Green Infrastructure

Background Note

September 2010

Contents

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1   Introduction

1.1   The attractiveness of Dacorum as a place where people want to live, work and relax depends in part on the environment, both natural and built. It is therefore important that the environment is maintained and where possible enhanced in order to sustain the attractiveness and character of the borough.

1.2   The borough must provide new homes and employment opportunities, and these will require development of supporting infrastructure. Dacorum will also need to reduce the borough's impact on and exposure to the effects of climate change, and to ensure that development in the borough is sustainable.

1.3   Providing supporting infrastructure, responding to climate change and contributing to sustainable development are all possible functions of green infrastructure.

1.4   There are many available definitions of green infrastructure, but it has been defined by Natural England[1] as

> *'A strategically planned and delivered network comprising the broadest range of high quality spaces and other environmental features. It should be designed and managed as a multifunctional resource capable of delivering those ecological services and quality of life benefits required by the communities it serves and needed to underpin sustainability. Its design and management should also respect and enhance the character and distinctiveness of an area with regard to habitats and landscape types.*
>
> *Green infrastructure includes established green spaces and new sites and should thread through and surround the built environment and connect the urban area to its wider rural hinterland. Consequently it needs to be delivered at all spatial scales from sub-regional to local neighbourhood levels, accommodating both accessible natural green spaces within local communities and often much larger sites in the urban fringe and wider countryside'.*

1.5   Green infrastructure refers to networks of protected sites, nature reserves, green spaces, waterways and green linkages. By providing for multi-functional uses, i.e. landscape, wildlife, recreational and cultural experience, it contributes to liveability, whilst delivering biodiversity and other benefits including, potentially, flood relief.

1.6   There are a range of types of spaces that may be considered to contribute to 'green infrastructure' including:

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[1] Natural England's Green Infrastructure Guidance (http://naturalengland.etraderstores.com/NaturalEnglandShop/Product.aspx?ProductID=cda68051-1381-452f-8e5b-8d7297783bbd

- Parks and Gardens: urban parks, country and regional parks, formal gardens.
- Amenity Greenspace: informal recreation spaces, housing green spaces, domestic gardens, village greens, urban commons, other incidental space, green roofs.
- Natural and Semi-Natural Urban Greenspaces: woodland and scrub, grassland (e.g. downland and meadow), heath or moor, wetlands, open and running water, wastelands and disturbed ground, bare rock habitats (e.g. cliffs and quarries).
- Green Corridors: rivers and canals including their banks, road and rail corridors, cycling routes, pedestrian paths, rights of way.
- Other: allotments, community gardens, city farms, street trees, cemeteries and churchyards.

1.7 The Natural England definition states that green infrastructure should be designed and managed as multi-functional. Potential functions may be environmental, social or economic and may include supporting: habitats and biodiversity, local distinctiveness, links between areas access, landscape setting, public health, the protection, conservation and management of heritage assets, sport and recreation, cultural experiences, education and training, food production, flood management and climate change adaptation and mitigation.

1.8 A high quality and multi-functional green infrastructure network can provide a range of environmental, social and economic benefits. Example benefits include:
- Social benefits: improving quality of life, providing access to nature and open space, offering greater integration between existing and new communities.
- Economic benefits: providing attractive places to live, work and visit, promoting inward investment and tourism, delivering resources and processes supplied by natural ecosystems and providing employment opportunities linked to outdoor environmental education and leisure enterprises.
- Environmental benefits: improving the quality of the environment, strengthening local character and identity, providing space for wildlife and heritage conservation, improving air quality and responding to climate change.
- Health benefits: facilitates and promotes active lifestyles e.g. more cycling and walking and mental well-being.

1.9 Gaining the greatest range of benefits from green infrastructure requires partnership working between neighbouring local authorities, the County Council, relevant interest groups and landowners.

1.10 This background note will review the context for green infrastructure in Dacorum, will identify existing Green Infrastructure and assets, and potential areas for future development of the Green Infrastructure network.

2   Green Infrastructure Context

National Context

2.1   Planning Policy Statement 1: Delivering Sustainable Development requires development plans and planning decisions to have due regard to environmental issues in meeting sustainable development objectives and states that development should provide for an appropriate mix of uses, including the incorporation of green space.

2.2   Planning and Climate Change - Supplement to PPS1 states that spatial strategies and any development should help deliver, amongst other things, green infrastructure and biodiversity as part of a strategy to address climate change mitigation and adaptation.

2.3   Planning Policy Statement 12: Local Spatial Planning gives prominence to the provision of green infrastructure, particularly alongside housing development. It advises that Core Strategy documents should be supported by evidence of what green infrastructure is needed to enable the amount of development proposed for the area to be delivered, taking account of its type and distribution. PPS12 notes that good infrastructure planning considers the infrastructure required to support development, costs, sources of funding, timescales for delivery and gaps in funding.

2.4   PPS12 recognises that many issues critical to spatial planning do not reflect local planning authority boundaries, and this is particularly relevant for green infrastructure networks which often cover large areas making planning an individual district in isolation a difficult task.

2.5   In addition to these documents, national policy documents with relevance to planning for green infrastructure include:
- PPG2: Green Belts
- PPS3: Housing
- PPS7: Sustainable Development in Rural Areas
- PPS9: Biodiversity and the Historic Environment
- PPG15: Planning and the Historic Environment
- PPG17: Planning for Open Space, Sport and Recreation
- PPS25: Development and Flood Risk.

Regional Context

2.6   In July 2010 the Government announced the revocation of all Regional Spatial Strategies. Despite no longer having any statutory weight as part of the borough's

development plan, the East of England Plan contained helpful advice regarding the role of Green Infrastructure that remains pertinent as background to local planning documents.

2.7   East of England Plan policy ENV1 (Green Infrastructure) stated that:

> *'Areas and networks of green infrastructure should be identified, created, protected, enhanced and managed to ensure an improved and healthy environment is available for present and future communities. Green infrastructure should be developed so as to maximise its biodiversity value and, as part of a package of measures, contribute to achieving carbon neutral development and flood attenuation. In developing green infrastructure, opportunities should be taken to develop and enhance networks for walking, cycling and other non-motorised transport.'*

2.8   The East of England Plan considered that while the policy applied region-wide and at all scales of development, green infrastructure would be particularly important in settlements and surrounding areas proposed for regionally significant development, notably the Key Centres for Development and Change. Hemel Hempstead was designated as a Key Centre for Development and Change.

