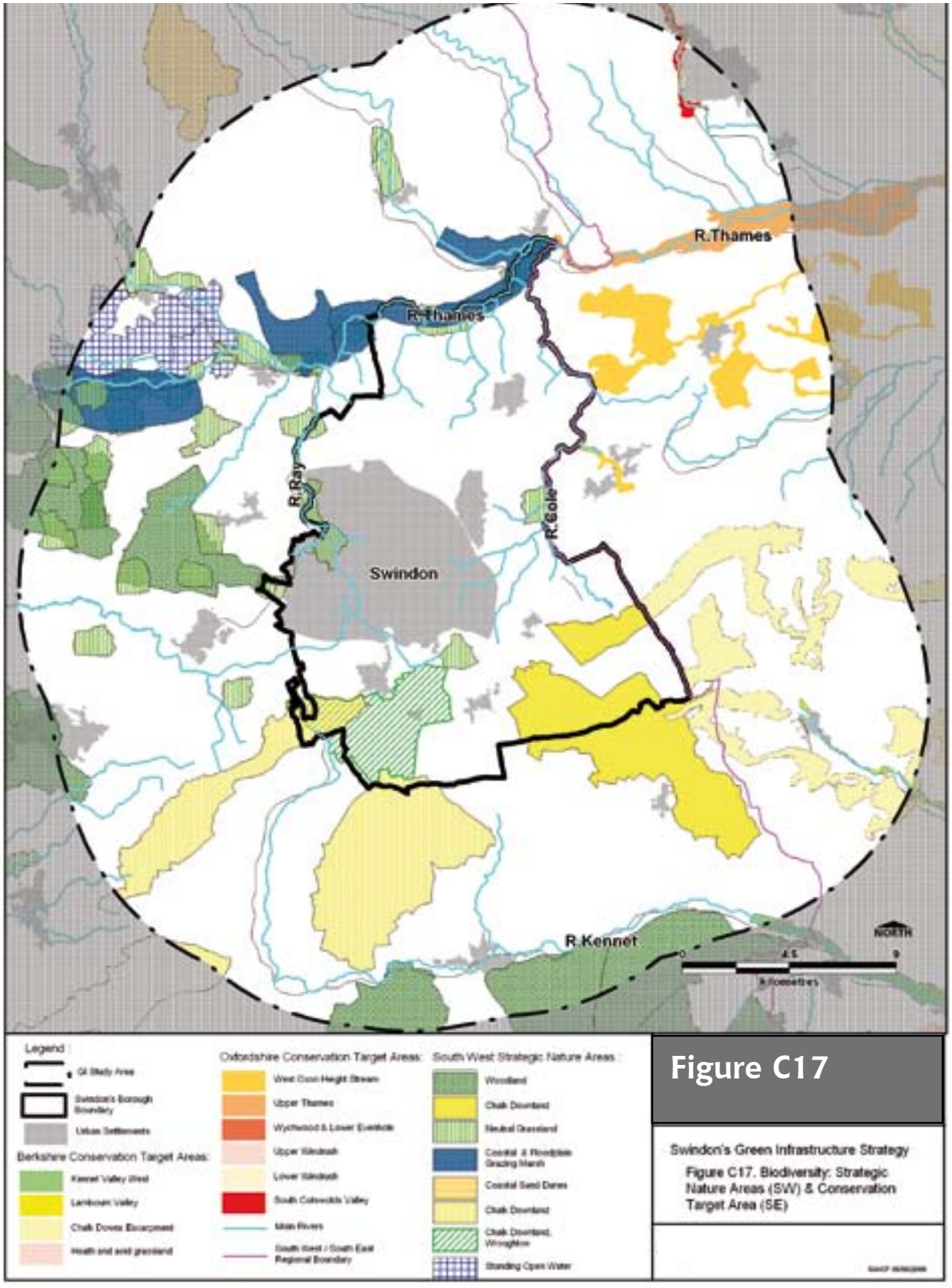


Figure C17

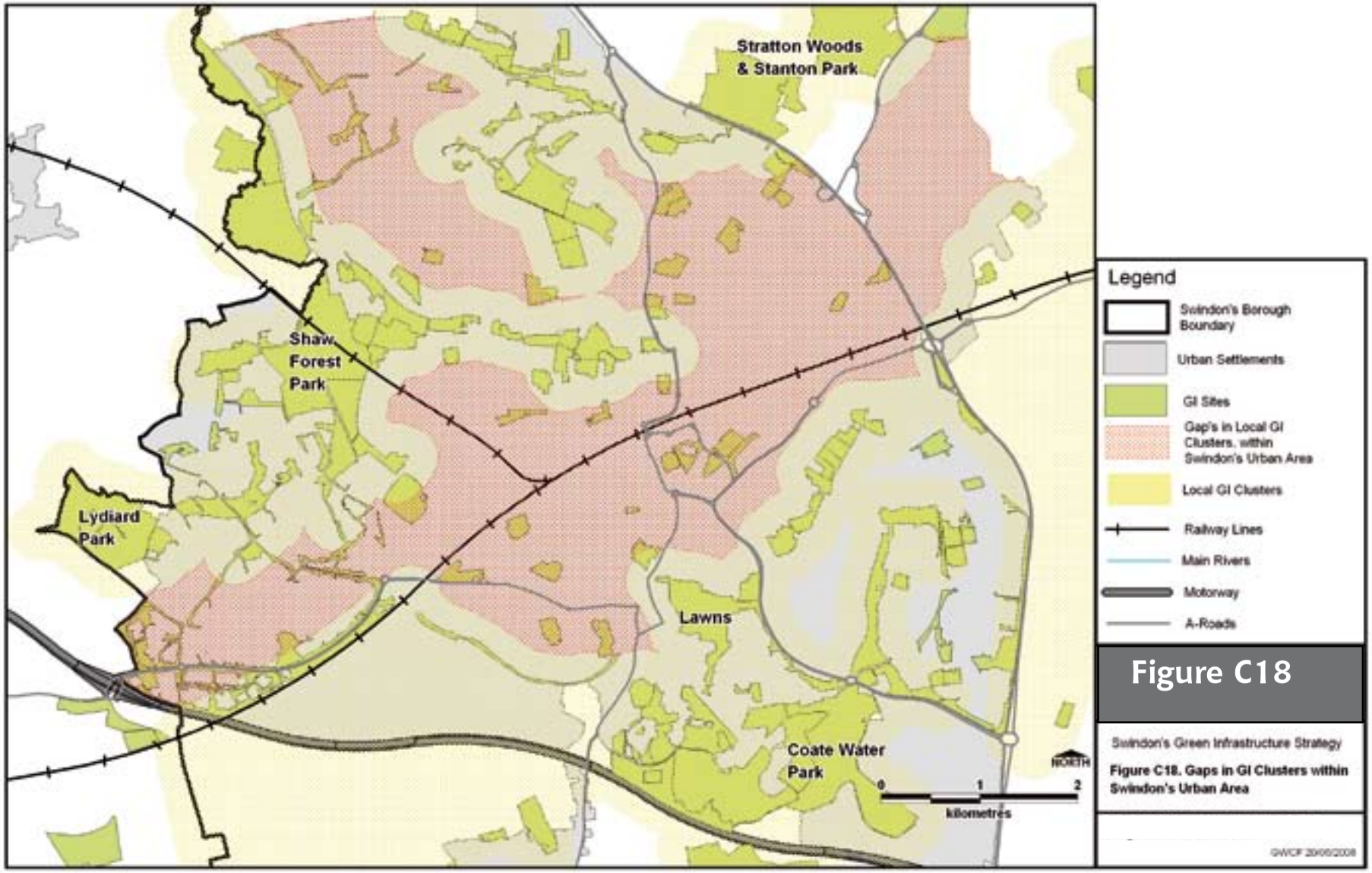


Figure C19

Swindon's Green Infrastructure Strategy

