

Dacorum Borough Council Strategic Infrastructure Study

> Executive Summary & Infrastructure Delivery Plan

Final // February 2011

URS



**Dacorum Infrastructure
Study**

**Executive Summary and
Infrastructure Delivery Plan**

February 2011
Final Report

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GLOSSARY

Acronym/Abbreviation	Definition
DIM	Dacorum Infrastructure Model
DBC	Dacorum Borough Council
DSIS	Dacorum Strategic Infrastructure Study
f.e.	Forms of Entry
GP	General Practitioner
HCC	Hertfordshire County Council
IDP	Infrastructure Delivery Plan
LDF	Local Development Framework
PPS	Planning Policy Statement
SHLAA	Strategic Housing Land Availability Assessment
SPD	Supplementary Planning Document
STPs	Synthetic Turf Pitches
TravelSmart	An innovative project offering households information and support to encourage and enable people to walk, cycle and use public transport more often.
WTE	Whole Time Equivalent
WWTWs	Waste Water Treatment Works

1. INTRODUCTION

Scope and Objectives

- 1.1. This Executive Summary is part of the *Dacorum Strategic Infrastructure Study (DSIS)*. It introduces the *DSIS*, provides additional information relating to the approach and draws together its findings.
- 1.2. The report is part of a suite of documents and outputs making up the *DSIS*. The accompanying outputs are:
 - Transport Infrastructure Assessment
 - Utilities and Physical Infrastructure Assessment
 - Social Infrastructure Assessment
 - Dacorum Infrastructure Model (DIM).
- 1.3. The predicted increase in Dacorum's population and housing provisions over the next 20 years will create increased pressure on the existing infrastructure within the borough and will in turn generate a need for the provision of further green, physical and social infrastructure.
- 1.4. In order to be genuinely sustainable, the anticipated housing and employment growth will need to be supported by the timely delivery of the necessary infrastructure including transport and utilities as well as more localised social infrastructure such as schools, health care services and community facilities. As such, the *DSIS* assesses the future infrastructure capacity and needs for the borough, highlighting required interventions and their priority, timing and location.
- 1.5. The types of infrastructure examined fall under three main categories (as set out in Figure 1-2). This work provides part of the evidence base for Dacorum's emerging Local Development Framework (LDF), including an Infrastructure Delivery Plan (IDP) for the borough, and will feed into a Supplementary Planning Document (SPD) on Planning Obligations.¹ The Study builds on the work of the Hertfordshire Infrastructure and Investment Strategy (HIIS), which is an assessment of the county's future infrastructure requirements, and was published in October 2009.

Key Drivers for the Study

- 1.6. A key driver for this work is the need to deliver the considerable population and employment growth likely to come forward in Dacorum in a sustainable manner.
- 1.7. In this respect the work supports the *Dacorum Sustainable Community Strategy 2008*, which has the following ambitions:

¹ The Interim Developer Contributions SPD is being formulated by Cushman and Wakefield LLP.

1. *Reducing crime and creating a safer Dacorum*
 2. *Creating a cleaner and healthier living environment*
 3. *Delivering lifelong learning*
 4. *Encouraging business and local employment*
 5. *Meeting housing need*
 6. *Promoting culture, arts, leisure and tourism*
 7. *Encouraging community involvement*
 8. *Meeting the needs of children and younger people*
 9. *Improving social care and health*
 10. *Meeting the needs of older people*
- 1.8. DBC has a coherent strategic and spatial vision for Dacorum, in which the diverse parts of the borough develop in a unified and complimentary way. The vision includes a clear set of aspirations for Hemel Hempstead, as articulated in the work of the Hemel 2020 Vision, which is owned by the Dacorum Partnership, The Local Strategic Partnership (LSP). Hemel 2020 currently has six key projects:
- Town centre regeneration
 - Maylands
 - Neighbourhood improvements and regeneration
 - Green spaces
 - Housing in growth areas
 - Hemel Station Gateway
- 1.9. Considerable planning work has been undertaken on these workstreams through the Hemel 2020 projects and by other stakeholders. There are likely to be implications for infrastructure in key sites such as the 'gateways' at Maylands and the station, ranging from utilities and transport infrastructure to public realm works and social facilities. The regeneration plans have been revised in recent months due to economic pressures, however DBC remains committed to their implementation in collaboration with its partners.
- 1.10. *Planning Policy Statement (PPS) 12 – Local Spatial Planning* requires planning authorities to place infrastructure planning at the heart of the planning process. Accordingly, it expects evidenced infrastructure planning to corroborate LDFs and, in particular, core strategies, as well as housing growth targets and the creation of sustainable development and communities. *PPS12* states that:

‘The Core Strategy should be supported by evidence of what physical, social and green infrastructure is needed to enable the amount of development proposed for the area, taking account of its type and distribution. This evidence should cover who will provide the infrastructure and when it will be planned.’

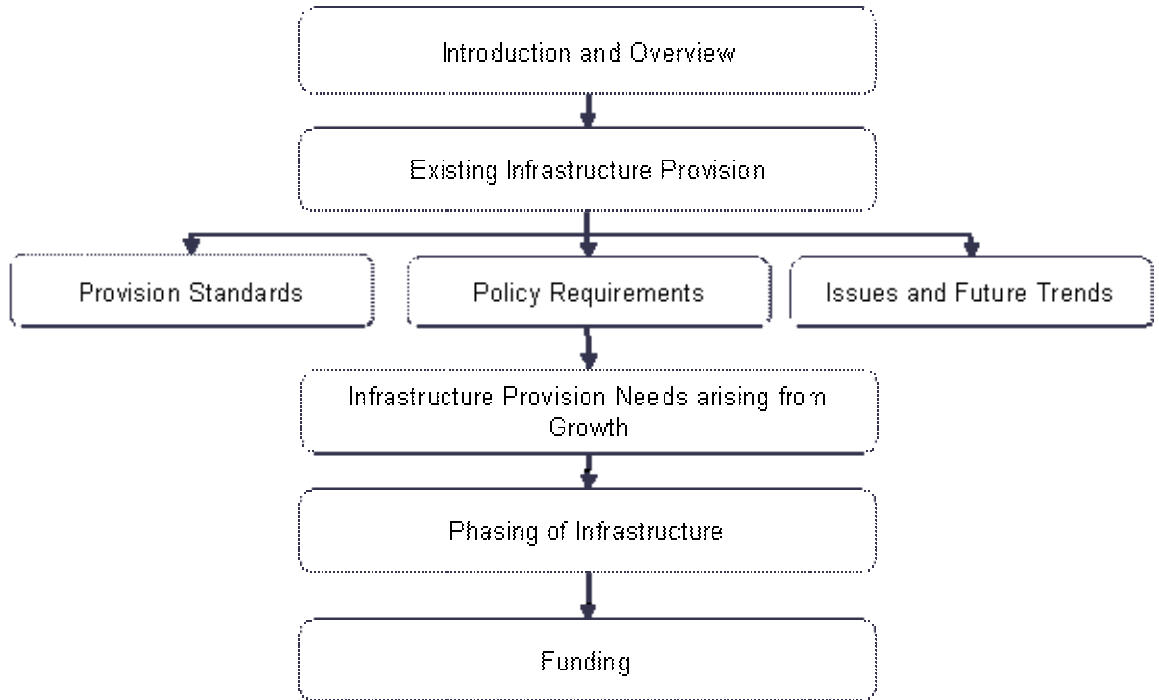
1.11. *PPS12* further articulates that in identifying infrastructure required to support development, infrastructure planning should consider the costs, sources of funding, timescales for delivery and gaps in funding. The Statement encourages a strategic, collaborative and comprehensive approach to the forward planning of infrastructure that involves key infrastructure providing agencies in identifying requirements in alignment with the Core Strategy planning process. However, it recognises that ‘the budgeting process of different agencies may mean that less information may be available when the Core Strategy is being prepared than would be ideal’. Accordingly *PPS12* states that the ‘test should be whether there is reasonable prospect of provision’.

1.12. Accordingly, understanding the scale of residential and commercial growth in Dacorum is essential in light of *PPS12*’s additional requirement to identify the type and level of infrastructure required to support growth.

Approach

1.13. Figure 1-1 below reflects the approach taken to assessing future requirements for each infrastructure type in the *DSIS* technical reports. The findings for each infrastructure area are drawn together within an *Infrastructure Delivery Plan (IDP)*. The growth forecasts which underlie the assessment, and the model which was developed to aid the assessment for certain infrastructures, are discussed within Sections 2 and 3 of this report.

Figure 1-1: Approach to Infrastructure Assessment



1.14. Stakeholder consultation was fundamental to the process and was undertaken at a number of stages, as follows:

- Providers were contacted in the initial weeks of the commission in order to draw up a preliminary *Infrastructure Delivery Plan* which listed planned infrastructure projects in Dacorum.
- A workshop was held on 31st March 2010 at DBC to which all infrastructure providers were invited, along with other key stakeholders such as HCC.² A briefing paper was circulated in advance to attendees. At the workshop, the aims of and approach to the *DSIS* was set out in full. Initial findings were presented to providers in order to verify the information gathered so far, to gather additional information and to identify a route to filling in outstanding data gaps.
- The *DSIS* reports, submitted to DBC in May and June 2010, were circulated to infrastructure providers so that findings could be verified. Comments were taken into account in the redrafting of the reports.

1.15. Throughout the commission, the consultant and client team have contacted stakeholders by telephone / email correspondence and with face-to-face meetings to discuss specific issues as required. The Hemel 2020 Infrastructure and Delivery Board has been an

² Attendees included: HCC - various departments (planning, transport, education, property, libraries, parks and open spaces and waste); DBC – officers and members representing various departments (adventure playgrounds, job brokerage, cemeteries and planning); Herts Fire and Rescue; Herts Highways, Job Centre Plus; NHS Hertfordshire; Sportspace and West Herts College. Workshop was facilitated by URS and DBC.

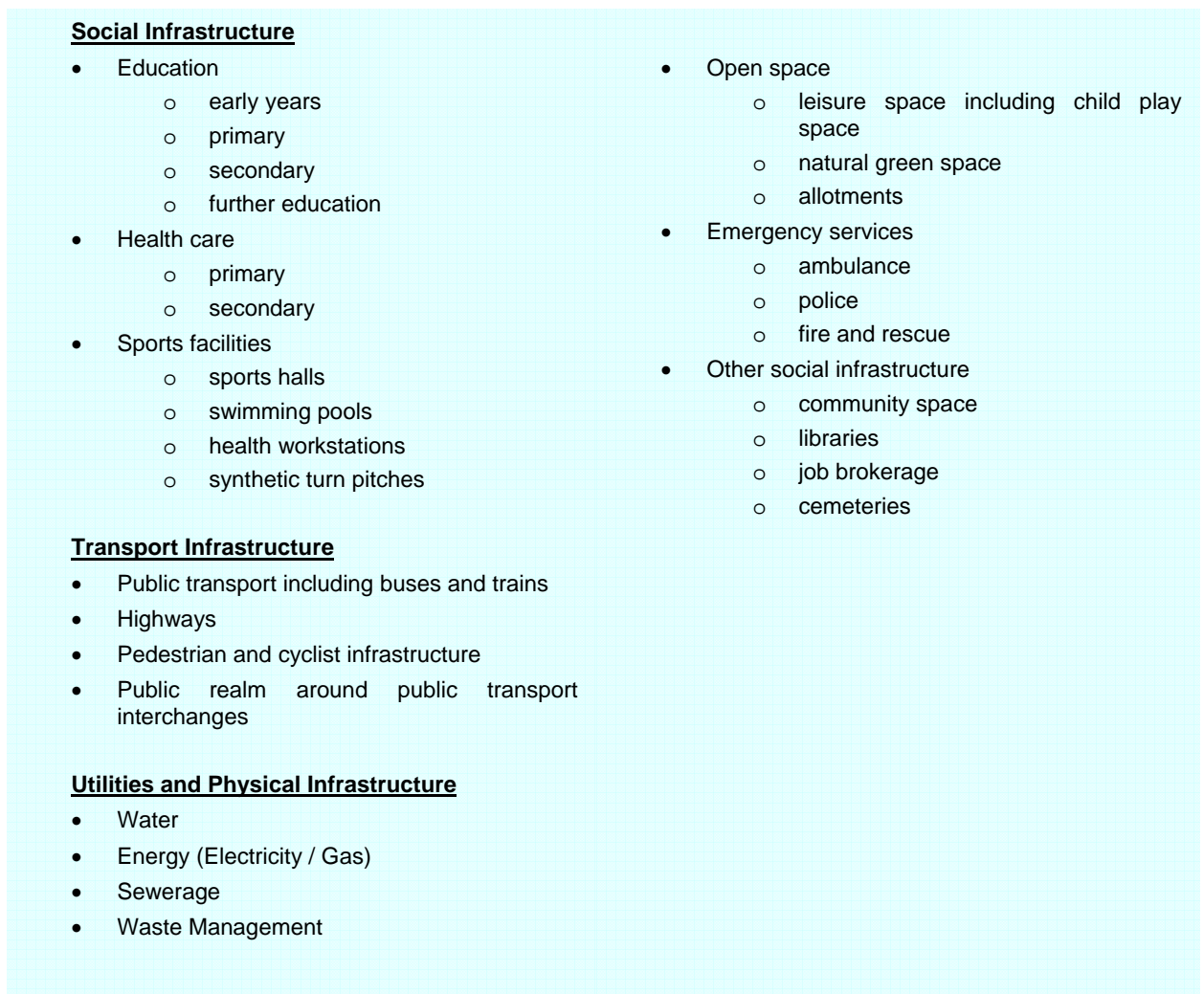
additional forum through which the information about the *DSIS* has been disseminated and gathered.

Report Structure

1.16. The remainder of this document is structured as follows:

- **Section 2** explains the approach to the development trajectories, which forecast rates of residential and commercial development growth over the life of the LDF
- **Section 3** explains some of the key factors taken into consideration in the process of assessing the demand that growth will create for infrastructure
- **Section 4** details the resulting findings of the infrastructure needs assessments carried out for social, transport and utilities and physical infrastructure leading to the identification of an infrastructure delivery plan for Dacorum.

Figure 1-2: Infrastructure Assessment Categories and Types



2. UNDERSTANDING DACORUM'S GROWTH FIGURES

Introduction

- 2.1. Understanding the quantum of development envisaged for Dacorum over the planning period is a critical first step to examining the consequential infrastructure requirements of growth. Part of this commission has involved establishing a Development Trajectory for Dacorum which sets out potential change to 2031 in dwellings, population and commercial activities (retail, office, industry, warehousing and leisure).
- 2.2. Dacorum does not presently have a regional spatial strategy (RSS) housing target due to the successful High Court Challenge to the East of England Plan which led to the borough's housing being quashed in May 2009. Future local spatial strategies will form the basis for local planning decisions. The dwellings figures used within this study are based on DBC's housing programme 2006-2031 which can be found within the *Annual Monitoring Report* (2008/09). Commercial growth figures are derived from the *Dacorum Retail Study Update* (DTZ, 2009), DBC internal workings and the *Hertfordshire London Arc Jobs and Employment Land Study* (Roger Tym and Partners 2009).
- 2.3. The methodology for the Development Trajectory is discussed in more detail below with the resulting forecast change in dwellings and commercial activities in Dacorum set out in Figure 2-1.
- 2.4. The Development Trajectory, data sources and assumptions are also set out in full in the *DIM* in Appendix C.