2.9   The East of England Biodiversity Mapping Project (2005)[2] developed a regional biodiversity network map for the East of England. This was produced in response to the levels of growth proposed for the Region which suggested the need to establish a network of biodiversity areas and corridors to both conserve existing biodiversity and restore and regenerate biodiversity in areas which may be suffering from a current deficit, set against an uncertain background of climate change. The regional biodiversity network map produced is shown in Map 1 and indicates core biodiversity areas, biodiversity enhancement areas, strategic river corridors and urban biodiversity deprivation areas.

2.10   The East of England Biodiversity Delivery Plan 2008-2015[3] recognises that the East of England is one of the most biodiversity rich areas in England, and that while the region strives for greater prosperity and an improved quality of life, this must also take into account the needs of biodiversity.

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[2] http://www.eoebiodiversity.org/reports/eofengland%20biodiversity%20network%20report.pdf
[3] http://eoebiodiversity.org/pdfs/habitat%20targets.pdf

Hertfordshire Context

Biodiversity Action Plan

2.11 The Hertfordshire Biodiversity Action Plan[4] provides a 50-year vision for the wildlife and natural habitats of Hertfordshire and identifies those habitats and species which are a priority for conservation action. It provides a valuable source of information on the county's natural assets.

Green Infrastructure Framework

2.12 In recognition of the need to develop a consistent and collaborative approach to green infrastructure provision in Hertfordshire, Hertfordshire County Council are leading on the preparation of a Framework for green infrastructure in Hertfordshire. The Framework preview document[5] encourages a consistent and focussed approach to green infrastructure provision in Hertfordshire through the creation of a green infrastructure Partnership and by supporting local green infrastructure strategies to deliver the many social, economic and environmental benefits that green infrastructure has the potential to provide.

2.13 The Framework identifies the priorities for green infrastructure planning in Hertfordshire as:
- Establishing a common approach to green infrastructure planning across authority boundaries;
- Safeguarding green space assets that contribute to green infrastructure including wildlife sites and corridors and movement networks for people (walking, cycling and other non-motorised transport);
- Assessing the quantity, quality and functionality of existing green infrastructure assets to identify areas where additional and/or enhanced green infrastructure is needed to meet future needs;
- Encouraging provision of connected networks of green space in urban, urban fringe and adjacent countryside areas related to settlements proposed for regionally significant development (notably Hatfield and Welwyn Garden City, Hemel Hempstead, Stevenage and Watford in Hertfordshire; and Luton/ Dunstable and Harlow, close to the county's boundaries);
- Highlighting the importance of 'landscape scale' assets of regional significance for the retention, provision and enhancement of green infrastructure (Chilterns Area of Outstanding Natural Beauty, Watling Chase Community Forest and the Lee Valley Regional Park) and strategically significant green infrastructure projects and proposals (such as the green infrastructure projects around the fringes of Greater London and associated corridors) within Hertfordshire; and

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[4] http://www.hef.org.uk/nature/biodiversity_vision/contents.htm
[5] http://www.hertsdirect.org/libsleisure/heritage1/landscape/about/ginf/

- Stimulating development of policies in Local Development Documents that respond to locally identified needs, and identify the scale and location of green infrastructure required to extend and enhance existing assets to create multi-functional networks of green space.

Local Context

Community Strategies

2.14 Dacorum Sustainable Community Strategy towards 2021[6] has identified priorities for the Borough as:

- **Reducing crime and creating a safer Dacorum**, by tackling crime and disorder and improving the quality of life for everyone who lives, works and visits Dacorum.

- **Creating a cleaner and healthier environment**, through encouraging individuals and organisations to work together locally to improve the environment and help reduce global impacts.

- **Delivering lifelong learning**, by supporting and inspiring individuals and communities, learning providers and local employers to work together to bring greater coherence and co-ordination to adult learning.

- **Encourage business and local employment**, by developing a strategy with the business community and through training and development schemes that build a flourishing and sustainable local economy.

- **Meeting housing need**, by maximising the provision of good quality affordable housing in partnership with a range of stakeholders and providers.

- **Promoting culture, arts, leisure and tourism**, through a variety of clubs, arts and leisure opportunities and activities.

- **Encouraging community involvement**, by enabling and supporting people and groups and developing opportunities for people to be involved.

- **Meeting the needs of children and young people**, by ensuring equal access to opportunities for children and young people to fulfil their potential and be empowered to become independent adults.

- **Improving social care and health**, through working in partnership to eliminate social care and health inequalities.

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[6] http://www.dacorum.gov.uk/pdf/Towards%202021%20lo.pdf

- **Meeting the needs of older people**, by ensuring equal access to opportunities and services, enabling older people to have informed choices and to contribute to our community.

2.15 These objectives complement those in the County-wide community strategy - Hertfordshire 2021: A Brighter Future, which identifies the following priorities:

- Jobs, prosperity and skills,
- Safer and stronger communities,
- Children and young people,
- An ageing population,
- Health and wellbeing,
- Housing, Affordable Housing and Quality Neighbourhoods
- Transport and Access
- Sustaining Hertfordshire's Unique Character and Quality of Life

2.16 Green infrastructure has a particularly important role to play in those objectives centre around reducing inequalities, improving health and well-being and helping improve the environment.

Technical Studies

2.17 A number of technical studies that relate to Green Infrastructure within the borough have already been carried out and comprise part of the Council's evidence base to inform production of the Local Development Framework:

Appropriate Assessment – Screening Report for the Core Strategy Issues and Options Paper (April 2008)

2.18 Proposals within Dacorum's Core Strategy Issues and Options Paper (May and November 2006) and Site Allocations Issues and Options Paper (November 2006) have been analysed as part of an Appropriate Assessment (AA) screening process. Similar assessments have been carried out for St Albans City and District Council, Three Rivers District Council and Watford Borough Council.