Figure 21. Swindon's Central Area

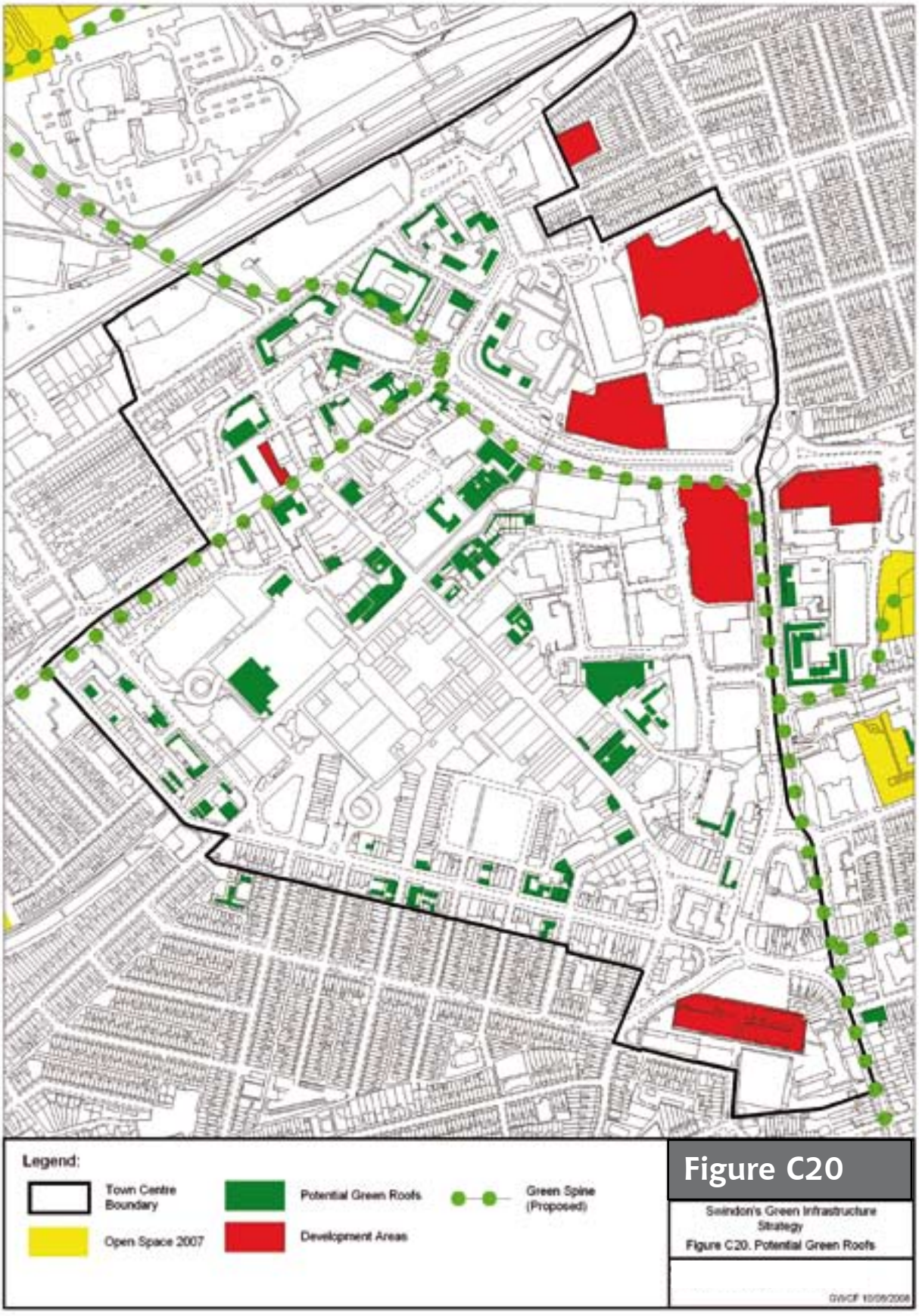
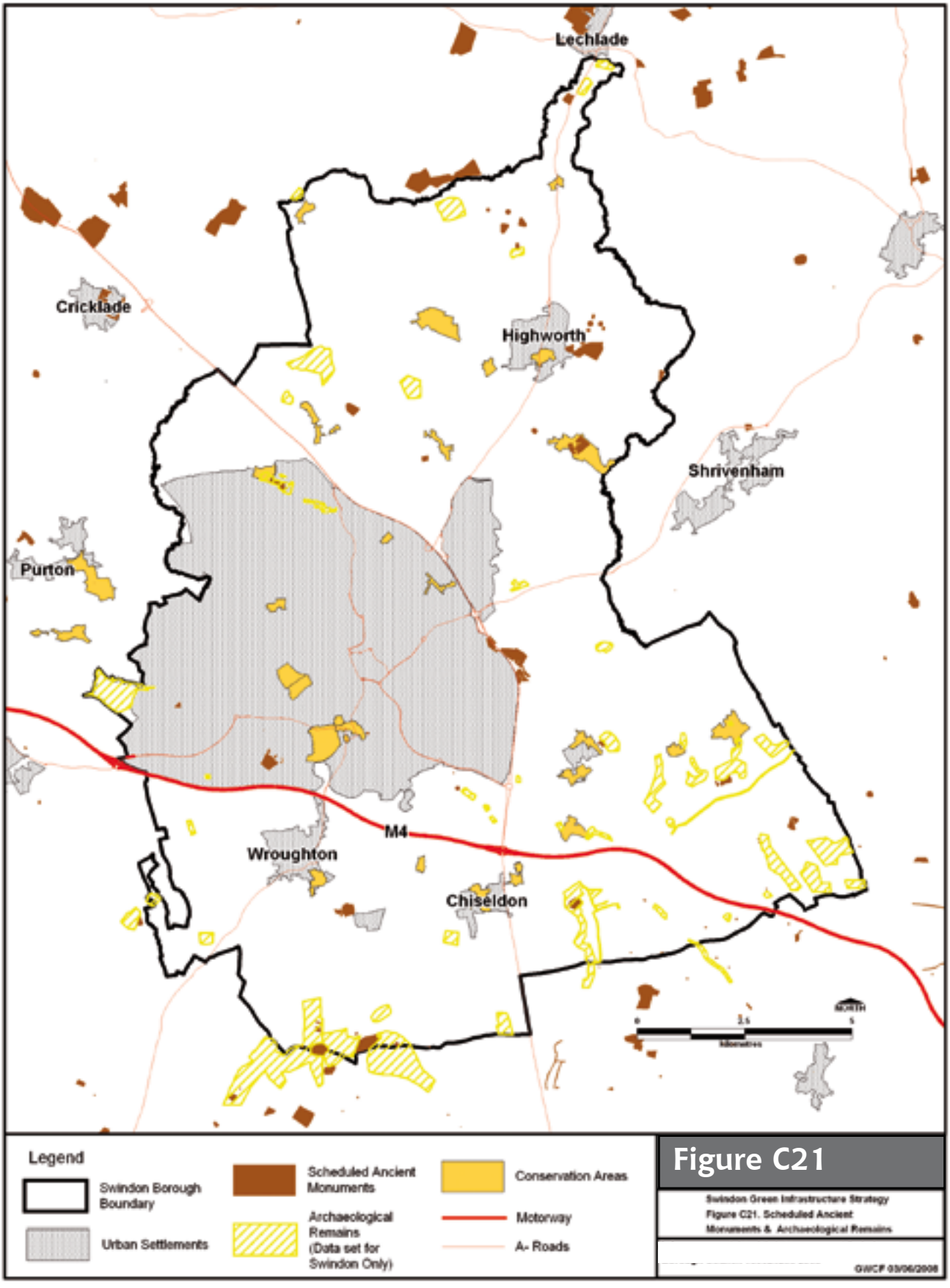