Geographical Areas and Phasing

- 2.5. The Development Trajectory takes account of the anticipated spatial layout of future development in Dacorum. Most of Dacorum's growth will occur within or as an extension to existing urban areas of the borough. Accordingly, for the purposes of this study the borough is broken down into eight areas, comprised of the three towns, three large villages, and two rural areas encompassing the remainder of the borough.
- 2.6. Development growth has, where possible and meaningful, been forecast for each area in isolation to provide an area-specific account of infrastructure requirements. Details regarding the spatial impact of growth have been included where local-level information is relevant, available and sufficiently robust.
- 2.7. To enable the phased assessment of infrastructure requirements, the forecasts for development have been divided into four five-year development periods extending to the Core Strategy planning horizon of 2031, beginning with 2011-2016 and ending with 2026-2031.

Low and High Scenarios and the Distribution of Growth

- 2.8. The Development Trajectory includes a low growth and a high growth scenario to account for two possible outcomes with respect to growth at Hemel Hempstead, the settlement where most of the growth in the borough will occur.
- 2.9. Under the low growth scenario, most of the growth in Hemel Hempstead is expected to be achieved within the town's existing urban settlement boundaries, mostly through redeveloping brownfield sites. Under the high growth scenario, the additional growth would be accommodated outside of the town's existing boundaries – by developing sites at West Hemel Hempstead, Marchmont Farm, Wood End Farm and Leverstock Green. These sites are identified in Figure 2-2.
- 2.10. The expected number of new dwellings for each of the sub-areas in Dacorum is given in Table 2-1, including both high and low options for Hemel Hempstead. Smaller amounts of growth are expected in Berkhamsted and Tring, the two other towns. Growth in the remainder of the borough, including the three large villages of Bovington, Markyate and Kings Langley, is anticipated to be modest.

Table 2-1: Overall Projected Residential Growth

Sub-Area		Residential Growth (No. of Dwellings)					Total (2009-2031)
		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	
Hemel Hempstead	Low Scenario	714	2,256	2,198	950	1,103	7,221
	High Scenario	714	3,156	3,798	3,450	2,903	14,021
Berkhamsted		115	157	359	70	96	797
Tring		35	90	43	40	97	305
Rural East		3	10	15	30	30	88
Bovington		19	32	5	10	17	83
Markyate		4	49	51	10	10	124
Kings Langley		10	10	5	16	42	83
Rural West		18	68	45	45	65	241
Total	Low Scenario	918	2,672	2,721	1,171	1,460	8,942
	High Scenario	918	3,572	4,321	3,671	3,260	15,742

Source: Dacorum Development Trajectory, developed by URS and Dacorum Borough Council.

- 2.11. Table 2-2 shows the overall quantum of commercial growth envisaged for Dacorum over the planning period to 2031, mostly dated from 2011 with the exception of retail (where figures are presented from 2009³). The majority of commercial development in each class (ca.90%

³ The retail figures for 2009 to 2011 exclude major schemes which may be developed during that period for which permission has already been granted, as the development control process will have considered the impact on, and demand for, infrastructure prior to granting permission.

on average) is forecast to take place in Hemel Hempstead, with only a small amount forecast to occur in Berkhamsted and Tring (5% in each on average).

- 2.12. Low and high scenarios are differentiated for leisure and retail, reflecting potential variations in the level of development at Hemel Hempstead.
- 2.13. The Development Trajectory does not identify any commercial growth in the Rural West or Rural East (including Bovington, Markyate and Kings Langley) areas, as it is expected that commercial development will be restricted to Dacorum's largest three settlements.
- 2.14. The growth figures for office, industry, warehouse and leisure are based on the *Hertfordshire London Arc Jobs and Employment Land Study*, which forecast growth for Dacorum from 2006 to 2031. The employment forecasts in this study were based on the housing target for Dacorum in the East of England Plan, which is akin to the high growth scenario in this study. The borough's employment growth forecasts may change once a housing target is established through the Core Strategy, and the conclusions of this study will be updated accordingly (see section 4.33). The majority of commercial development is expected to be office space, followed by warehousing and retail. Conversely, there is expected to a significant decline in the amount of industry, and it is important that this decline is taken into account when looking at the demand for infrastructure.

Table 2-2: Overall Projected Commercial Growth

Phase:	Commercial Growth by Phase (Floorspace - sqm)					Total (2011-31)
	2009 – 11	2011 – 16	2016 – 21	2021 – 26	2026 – 31	
Business / Office	na	39,841	39,841	47,845	55,333	182,860
Industry	na	-17,141	-17,141	-17,141	-3,666	-55,088
Warehouse	na	23,495	23,495	23,495	6,802	77,286
Retail						
Low	4,090	13,150	9,800	12,350	16,111	55,501
High	4,540	14,350	11,100	16,621	22,150	68,761
Leisure						
Low	na	3,862	3,862	3,862	3,862	15,447
High	na	6,394	6,394	6,394	6,394	25,574

Source: Dacorum Development Trajectory, developed by URS and Dacorum Borough Council.

Strong Housing Growth; Modest Population Growth

- 2.15. While the number of new dwellings in the borough will be quite significant, the anticipated increase in population will be much less so. This is due to changes in the existing population, as the number of people residing in the borough's existing dwelling stock is expected to fall over the forecast period. This is due to a projected decline in average household size due to changing household and family structures, and an ageing population. Accordingly, the proportionate increase in population in the borough is not anticipated to be nearly as marked as the proportionate increase in the number of dwellings.
- 2.16. Table 2-3 shows the extent of the disparity between the dwelling and population forecasts. Despite an increase, under the low growth scenario, of 8,942 dwellings over the plan period,

which equates to an extra 15%, the population will only increase by just over 2% (2,942 residents). Similarly under the high growth scenario, while the number of dwellings is expected to increase by over 26% compared with existing levels, the population is expected to rise by 17.5%.

2.17. While overall population growth will be more muted than the increase in the number of dwellings, the pattern of population increase will be very uneven. Existing areas of housing will experience a decline in population levels, while major development sites and zones will see relatively sharp increases in population. This will be more pronounced under the high growth scenario where development will take place beyond Hemel Hempstead's existing urban settlement boundary.

Table 2-3: Relative Increase in Dwellings and Population

Category	Existing (~2009)	Predicted Growth 2009 to 2031	Growth as % of Existing
Low Growth Scenario			
Number of Dwellings	59,957	8,942	14.9%
Population	139,499	2,954	2.1%
High Growth Scenario			
Number of Dwellings	59,957	15,942	26.6%
Population	139,499	24,352	17.5%

Source: (Dwellings): Dacorum Development Trajectory, developed by URS and Dacorum Borough Council and (Population) Hertfordshire Property (HCC) Population Projections

2.18. This is a significant consideration for infrastructure planning as population is a significant determinant of demand for infrastructure. The existing infrastructure may be able to absorb some of the impact of new housing given the projected decline of population in the existing dwelling stock.

2.19. It will, however, critically depend on the type of infrastructure in question, its catchment area, and the way in which people need to access the infrastructure services provided.

- Infrastructure that serves an entire area, town or even region from fixed or central locations will, all other factors being equal, only need to expand in accordance with the additional demands placed upon it by the borough-wide increase in population. The rate of demand for these infrastructure types is less sensitive to the geographical location of growth within the borough. Most utilities and physical infrastructure comes into this category.
- By contrast, there are certain types of infrastructure that are more sensitive to the location of demand. Ideally, these types of infrastructure should be located close to the population that they are intended to serve as the extent of the area that they serve (or in other words their 'catchment') is very local. In this case new investment in infrastructure may be needed in localities where the development is concentrated, despite relatively low overall levels of population increase at a wider geographical level. Moreover, existing facilities may come to have spare capacity as their location does not match that of demand. Many

social infrastructures come into this category – for example, child play space, primary schools and health centres should all ideally be within walking distance of home.

2.20. These considerations are important in informing the approach to our independent assessments of demand, as set out within the *DIM* and discussed in Section 3.

Figure 2-1: Dacorum Borough Sub-Areas and Development Trajectory

1 HEMEL HEMPSTEAD												
2009 - 2011		2011 - 2016		2016 - 2021		2021 - 2026		2026 - 2031		Total		
LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	
714	918	2,256	3,572	2,198	4,321	950	3,671	1,103	3,250	7,221	15,742	
-	-	35,857	35,857	35,857	35,857	43,061	43,061	49,800	49,800	164,574	164,574	
-	-	-15,426	-15,426	-15,426	-15,426	-15,426	-15,426	-3,299	-3,299	-49,579	-49,579	
-	-	21,145	21,145	21,145	21,145	21,145	21,145	6,122	6,122	69,558	69,558	
3,547	3,997	11,800	13,000	8,250	9,550	10,450	14,721	14,111	20,150	48,158	61,418	
-	-	3,222	5,754	3,222	5,754	3,222	5,754	3,222	5,754	12,889	23,017	

2 BERKHAMSTED											
2009 - 2011		2011 - 2016		2016 - 2021		2021 - 2026		2026 - 2031		Total	
115	157	359	70	96	797	9,143	2,767	2,767	9,143	9,143	9,143
-	-	1,992	1,992	2,392	2,392	-183	-183	-183	-183	-2,754	-2,754
-	-	-857	-857	-857	-857	340	340	340	340	3,864	3,864
554	900	1,060	1,250	1,300	5,904	1,279	1,279	1,279	1,279	1,279	1,279
-	320	320	320	320	320	320	320	320	320	320	320

3 TRING											
2009 - 2011		2011 - 2016		2016 - 2021		2021 - 2026		2026 - 2031		Total	
35	90	43	40	97	305	9,143	2,767	2,767	9,143	9,143	9,143
-	-	1,992	1,992	2,392	2,392	-183	-183	-183	-183	-2,754	-2,754
-	-	-857	-857	-857	-857	340	340	340	340	3,864	3,864
-11	450	550	650	700	2,339	1,279	1,279	1,279	1,279	1,279	1,279
-	320	320	320	320	320	320	320	320	320	320	320

4 BOVINGDON											
2009 - 2011		2011 - 2016		2016 - 2021		2021 - 2026		2026 - 2031		Total (2009-2031)	
19	32	5	10	17	83	83	83	83	83	83	83

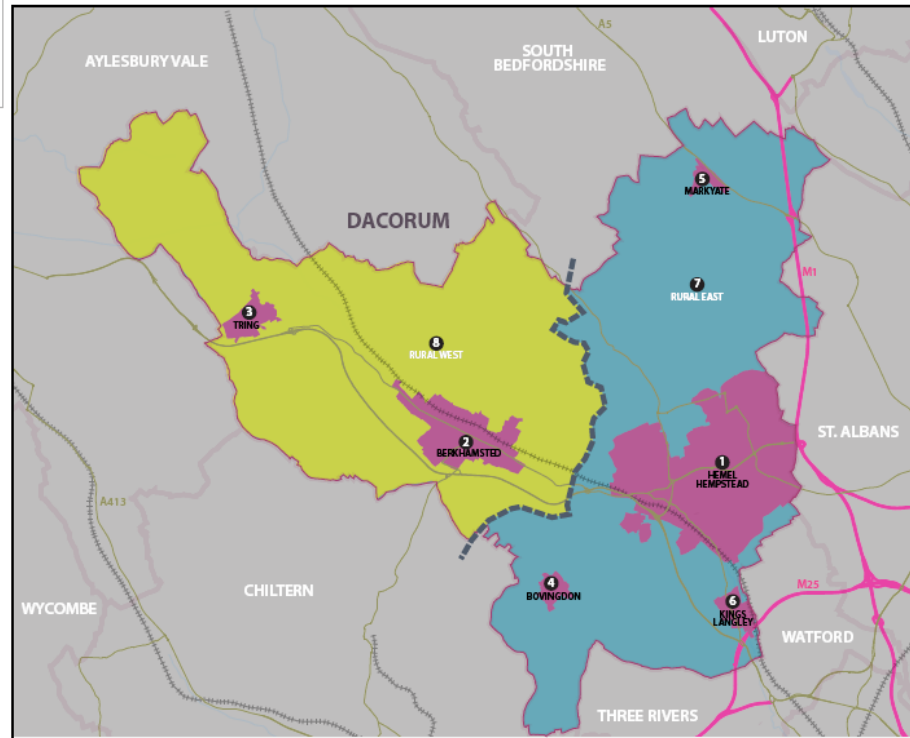
5 MARKYATE											
2009 - 2011		2011 - 2016		2016 - 2021		2021 - 2026		2026 - 2031		Total	
4	49	51	10	10	124	124	124	124	124	124	124

6 KINGS LANGLEY											
2009 - 2011		2011 - 2016		2016 - 2021		2021 - 2026		2026 - 2031		Total	
10	10	5	16	42	83	83	83	83	83	83	83

7 RURAL EAST											
2009 - 2011		2011 - 2016		2016 - 2021		2021 - 2026		2026 - 2031		Total	
3	10	15	30	30	88	88	88	88	88	88	88

8 RURAL WEST											
2009 - 2011		2011 - 2016		2016 - 2021		2021 - 2026		2026 - 2031		Total	
18	68	45	45	65	241	241	241	241	241	241	241

DACORUM BOROUGH - TOTAL												
2009 - 2011		2011 - 2016		2016 - 2021		2021 - 2026		2026 - 2031		Total		
LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	
918	918	2,672	3,572	2,721	4,321	1,171	3,671	1,460	3,260	8,942	15,742	
-	-	39,841	39,841	39,841	39,841	47,845	47,845	55,323	55,323	182,860	182,860	
-	-	-17,141	-17,141	-17,141	-17,141	-17,141	-17,141	-3,666	-3,666	-55,088	-55,088	
-	-	23,495	23,495	23,495	23,495	23,495	23,495	6,802	6,802	77,286	77,286	
4,090	4,540	13,150	14,350	9,800	11,100	12,350	16,621	16,111	22,150	55,501	68,761	
-	-	3,862	6,394	3,862	6,394	3,862	6,394	3,862	6,394	15,447	21,968	



LEGEND

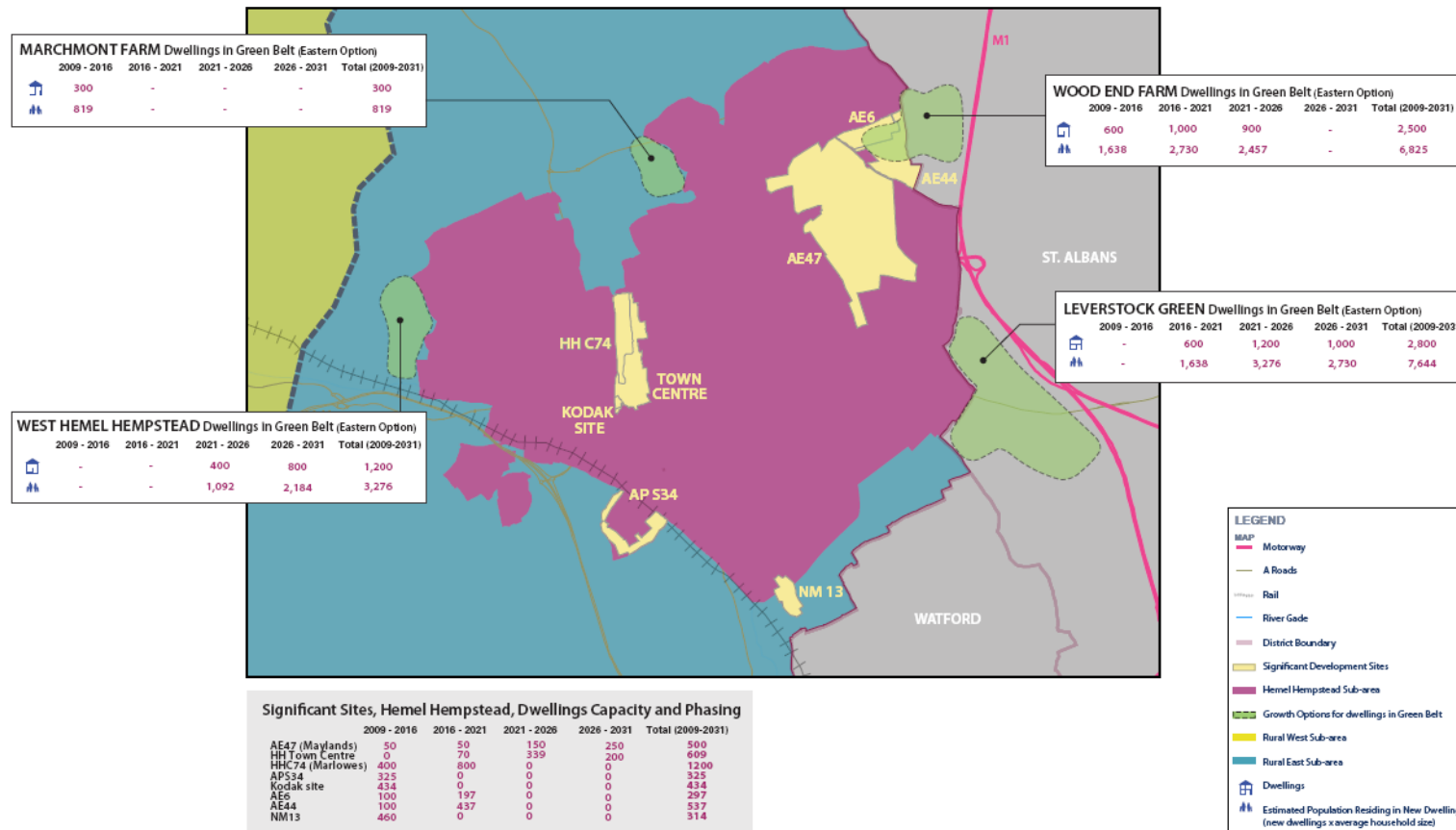
MAP

- Motorway
- A Roads
- Rail
- River/Gate
- District Boundary
- Wards
- Rural West
- Rural East