2.19 Screening is required where a plan, either alone or in combination with other plans, could affect Natura 2000 Sites (Special Protection Areas for birds - SPAs, Special Areas of Conservation for habitats - SACs) following Article 6(3) of the European Habitats Directive. The first phase of this screening involved an analysis of Dacorum's Issues and Options to ascertain any likely significant effects that may compromise the conservation objectives of nearby Natura 2000 sites. In agreement with Natural England, the statutory consultee for Appropriate Assessment screening, it was decided that Chilterns Beechwoods SAC was the only site of relevance to this screening. The next phase of the AA screening involved examining all other plans,

programmes and projects that may affect the Chilterns Beechwoods SAC in conjunction with Dacorum's potential sites.

2.20 The screening concluded that the minor wording changes to some of the questions in the Dacorum Site Allocations Issues and Options DPD, including giving more prominence to the SAC when discussing designated areas, would assist in the protection of the site. Major development sites put forward in the Schedule of Site Appraisals lie beyond a 3km buffer zone from the SAC. Significant greenfield development is not expected within the buffers, and development potential would predominantly consist of brownfield sites within settlements and small scale greenfield development required for affordable housing need.

2.21 The biggest, if indirect, threat to the Chilterns Beechwoods SAC would come from development to the west of Hemel Hempstead and/or the implementation of any northern bypass for the town and the associated increases in recreational use.

2.22 The Screening Report (April 2008) concluded that a full Appropriate Assessment and any associated mitigation measures (to be agreed with Natural England) would only be necessary if large scale greenfield development were to occur within the 3km buffers and accessibility to the SAC was improved in conjunction with the development of one or more neighbourhoods outside the SAC buffers.

Urban Design Assessment[7] (January 2006)

2.23 This assessment covers the borough's three towns (Hemel Hempstead, Berkhamsted and Tring) and three large villages (Markyate, Bovingdon and Kings Langley). A strategy plan and set of settlement principles are provided for each of the towns and villages. These define the broad "Urban Design Zones" into which the settlements have been sub-divided. Green Infrastructure is recognised as having a significant impact upon the character of these urban design zones.

Urban Nature Conservation Study[8] (March 2006)

2.24 This study identifies the wildlife resources and habitats accessible to (and within) the six main settlements of the borough. It reviews existing policies and applies the standards recommended by English Nature (now Natural England). The study puts forward a strategy for the protection and enhancement of key wildlife areas and a network of spaces and natural (or semi-natural) corridors for each town and large village.

2.25 The study concludes that the urban biodiversity of the six major settlements needs to be considered in the context of the ecological resources of the borough as a whole and their immediate hinterland. Sites of Special Scientific Interest, Local Nature

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[7] http://www.dacorum.gov.uk/PDF/Urban%20Des%20Executive%20Summary.pdf
[8] http://www.dacorum.gov.uk/pdf/UNCSMar06.pdf

Reserves and Wildlife Sites should be protected from adverse development. The maintenance and enhancement of these assets should be encouraged through their active management. Local valuable 'Wildspace' areas should be protected, particularly where consistent with Open Land designated within the Local Plan. Links to open countryside and other recognised sites of wildlife value should be protected and enhanced with appropriate management where possible. New sites should be enhanced or created where appropriate, especially where consistent with Open Land. All opportunities for Local Nature Reserve designated should be explored and suitable sites designated to help towards meeting English Nature's recommended target. Finer grained support for wildlife should be developed and maintained using the 'Greenspace Factor' principle and policies to protect and /or plant trees, hedgerows and other vegetation, which will contribute to the delivery of sustainable development. The principles of sustainable development should be followed across the borough with respect to biodiversity resources, including opportunities to address deficiencies through planning gain.

2.26 The principal wildlife corridors for each of the borough's towns and large villages will be highlighted on the place Vision Diagrams within the Core Strategy.

Outdoor Recreation Facilities Study[9] (October 2006)

2.27 This study assesses the provision of pitches, courts and greens, identifies clubs and teams and assesses the need for additional provision. Local standards are set for sub-areas of the borough, in accordance with Sport England's Electronic Toolkit and a Strategy Action Plan developed.

Open Space Study[10] (March 2008)

2.28 This study analyses the current provision of open space in Dacorum. It focuses on the amount of open space per settlement, the quality of open space, and how accessible open spaces are. The study then looks to understand the needs of the community and make recommendations on the provision of open space within Dacorum. The study aims to support, inform and help integrate the following local initiatives;

     a) local planning policies;
     b) management of public open spaces; and
     c) funding bids and investment priorities.

2.29 The study identifies deficiencies in open space at a number of geographical scales (local, borough-level and regional). Key recommendations are as follows:

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[9] http://www.dacorum.gov.uk/PDF/Final%20Outdoor%20Sport%20Report%20Oct%202006.pdf
[10] http://www.dacorum.gov.uk/pdf/Final%20version%20of%20Open%20Space%20Studyv3.pdf

- Existing open space should be protected from development, and new opportunities for open space provision be sought.

- Areas where dedicated children's play areas are not provided are mainly confined to certain specified villages. In order to reduce these deficiencies, it is recommended that opportunities to provide additional children's play space should be sought.

- As part of a quality analysis some sites scored lower than expected. Opportunities should be sought to improve the quality of these open spaces. Management plans could act as a catalyst for the improvements, and developer contributions towards provision should be sought.

- If a proposed development is located in an area with an open space deficiency, it will be necessary for additional space to be provided. This can either be through providing space within the development itself, or contributing to off-site provision.

- If the proposed development is not located in an area with open space deficiency, then consideration should be given to quality issues. If appropriate, the developer will be required to make a contribution towards the enhancement of existing provision, e.g. by improving the range of facilities and their condition.

- Deficiencies in open space provision should be addressed through specific improvements to existing spaces within the areas affected where possible, or through establishing new open spaces where opportunities arise as a result of new housing development. Existing Council land holdings could potentially be used to fulfil local needs particularly where opportunities are linked to other initiatives (i.e. schools re-organisation).

2.30 The study recorded 64 natural green spaces equating to 205.114 hectares or 1.485 ha per thousand population. Sites are distributed quite evenly across the borough, many of them outside or just on the edge of settlements. Public consultation, through the Citizens Panel, has highlighted the importance placed by residents on open space.