Figure C20

Swindon's Green Infrastructure Strategy
Figure C20. Potential Green Roofs



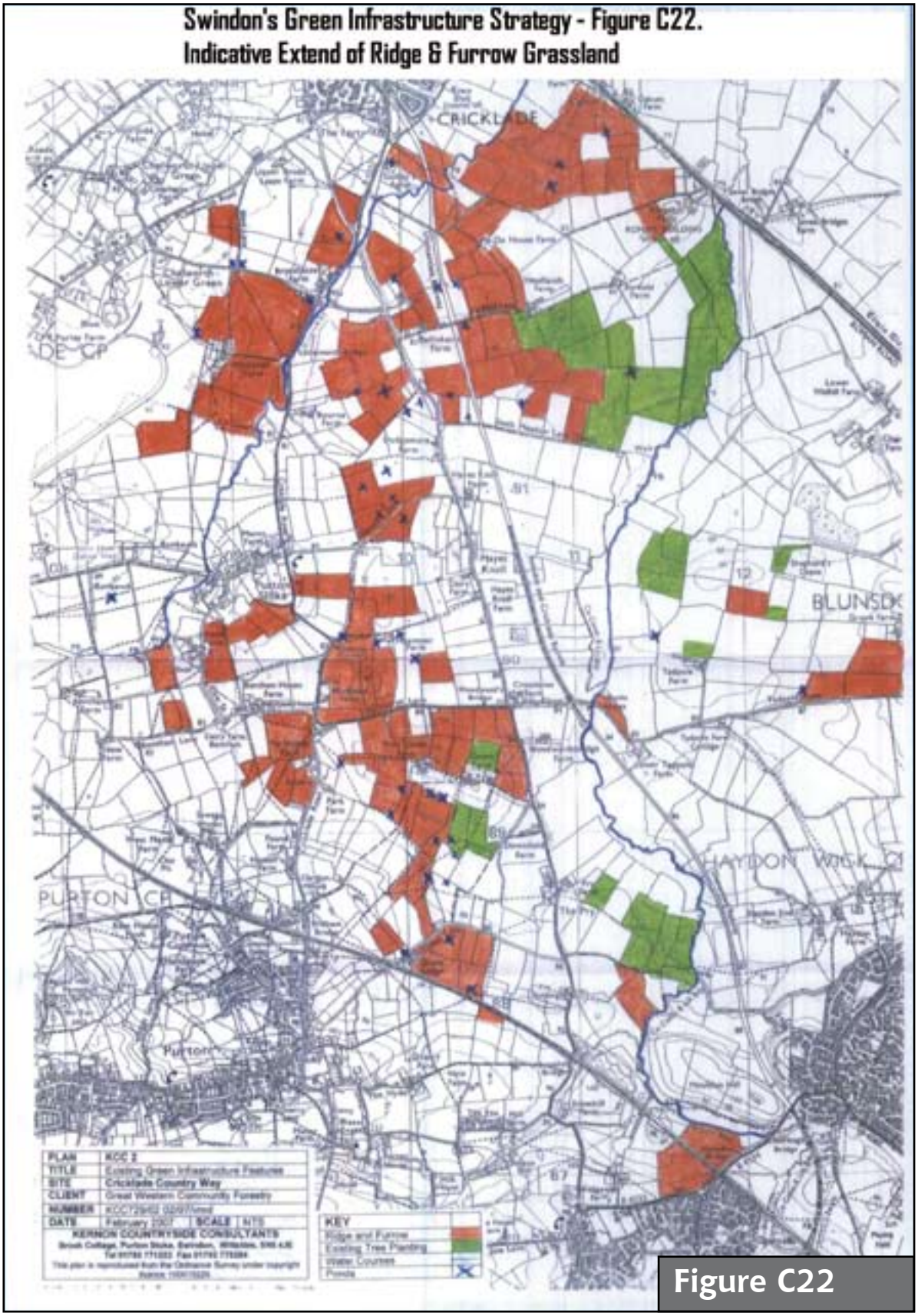
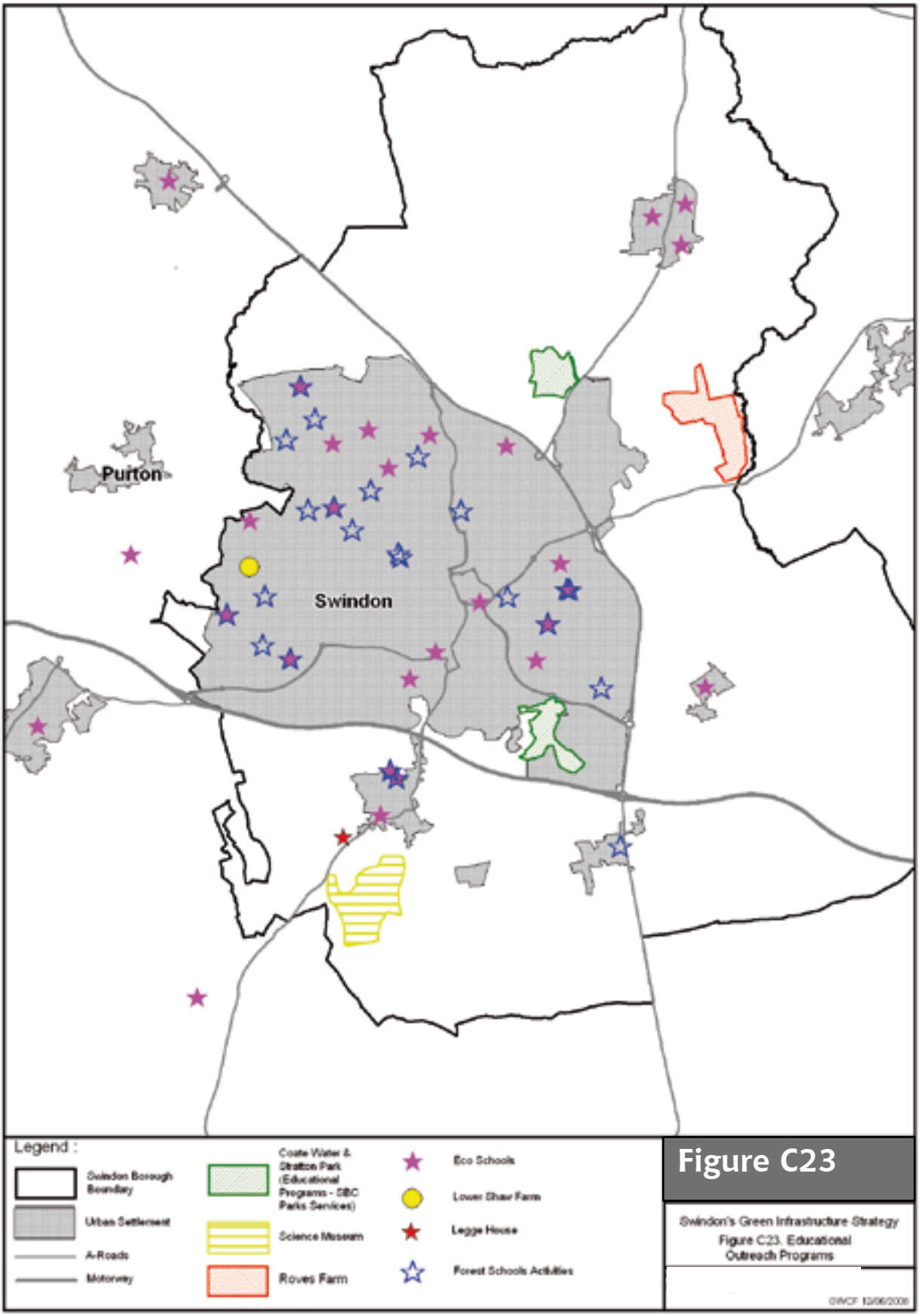