TABLES

- Residential: Dwellings
- Commercial Floorspace (sqft): Office, Industrial, Warehouse, Retail, Leisure

Figure 2-2: Hemel Hempstead Key Development Sites, 2009 to 2031



3. MODELLING DEMAND FOR INFRASTRUCTURE

Introduction

- 3.1. The *DSIS* involves identifying potential future gaps between demand for and supply of infrastructure in Dacorum. This section describes how providers' own forecasts and the *Dacorum Infrastructure Model* were used to achieve this.
- 3.2. Full details of the assumptions and workings of the *DIM* in terms of inputs and standard benchmark assumptions are provided in Appendix C.
- 3.3. It should be noted that the *DIM* was not used for modelling transport infrastructure. Rather, TRICS (Trip Rate Information Computer System) was used to identify trip rates; with the rates and their application agreed with DBC and HCC. A description of the trip modelling workings undertaken for the transport assessment is provided separately in the Transport Infrastructure Assessment.

Existing Service Providers' Strategies

- 3.4. The preferred strategy for formulating a comprehensive long term infrastructure plan is to use providers' own forecasts and assessments of future investment requirements. This is because it is assumed that providers best understand the determinants of demand for infrastructure and the on-the ground situation with regard to any current or potential future demand / supply gaps.
- 3.5. Through our research and stakeholder consultation we sought to establish the degree to which providers had forecast and planned for demand associated with new growth. This is an important part of the infrastructure planning process because it establishes channels of communication with the forward-planning sections of the relevant organisations and raises awareness of the workings and aims of DBC's strategic planning process.
- 3.6. It was not however possible to rely completely on all providers' own forecasts of demand and requirements for the *DSIS*. Reasons for this include:
 - Strategic planning requirements and priorities for service providers do not match with the LDF framework. The LDF process considers growth and infrastructure requirements over a 20-year planning period. For many infrastructure providers the development of strategies and funding on such long-term timescales is not meaningful or necessary.
 - There is amongst some service providers a reluctance to engage and to provide the relevant information (presumably due to a lack of time and resources).
 - There is little incentive for some service providers to engage in the LDF planning process due to the planning and regulatory environment within which they operate. For example, electricity, gas and water utilities providers tend to plan local infrastructure on a reactive basis in response to the market and regulator requirements, and assume that others, such as developers, will fund provision. They have little reason to plan more strategically. The

regulatory environment encouraging competition also tends to discourage or prevent co-ordinated strategic planning.

- Some providers are behind schedule in their strategy planning exercises or are operating to different planning cycles, so that up-to-date information is not available to feed into this study.
- 3.7. For the infrastructure areas where the providers' strategy was well enough developed, the information was included in the *DSIS*, tested within the *DIM*, and incorporated where possible and appropriate. This was the case for some providers, such as the Hertfordshire Constabulary and Dacorum Sports Trust, who have their own models for forecasting future requirements. Where there were information gaps in providers' information URS sought to fill these gaps through the *DIM*.

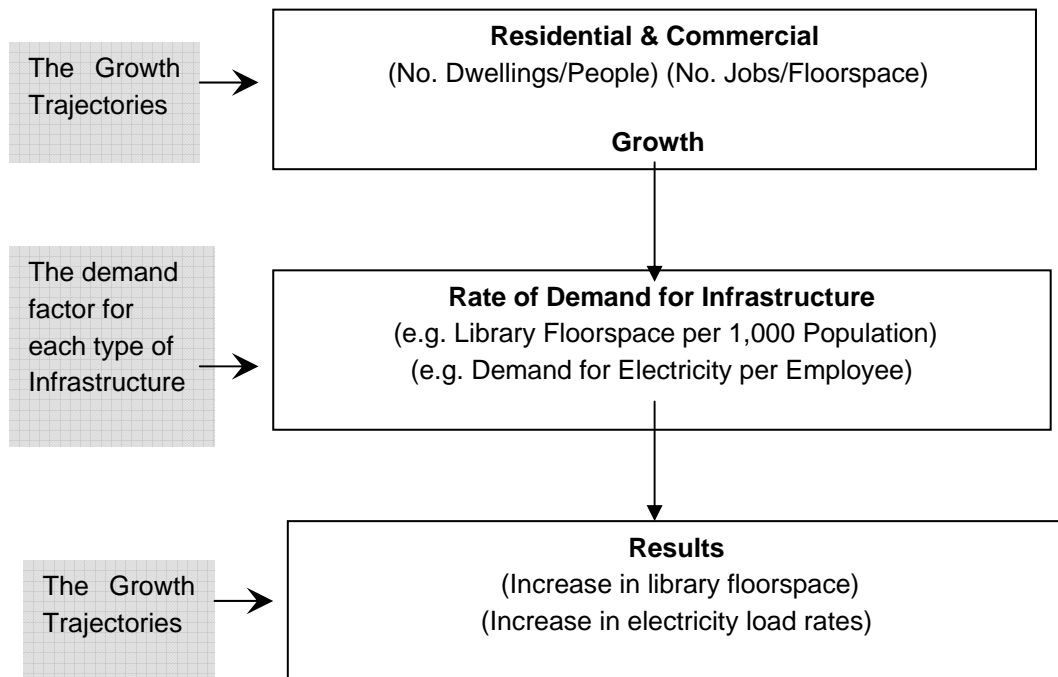
Aims of the Dacorum Infrastructure Model

- 3.8. URS has produced a bespoke *Dacorum Infrastructure Model (DIM)* that can be used to help assess and model the demand for infrastructure arising from development. The *DIM* is driven by the Development Trajectory and is used within the *DSIS* for assessing demand where there is a direct relationship between residential and / or commercial development and infrastructure requirements.
- 3.9. The *DIM* assists in the independent assessment of infrastructure requirements and costs which is a key element of planning infrastructure as described in *PPS12*. It enables the providers' forecasts of future requirements to be tested, and, in the absence of any provider forecasts provides a basis for infrastructure planning. It also enables the identification of potential demand-supply gaps, costs over the entire LDF planning period, and the breakdown of information by geographical sub-area and phase. The *DIM* has been constructed in a simple and malleable way so that future users can easily adjust the inputs and assumptions within it as they evolve.
- 3.10. It is important to recognise that there is not always a straight-forward relationship between growth and infrastructure requirements, and that there is a danger of over-simplifying what is a dynamic and complex picture. The *DIM* has been used only as and when appropriate, to test information supplied by service providers and to provide an indicative, high-level assessment where no such information is forth-coming. Further details are provided below.

How the Dacorum Infrastructure Model Works

- 3.11. Put simply, the *DIM* uses population and jobs growth forecasts in combination with various demand factors, to derive a set of forecasts of new demand for services, and in some cases infrastructure, that will arise from that growth.
- 3.12. A defining characteristic of the approach that we have developed is its ability to adapt, to the different methods of analysis appropriate for the range of infrastructure types that the study is examining. This common approach is set out in Figure 3-1.

Figure 3-1: Standard Approach to Demand and Infrastructure Forecasting used in the Dacorum Infrastructure Model



Applying the Model to Different Types of Infrastructure

3.13. While the *DIM* attempts to use a common approach for each type of infrastructure there are some differences in the way it can be applied and the results which it can yield because of the diverse nature of the different types of infrastructure considered in this study. Associated issues are explored below.

Translating Change in Demand into Infrastructure Requirements

3.14. With respect to the types of social infrastructure modelled, the *DIM* sets out the demand arising from growth for various services (e.g. for GPs, open space etc) over the period to 2031. The model subsequently, where possible, translates this into a requirement for infrastructure (e.g. swimming pools or medical centres) and provides an assessment of a likely commensurate cost. The model is therefore crucial in facilitating an assessment of the infrastructure provision required for growth, while this, and the other reports, explain the findings and the results⁴.

3.15. With respect to utilities and physical infrastructure the model is limited to estimating the additional demand for utilities (specifically water, sewage, gas, electricity and waste) generated by the projected residential and commercial development. Utilities networks are often very complex systems, and it is not possible to simply translate forecast increases in

⁴ See the *Social Infrastructure Assessment* for further detail.

demand into a straightforward recommendation on a resulting infrastructure requirement. This is especially so at the strategic level, where the cumulative impact of development across a much wider area than Dacorum may influence the investment in infrastructure required locally to cope with growth. As such, the information generated by the model for utilities is used to help provide a context for the physical infrastructure and utilities assessment and the discussions that have been held with various utilities network providers on the likely or potential requirement for new or upgraded infrastructure⁵.

Alternative models and Infrastructures Not Modelled

- 3.16. For sports facilities and police, alternative models were used (the Sports England calculator and the Hertfordshire Constabulary's local demand model, respectively) because they are used by local service providers and contain locally-specific data and assumptions. The assumptions and input data were tested and updated where necessary in collaboration with the service providers.
- 3.17. Demand was not modelled for job brokerage, cemeteries, fire and rescue or ambulance services. Consultation with service providers indicated that there was no clear causal link between population / employees and demand which is needed to make such a modelling exercise robust.

Population Change Inputs and Catchment Areas

- 3.18. The key input to the model for many of the infrastructures is population change, and the resulting estimate is the change in demand associated with this population change. However, as discussed above, in Dacorum there is a complicated picture in terms of population change; while there is housing growth in all sub-areas, HCC forecast a decline in population for the borough as a whole in the later stages of the planning period.
- 3.19. The population of new housing can be estimated by multiplying the number of new dwellings in a sub-area by the Hertfordshire average household size for new housing residents.⁶
- 3.20. Table 3-1 compares the result of this calculation for all the new housing forecast in Dacorum, with the HCC population forecasts for the borough over the period. The projected underlying demographic changes give rise to significant differences between the two.

⁵ See the *Utilities and Physical Infrastructure Assessment* for further detail.

⁶ According to the Hertfordshire Survey of New Housing ('Campion Housing Survey') 2003 – 4, the average household size for new dwellings is 2.73. Source: HCC

Table 3-1: Estimated Population Change in Dacorum: All Housing versus New Housing (Low Growth Scenario)

	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2009-2031)
Population change (all housing), HCC forecasts	1,354	2,456	2,479	- 1,679	- 1,656	2,954
Population change (new housing only), new dwellings x av. household size	2,508	7,301	7,435	3,200	3,989	24,433

3.21. In the *DIM*, the input population figures used to model demand associated with growth to 2031 is determined by how close, geographically, provision is required to new housing, as follows:

- For infrastructures with a wide catchment, which people will travel some distance to use, the population projections relating to all housing across the whole borough have been used as a basis for forecasting demand
- For infrastructures with a smaller catchment, which should be provided close to people's homes if development is to be sustainable, the basis of the forecast is the number of residents occupying new housing.

3.22. This approach to modelling demand has limitations. It requires infrastructures to be categorised as having either a 'local' or 'borough-wide' catchment. Realistically there are many types of infrastructure which fall somewhere in between, and there are also variations in how far different people will travel to access services. Some of the categories of infrastructure, such as open space, break-down into sub-categories with different recommended catchment areas. These caveats should be borne in mind when considering the outcomes of the modelling exercise for each infrastructure.

3.23. Nonetheless, the approach described above is considered appropriate for a strategic piece of work such as this and provides a useful indication of potential demand for infrastructures up to 2031.

Summary

3.24. Table 3-2 below sets out the resulting approach taken within the DSIS to modelling future requirements for different infrastructures.

Table 3-2: Approach to Modelling Demand by Infrastructure Type

Infrastructure	Modelled, based on:				Not modelled
	Population in new housing (dwellings x av. household size)	Population change, all housing (HCC population projections)	Dwellings change	Commercial Change	
Education (early years, primary, secondary)					✓ (Forecasts provided by HCC)
Further Education		✓			
Primary health care	✓				
Secondary health care					✓
Leisure space	✓				
Child play space	✓				
Natural green space	✓				
Allotments	✓				
Sports halls		✓ (Sports England calculator)			
Swimming Pools		✓ (Sports England calculator)			
Health and fitness Workstations		✓ (Sports England calculator)			
Synthetic Turf Pitches		✓ (Sports England calculator)			
Police		✓ (Hertfordshire Constabulary demand model)			
Ambulances					✓
Fire and					✓

Infrastructure	Modelled, based on:				Not modelled
	Population in new housing (dwellings x av. household size)	Population change, all housing (HCC population projections)	Dwellings change	Commercial Change	
Rescue					
Community Space	✓				
Libraries		✓			
Job brokerage					✓
Cemeteries					✓
Transport	✓			✓	
Water		✓		✓	
Electricity		✓		✓	
Gas		✓		✓	
Sewage		✓		✓	
Waste Management			✓		

Incorporating the Baseline

- 3.25. Where it is available, baseline information is incorporated into the *DIM* to show what the net impact of the change in demand is likely to be. The baseline information includes, where available, the capacity of the existing infrastructure (deficit or surplus). In addition, any planned investments for which funding has been committed are included and off-set against the forecast requirement and cost.
- 3.26. It has not been possible to include baseline information in the assessment across the board. For all the physical infrastructures and utilities, such detailed information was not available. Even where this information is available and quantifiable, it may not be at the appropriate geographical scale. For example, information was available on the capacity of GPs to take on additional patients, but at the Hemel Hempstead level, which is too broad a geographical area given that people should ideally live within walking distance of their GP.
- 3.27. Planned investments are only included within the *DIM* calculations where funding has been committed, given that until this point it cannot be assumed that the facility in question will come forward, especially in the current climate of uncertainty around funding streams. However, the impact of planned projects which are in the pipeline albeit at an earlier stage of planning is included and reflected upon within the text.

3.28. All qualitative information regarding baseline and planned investments is comprehensively detailed in the text within the relevant section of the *DSIS*.

4. STRATEGIC INFRASTRUCTURE REQUIREMENTS: KEY FINDINGS

Introduction

4.1. The respective technical assessments set out the conclusions on Dacorum's strategic infrastructure needs arising from envisaged growth within the borough for the period to 2031. In addition:

- To assist with understanding the infrastructure requirements and their distribution across Dacorum, summary maps in Appendix A illustrate the social, transport and utilities and physical infrastructure needs
- The results of each assessment are represented in Appendix B: Infrastructure Delivery Plans
- The full *DIM* is also set out in Appendix C.