2.31 There is currently no standard for natural green spaces in Dacorum. Policy 103 of the Local Plan seeks to encourage management of sites of ecological value when development is permitted on or adjacent to such sites, or require compensatory measures. Formal opportunities through the planning process or Wildlife and Countryside Act or other voluntary measures will be encouraged. The Local Biodiversity Action Plan provides the ecological context for this work. The Urban Nature Conservation Study (March 2006) states that *"new sites should be enhanced or created for their wildlife value where appropriate, especially where consistent with*

Open Land. These can help to offset areas of deficiency or improve public accessibility."

2.32 The ANGSt model is based on research which reviewed the available scientific literature and concluded that the provision of natural green space in urban areas should be governed by a hierarchy of size and distance criteria which can be translated into a set off standards. The ANGSt model requires:

- that no person shall live more that 300m from their nearest area of natural green space of at least 2ha in size;
- provision of at least 1ha of Local Nature Reserve per 1,000 population;
- that there should be at least one accessible 20ha site within 2km from home;
- that there should be one accessible 100ha site within 5km; and
- that there should be one accessible 500hs site within 10km.

2.33 It is acknowledged that not all of these standards may be achievable in the short term. However, they provide clear long term targets. Other types of green spaces also need to be taken into account as they provide multi-functional use.

2.34 Natural England have recently undertaken an analysis and review of the ANGSt standards for Hertfordshire[11].

Green Space Strategy 2010-2015 (Consultation Draft March 2010)

2.35 Provides a vision and plan to deliver improved public spaces within the borough. It provides the means to improve quality of neighbourhoods, to meet community and planning needs, and to deliver wider objectives for Dacorum.

2.36 Over the next five years the strategy will be used as a management tool to guide the Council's work programme, direct existing resources and seek additional funding. It will support the development of the Local Development Framework and help to protect green space from the pressure of development.

2.37 To prepare the strategy the following were assessed; the needs of local communities, the availability of resources and the quality, and the quantity and accessibility of green spaces. This information helped establish priorities for the borough and develop local standards for the provision, design and management of new green spaces. The work has fed into an Action Plan which will help ensure delivery of the recommendations.

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[11] http://www.naturalengland.org.uk/Images/HertsReport_tcm6-21928.pdf

2.38 The strategy provides both the general direction required to improve the borough's green spaces and also detailed local solutions to implement the community's priorities on the ground.

Dacorum Borough Nature Conservation Strategy – A Local Biodiversity Action Plan (September 2001)

2.39 This strategy builds on the county-wide Biodiversity Action Plan. It aims to concentrate available resources and expertise to secure greater benefits for nature conservation and enable the conservation and enhancement of local wildlife and natural features both now and for future generations. The overall aim of the strategy is to achieve the following long term (50 years) ecological objectives, taking a holistic view of Dacorum's natural resources:

- To realise the full ecological potential of the Dacorum area by maintaining and enhancing the present range of species, habitats and landscape features combined with extensive recreation and expansion of key habitat types.
- To create, restore and link characteristic ecological, hydrological and landscape features to form an ecologically integrated landscape.
- To achieve the sustainable use of the area's natural resources.
- To raise public awareness of the Borough's biodiversity and issues relating to its wellbeing and to encourage community involvement in projects, involving all sectors of society.

2.40 To achieve this the strategy must influence and actively engage all organisations involved in managing the natural environment, landowners and managers, all Dacorum Borough Council (DBC) departments and other sectors of society including residents, businesses, schools and colleges and wider public.

2.41 The Nature Conservation Strategy has therefore been produced in the form of a Local Biodiversity Action Plan (BAP). It aims to prepare detailed objectives, targets and actions for the conservation of the borough's biodiversity, through the production of a series of action plans. It contains:

- a background to nature (biodiversity) conservation;
- an evaluation of Dacorum's ecological resources;
- detailed action plans for selected habitats;
- a detailed community involvement action plan; and
- a suggested monitoring and review process.

2.42 This work has been informed by an 'Urban Survey and Assessment of Hemel Hempstead' (HERC 1992) and 'The Habitat Survey for Dacorum – A Nature Conservation Reference Guide' (HERC / HMWT 1997).

Landscape Character Assessment[12] (May 2004)

2.43 In February 2000 Hertfordshire County Council commissioned The Landscape Partnership to undertake the preparation of a local authority scale landscape character assessment and evaluation of the southern part of the county. The characterisation work was to enable a definitive classification of all landscape types and boundaries encountered to be made, for the purposes of

- Advising on development control and policy development for future development plans, and
- Providing a framework for other landscape planning, regulation, conservation and management activities in the county.

2.44 The Landscape Character Assessment for Dacorum was published in May 2004. The assessment looks at both natural and historic landscape features and complements the county-level work carried out on Historic Landscape Characterisation. Each landscape area is assessed in terms of its key characteristics, distinctive features, physical, historical and cultural influences, issues of visual and sensory perception, accessibility and community views. Plotting the overall strength of character and condition of each area allows a recommended approach to future land management to be reached (Figure 1).

Figure 1   Landscape Character – Summary of Recommendations

CONDITION				
	GOOD	Strengthen and reinforce	Conserve and strengthen	Safeguard and manage
	MODERATE	Improve and reinforce	Improve and conserve	Conserve and restore
	POOR	Reconstruct	Improve and restore	Restore condition to maintain character
		WEAK	**MODERATE**	**STRONG**
		STRENGTH OF CHARACTER		

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[12] http://www.dacorum.gov.uk/PDF/LandscapeCharAssess_F02_IntroGenFeaturesMethodology.pdf

Ancient Woodland Study

2.45 Ancient woodland over two hectares in a size are recorded in Ancient Woodland Inventories, compiled in the 1980's and 1990's by the Nature Conservancy Council. These are now administered by Natural England.

2.46 In well wooded areas such as the Chilterns, which are under considerable development pressures, small woodlands are a central part of the fabric of the countryside and make a significant contribution to the overall woodland reserve. Their omission from the inventory undermines their protection through the planning process.

2.47 Dacorum Borough Council is supporting a project being led by Natural England and the Chilterns Conservation Board to revise and update the original Ancient Woodlands Inventory and include woodlands of less than two hectares for the first time.

2.48 Final results, which will be included a GIS layer with updated Ancient Woodland boundaries and database holding information on all woodland surveyed, together with a summary report for the borough, are expected in May 2012.