Figure C22



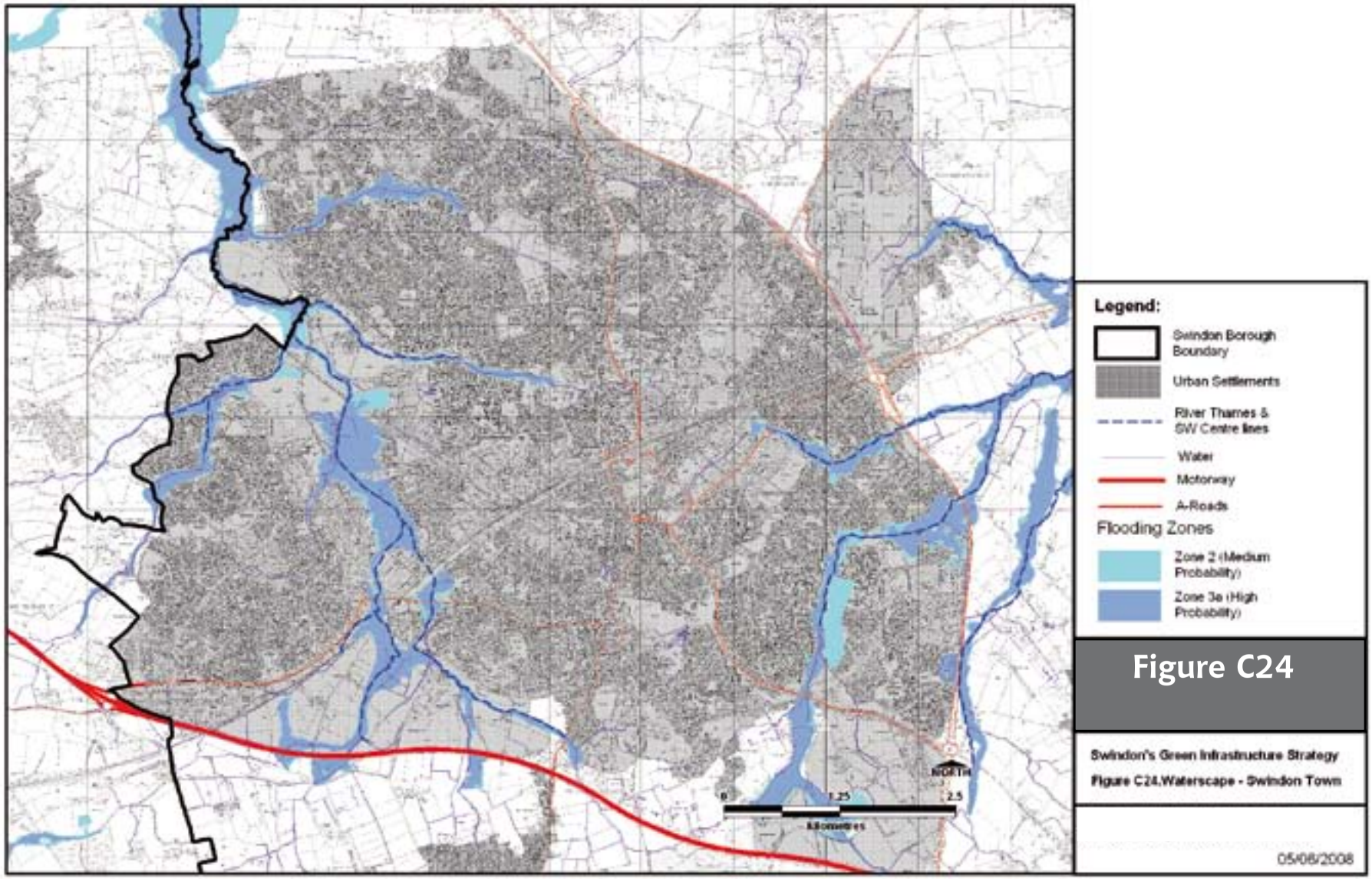
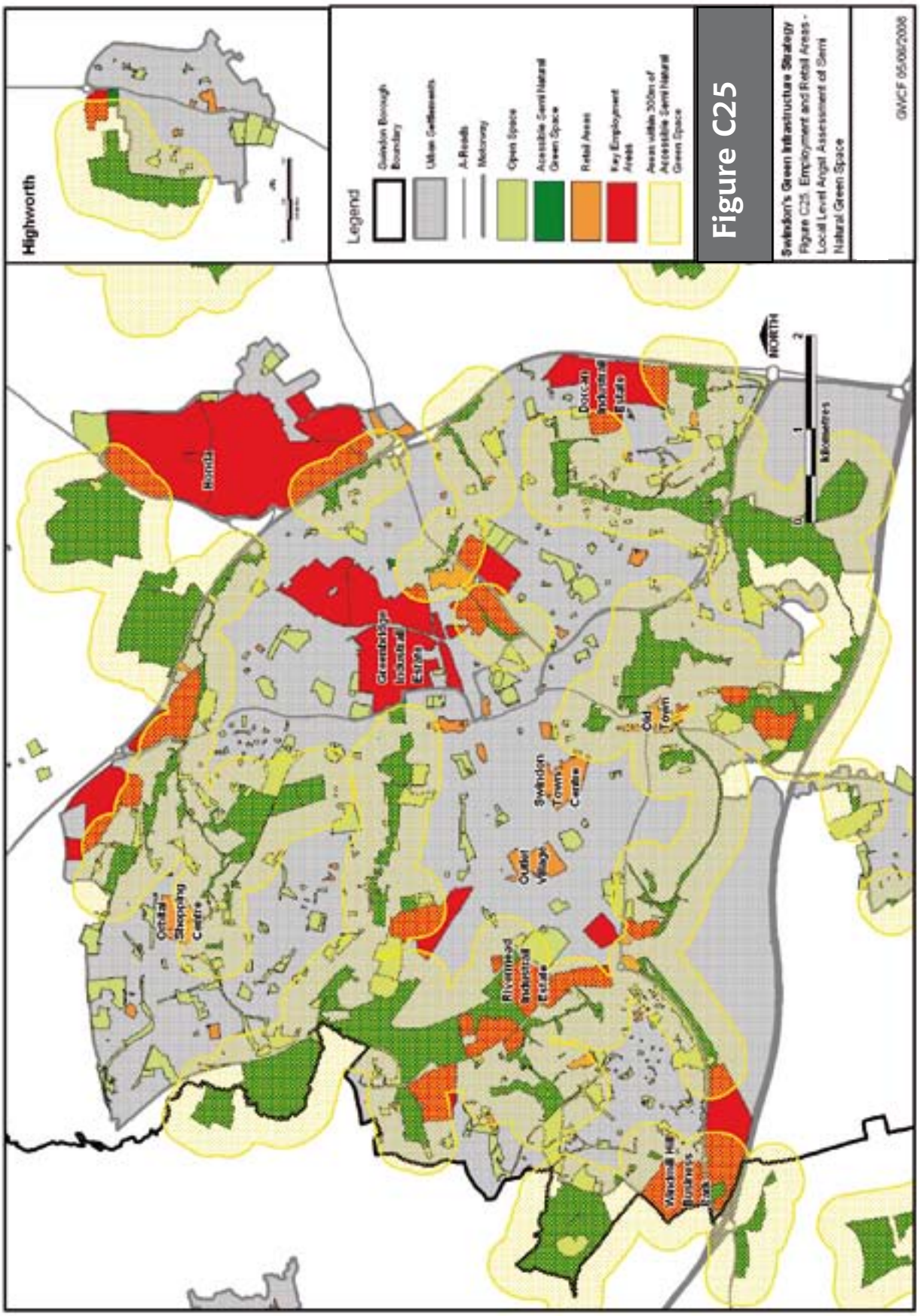