4.2. Key findings are summarised below.

Priorities

4.3. An attempt has been made to prioritise the infrastructure requirements within the IDP as 1, 2 or 3 with 1 being the most important (see below for more detailed definition and discussion).

4.4. The prioritisation ranking should be interpreted as follows:

- Priority level 1 – these are infrastructure items that enable basic functionality and, if not provided have the potential to threaten the delivery of growth
- Priority level 2 – these items are considered critical to ensure that development is sustainable
- Priority level 3 – these items are considered very important for sustainable development.

4.5. This exercise is difficult given that all the infrastructures covered in the DSIS are important to ensuring that growth comes forward in a sustainable way. However, the IDP generally judges utilities and physical infrastructure as higher priority than social infrastructure, because a lack of these infrastructures could potentially be a 'showstopper' to growth – in other words, without them development should not come forward. The transport assessment characterises rail investments as high priority, reflecting the current context of growing demand and a lack of capacity and the requirement to shift passengers from their cars to more sustainable modes. The assessment also reflects the importance of measures such as cycling, walking routes and the 'TravelSmart' initiative in changing people's behaviour and managing demand as an alternative to investing in new infrastructure.

4.6. Most of the social infrastructures are characterised as priority 3 to reflect the fact that they are less likely to be 'showstoppers' to development but that they are fundamentally important to

creating sustainable communities. Primary health care services and child play space are categorised as priority 2 reflecting the deficit in provision likely to occur without new interventions and the need for local-level circumstances to be taken into account.

- 4.7. The majority of projects identified in the IDP do not have committed funding. Some do not even have costs identified. While this is in part due to the fact that infrastructure providers tend to operate on a shorter timescale than the LDF's 20 year planning period, in some cases the absence of detail regarding costs and funding arrangements may be indicative of a lack of priority.
- 4.8. Many types of infrastructure receive mainstream funding from central government. While previously these investment programmes would have probably been more certain than projects funded on an ad hoc basis, this is no longer necessarily the case given the public sector spending cuts which the new government is implementing. Similarly, major redevelopment programmes which involve large capital spend such as the Hemel Hempstead library and West Herts College campus may be vulnerable in the current climate of austerity. The recent cutting of the Building Schools for the Future programme for secondary schools illustrates that even projects which are relatively advanced in their planning are subject to review.
- 4.9. Securing S106 payments for infrastructure has also become more difficult in recent years as developers' margins are squeezed by falling values and making contributions becomes less affordable. The rules governing securing S106 payments will change in 2014, in particular the ability to pool of contributions from a number of developments will be restricted. For this reason, there may be issues around the delivery of projects which rely on developer contributions for some or all of their funding. Many of the open space projects fall into this category. The energy to waste plant planned by the Herts Waste Partnership is a much more costly project which at present relies on developer contributions: according to the HHS (2009) £84.7M of the £200M cost is to come from the Community Infrastructure Levy (CIL), although it should be noted that none of the Hertfordshire authorities have adopted a CIL yet.
- 4.10. A final issue relates projects which require ongoing revenue commitments. It is proving increasingly difficult to capitalise revenue costs due to local government accounting procedures and responsibilities. Examples of relevant projects include the Smarter Choices initiative aimed at encouraging transport mode shift (e.g. TravelSmart). There is a need to identify how these costs can be funded from what is traditionally considered to be capital budget.

Phasing

- 4.11. The *DIM* demonstrates potential variations in the rate of changing demand over time. Its outputs generally reflect the varying rate of population / dwellings / commercial change as these are the drivers of the demand calculation. For example, demand for GPs and open space is forecast to increase within every five-year phase, but this increase will be greatest within the 2011-16 and the 2016-21 phases, reflecting that these periods have the greatest projection increases in dwellings.

- 4.12. The *DIM* emphasises that expanded provision of some services will be required in the near future, and thus the urgency of effective planning in the short to medium term. It also highlights, however, that the demand for some infrastructures will increase in the short to medium term but decrease in the later phases of the planning period, reflecting the projected decline in population and some commercial activities. For example, the required capacity of the water and sewage networks will increase to 2021 but decline thereafter under the low scenario (though under the high scenario there will be increased demand throughout to 2021). The demand for sports facilities could also peak in the earlier phases of growth but then decline from 2026 (and from 2021 in some sub-areas). This situation presents a challenge for service providers. With regard to social infrastructure, strategies for dealing with these patterns of demand should include investigating how multi-functional, adaptable space can be provided for use by a number of different services. The picture of the demand / supply gap for infrastructure is dynamic and the evolving baseline and projections should be regularly reviewed.
- 4.13. For utilities, it has not been possible to fully quantify the future demand–supply gap. However the strategic design standards employed with the *DIM* represent the worst-case infrastructure requirement scenarios, and thus identify ‘trigger points’ at which new infrastructure will be required. For electricity it is concluded that an additional primary substation and two primary substation upgrades will be required within the planning period. For sewers, new and refurbished waste water treatment works (WWTWs) will be required at a number of locations.

Distribution of Infrastructure Requirements

- 4.14. For all infrastructure, future demand will be greatest at Hemel Hempstead, reflecting the concentration of development here.
- 4.15. It is possible that demand for some infrastructures will decline in the later phases of the planning period in other parts of the borough. However, there are some significant requirements in other settlements within Dacorum including WWTWs at Tring, Markyate, Berkhamsted and Bovingdon.
- 4.16. Moreover, the DSIS highlights the importance of capturing local variations in the quantity and quality of services. For example, at Berkhamsted there is a significant baseline deficit in child play space and leisure space. For infrastructures with very local catchments, like child play space and primary health care, provision will be required near to new housing developments even if there is capacity in alternative locations further afield.

Key Findings by Infrastructure Area

Utilities

- 4.17. Potential shortfalls in the capacity of existing sewerage and electricity networks were highlighted.
- 4.18. There is a lack of Dacorum-specific information around potential capacity for water supply, and until further information comes forward this information-gap should be flagged up as a potential risk.

4.19. The quantum of physical infrastructure that could be required as a result of the growth envisaged includes:

- An additional primary substation and two primary substation upgrades
- New and refurbished WWTWs at a number of locations
- Local network reinforcement of water and gas networks
- A new waste to energy facility.

Social Infrastructure

4.20. Education provision is the most significant social infrastructure requirement in Dacorum in terms of space requirements and costs. This conclusion is based on HCC's planning exercise, and it should be noted that HCC emphasise that forecasting future child numbers and enrolments is complex and that demand forecasts will be kept under review. Headline findings are as follows for the low / high scenarios:

- A Dacorum-wide requirement for an additional 27 / 37 primary f.e. under the low / high growth scenarios respectively to 2031, of which 5 f.e. could be accommodated on existing sites and 20-22 / 32 f.e. would require new sites. This could imply a space requirement of 27.5 ha / 40 ha and costs of £88.0M / £120.6M. The majority of new schools will be required in Hemel Hempstead, though there is a marked requirement in Berkhamsted also. In contrast, no new primary schools are required in Bovingdon or Markyate.
- Assuming that each primary school f.e. has one nursery class, this implies a requirement for an additional 27 / 37 nursery classes under the low / high growth scenarios respectively, with need concentrated in Hemel Hempstead. Applying the benchmark cost of £14,519 per nursery place results in costs to 2031 being estimated at £12.6M / £17.2M.
- With regard to secondary schools, HCC have forecast a requirement to 2031 of 10 f.e. / 18 f.e. under the low / high scenarios respectively – 8 f.e. / 16 f.e. on a new site in Hemel Hempstead and 2 f.e. at Tring through either expansion of the existing school, or through relocation and expansion of the existing school. One new site at Hemel Hempstead would require 14 ha; two would total 28 ha. Estimated costs are £42.3M / £76.2M under the low / high scenarios respectively.

4.21. Demand for FE places is also likely to increase over the planning period, particularly due to the rise in education/training leaving age. Information is lacking on current and forecast demand and provision, but broad-brush estimates indicate that under the low growth scenario demand for FE places in Dacorum could rise by around 1,000 places between 2011 and 2016, though beyond 2016 demand could fall off somewhat. If the new secondary schools identified as required by HCC come forward with sixth forms, this would help meet new demand forecast for this period, though places within sixth forms are unlikely to meet demand for more vocational courses.

4.22.HCC emphasises the critical need for a flexible approach to enable the expansion of operational schools and / or changes to the way education is delivered from an existing school site, including through planning and land use policies.

4.23.Demand was modelled within the *DIM* for GPs, sports halls, swimming pools, health and fitness stations, synthetic turf pitches, allotments, natural green space (local nature reserves), leisure space including child play space, police, libraries and community facilities. Quantitative information on the baseline was factored in where possible; this was available for all infrastructures apart from primary healthcare, local nature reserves (natural green space) and police. It was found that:

- The assessment reveals significant existing capacity in Dacorum for sports halls and swimming pools and some categories of green space. However once the baseline and local context are taken into account the picture changes – for example, there are apparently marked deficiencies of open space in many settlements.
- Before the baseline is taken into account, under the low scenario, there is estimated to be additional demand for all infrastructures considered apart from synthetic turf pitches (STPs). Under the high scenario there is additional demand for STPs also.
- Taking baseline information for those infrastructures where it was available indicates that under the low scenario, there is likely to be unmet demand for health and fitness stations, synthetic turf pitches, leisure space, children’s play space, allotments, natural green space / local nature reserves and libraries.
- In terms of land take, the requirements for leisure space and child play space are considerable. For leisure space the requirement to meet demand from new residents is 68.4 ha / 120.4 ha, rising to 113.9 ha / 165.9 ha once the baseline is taken into account. For child play space the requirement is 19.5 ha / 34.4 ha without the baseline, and 115.3 ha / 130.1 ha with the baseline. For local nature reserves the requirement is 24.4 ha / 43.0 ha without the baseline, and 144.6 ha / 163.2 ha with the baseline.
- Aside from education, the greatest capital cost identified to meet future demand is for child play space (£39.0M / £68.6M under the low / high scenario; £229.7M / £259.4M if the baseline deficit is taken into account.) The other significant capital cost is for GPs (£4.0M / £7.2M under the low / high scenario).

4.24. There are a many planned projects and initiatives to expand and improve social infrastructure provision in Dacorum; however a significant proportion do not yet have funding secured.

Transport Infrastructure

4.25. The transport assessment reviews existing planned interventions and identifies new interventions required to deliver forecast growth in the borough. The starting point for the assessment is that land-use and transport planning must work together to deliver sustainable development, and that there is a presumption for infrastructure that promotes sustainable modes above the private car, whilst recognising that it is necessary to maintain a good road network for essential vehicle trips.

4.26. The assessment highlights that:

- There has been net annual growth of rail use within Dacorum in the last year for which data is available. This is in contrast to the limited capacity for growth on the rail network through the borough in future years.
- Additional walking and cycling trips are likely to put additional pressure on strategic crossing facilities such as locations in town centres and at employment areas. In addition to route infrastructure cyclists will also require facilities including to safely lock up cycles whilst shopping or working.
- There are already some significant plans for enhancing cycling through the borough, particularly in support of inter-urban / leisure cycling and walking. There are also plans for improved cycle parking facilities at all stations. The assessment of travel impacts suggests that there is a need to improve routes within urban areas and facilities at key locations such as stations, employment areas and town centres to allow for commuting and utility trips by cycle.
- There is relatively poor existing penetration of bus services into areas that are likely to become higher trip generators in the high growth scenario. Bus frequencies and routes may not provide for the anticipated level of demand generated by growth. There is a lack of provision for orbital bus trips around the north and east of Hemel Hempstead.
- Key stress points on the road network include the A41; stress is likely to increase between Berkhamsted and the M25 including affecting operational capacity at J20 of the M25.
- Traffic movements in Hemel Hempstead that are not internalised will predominantly be to and from the M1 and A41, with some traffic likely to choose to travel to/ from the east via the B487. This will impact strategic junctions such as J20 of the M25 and junctions along the A414 towards J8 of the M1. Combined with these movements the internalised trips will place a great deal of pressure on the road network of the town itself.
- In Berkhamsted the main pressure points on the road network are on the High St and Kings Rd.
- There are significant plans (identified as existing interventions) to improve junctions within the Hemel Hempstead central box (i.e the A414/ A4146/ A4147/ B487), although these are likely to be the subject of further investigation by the highway authority. The impact of the high growth scenario is likely to bring additional pressures and expose new weak points in the road network. The cumulative impact of development will see impacts based on the existing travel patterns in the low growth scenario but with a greater emphasis on orbital travel in the high growth scenario.

Infrastructure Delivery Plan

4.27. Appendix B gives the details of each type of infrastructure requirement, by type and phase, comprising an Infrastructure Delivery Plan (IDP) for the borough.

4.28. It also proposes the level of priority (1-3) relating to how critical the consultants consider the infrastructure item is to ensuring delivery of development in the borough in the context of the entire DSIS. See paragraph 4.4 for a reminder of the priority of infrastructure at each level.

4.29. The process of prioritisation is encouraged by policy and best practice guidance. Clearly, all the infrastructures covered by the DSIS are important to ensuring that growth is sustainable. However, prioritisation allows those items which are considered potential 'show-stoppers' to growth to be identified and also reflects factors such as DBC's legislative requirements and role in bring forward infrastructure accompanying growth. For example, it can be assumed that development will not be permitted without priority 1 items. However it is likely that DCB will have a fundamental role in securing priority 3 items from developers through planning obligations and conditions within the planning process.

4.30. The tables also set out where possible:

- when and where the infrastructure is required
- who is responsible for delivery and funding
- where the infrastructure is accounted for in the range of existing plans and investment strategies of the respective responsible agencies
- potential costs as identified by the provider and / or by URS.

4.31. These dimensions of the analysis inform and add detail to the assessment of infrastructure priority.

Next Steps and Monitoring

4.32. The *DSIS* highlights the considerable infrastructure requirements associated with growth. There is a clear need for the *DSIS* to be updated over time in order to monitor progress against goals for provision and so that estimates of requirements can be revisited, for the following reasons:

- As well as feeding directly into the Interim SPD on Planning Obligations the *DSIS* can act more widely as an evidence base for infrastructure planning, for the LDF, and as a tool to lobby government for resources to ensure growth is sustainable. It can inform the wider processes of asset and investment planning, both internally within DBC and with partners such as the HCA. In the current fiscal climate these processes are imperative to ensuring that efficiency and value for money is maximised.
- In the most literal sense, infrastructure networks are dynamic and the Development Trajectory for Dacorum will evolve. Regulatory content and policy drivers also change. It will therefore be necessary to update the parameters, baseline assumptions and associated conclusions so the requirements around infrastructure provision are accurately assessed.
- Similarly, the study has highlighted changing models of service delivery for a number of infrastructures. There is potential in the future for synergies in service provision and

innovative service delivery models to enable efficiency savings to be made. Such savings are key drivers within the current economic climate and fit with the objectives of the government's 'Total Place' programme.