3 Green Infrastructure in Dacorum

3.1 A variety of datasets and information sources have been used to identify and map the distribution of Green Infrastructure assets within Dacorum, and subject to data availability, in surrounding local authority areas.

3.2 The Green Infrastructure assets which are considered most important for Dacorum are:

- Landscape Character Areas;
- Special Area of Conservation;
- Chilterns Area of Outstanding Natural Beauty;
- Sites of Special Scientific Interest;
- Local Nature Reserves;
- County Wildlife Sites;
- Key Biodiversity Areas;
- Biodiversity Action Plan priority habitats;
- Biodiversity Action Plan priority species;
- woodlands;
- parks and open spaces;
- heritage assets;
- water environment (rivers, canals, reservoirs etc); and
- access corridors (railways, roads and pedestrian and cycle networks).

Landscape Character Areas

3.3 Map 2 shows the different Landscape Character Areas within the borough. In order to give an overall picture of their condition and strength, the recommended management approach for each defined landscape area has been plotted (Map 3). This shows that the majority of areas fall into the 'improve and conserve' category. All areas are assessed to have a moderate to strong character and apart from a very small area to the east of Hemel Hempstead, all are in a moderate to good condition.

The Chilterns Area of Outstanding Natural Beauty

3.4 The Chilterns Area of Outstanding Natural Beauty (AONB) is one of the borough's most important landscape assets. The extent of the Chilterns AONB within Dacorum is shown in Map 4. It was designated for the natural beauty of its landscape and its natural and cultural heritage. Its special qualities include the steep chalk escarpment with areas of flower-rich downland, woodland, commons, tranquil valleys, the network of ancient routes, villages with their brick and flint houses, chalk streams and a rich historic environment. Its conservation and enhancement is a national priority that

needs to be reflected locally. The Chilterns Conservation Board has a statutory duty to produce a Management Plan, supported by a Delivery Plan. This identifies the management issues faced and provides policies and actions to guide the work of all those who care for the AONB.

Sites of Special Scientific Interest

3.5 Sites of Special Scientific Interest are nationally important wildlife and geological sites. There are eight Sites of Special Scientific Interest within Dacorum as shown on Map 9. The sites are:

- Aldbury Nowers
- Alpine Meadow, near Brick Kiln Cottage, Berkhamsted
- Ashridge Common and Woods
- Little Heath Pit (Geological)
- Oddy Hill and Tring Park
- Roughdown Common
- Tring Reservoirs
- Tring Woodlands

Local Nature Reserves

3.6 Local Nature Reserves are designated sites of importance for wildlife, geology, education or public enjoyment. There are six Local Nature Reserves within Dacorum as shown on Map 5. These sites are:

- Alpine Meadow (Wildlife Trust)
- Long Deans, Hemel Hempstead (Wildlife Trust)
- Wilstone Reservoir (Wildlife Trust)
- Shrub Hill Common Local Nature Reserve
- Aldbury Nowers, Duchies Piece (Wildlife Trust)
- Howe Grove Local Nature Reserve

County Wildlife Sites

3.7 County wildlife sites are defined as discrete areas of land which are considered to be of significance for wildlife features in at least a borough context. These sites cover a variety of habitat types and species identified as having biodiversity value and should therefore be retained. These sites are spread across the borough and are shown on Map 5.

Key Biodiversity Areas

3.8 The Hertfordshire Biodiversity Action Plan identifies a number of key biodiversity areas in Dacorum. These areas are shown in Map 6 and are:

- o River Chess Valley: wetland.
- o Ashridge/Berkhamstead Common/ Aldbury Nowers: woodlands.
- o Tring Park/ High Scrubs: grasslands.
- o Tring Reservoirs: wetland.
- o Upper Grade Valley: mosaic.

3.9 These Key Biodiversity Areas correspond to the target areas identified by the Herts and Middlesex Wildlife Trust's 'Living Landscapes' scheme. This seeks to enable the creation of more robust, resilient and connected landscapes, which are full of wildlife, safeguarded for the future, highly valued and enjoyed by people and rich in opportunities for learning, health and wildlife well-being.

Biodiversity Action Plan Priority Habitats

3.10 The Hertfordshire Biodiversity Action Plan has identified a series of priority habitats for Hertfordshire. These are:

- o Key habitats of which there is a significant proportion of the UK resource in Hertfordshire. Hertfordshire has special responsibility for these and are therefore a priority for action:
  - Chalk rivers
  - Lowland Beech woods.

- o Key habitats which have declined in the recent past or are still declining locally. These habitats are directly threatened and must therefore be a priority for action:
  - Ancient species-rich hedgerows
  - Lowland acidic grassland and lowland heathland
  - Lowland calcareous grassland.

- o Key habitats which are locally rare and/or threatened and therefore require conservation action:
  - Lowland hay meadow
  - Floodplain grazing marsh
  - Fens
  - Reedbeds
  - Cereal field margins.

o   Local habitats which Hertfordshire has a significant proportion of the UK resource and therefore a wider responsibility for, or habitats which are locally distinctive and important in defining the character of the local natural environment:
- Oak-hornbeam woods.

Biodiversity Action Plan Priority Species

3.11 The Hertfordshire Biodiversity Action Plan also identifies a series of priority species for Hertfordshire. These are:

o   UK priority species where Hertfordshire can contribute to the achievement of the national targets, because the species are characteristic of the area:

- Brown Hare
- Otter
- Water Vole
- Grey Partridge
- Song Thrush
- Bullfinch
- Linnet
- Spotted Flycatcher
- Turtle Dove
- Stag Beetle
- Thatch Moss
- Cornflower
- Dormouse
- Pipistrelle
- Bittern
- Skylark
- Stone Curlew
- Corn Bunting
- Reed Bunting
- Tree Sparrow
- Great Crested Newt
- White-clawed Crayfish
- Shepherd's Needle
- Corn Cleavers

o   Species which are locally rare, declining, threatened and are either high profile and/or locally distinctive:

- Natterer's Bat
- Nightingale
- Water Rail
- Kingfisher
- Palmate Newt
- Brown Hairstreak
- Chalkhill Blue
- Grizzled Skipper
- Corn Parsley
- Long-eared Owl
- Pochard
- Hawfinch
- Snipe
- Small Blue
- Duke of Burgandy
- Silver-washed Fritilliary
- Corn Buttercup
- Corn Gromwell
- River water-dropwort
- Narrow-fruited Corn Salad
- Great Pignut
- Green-winged Orchid
- Ivy-leaved Water Crowfoot
- Pasqueflower
- Petty Whin
- Snakes-head Fritillary

3.12 The Dacorum Biodiversity Action Plan also identifies a series of priority species for Dacorum. These are:

- UK priority species where Dacorum can contribute to national targets:
  - Common Dormouse
  - Pipistrelle
  - Grey Partidge
  - Song Thrush
  - Bullfinch
  - Reed Bunting
  - Tree Sparrow
  - Turtle Dove
  - Violet Click Beetle
  - Stag Beetle
  - Seligeria paucifolia (a moss)
  - Water Vole
  - Brown Hare
  - Skylark
  - Linnet
  - Corn Bunting
  - Spotted Flycatcher
  - Barn Owl
  - Great Crested Newt
  - White-clawed Crayfish
  - *Ephemerum cohaerens* (a moss)
  - *Weissia sterilis* (a moss)

- Species which are locally rare, declining, threatened and are either high profile or locally distinctive.
  - Natterer's Bat
  - Red kite
  - Grizzled Skipper
  - Silver-washed Fritillary
  - Stream Water-crowfoot
  - Chiltern Gentian
  - Yellow Bird's-nest
  - Hawfinch
  - Chalkhill Blue
  - Duke of Burgundy
  - Pasqueflower
  - Ivy-leaved Water-crowfoot
  - White Helleborine
  - Black Poplar

3.13 Key sites highlighted within the Dacorum BAP are illustrated on Map 5.

Ancient Woodland Study

3.14 Known ancient semi-natural woodlands are designated as Wildlife Sites. The Ancient Woodland Study is due to publish its updated schedule of sites in early 2010 and this may identify additional locations which will require similar designation and protection. The extent of the area subject to re-survey is shown on Map 7.

Parks and Open Spaces

3.15 Map 4 shows the parks and open spaces in the Borough. Parks and open spaces include village greens and areas of common land. There are many smaller areas of amenity space which have not been mapped, but may still be important resources more locally.

Heritage assets

3.16 Map 8 shows registered parks and gardens, Scheduled Ancient Monuments and archaeological sites within the Borough, which may be important Green Infrastructure assets.

3.17 There are four registered parks and gardens at Ashridge, Tring Park, Markyatecell Park and the Jellicoe Water Gardens in Hemel Hempstead town centre. There are also unregistered parks and gardens which are considered to be of considerable local interest.

3.18 There are the 27 Scheduled Ancient Monuments within the Borough:
- Grim's Ditch (or Gryme's Dyke), Berkhamsted
- Grim's Ditch (or Gryme's Dyke), Woodcock Hill, Northchurch
- Grim's Ditch (or Gryme's Dyke), in Northchurch Parish
- Grim's Ditch (or Gryme's Dyke), 969 meters north-west from Smart's Wood, Wiggington
- Grim's Ditch (or Gryme's Dyke), section extending 1 mile 740 yds east from Longcroft, Tring
- Highfield Tumulus, Hemel Hempstead
- The Charter Tower, Hemel Hempstead
- Deserted Village of Tiscott, Tring
- Roman Settlement in Gadebridge Park, Hemel Hempstead
- Wood Lane End Roman site
- Royal Palace (site of) Kings Langley
- Dominican Priory (site of) (excluding inhabited parts), Kings Langley

- Site of Roman buildings north of Berkhemsted Castle
- Roman settlement at the Cow Roast Inn, Northchurch
- Romano-British Settllement and earthworks on Berkhamsted Common, Northchurch
- Settlement of St Mary's Church, Puttenham, Tring
- Ardwick deserted medieval village, Tring
- Stool Baulk, Aldbury
- Little London moated site and surrounding earthwork enclosure, Kings Langley
- Two barrows on Chipperfield Common
- Two barrows at Bridgewater Monument
- Marlin Chapel Farm moated site
- Berkhamsted Castle
- Bowl barrows, 950 and 900 m SSW of Nettleden Lodge
- Bowl barrow, Turlshanger Wood, 300m SE of Northfield Grange
- Bowl barrow, Aldbury Nowers Wood
- Boxmoor House Roman Villa, Hemel Hempstead

3.19 There are 61 archaeological sites within the Borough:
- Markyatecell Park
- Markyate
- Astrope
- Puttenham
- Wilstone Cropmark
- Marshcroft Lane, Tring, cropmark
- Pendley Manor
- Gubblecote
- Wigginton
- Tring
- Boarscroft Farm/Alnwick Farm, Long Marston
- Long Marston
- Wilstone
- Jockey End
- Great Gaddesden
- St Margaret's Farm, Great Gaddesden
- Nettleden
- Flamstead
- Gaddesden Row
- Berkhamsted
- Grim's Ditch, Berkhamsted
- Cow Roast
- Hamberlins Lane, Northchurch

- Marlin Chapel Farm, Berkhamsted
- Tring Station
- Brick Kiln Cottage, Berkhamsted Common
- Ashridge
- Aldbury
- Northchurch Common (first site)
- Little Gaddesden Church
- Frithsden
- Grim's Ditch, Potten End
- Gadebridge Park
- Boxmoor
- High Street, Hemel Hempstead
- Queensway, Hemel Hempstead
- Wood Lane End, Hemel Hempstead
- Chipperfield Common
- Barnes Lodge, Hempstead
- Priory, Kings Langley
- High Street, King's Langley
- Little London moated site and surrounding earthwork enclosure, Kings Langley
- Miswell Farm, Tring
- West Leith, Tring
- Northchurch Common (second site)
- Hudnall Common
- Bury Farm, Bovingdon
- North west of Lower Gade Farm, Hudnall Corner, cropmarks
- Hill and Coles Farm, Flamstead, cropmarks
- East of New Wood, Flamsteadbury, cropmarks
- East of New Wood, Flamsteadbury, cropmarks
- Apsley Manor, A41
- Stoney Lane/Broadway Farm A41
- Chesham, Road, Berhamstead A41
- Oakwood, Berkhamsted A41
- Pea Lane, Northchurch A41
- East of Hogtrough Wood, Flamstead
- Picotts End
- Bovingdon Green
- Leverstock Green

Water Environment

3.20 Map 9 shows the corridors of the Rivers Ver, Bulbourne and Gade and the Grand Union Canal. These corridors provide important linkages across the borough and into adjoining areas. Reservoirs and areas liable to flooding are also shown.