Figure C24

Swindon's Green Infrastructure Strategy

Figure C24.Waterscape - Swindon Town

05/08/2008



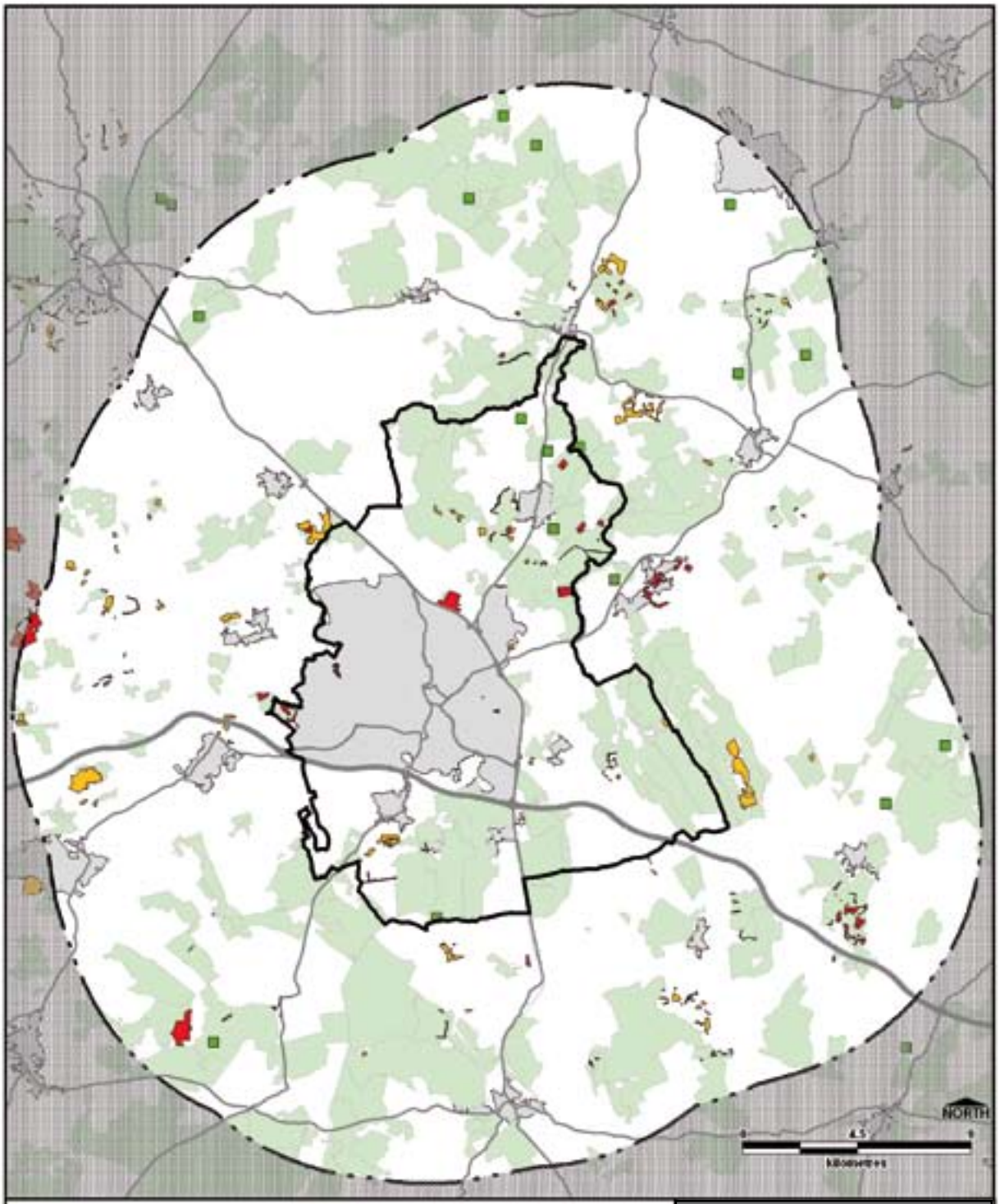


Figure C26

Swindon's Green Infrastructure Strategy

Figure C26 : Agricultural Schemes