- Above all, the *DSIS* has been designed as a live tool for infrastructure planning. The work that has gone into the *DSIS* would be wasted if it is not used as such. It is not suggested that the entire suite of documents is updated on a regular basis, but rather that clear actions are put in place for monitoring the progress in provision and updated forecasts of requirements.
- 4.33. To an extent, DBC's wider annual reporting processes, which are already established, can be drawn upon to update the *DSIS* – for example, it is likely that key information on planned schemes, costs, developer contributions and spending will be available through these processes. However a number of additional actions are suggested below as part of a monitoring strategy for the *DSIS*:
- Rather than updating the entire suite of documents on a regular basis, it is suggested that the model and the IDP are updated regularly. The model is simple and user-friendly. Key assumptions and inputs are set out clearly; they can be easily updated once new information is available and these changes feed through to update the outputs. This means that if any aspects of the development trajectory change as part of the LDF process the IDP can be updated accordingly. The IDP distils the central information required for infrastructure planning and presents it in a clear format which can be easily circulated.
 - In terms of timescale, it is suggested that the IDP and model are updated annually; ideally as part of the wider Annual Monitoring Report (AMR) process. It is anticipated that as providers become increasingly familiar with the process by which they are expected to feed into the work, the 'refresh' process will become easier and quicker. The timescale for updates does not have to be prescriptive; there may be particular milestones relating to the planning process or funding cycle to which updates can be more usefully tied. However, setting out and conducting a regular programme for updates has the benefit of ensuring that providers remain engaged in the infrastructure planning process, and of providing regular occasions for dialogue and joint-working which can only be beneficial to all stakeholders.
 - For all infrastructure areas as well as for the project management function, strategic planning involves information-gathering and joint-working and ultimately is very difficult unless the staff involved have been assigned clear responsibilities to feed into the process and have sufficient time to provide the required information. This commission involved explaining the aims and benefits of joined-up, long terms strategic planning to service providers and going forward, there is a need to ensure that sufficient resources are allocated to the process so that strategic planning can successfully continue. Champions or named delegates should be assigned within each service area to work with the Council and other partners in the strategic planning process. The Hemel 2020 Infrastructure and Delivery Board may provide a starting point for this process.

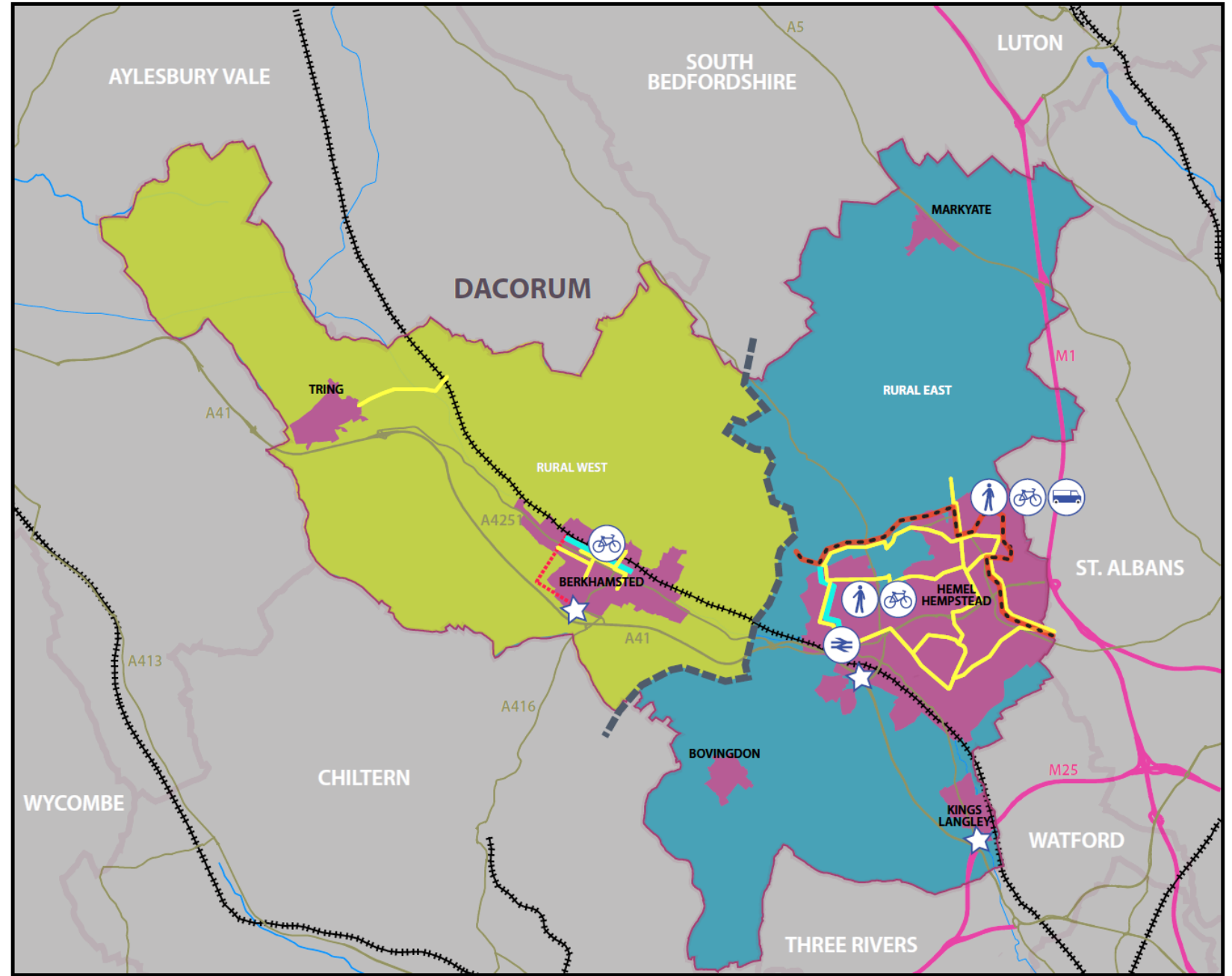
- It was most challenging to obtain the required information for the study from service providers who are external to DBC. This includes the health care providers, the emergency services and utilities. For the utilities especially, providers are set up to respond reactively to planning applications as they arise, rather than proactively to longer term strategic planning drivers, and their planning and funding cycles do not correspond to those of the LDF. We recommend that DBC particularly focuses efforts on proactively engaging with these providers to raise awareness of the strategic planning process, and to promote mechanisms whereby providers can effectively feed into the process.

Appendix A

Strategic Infrastructure Summary Maps

Figure A1: Summary of Strategic Transport Infrastructure Requirements

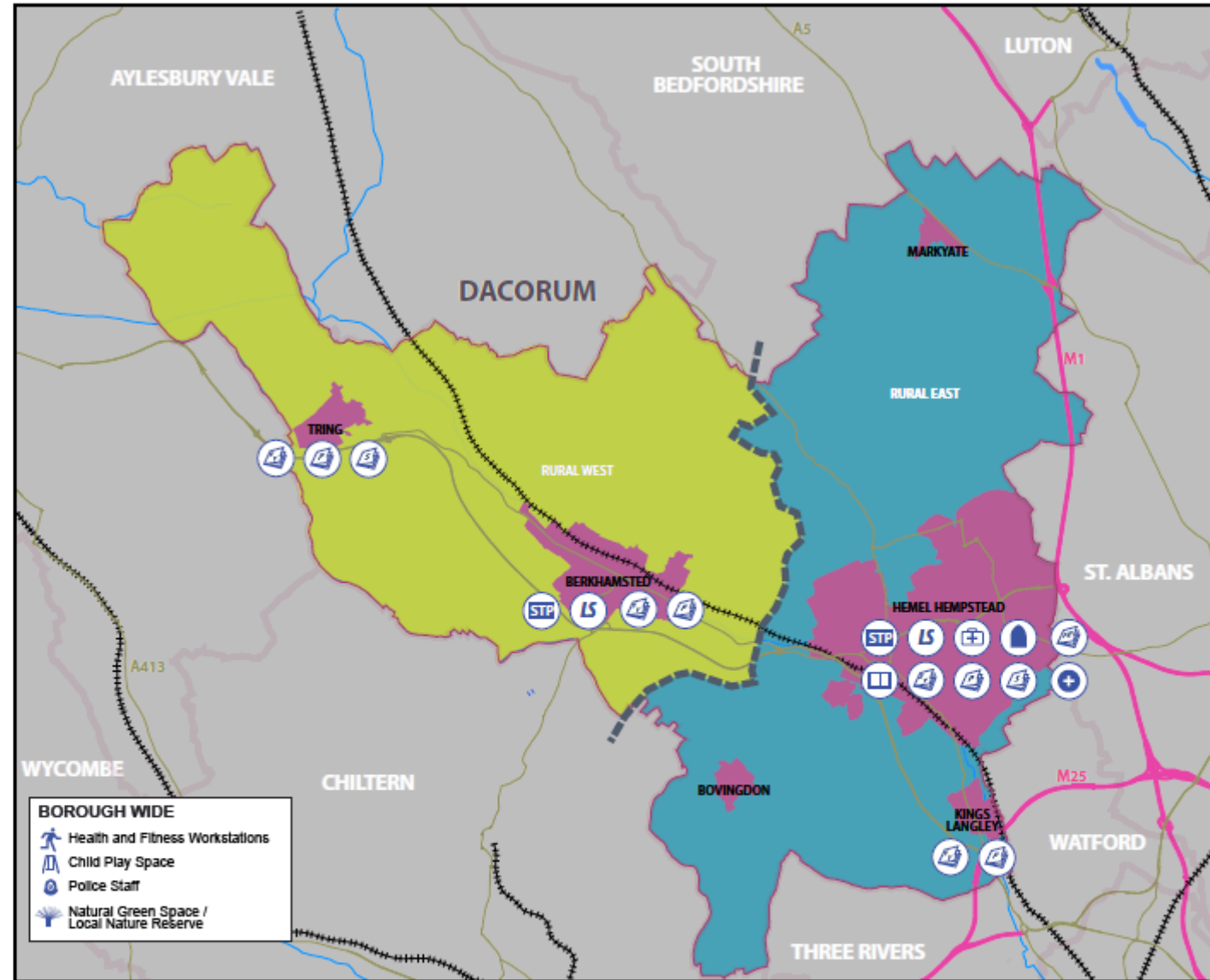
Transport		
Cycle facility / route	Implementation of HCC Cycling Strategy including comprehensive cycle network	Berkhamsted
	Enhanced & extended cycle route between Tring & Tring station	Tring
Bus facility / route	Implementation of HCC Cycling Strategy including comprehensive cycle network	Hemel Hempstead
	Orbital bus priority	Hemel Hempstead
Road network / junction	Maylands Interchange	Hemel Hempstead
	Signalise Kings Rd/ Kingshill Way/ Durrants Rd	Berkhamsted
Walk facility / route	Partial signalisation of A41/ A4251	Hemel Hempstead
	High St traffic management	Berkhamsted
Smarter Choices	TravelSmart	Dacorum



LEGEND MAP			
Motorway	District Boundary	Cycle Facility	Junction
A Roads	Wards	Walk Facility	Cycle/ Walk Route
Rail	Rural West	Bus Facility	Bus Route
River Gade	Rural East	Rail Facility	Road Network
			Road showing benefit from the junction improvement

Figure A2: Summary of Strategic Social Infrastructure Requirements

Infrastructure	Demand	
	Low	High
Early Years Classes	27	37
Primary School Forms of Entry	27	37
Secondary School Forms of Entry	10	18
Further Education Places (FTE)	689	
GPs (WTE)	11	21
Secondary Healthcare		n/a
Sports Halls	0.3	1.7
Swimming Pools	0.2	1.1
Health And Fitness Workstations	18.1	149.3
Synthetic Turf Pitches	0	0.7
Leisure Space (ha)	68.4	120.4
Child Play Space (ha)	19.5	34.4
Natural Green Space (ha) / Local Nature Reserve	24.4	43.0
Allotments (ha)	8.6	15.1
Police Staff	5.2	42.8
Community Space (sq m)	1,493	2,628
Libraries (sq m)	88.6	730.6
Cemetaries (ha)	4.9	4.9







LEGEND MAP		TABLES		GP's (WTE)		Leisure Space	
Motorway	District Boundary	Early Years Classes	Secondary Healthcare	Leisure Space	Child Play Space	Natural Green Space / Local Nature Reserve	Allotments
A Roads	Wards	Primary Forms of Entry	Sports Halls	Swimming Pools	Health and Fitness Workstations	Community Space	Libraries
Rail	Rural West	Secondary Forms of Entry	Synthetic Turf Pitches	Police Staff	Cemetaries		
River Gade	Rural East	FE Places					

Figure A3: Summary Strategic Utilities and Physical Infrastructure Requirement

Infrastructure	Demand		Requirement
	Low	High	
	32.8 MVA	46.5 MVA	 
	7,742 m ³	13,391 m ³	
	6.5 t	12.8 t	 

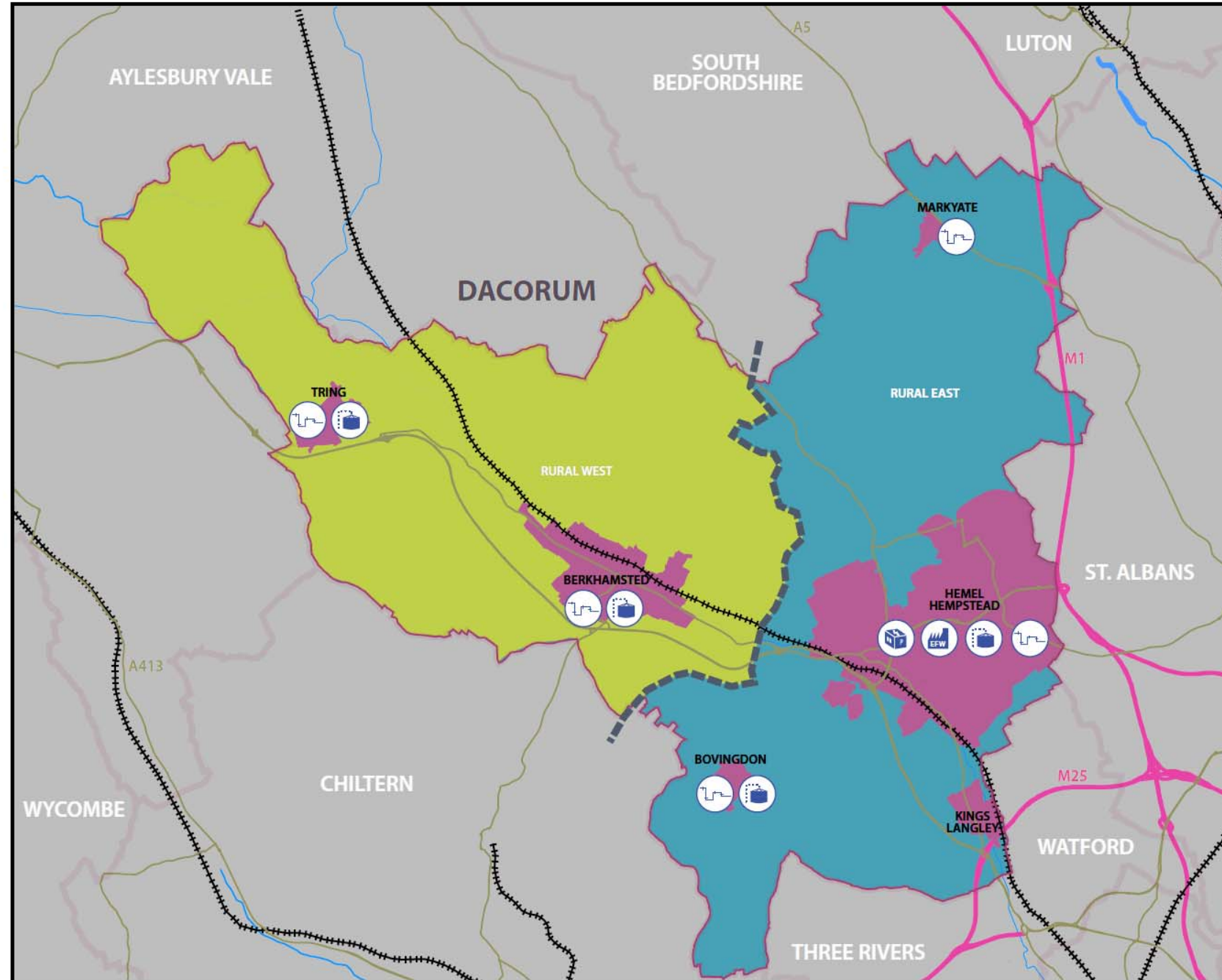
* Household waste only



















Infrastructure	Demand		Requirement
	Low	High	
	5.4 MVA	n / a	n / a
	1,626 m ³	n / a	 (Markyate, Tring, Berkhamsted)
	1.5 t	n / a	n / a