Access Links

3.21 Public access is an important feature of Green infrastructure, and Map 10 shows the extent of the public footpath network, and existing and proposed cycle routes. It also illustrates the main rail route through the borough.

Special Area of Conservation (SAC)

3.22 The extent of the Special Area of Conservation (Chiltern Beechwoods), together with the 3km 'buffer zone' referred to within the Appropriate Assessment Screening Report is shown on Map 11.

Green Infrastructure Assets and Corridors

3.23 If all of the above Green Infrastructure assets were overlayed onto a single map, it would show that the borough has relatively good access to green infrastructure.

3.24 This wealth of information is summarised on the Green Infrastructure Network map within the Consultation Draft Core Strategy (November 2010), reproduced here as Map 12. This diagram brings together a number of separate studies and strategies and provides a conceptual tool for identifying key landscape features, sites and areas of high biodiversity; ensuring these environmental assets are protected and enhanced; and creating opportunities to extend and link them together. This is reinforced at the local level through the individual Place Strategies, which identify wildlife corridors and areas of open space that are of particular local importance for each of the Borough's towns and large villages.

4   Green Infrastructure Priorities

4.1   Dacorum's Core Strategy aims for new development in the Borough to maintain or improve the quality of life of Dacorum's communities, and for development to be supported by appropriate infrastructure provision. This should include green infrastructure provision and improvements for both people and wildlife.

4.2   Green infrastructure contributes to the high quality natural and built environment of the borough and towards sustainable communities.

4.3   The mapping exercise undertaken and described in Chapter 3 shows that there are existing assets with potential to contribute to green infrastructure across much of the borough. Assets may be public or private, with or without public access, and in both urban and rural areas.

4.4   The key green infrastructure assets highlighted within this Background Note represent the priorities for green infrastructure in the borough. The focus for green infrastructure should therefore be on conserving and enhancing these key assets.

4.5   The connectivity between key assets through the establishment of linked and coherent networks and corridors of green spaces and sustainable transport links should also be improved. New development should contribute to the delivery of new green infrastructure and management of a linked green infrastructure network. It should not compromise the integrity of the existing network by causing fragmentation, damage to, or isolation of green infrastructure assets.

4.6   Given the level pressure for change Dacorum and surrounding areas, there is a strong need to conserve and enhance green infrastructure. In order to provide for future needs, a net gain in both the quality and quantity of green infrastructure in the borough should be sought. This may be through the protection and enhancement of existing assets and provision of new green spaces.

5 Future Actions

5.1 The Council is working with the County Council and Natural England to improve its understanding of Green Infrastructure at both strategic and local level.

5.2 A county 'Strategic Highlights' plan will illustrate Green Infrastructure which is considered to be of county or strategic importance. It will also consider standards and costings for proposals which need to be implemented across more than one district.

5.3 This county level plan will be complemented by a suite of compatible district-scale Green Infrastructure Plans. These will comprise:

- district-scale mapping,
- accompanying mapping which summarises the proposals and includes costings for growth-related (rather than historic-deficit related) proposals to support the case for developer contributions; and
- a covering report to link these map and tables and inform the district's Local Development Framework. This will consider and analyse evidence (including that provided by existing technical studies summarised in this Background Note) and highlight key gaps in Green Infrastructure provision.

5.4 A stakeholder workshop will be held in December 2010, with the final reports due for publication in March 2011.

5.5 This work will inform the production of a Supplementary Planning Document that will provide more detailed guidance on the provision of Green Infrastructure and an updated landscape strategy for the borough. This will include identification of policy and delivery mechanisms for Green Infrastructure, including possible funding, delivery mechanisms and main delivery partners for the implementation of Green Infrastructure objectives within Dacorum.

6   Appendices

Appendix 1

Wildlife Sites within Dacorum Borough

The following areas have been selected as Wildlife Sites for Dacorum Borough using the criteria in Appendix 4 of the Habitat Survey for Dacorum Borough: A Nature Conservation Reference Guide. Maps showing the location and boundaries of the sites listed below can be found in Appendix 5 of the Habitat Survey for Dacorum Borough Council. More detailed site data is held at Hertfordshire Environmental Records centre (HERC) and is available on request reference to the identification numbers listed here.

- o Folly Farm Pasture
- o Pasture South of Red House Farm
- o Meadow West of Astrope
- o Meadow West of Astrope
- o Meadow South- east of Astrope Lane
- o Boarscroft Farm
- o Long Marston Meadow
- o Field N. Of Long Marston Recreation Ground
- o Betlow Farm Pond
- o Field North of Long Marston Cricket Ground
- o Church Farm Barns, Long Marston, Natterers Barn
- o Long Marston Churchyard and Ponds
- o Great Baldwin's Wood, Gravelpit Wood, Spicer's Spring, Goose Hatch
- o Fairless Wood
- o Broomhill Leys Wood
- o Birchin Grove
- o Birchin Grove Meadow, Pepperstock Meadow
- o Heavens and Chalk Wood
- o Limekiln Plantation
- o Cheverell's Green
- o Road to Pepperstock
- o Borrow Pits, Aylesbury Arm near Grand Union Canal
- o Pasture near Astrope Farm
- o Grand Union Canal, Aylesbury Arm
- o Astrope Meadow
- o Puttenham Old Rectory
- o Dundale
- o Wilstone Reservoir, Tring Reservoirs
- o Tringford Reservoir
- o Startops End and Marsworth Reservoirs
- o Tring Sewage Works
- o Dawes Park, Tring Museum