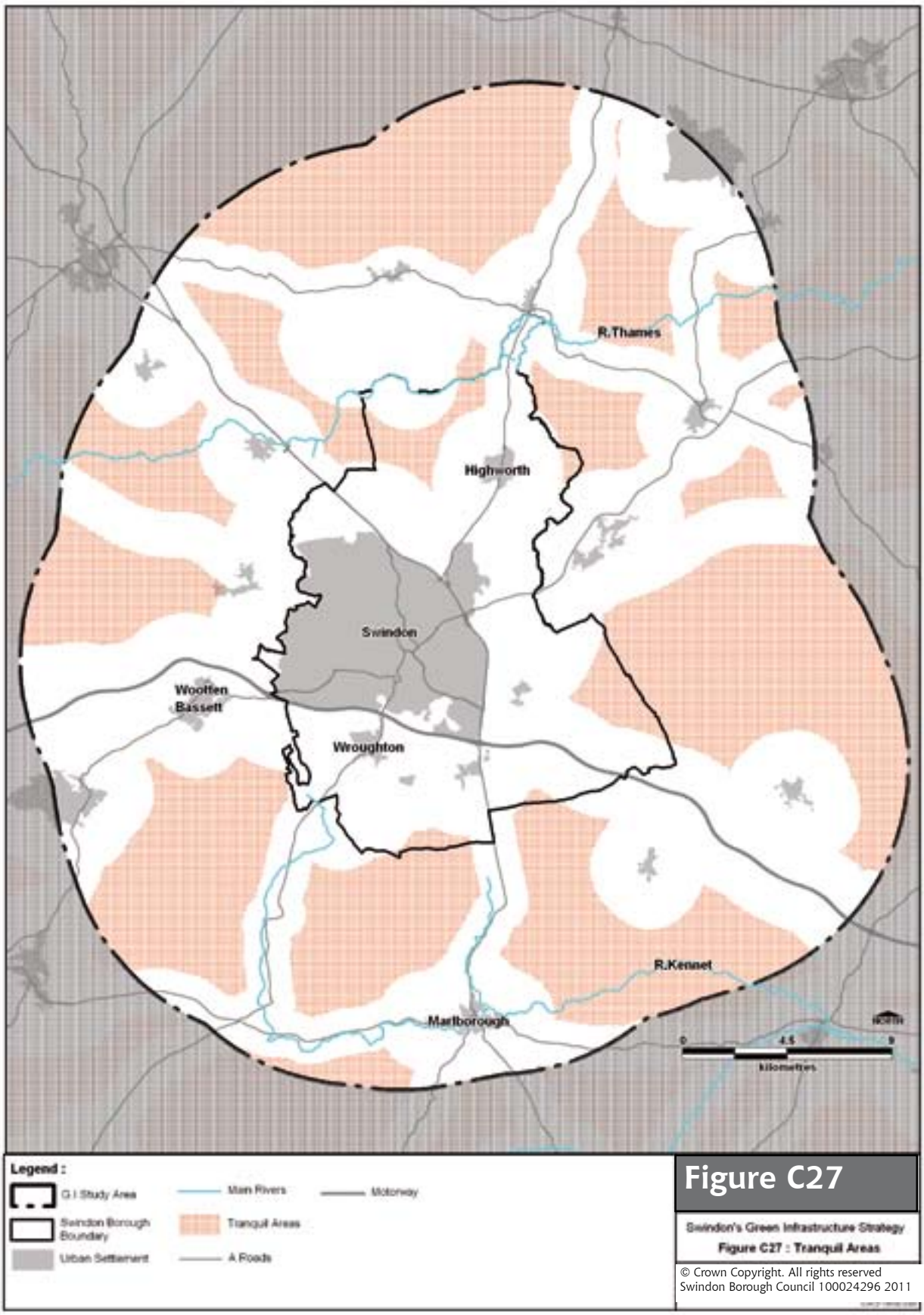


Figure C27

Swindon's Green Infrastructure Strategy
Figure C27 : Tranquil Areas

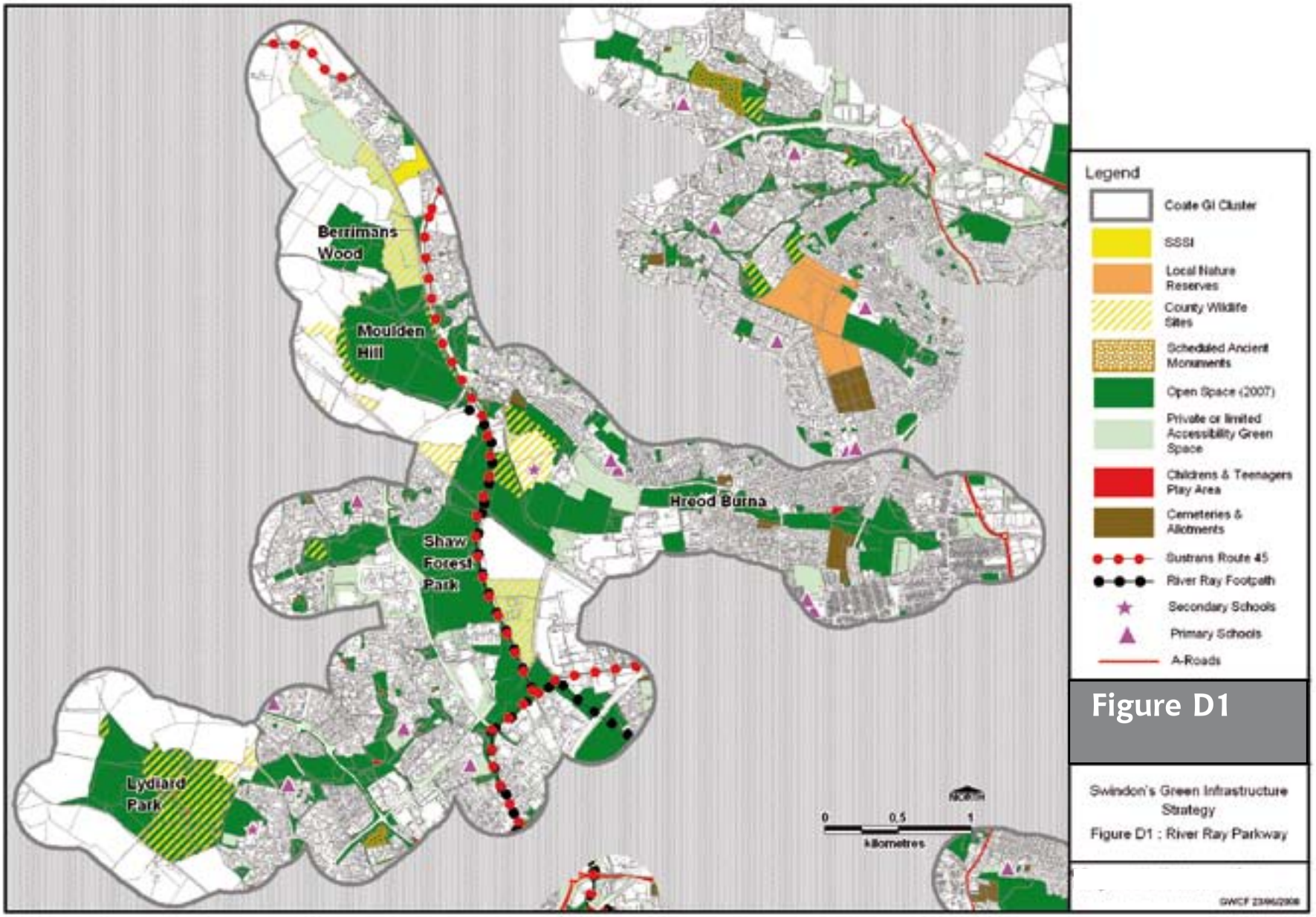


Figure D1

Swindon's Green Infrastructure Strategy