* Household waste only

Infrastructure	Demand		Requirement
	Low	High	
	38.3 MVA	52.0 MVA	 
	9,368 m ³	15,016 m ³	
	1.3 M l/day	4.6 M l/day	 (Borough wide - location tbc)
	1.3 M l/day	4.6 M l/day	 (Hemel Hempstead, Bovington, Tring, Berkhamsted)
	8.1 t	14.3 t	 

* Household waste only



LEGEND MAP		INFRASTRUCTURE TYPE	REQUIREMENT
	Motorway		Electricity
	A Roads		Gas
	Rail		Water
	River Gade		Sewage
	District Boundary		Waste
	Wards		Main / Pipe / Cable Infrastructure Network
	Rural West		Primary Substation
	Rural East		Energy for Waste Facility
			Other Waste Management Facility
			Waste Water Treatment Works

Appendix B

Infrastructure Delivery Plan

STRATEGIC INFRASTRUCTURE REQUIREMENT TABLES

Table A1: Summary List of Utilities and Physical Infrastructure Requirements to 2031

Type of infrastructure	Description of scheme / requirement	Priority 1, 2 or 3 (1 Highest, 3 Lowest) Include rationale for rating and risks of non-delivery.	Time-scale Required delivery date and phasing	Location Sub-area	Drivers		Costs (£)	Planning and Funding Status			Funding and Delivery Responsibilities		Notes	Source	
					To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies			
Utilities and Physical Infrastructure															
Electricity	Extension of strategic (132 kV) network to cater for additional demand (estimated at between 38MVA and 52MVA)	1	By 2031	New site towards the M1 or at the back of Abbots Hill School	✓		£6M-£7m plus cabling	✓				Utility provider / developers	Utilities provider	EDF plan investment through a five-year Asset Management Programme.	
	Primary sub-station (new)	1	By 2031	Hemel Hempstead (east)	✓		£2M (excluding land and cabling costs)	✓				Utility provider / developers	Utilities provider		
	Primary sub-station (upgrade)	1	By 2031	Hemel Hempstead (western - Warners End)	✓		£4M (excluding land and cabling costs)	✓				Utility provider / developers	Utilities provider		
	Primary sub-station & cabling (upgrade)	1	By 2031	Hemel Hempstead (western - Frogmore)	✓		£2M (excluding land and cabling costs)	✓				Utility provider / developers	Utilities provider		
TOTAL COSTS / FUNDING							£14M - £15M								
Gas	Local network reinforcement (new / upgraded mains) as appropriate to cater for additional gas usage (estimated at 9,368m ³ /hr to 15,016m ³ /hr)	2	By 2031	Hemel Hempstead, Markyate, Tring, Berkhamsted	✓			✓				Utility provider / developers	Utilities provider	National Grid and Southern Gas Networks plan investment through a five-year Asset Management Programme.	
TOTAL COSTS / FUNDING															
Water	Local network reinforcement (new / upgraded mains) as appropriate to cater for additional water usage (estimated at 1.4MI/ day to 4.6MI/day)	2	By 2031	Borough-wide (details not available)	✓			✓				Utility provider / developers	Utilities provider	Veolia (formerly Three Valleys Water) plan investment through a five-year Asset Management Programme.	

Type of infrastructure	Description of scheme / requirement	Priority 1, 2 or 3 (1 Highest, 3 Lowest) Include rationale for rating and risks of non-delivery.	Time-scale Required delivery date and phasing	Location Sub-area	Drivers		Costs (£)	Is the need noted by the provider?	Planning and Funding Status		Funding and Delivery Responsibilities		Notes	Source
					To meet existing deficiency	To meet additional future demand			Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies		
TOTAL COSTS / FUNDING														
Sewerage	New and refurbished waste water treatment works (WWTW) to cater for additional flows (estimated at 1.4Ml/ day to 4.6Ml/day)	1	2010-2020	Hemel Hempstead (served by Maple Lodge / Blackbirds), Markyate, Berkhamsted, Tring, Bovingdon	✓		£35.4M (DBC portion of cost for new and upgraded WWTWs across whole Thames Water area to 2020)	✓	£18.1M (DBC portion of cost for entire Thames Water area (2010-2015), based on population)	£17.3M (DBC portion of cost for entire Thames Water area (2015-2020), based on population)			Thames Water. Asset Management Plan (AMP) for 2010-2015 has now been agreed with Ofwat.	Costs from 'Taking Care of Water – The Next 25 Years (2010-2035)'.
	(New and refurbished WWTW works)	1		(Rye Meads, Outside Dacorum - Ware)		✓								
	New / upgraded sewers	2		Hemel Hempstead, Berkhamsted, Tring, Bovingdon		✓								
TOTAL COSTS / FUNDING							£35.4M		£18.1M	£17.3M	Costs are DBC portion of cost for new and upgraded WWTWs across whole Thames Water area to 2020)			
Waste	Additional Energy from Waste Facility	1	2010	Not confirmed (may be outside Dacorum - New Barnfield in Welwyn Hatfield is a potential site).	✓	✓	£200M	✓	£115.3M	£84.7M	PFI provided by the Department for Environment, Food and Rural Affairs (Defra) and the Community Infrastructure Levy (CIL)	Herts CC and one of four potential bidders.	No further information on type, capacity or location of the facility. This will be decided when the preferred bidder is announced by HCC in 2011.	HCC Website
													The Herts Waste Partnership estimates that £84.7 million is required from CIL funding.	http://www.hertsdirect.org/envroads/environment/waste/disposal/future/ HCC Hertfordshire Waste Procurement Programme Residual Waste Project Invitation to Submit Outline Solutions and Descriptive Document, July 2009 HIS Final Technical Report May 2009

Type of infrastructure	Description of scheme / requirement	Priority	Time-scale	Location	Drivers		Costs (£)	Planning and Funding Status			Funding and Delivery Responsibilities		Notes	Source
		1, 2 or 3 (1 Highest, 3 Lowest) Include rationale for rating and risks of non-delivery.	Required delivery date and phasing	Sub-area	To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies		
	In-vessel composting facility with 50,000 tonne per year capacity	2	Not stated	Not confirmed, however the Hemel Hempstead/Watford corridor is being considered.	No	✓	Not stated	✓				HCC		Minutes of Environment Overview and Scrutiny Meeting, Dacorum Borough Council, 17 Nov 2009 Draft Municipal Waste Spatial Strategy on behalf of HCC, Vincent and Goring, June 2009 RP/4181/JUNE 2009 (REVISED JULY 2009)
TOTAL COSTS / FUNDING							£200M		£115.3	£84.7				

Table A2: Summary List of Transport Infrastructure Requirements to 2031

Type of Infrastructure	Description of Scheme / Requirement	Priority 1, 2 or 3 (1 Highest, 3 Lowest) Include rationale for rating and risks of non-delivery.	Timescale Required delivery date and phasing	Location Sub-area	Drivers		Costs (£) Cost	Planning and Funding Status			Funding and Delivery Responsibilities		Notes	Source
					To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies		
Transport														
Bus	Bus priority on key routes	1	by 2019	Hemel Hempstead	✓	✓	1,000,000	✓	£1M		HCC	HCC		Hemel Hempstead Urban Transport Plan, Jan 2009. Pg83
	Central corridor bus priority scheme	1	by 2021	Hemel Hempstead	✓	✓	1,000,000	-	600,000		HCC/ Operators	HCC/ Operators	Scheme was proposed by URS in HIIS. Note: DBC have removed funding for a similar scheme proposed by the HH UTP.	HIIS Transport Technical Report, Nov 2009. Appx F
	Hemel Hempstead Bus Station	1	by 2016	Hemel Hempstead	✓	✓	4,000,000	✓	£2.3M		HCC	HCC	Timescale changed from 2021 to 2016 following comment from HCC Passenger Transport Unit	HIIS Transport Technical Report, Nov 2009. Appx F
	Real Time Passenger Information (RTPI) on routes to/ from/ around Maylands	1	2016	Hemel Hempstead	✓	✓		-			Developer	HCC/ Developer/ DBC	URS phasing	Maylands Master Plan Planning Policy Statement, Sept2007. Pg14
	RTPI at bus stops	1	by 2019	Hemel Hempstead	✓	✓		✓			HCC	HCC		Hemel Hempstead Urban Transport Plan, Jan009. Pg82
	Orbital bus priority	1	2016	Hemel Hempstead		✓	1,000,000	-					URS new intervention. Particularly relevant for the high growth scenario	URS new intervention
	Maylands Interchange	2	2021	Hemel Hempstead		✓	2,000,000	-					URS new intervention	
	Maylands Park & Ride	3		Hemel Hempstead	✓	✓		-			Development (TBC)	Development/ HCC/ DBC (TBC)	Aspirational - However could provide combined role with bus interchange suggested by URS below	Dacorum Borough Council IDP Comments
Cycling & Pedestrian	Cycle Route between Two Waters, Apsley & Nash Mills	1	2021	Hemel Hempstead	✓	✓		✓			HCC/ DBC	HCC/ DBC	URS phasing	Dacorum Borough Local Plan Schedule of Transport Proposals, April 2003. Pg153
	Improved cycle links from Maylands to Adeyfield, Grovehill, & Cupid Green	1	2016	Hemel Hempstead	✓	✓		✓			HCC/ Developer	HCC/ Developer	Timescale to support growth in existing urban area. URS phasing	Maylands Master Plan Planning Policy Statement, Sept 2007. Pg15
	Queensway to Maylands advisory route	1	2021	Hemel Hempstead	✓	✓		✓			Developer/ HCC/ DBC	Developer/ HCC/ DBC	URS phasing	Dacorum Borough Local Plan Cycle Strategy, Oct 2009. Pg10
	Upgrades to station cycle parking	1	2016	Hemel/ Tring/ Berkhamsted/ Apsley/ Kings Langley	✓	✓		✓				HCC/ TOC/ DBC	URS phasing	HCC LTP2, March 2006. Rail Strategy Pg20

Type of Infrastructure	Description of Scheme / Requirement	Priority 1, 2 or 3 (1 Highest, 3 Lowest) Include rationale for rating and risks of non-delivery.	Timescale Required delivery date and phasing	Location Sub-area	Drivers		Costs (£) Cost	Planning and Funding Status			Funding and Delivery Responsibilities		Notes	Source
					To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies		
	Durrants Hill Rd footpath improvements	1	2016	Hemel Hempstead	✓	✓		✓			HCC	HCC	Funding not considered in HIIS as scheme not suitable for CIL. URS phasing	HIIS Transport Technical Report, Nov 2009. Appendix B
	Improved links between Hemel Hempstead station & Town Centre	1	by 2016 amended from 2019 due to town centre development	Hemel Hempstead	✓	✓	500,000	✓			HCC/ DBC	HCC/ TOC/ DBC	URS phasing	Hemel Hempstead Urban Transport Plan, Jan 2009. Pg82
	Maylands Avenue Shared Paths	1	2021	Hemel Hempstead	✓	✓		✓			Developer/ HCC/ DBC	Developer/ HCC/ DBC	URS phasing	Dacorum Borough Local Plan Cycle Strategy, Oct 2009. Pg10
	Implementation of HCC Cycling Strategy including comprehensive cycle network	1	2021	Berkhamsted	✓	✓	2,000,000	✓					URS new intervention	
	Implementation of HCC Cycling Strategy including comprehensive cycle network	1	2021	Hemel Hempstead	✓	✓	3,000,000	✓					URS new intervention	
	Riverside shared path, Waterhouse Square Proposal	2	2016	Hemel Hempstead	✓	✓		✓			Developer	Developer/ HCC/ DBC	URS phasing	Dacorum Borough Local Plan Cycle Strategy, Oct 2009. Pg10
	Kings Road footpath improvements	2	2026	Berkhamsted	✓	✓		✓			HCC	HCC	Funding not considered in HIIS as scheme not suitable for CIL. URS phasing	Dacorum Transport Study, Aug 2006. Pg31
	Enhanced & extended cycle route between Tring & Tring station	2	2021	Tring		✓	97,500						URS new intervention	
	Regional Route 66	3	2021	Hemel Hempstead/ Tring/ Rural West	✓	✓					Sustrans	Sustrans/ HCC/ DBC	Desirable. URS phasing	Dacorum Borough Local Plan Cycle Strategy, Oct 2009. Pg8
	Better pedestrian links, particularly to station	3	2016	Kings Langsley	✓	✓		✓			HCC	HCC	No committed funding. URS phasing	Spatial Strategy for the Town of Kings Langley, June 2009. Pg16
	Improvements to National Cycle Network Route 57 from Chesham to the start of the Nickey line and from the Nickey line to HH town centre.	3	2021	Hemel Hempstead	✓	✓							Desirable - Low priority as unlikely to be substantial interurban travel by cycle from growth, although recognised that may be desirable for leisure uses. URS phasing	Hemel Hempstead Urban Transport Plan, Jan09. Para 7.14

Type of Infrastructure	Description of Scheme / Requirement	Priority 1, 2 or 3 (1 Highest, 3 Lowest) Include rationale for rating and risks of non-delivery.	Timescale Required delivery date and phasing	Location Sub-area	Drivers		Costs (£) Cost	Planning and Funding Status			Funding and Delivery Responsibilities		Notes	Source	
					To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies			
	Implementation of HCC cycling Strategy	See new interventions for Hemel, Berkhamsted, and Tring below	See new interventions for Hemel, Berkhamsted, and Tring below	Hertfordshire-wide	✓	✓	36,000,000 excluded from total due to new interventions	✓	£12.1		HCC	HCC	£3m anticipated from Sustrans. Cost & funding is for whole of Herts (av £2m/ town) including Hemel. This cost would be replaced by that identified for Hemel, Berkhamsted, and Tring below	HIIS Transport Technical Report, Nov 2009. Appendix F	
Other	TravelSmart	1	Ongoing	Dacorum	✓	✓	low = 1,722,000 high = 1,893,000							URS new intervention	
	Car parking close to centre	3	2016	Markyate	✓	✓							Aspirational - Parking given low priority as internalisation of trips within Markyate by private car should be discouraged. URS phasing	Spatial Strategy for the Village of Markyate, June 2009. Pg15	
	Station Gateway	3	2016	Hemel Hempstead	✓	✓		✓					Desirable. URS phasing	Dacorum Borough Council IDP Comments	
Rail	London Euston station redevelopment			Sub-Regional (London Euston)	✓	✓		✓			Network Rail	Network Rail/ TOCs	At GRIP stage 0 (First stage in scheme approval for rail schemes) Not in DBC	West Coast Mainline RUS Scoping Document, Nov 2008. Pg	
	National Stations Improvement Programme Works at Berkhamsted	1	2013	Berkhamsted	✓	✓		✓			Network Rail	Network Rail	Cost not provided for approved schemes	Route Plan Route 18 West Coast Mainline, 2009. Pg31	
	Extension of platform 11 @ Euston for 12 car Class 350	1	2010	Sub-Regional (Euston)	✓	✓		✓			Third Party - Train Operating Company (TOC) / franchise	Network Rail	Cost not provided for approved schemes Not in DBC	Route Plan Route 18 West Coast Mainline, 2009, Pg29	
	DDA access scheme at Hemel Hempstead station	1	2016	Hemel Hempstead	✓	✓		✓				HCC/ TOC		HCC LTP2, Mar 2006. Rail Strategy Pg19	
	Hemel Hempstead station improvements	1	by 2021	Hemel Hempstead	✓	✓	2,000,000				TOCs/ HCC/ DBC	TOCs/ HCC/ DBC		HIIS Transport Technical Report, Nov 2009. Appx F	
	Real Time Passenger Information at stations	1	by 2019	Hemel Hempstead	✓	✓		✓			TOCs	TOCs		Hemel Hempstead Urban Transport Plan, January 2009. Pg82	
	Step free access to platforms	1	by 2015	Hemel Hempstead	✓	✓		✓			DfT	DfT	Timescale changed from 2019 to 2015 following comments from HCC. Fully funded – see link (commitment listed by DfT on website)	Hemel Hempstead Urban Transport Plan, January 2009. Pg82	