- Tring Park
- Pasture south of Oddy Hill, Oddy Hill Field
- Station Road/Grove Road Fields
- Lodge Bushes
- No-Man's Friend Wood
- Rushy Meadow
- Grove and Stubbings Woods, Tring Woodlands
- Grassland south-west of Wilstone Reservoir
- Upper Dunsley Meadow, Meadow near Cow Lane Farm
- Pitsone Quarry
- Grand Union Canal, Bulbourne to Tring Station, Wendover Arm Canal
- Cow Lane Farm Meadows
- Hastoe Lane
- Wilstone Great Farm Barns
- Field N. Okeley Lane
- Dunsley Orchard
- Aldbury Common, Ashridge
- Berkhamsted Common
- Northchurch Common, Ashridge Estate
- The Hangings, Bottom Spring, High Spring and the Scrubs, Ashridge Estate
- Ringshall Drive Field
- Aldbury Nowers, Dunchies Piece
- Money Hill Meadow, Fields West of Aldbury Common
- Alpine Meadow and adjacent Woodland
- Hill Farm Beech Grove
- Ashridge Park, Ashridge Golf Course
- Wood by Norcott Court
- Furzefield Wood
- Hoo Wood
- Meadow north-west of Brickkiln Cottage
- Little Gaddesden Village Green
- Coldharbour Farm Pond and Meadow, Ashridge Estate
- Little Gaddesden Chruch & Chruchyard, St Peters & Paul Church
- Monument Cottage, Ashridge Estate, Cottage by Albury Common
- Thunderdell Cottages and Lodge, Ashridge
- Water End Moor
- Badger Wood
- Hudnall Common
- Hill Wood
- Pulridge Wood
- Breach Wood
- St Margaret's Copse
- Highpark Wood
- Dean Wood

- Marsh Wood
- London Wood
- Big Wood, Moody Wood
- Birchley and Stable Woods
- Nettleden Church, Nettleden Churchyard
- Great Gaddesden Pasture by River Gade
- Pasture north-west of Hoo Wood
- Hatche's Farm
- Water End Meadows
- Nettleden Farm/Roman Farm, Calcareous Bank
- Grassland near Hudnall Park
- Beechwood Park (South)
- Hundall Park
- Whitfield Spring
- Lamb's Spring
- Shaw Wood
- New Gorse
- Field north of Donkey's Dell
- Meadow north of Pampard Kennels
- Meadow north-east of Donkey Dell
- Chalk Dell
- Great Gaddesden Church
- Nettledon House
- Forge Farm Meadow and Orchard
- Grassland N.E. of Church Meadow
- Lane House Pasture
- Bridens Camp Road Verge
- Cruck Barn
- Flamstead Green Lane and Ponds (Puddephat's-Nirvana)
- Babies Wood
- Grove Wood
- Friendless Wood
- Hay Wood
- High Wood
- Nicholl's Great Wood & Rabbitfield Spring
- Bury Wood
- Jacks Dell Chalk Pit, Delmerend Lane
- Newlands Wood
- Abel's Grove
- Prior's Green
- Varney's Wood
- Greenlane Wood
- New Wood
- Trowley Button Farm Wood and Hedgerow

- Green Lane South of Jacks Dell
- Champney's Estate
- High Spring, Evans Spring
- High Scrubs
- Hardingings Wood
- Road verge by Haresgarden Wood
- Brown's Lane, Green Lane
- Wixe's Wood
- Wick Wood
- Haresgarden Wood
- Lower Wood
- Paddocks below Geary's Hill
- Grassland S. Of Harding Wood
- Newsett's Wood
- Hamberlin's Wood & Breech's Wood
- The Shrubbery
- Little and Greak Dickshill Wood
- Cock Grove
- River Bulbourne Meadow by Northchurch Playing Field
- Meadow south-west of Shootersway Road
- Hockeridge Wood
- Brickhill Green
- Hockeridge Bottom
- Harriottsend Spring
- Sandpit Green
- Long Green
- Millfield Wood
- Rossway Park, Hanging Plantation
- Berkhamsted Castle
- Berkhamsted Railway embankment, Ellesmere Road
- Paddocks by New Road, Tunnel Field Meadow
- Dropping Wood and Coker's Spring
- Heathen Grove & The Larches
- Green Lane adjacent to The Larches
- Grassland E. Of Swags Spring
- New Road Abandoned Allotments
- Roughdown Common
- Sheethanger Common, Shothanger Common
- Shrub Hill Common
- Harrison Moor Boxmoor
- Cress Farm Watercress Beds, Bourne End
- Frithsden Copse
- Little Heath, Roseheath Wood
- Potten End Green and Pond

- Guteridge Wood
- Hanging Wood
- Browns Spring and Hollybush Wood
- Heizdins Wood
- Dell
- Wood
- Boxmoor Trout Fishery
- Long Wood
- Thrift Wood
- Warners End Wood
- Gravel Hill Spring Wood, Sunnyhill Road
- Meadow by River Gade S. Of Grist house Farm
- Grasslands S. Of Roughdown Common
- Coleshill Wood
- Lower Little Heath Farm Grassland
- Bourne End Churchyard
- Howe Grove
- Two Waters, Apsley, Durrant Hill Cress Beds
- Widmore Wood
- Maylands Wood
- Long Deans Meadow
- Long Deans Wood
- Disused Railway Line, Hemel Hempstead
- Rant Meadow Wood, Bennets End Pit
- Home Wood
- Grand Union Canal, Two Waters to Nash Mills Lane
- Woodhall Wood
- Holy Trinity Church, Leverstock Green
- Pocketsdell Lane
- Green Lane on County Boundary, Bovingdon
- Chipperfield Common
- Bury Wood
- Simon Deans Wood
- Woodmans Wood
- Ramacre Wood, Highcroft Wood
- The Knoll
- Flauden Chalk Quarry
- Field between Darley Ash and Cross Farm
- Lower Plantation
- Meadow behind Scatterdells Lane
- Nuffield Farm Meadow and Orchard
- Green Lane West of Great Wood
- Strawberry Wood
- Rabbit Dell and Fir Wood

- Scatterdells Wood, the Wuings and the Grove
- Kings Langley Common
- Phasels Wood, Great Wood
- Grand Union Canal/River Gade
- The Nucket
- Abbot's Hill School Meadow
- Barnes Farm
- Grassland E. Of Barnes Lodge
- Limeshill Wood and Hanging Lane Wood
- Long Wood, Hanging Croft

Appendix 2

Maps

Maps Shown Separately