Figure D1 : River Ray Parkway

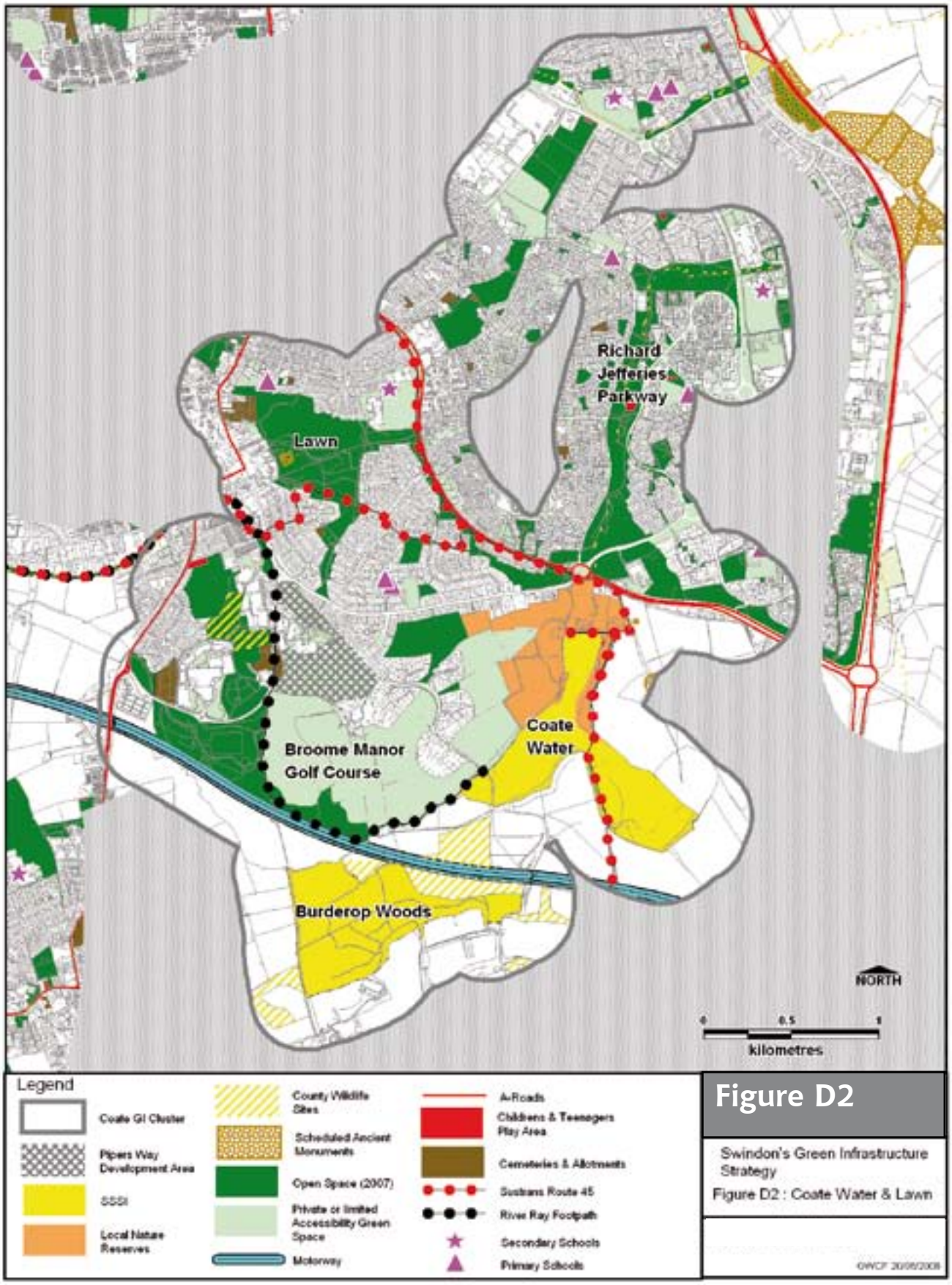


Figure D2

Swindon's Green Infrastructure Strategy

Figure D2 : Coate Water & Lawn

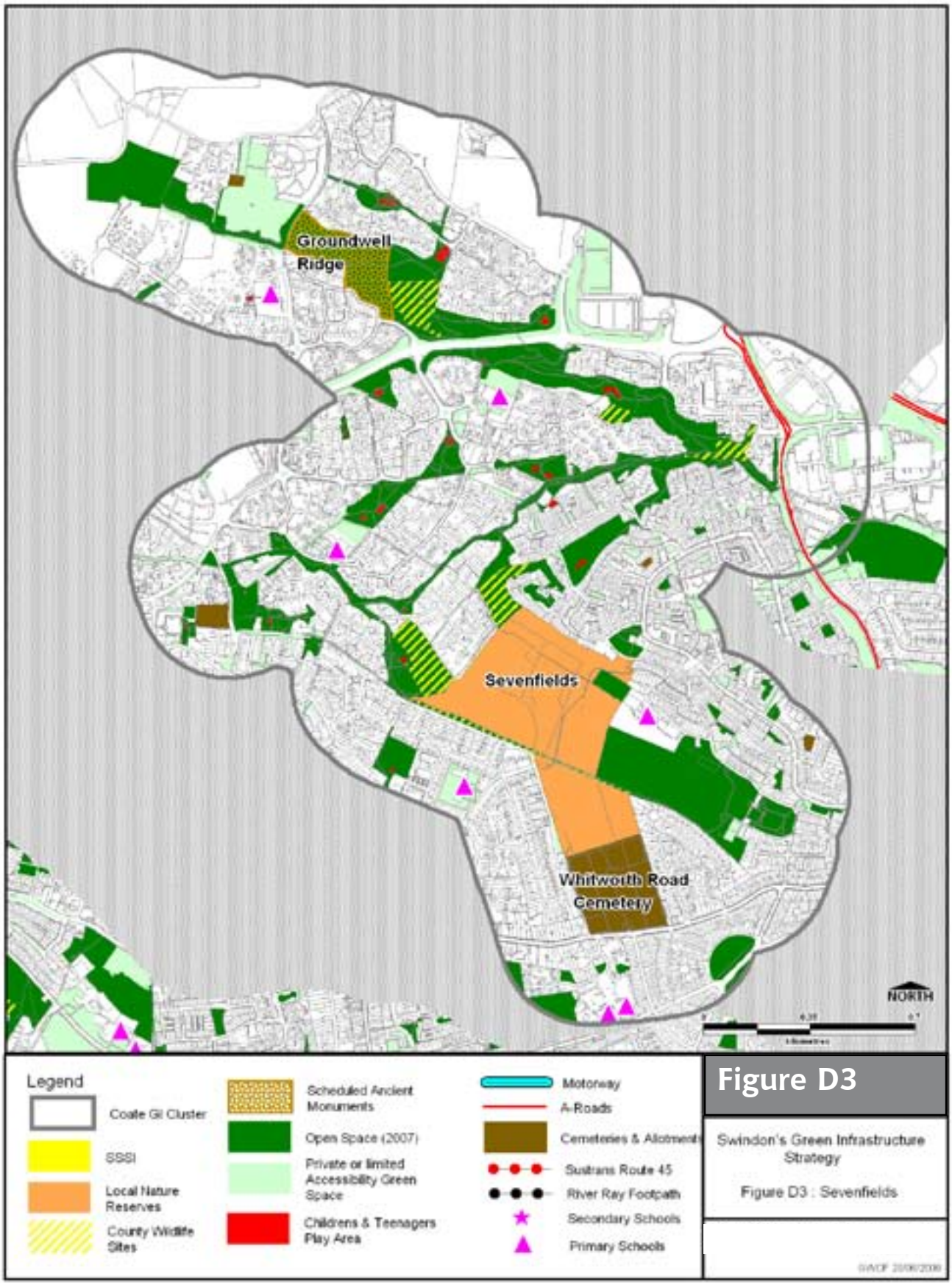


Figure D3

Swindon's Green Infrastructure Strategy