Type of Infrastructure	Description of Scheme / Requirement	Priority 1, 2 or 3 (1 Highest, 3 Lowest) Include rationale for rating and risks of non-delivery.	Timescale Required delivery date and phasing	Location Sub-area	Drivers		Costs (£) Cost	Planning and Funding Status			Funding and Delivery Responsibilities		Notes	Source
					To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies		
Road	M25 Widening to D4 J16-23		2012	Sub-regional	✓	✓	601,800,000 excluded due to status as national scheme	✓	602		PFI	DBFO (Design Build Finance and Operate)	Not in DBC	East of England Plan, May 2006. Pg115. Also Highways Agency Senior Network Manager by phone.
	A4146/ A414 jct improvements	1	by 2016, amended from 2021 in HIIS due to town centre development	Hemel Hempstead	✓	✓	5,000,000	-			HCC	HCC	Scheme was proposed by URS in HIIS, URS phasing	HIIS Transport Technical Report, Nov 2009. Appx F
	A4147 widening & jct improvements	1	2021	Hemel Hempstead	✓	✓		✓			HCC	HCC	Funding not considered in HIIS as scheme not suitable for CIL - timescale to support orbital movements. URS phasing	HIIS Transport Technical Report, Nov 2009. Appx B
	Breakspear Way jct improvements	1	by 2021	Hemel Hempstead	✓	✓	100,000	✓	60,000		HCC	HCC		HIIS Transport Technical Report, Nov 2009. Appx F
	Durrants Hill Rd carriageway widening	1	2016	Hemel Hempstead	✓	✓		✓			HCC	HCC	Funding not considered in HIIS as scheme not suitable for CIL - timescale to support growth in south Hemel in addition to existing deficit. URS phasing	HIIS Transport Technical Report, Nov 2009. Appx B
	Durrants Hill/ London Road Signalisation	1	by 2021	Hemel Hempstead	✓	✓	100,000	✓	60,000		HCC	HCC		HIIS Transport Technical Report, Nov 2009. Appx F
	Featherbed Lane / London Rd jct improvements	1	by 2021	Hemel Hempstead	✓	✓	100,000	✓	60,000		HCC	HCC		HIIS Transport Technical Report, November 2009. Appendix F
	New Road Layout at Leverstock Green	1	by 2019	Hemel Hempstead	✓	✓		✓			HCC	HCC		Hemel Hempstead Urban Transport Plan, January 2009. Pg83
	Signalise Kings Rd/ Kingshill Way/ Durrants Rd	1	2016	Berkhamsted		✓	300,000	-					URS new intervention	
	Hemel Hempstead North eastern relief road	2	by 2031	Hemel Hempstead	✓	✓	34,000,000	-			Developers	HCC/ Developers	Cost is an assessment by URS for HIIS but is not committed nor formally adopted. Likely to be refined following ongoing work by HCC.	PN006 Dacorum Master Planning ODYSSEUS Testing, HIIS, Jan 2009. Unpublished.
	London Rd/ Station Rd jct improvements	2	by 2021	Hemel Hempstead	✓	✓	200,000	✓	12,000		HCC	HCC		HIIS Transport Technical Report, November 2009. Appendix F
	Swallowdale Ln widening & jct improvements	2	by 2021	Hemel Hempstead	✓	✓	1,000,000	✓	580,000		HCC	HCC		HIIS Transport Technical Report, Nov 2009. Appx F

Type of Infrastructure	Description of Scheme / Requirement	Priority 1, 2 or 3 (1 Highest, 3 Lowest) Include rationale for rating and risks of non-delivery.	Timescale Required delivery date and phasing	Location Sub-area	Drivers		Costs (£) Cost	Planning and Funding Status			Funding and Delivery Responsibilities		Notes	Source	
					To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies			
	Maylands North East	2	2021	Hemel Hempstead	✓	✓	-				HCC/ DBC (TBC)	HCC/ DBC (TBC)	Considered essential, modelling work under way	Dacorum Borough Council IDP Comments	
	High St traffic management	2	2021	Berkhamsted	✓	✓	2,000,000	-					URS new intervention		
	Partial signalisation of A41/ A4251	2	2021	Hemel Hempstead		✓	500,000	-					URS new intervention		
	Tunnel Fields link to New Road, Northchurch, Berkhamsted and associated work to junction of New Road/ A4251	3		Berkhamsted	✓	✓		-			HCC	HCC		Dacorum Borough Local Plan Schedule of Transport Proposals, April 2003. Pg154	
	Water End Bypass	3	by 2021	Rural East	✓	✓	17,400,000	✓			HCC	HCC		HIIS Transport Technical Report, Nov 2009. Appx F	
Existing Interventions							66,400,000								
New Interventions							Low = 12,619,975								
							High = 12,789,975								
TOTAL COSTS / FUNDING							Low = 79,019,500								
							High = 79,190,500								

Table A3: Summary List of Social Infrastructure Requirements to 2031

Type of infrastructure	Description of scheme / requirement	Priority	Timescale	Location	Drivers		Costs (£)	Planning and Funding Status			Funding and Delivery Responsibilities		Notes
					To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies	
Social Infrastructure													
Nursery Schools	Provision of 27 / 37 classes (low / high scenario) for new residents	2	To 2031	Hemel Hempstead, Berkhamsted, Tring, Kings Langley	✓		£12.6M / £17.2M (low / high scenario)	✓			Central government, private and voluntary sector	HCC + private and voluntary sector	Refers to LA statutory provision only – excludes related provision such as children's centres, pre-school classes, child care etc.
TOTAL COSTS / FUNDING							£12.6M / £17.2M (low / high scenario)						
Primary Education	Provision of 27 / 37 forms of entry (f.e.) (low / high scenario) for new residents, of which 5 to 6.5 f.e. may be provided through expansion on existing sites	2	To 2031	Hemel Hempstead, Berkhamsted, Tring, Kings Langley	✓		£88.0M / £120.6M (low / high scenario)	✓			Central government, private and voluntary sector	HCC + private and voluntary sector	Costs estimated on a per pupil basis; do not include land acquisition or differentiate between extension and new build.
TOTAL COSTS / FUNDING							£88.0M / £120.6M (low / high scenario)						
Secondary Education	Provision of 10 / 18 new f.e. (low / high scenario) for new residents, of which 2 f.e. may be provided through expansion on existing site		To 2031	Hemel Hempstead, Tring	✓		£42.3M / £76.2M (low / high scenario)	✓			Central government, private and voluntary sector	HCC + private and voluntary sector	Costs estimated on a per pupil basis; do not include land acquisition (including playing fields) or differentiate between extension and new build.
TOTAL COSTS / FUNDING							£42.3M / £76.2M (low / high scenario)						
Further Education	Provision of approximately 958 additional FTE places to 2016, and 689 places to 2031	3	To 2031 (but demand to peak in 2011 to 2016 period)	Borough-wide, especially Hemel Hempstead	✓				✓		Central government, private and voluntary sector	HCC + private and voluntary sector	No detailed baseline information available on current capacity and planned provision.
TOTAL COSTS / FUNDING													
Primary Health-Care	Hillfield Rd facility, on site of existing Local General Hospital; provision of GP, outpatient, therapy, diagnostics, urgent care centre services etc.	2	Planned completion end 2013	Hemel Hempstead	✓	✓		✓			Hertfordshire NHS	Hertfordshire NHS	
	New health centres to cater for demand associated with growth (13.6 / 23.9 WTE GPs, 1,164 / 2,048 sq m required gross borough-wide under low / high scenario)	2	To 2031	Primarily Hemel Hempstead	✓	✓	Estimated at £4.07M - £7.17M (low / high scenario)	✓			Hertfordshire NHS, developer contributions	Hertfordshire NHS, developers / PFI	
TOTAL COSTS / FUNDING							£4.07M - £7.17M (low / high scenario)						

Type of infrastructure	Description of scheme / requirement	Priority 1, 2 or 3 (1 Highest, 3 Lowest)	Timescale Required delivery date and phasing	Location Sub-area	Drivers		Costs (£)	Planning and Funding Status			Funding and Delivery Responsibilities		Notes
					To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies	
Secondary Healthcare	Expansion of facilities to cater for population growth, especially in the older age groups.	3	Short to medium term (Borough-wide population forecast to decline after 2021)	Borough-wide, especially Hemel Hempstead		✓					NHS Hertfordshire and healthcare trusts	NHS Hertfordshire and healthcare trusts, and partners	
TOTAL COSTS / FUNDING													
Emergency Services	Provision of 7.5 / 42.8 police staff (high growth scenario) and 35sq / 270 additional sq m to cater for new demand; refurbishment / rationalisation of existing estate.	3	Medium term	Borough-wide			£0.1M or £0.91M (low / high scenario)						
TOTAL COSTS / FUNDING													
Open Space	Provision of 68.4 / 120.4 ha of leisure space (low / high scenario) or 113.9 ha / 165.9 ha taking the baseline into account for residents of new housing	3	Short to medium term	All settlements in Dacorum except Tring	✓	✓	£0.1M or £9.1M	✓			Developers; DBC and partners	Developer; DBC and partners	There are many planned projects to improve the quality and quantity of leisure space set out in the Draft Green Spaces Strategy and the Play Strategy - see Social Infrastructure Technical Assessment for details. However few of these have committed funding.
	Urban Park at Two Waters including Heath Park Gardens			Hemel Hempstead				£185,000 (Heath Park Gardens)	£102,000		S106 (Kodak; Riverside, SAPPI), GAF capital funds	DCC	Costs and proposals to be determined
	Bunkers Park extension, 3 ha			Hemel Hempstead		✓	Approx. £700,000						
	Apsley Fitness Trail		2011	Hemel Hempstead			£25,000	£25,000			Big Lottery Fund	DBC	Location to be determined through Urban Park feasibility study.
	Tree Planting along High Street		2010	Berkhamsted			£5,000	£5,000			S106 (Waitrose Extension)	DCC	£5,000 of committed funds is from Waitrose S106
	Margaret Lloyd Park Pond refurbishment		2011	Hemel Hempstead			£35,000	£35,000	✓		DBC	DBC	Nearing completion.

Type of infrastructure	Description of scheme / requirement	Priority 1, 2 or 3 (1 Highest, 3 Lowest)	Timescale Required delivery date and phasing	Location Sub-area	Drivers		Costs (£)	Planning and Funding Status			Funding and Delivery Responsibilities		Notes
					To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies	
	Mortimer Hill Play area improvements	2	2010/11	Tring			£52,000		£52,000		Department for Children, Schools and Families (DCSF)	DCC, DCSF	DCSF funding from Play Builder programme. Note: recent government review indicates this funding may not come forward. May be able to negotiate small additional contribution from Maund & Saunders application received 02/10
	New child play space: 19.5 / 34.4 ha (low / high scenario), or 115.2 ha / 130 ha (low / high scenario) taking the baseline into account..	2	Short term	All settlements, especially Hemel Hempstead and Berkhamsted	✓	✓	£39.0 / £68.6M (low / high scenario) without baseline; £229.9M / £259.6M with baseline	✓			Developers; DBC and partners	Developer; DBC and partners	
	East Langley meadows and Butts meadow - improvements to playgrounds	3	2013 (East Meadow)	Berkhamsted	✓				£36,000		S106 (Stag Lane, for East Meadow)		
	Improved access to four adventure playgrounds including skate ramps	3											To be progressed through Play Strategy and Green Spaces Strategy
	Play improvement programme - improvements to existing play facilities.	3	For the next five years	Borough-wide (work currently underway at Hemel Hempstead - Woodhall Farm)	✓				£50,000		DBC	DBC	Funding identified in DBC's Capital Funding Programme for the next five years
	8.6 ha / 15.1 ha (low / high scenario) of new allotments; 19.4 ha / 25.9 ha once the existing deficit is taken into account.	3	Short term	Borough-wide, especially Hemel Hempstead	✓	✓	£0.9M / 2.0M (low / high scenario, without baseline), £1.9M / £2.6M (with baseline)	✓			DBC	DBC	
	New allotment site Grovehill, 6,540 sq m	3		Hemel Hempstead	✓			✓			External funding bid	Hemel Hempstead Society for Allotments and Leisure Gardens	(HHSALG) repairing project to include lease of area.
	Bennets End – reinstating allotment. 3,844 sq m	3	End 2010	Hemel Hempstead	✓			✓	£28,000				Performance Reward Grant
	New Local Nature Reserves: 24.4/ 43.0 ha (low / high scenario), or 114.6 ha / 163.2 ha (low / high scenario) taking the baseline into account.	3	To 2013	Borough-wide	✓	✓	£0.2M / £0.4M (low / high scenario, without baseline), £1.4M / £1.6M (with baseline)				DBC, S106	DBC, developers and other partners	

Type of infrastructure	Description of scheme / requirement	Priority 1, 2 or 3 (1 Highest, 3 Lowest)	Timescale Required delivery date and phasing	Location Sub-area	Drivers		Costs (£)	Planning and Funding Status			Funding and Delivery Responsibilities		Notes
					To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies	
TOTAL COSTS / FUNDING								£40.9M / £71.8M (low / high scenario, without baseline), £234M / £265M (with baseline)	£416,000	£102,000			
Sports and Leisure	Jarmans Park Sports and Youth facility – extreme sports and one stop shop youth facility, including indoor skate park, climbing centre, music and performance and youth services.	3	Completed by 2011	Hemel Hempstead			£5.25M		£5.25M		Big Lottery Fund (MyPlace) and Dacorum Sports Trust	Dacorum Sports Trust, DBC, HCC	
	Health and fitness workstations: 38.6 / 149.3 workstations (low / high scenario), or 225 / 335 workstations taking baseline into account	3	Short to medium term	Borough-wide	✓	✓		✓			Sportspace and partners	Sportspace and partners	
	Two new pitches Ashlyns School (Berkhamsted) and Hemel Hempstead Football Club	3	Short term	Berkhamsted, Hemel Hempstead	✓	✓	Estimated between £1.2M and £1.5M	✓	(Half cost of Ashlyn pitch)				
TOTAL COSTS / FUNDING								Estimated at £6.45M to £6.75M		£5.25M			
Other Social Infrastructure	New library space of 148 sq m / 731 sq m (low / high scenario), or 2,578 sq m / 3,220 sq m taking the baseline into account.	3	To 2031	Borough-wide	✓	✓	£0.3m / £2.2m (low / high scenario) without baseline, or £7.7M or £9.7M (low / high) with baseline.				HCC	HCC	Estimates of requirement and costs do not include potential reprovision of Hemel Hempstead library (see below) as funding is not committed. Costs take baseline into account.
	Re-provision of Hemel Hempstead public library - current library is inadequately sized and has significant accessibility issues; net additional space of 1,785 sq m.	2		Hemel Hempstead	✓						HCC	HCC	A business plan is not yet developed and a partnership development will be required.
	Job brokerage facilities to cater for growth in claimants	3	Medium to long term	Hemel Hempstead		✓					Job Centre Plus / mainstream funding	Job Centre Plus /	Potential demand cannot be quantified.
TOTAL COSTS / FUNDING								£7.7M - £9.7M					