Figure D3 : Sevenfields

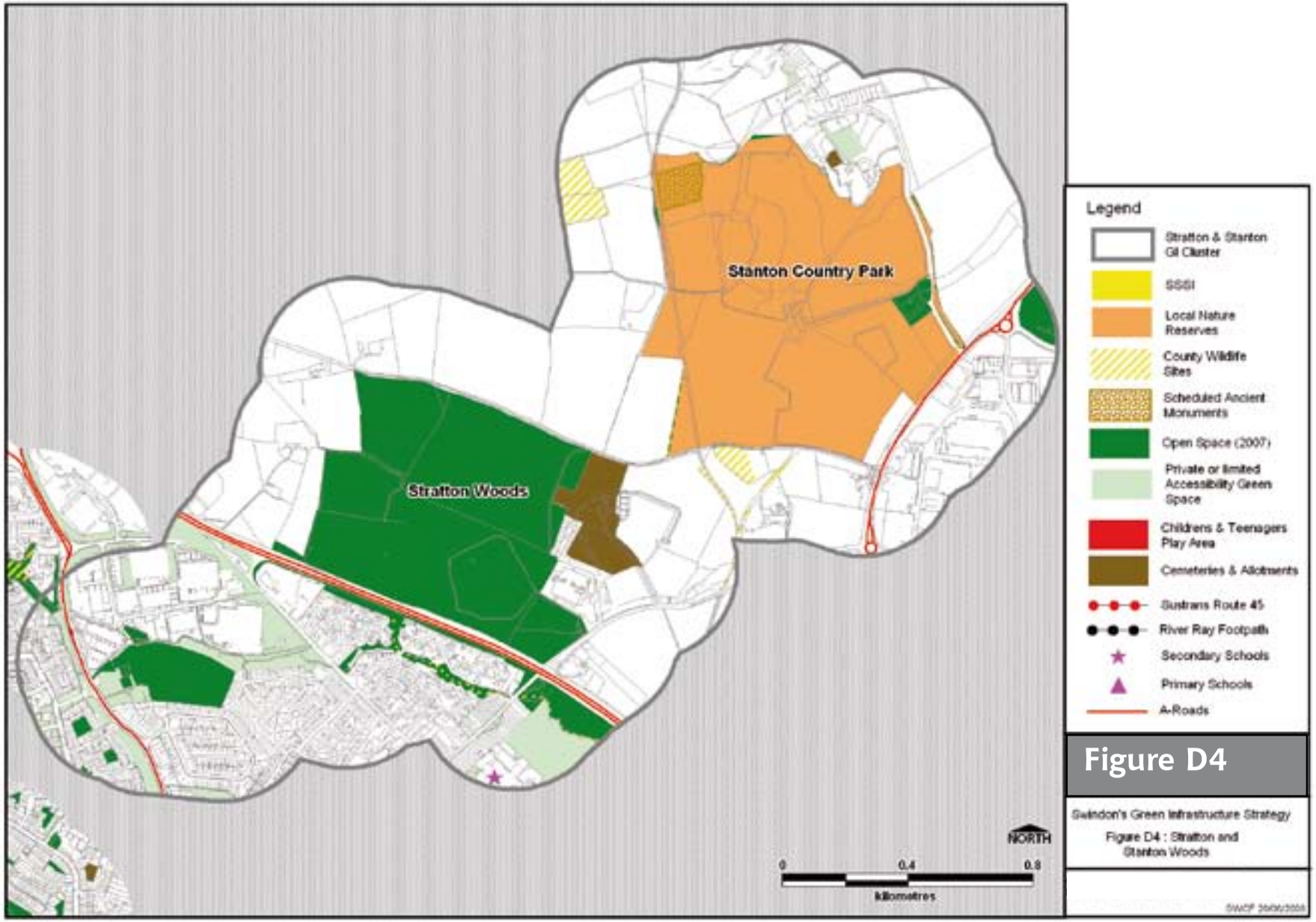


Figure D4

Swindon's Green Infrastructure Strategy

Figure D4 : Stratton and Stanton Woods

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