Type of infrastructure	Description of scheme / requirement	Priority 1, 2 or 3 (1 Highest, 3 Lowest)	Timescale Required delivery date and phasing	Location Sub-area	Drivers		Costs (£)	Planning and Funding Status			Funding and Delivery Responsibilities		Notes
					To meet existing deficiency	To meet additional future demand		Is the need noted by the provider?	Planned and Committed Funds	Planned not committed funds	Funding Agency / Agencies	Delivery Agency / Agencies	
Cemeteries	New 12 acre (4.84 ha) site	3	To be operational by 2013	Hemel Hempstead	✓		Estimated at £1.84M	✓			DBC	DBC	The Council is carrying out a study looking at potential sites and their viability.
TOTAL COSTS / FUNDING							£1.84M						

Appendix C

Dacorum Infrastructure Model

Dacorum Infrastructure Model

FINAL Feb 2011

Dacorum Borough Council
Dacorum Strategic Infrastructure Study

URS Corporation Ltd

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SUMMARY OF MODEL RESULTS

TOTAL REQUIREMENTS FOR WHOLE OF DACORUM FOR ADDITIONAL POPULATION TO 2031
LOW SCENARIO

Infrastructure Theme	Infrastructure Item	Gross Additional Requirement		Baseline Provision*		Net Additional Requirement*		Capital Cost (£) Gross Requirement	Capital Cost (£) (Net Requirement)
		Quantum	Unit	Quantum	Unit	Quantum	Unit		
Education	Early Years	27.0	classes			27.0	classes	12,570,390	12,570,390
	Primary Education	27.0	f.e.			27.0	f.e.	87,992,730	87,992,730.0
	Secondary Education	10.0	f.e.			10.0	f.e.	42,312,900	42,312,900.0
	Further Education	689.0	places			689.0	places		
Health	GPs	13.6	WTE GPs			13.6	WTE GPs	4,072,228	4,072,228
Sports	Sports Halls (4 courts)	0.3	halls	18.3	halls	-18.1	halls	753,294	-
	Swimming Pools (4 lanes)	0.2	pools	7.6	pools	-7.4	pools	425,491	
	Health and Fitness Stations	18.1	stations	(186.1)	stations	204.2	stations		
	Synthetic Turf Pitches	-	pitches	-1.2	pitches	1.2	pitches	-	788,151
Open Space	Leisure Space inc Child Play Space	68.4	ha	-45.5	ha	113.9	ha		
	Child Play Space	19.5	ha	-95.7	ha	115.3	ha	38,991,742	229,914,449
	Local Nature Reserve	24.4	ha	-120.2	ha	144.6	ha	244,334	1,446,324
	Allotments	8.6	ha	-10.8	ha	19.4	ha	855,168	1,939,293
Emergency Services	Police	5.2	staff			5.2	staff	127,757	
Other Social Infrastructure	Libraries	89	sq m	-2489.0	sq m	2,578	sq m	265,860	7,732,770
	Community Space	1,493	sq m	4,704.7	sq m	-3211.8	sq m		
Utilities	Electricity	38,338	kVA						
	Gas	9,368	m3						
	Water	1,314,406	litres/day						
	Sewage	1,314,406	litres/day						
	Waste (household waste only)	8,137	tonnes						

*Note: where baseline provision is shown in brackets this represents a current deficit; where it is not in brackets this represents a surplus. Where net additional requirement is in brackets this represents negative new demand - i.e. a surplus of this infrastructure type, even with growth.

SUMMARY OF MODEL RESULTS

TOTAL REQUIREMENTS FOR WHOLE OF DACORUM FOR ADDITIONAL POPULATION TO 2031

HIGH SCENARIO

Infrastructure Theme	Infrastructure Item	Gross Additional Requirement		Baseline*		Net Additional Requirement*		Capital Cost (£) Gross Requirement	Capital Cost (£) (Net Requirement)
		Quantum	Unit	Quantum	Unit	Quantum	Unit		
Education	Early Years	37	classes			37.0	classes	17,226,090	17,226,090
	Primary Education	37	f.e.			37.0	f.e.	120,582,630	120,582,630
	Secondary Education	18	f.e.			18.0	f.e.	76,163,220	76,163,220
	Further Education								
Health	GPs	23.9	WTE GPs			23.9	WTE GPs	7,168,979	
Sports	Sports Halls (4 courts)	1.69	halls	18.3	halls	(16.65)	halls	4,639,408	
	Swimming Pools (4 lanes)	1.13	pools	7.6	pools	(6.49)	pools	2,620,523	
	Health and Fitness Stations	149	stations	(186)	stations	335	stations		
	Synthetic Turf Pitches	0.7	pitches	-1.2	pitches	1.9	pitches	458,779	1,246,930
Open Space	Leisure Space inc Child Play Space	120.4	ha	-45.5	ha	165.9	ha		
	Child Play Space	34.4	ha	-95.7	ha	130.1	ha	68,643,257	259,565,964
	Local Nature Reserve	43.0	ha	-120.2	ha	163.2	ha	430,139	1,632,129
	Allotments	15.1	ha	-10.8	ha	25.9	ha	1,505,486	2,589,611
Emergency Services	Police	42.8	staff			42.8	staff	910,893	
Other Social Infrastructure	Libraries	731	sq m	-2489.0	sq m	3,220	sq m	2,191,680	9,658,590
	Community Space	2,628	sq m	4,705	sq m	(2,077)	sq m	4,467,851	
Utilities	Electricity	52,024	kVA						
	Gas	15,016	m3						
	Water	4,556,392	litres						
	Sewage	4,556,392	litres						
	Waste (household only)	14,325	tonnes						

*Note: where baseline is shown in brackets this represents a current deficit; where it is not in brackets this represents a surplus. Where net additional requirement is in brackets this represents a surplus of this infrastructure type, even with growth.

11 EVIDENCE BASE FIGURES

Table 1 - Residential Growth Low Scenario.

Year	2009	2011	2016	2021	2026	2031	Total Change
Population (Borough)	139,499	140,853	143,309	145,788	144,109	142,453	2,954
Dwellings							
Hemel	35,429	36,143	38,399	40,597	41,547	42,650	7,221
Berkhamsted	8,312	8,427	8,584	8,943	9,013	9,109	797
Tring	4,084	4,119	4,209	4,252	4,292	4,389	305
Rural East	2,700	2,703	2,713	2,728	2,758	2,788	88
Bovingdon	1,894	1,713	1,745	1,750	1,760	1,777	83
Markyate	1,283	1,287	1,336	1,387	1,397	1,407	124
Kings Langley	2,190	2,200	2,210	2,215	2,231	2,273	83
Rural West	4,265	4,283	4,351	4,396	4,441	4,506	241
Total	59,957	60,875	63,547	66,268	67,439	68,899	8,942

Notes

Source of population projections: HCC

Note on dwellings figures: The baseline has been calculated using information from the 2001 census and DBC AMR dwellings completion information. The 2001 census data 'all dwellings' at ward level has been attributed to each infrastructure planning zone; total dwelling stock in some wards has been split across the infrastructure planning zones by estimation. The future dwelling stock in each zone was estimated based on data comprising: sites with planning permission and those pending a legal agreement; sites identified for housing in the Local Plan; sites identified through the SHLAA; targeted loss of open land; defined locations; rural exception sites; gypsy and traveller sites; and windfall sites. Rural exception sites will provide local needs housing – it is assumed that 15 units will come forward in each of the 7 small villages across the Borough. These have been distributed between Rural Area East and Rural Area West accordingly. An assumption of 91 windfall sites per year from 2015/16 was made; these were divided across the 6 main settlements and 'the rest of Dacorum' according to their proportions of total dwelling completions across the Borough 2001-08. Those for 'the rest of Dacorum' were divided between the Rural Area East and the Rural Area West. The level of 91 is based on past completion rates of small Gypsy and Traveller Sites have been split equally between sub-areas.

Table 2 - Residential Growth High Scenario for Hemel Hempstead

Year	2009	2011	2016	2021	2026	2031	Total Change
Population (Borough)	139,499	144,062	147,612	153,520	158,804	163,851	24,352
Dwellings in Green Belt (Eastern Option)							
Marchmont Farm	-	-	300	-	-	-	300
Wood End Farm	-	-	600	1,000	900	-	2,500
Leverstock Green	-	-	-	600	1,200	1,000	2,800
West Hemel Hempstead	-	-	-	-	400	800	1,200
Total	-	-	900	1,600	2,500	1,800	6,800

Total High Scn
15,742

Notes

Source: DBC, Dwellings in Green Belt (Eastern Option)

Table 3 - Retail - High Growth (floorspace sq m NIA)

Year	Existing - 08	Existing - 09	2011	2016	2021	2026	2031	Total Change
Hemel Hempstead								
Town Centre Convenience	4,267	4,267	4,267	7,967	8,717	9,567	10,467	6,200
Town Centre Comparison	40,184	40,070	42,234	51,534	60,334	71,684	83,034	42,850
Total - Town Centre	44,451	44,337	46,501	59,501	69,051	81,251	93,501	49,050
Non-central Convenience	8,969	8,969	10,719	10,719	10,719	10,969	11,969	3,000
Non-central Comparison	24,119	30,665	30,748	30,748	30,748	33,019	39,919	15,800
Total - Non Central	33,088	39,634	41,467	41,467	41,467	43,988	51,888	18,800
Overall Total	77,539	83,971	87,968	100,968	110,518	125,239	145,389	67,850
Berkhamsted								
Convenience	3,858		3,858	3,858	3,858	3,858	3,908	50
Comparison	7,870		8,120	9,020	10,020	11,270	12,520	4,650
Total	11,728	11,424	11,978	12,878	13,878	15,128	16,428	4,700
Tring								
Convenience	2,391		2,441	2,541	2,641	2,791	2,941	550
Comparison	3,147		3,247	3,597	4,047	4,547	5,097	1,950
Total	5,538	5,699	6,138	6,688	7,338	8,038	8,038	2,500
Rural East								
Convenience	-		352	352	352	352	352	
Comparison	-		-	-	-	-	-	
Total	-	-	352	352	352	352	352	
Rural West								
Convenience	-		-	-	-	-	-	
Comparison	-		-	-	-	-	-	
Totals	94,805	101,094	105,986	120,336	131,436	148,057	170,207	75,050

Notes

Retail figures are from the Dacorum Retail and Leisure Study, Donaldson 2006.

[1] Includes 683 sqm (net) at Tesco, Jarman Fields (planning permission granted subject to legal agreement)

[2] Assumes that 5,695 of retail warehouse floorspace will be implemented at Jarman Park before 2011 (planning permission granted) and 934 sqm of comparison floorspace at Tesco, Hemel Hempstead (planning permission granted subject to legal agreement)

[3] This refers to planning permission given for Tesco Express at Bovingdon

2011
Notes

Notes
10,719[1]
30,748[2]

Notes
352[3]

Table 4 - Retail - Low Growth affecting Hemel Only (floorspace sq m NIA)

Year	Existing-09	Existing - 09	2011	2016	2021	2026	2031		2011
Hemel Town Centre Convenience	4,267	4,267	4,267	7,667	8,167	8,742	9,317		Notes
Hemel Town Centre Comparison	40,184	40,070	41,934	50,334	58,084	67,959	77,834	5,050	
Total - Town Centre	44,451	44,337	46,201	58,001	66,251	76,701	87,151	42,700	
Hemel Non-central Convenience	8,969	8,969	10,569	10,569	10,569	10,569	10,579	1,610	Notes
Hemel Non-central Comparison	24,119	30,665	30,748	30,748	30,748	30,748	34,399	10,280	10,569[1]
Total - Non Central	33,088	39,634	41,317	41,317	41,317	41,317	44,978	11,890	30,748[2]
Overall Total Floorspace	77,539	83,971	87,518	99,318	107,568	118,018	132,129	54,590	

Notes

Existing 09 figures comprise 08 figures + change 08-09

[1] Includes 683 sqm (net) at Tesco, Jarman Fields (planning permission granted subject to legal agreement)

[2] assumes that 5,695 of retail warehouse floorspace will be implemented at Jarman Park before 2011 (planning permission granted) and 934 sqm of comparison floorspace at Tesco, Hemel Hempstead (planning permission granted subject to legal agreement)

Table 5 - Employment Trajectory by Jobs Growth

Job Type	2006	2021	2026	2031	Change 2006-2031
B Class Jobs					
Industrial	7,074	5,170	4,931	4,817	(2,257)
Warehousing	8,235	7,783	7,813	7,910	(325)
Office	14,454	21,094	23,752	26,826	12,372
Total B Class	29,763	34,047	36,496	39,553	9,790
Non B Class Jobs					
Agriculture & Extraction					(141)
Utilities					(71)
Non B Construction					909
Non B Wholesale & Distribution					(137)
Retailing					(353)
Hotels & Catering					1,776
Non B Transport & Comms					(631)
Non B Business Services					2,155
Non B Public Admin					36
Education					1,239
Health					1,871
Other services					(107)
Total Non B					6,546

Notes

Job numbers taken from the Hertfordshire London Arc Jobs and Employment Land Study, 2009

Table 5 - Employment Trajectory by Jobs Growth

Floorspace Type	2006	2021	2026	2031	Change 2006-2031	Implied Sq M / Job	Change 2006-2026	Change 2006-2026
Industrial					(72,228)	32	(68,562)	(3,666)
Warehousing					100,781	(310)	93,979	6,802
Office					222,701	18	222,701	-
Total B Class					251,254		251,254	3,136

Table 7 - Baseline Summary

Category	Sq m	Year	Employees
Number of dwellings	59,957	2009	
Population	139,499	2009	
Office	337,000	2008	14,454
Retail (NIA)	101,094	2009	5,055
Warehouse	497,000	2008	8,235
Industry	185,000	2008	7,074
Other Bulk Premises	42,000	2008	

Notes

Figures for commercial floorspace are from ONS Rateable Values Data from 2005 Reevaluation, but reset for 1st April 2008). Not clear if these figures are gross / net and internal / external.

Other bulk premises' are defined as 'a variety of premises rated using the RSA that do not fall into one of the above four bulk classes. They include garden centres, halls and social clubs. This group of properties is made up of those in the bulk class that the VOA defines as 'miscellaneous'.

I2a DEVELOPMENT TRAJECTORY LOW SCENARIO

Residential Projected Growth; 2009 - 2031 (Low)

Notes / Sources

Population (all housing, including background change)	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2009-2031)
Hemel Hempstead	1,053	2,074	2,259	82	-929	4,538
Berkhamsted	170	144	319	-898	-353	-618
Tring	52	83	-23	-264	-142	-294
Rural East	4	9	-33	-70	-23	-113
Bovingdon	28	29	-27	-97	-29	-95
Markyate	6	45	43	-147	-53	-106
Kings Langley	15	9	-36	-66	-30	-108
Rural West	27	63	-23	-219	-96	-249
Totals	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	
Population Change (all housing)	1,354	2,456	2,479	-1,679	-1,656	2,954
Population (new housing only)	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2009-2031)
Hemel Hempstead	1,951	6,164	6,006	2,596	3,014	19,731
Berkhamsted	314	429	981	191	262	2,178
Tring	96	246	117	109	265	833
Rural East	8	27	41	82	82	240
Bovingdon	52	87	14	27	46	227
Markyate	11	134	139	27	27	339
Kings Langley	27	27	14	44	115	227
Rural West	49	186	123	123	178	659
Totals	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	
Population change (new housing only)	2,508	7,301	7,435	3,200	3,989	24,433
Forecast Average Household Size						
	2.73	2.73	2.73	2.73	2.73	
Dwellings	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2009-2031)
Hemel Hempstead	714	2,256	2,198	950	1,103	7,221
Berkhamsted	115	157	359	70	96	797
Tring	35	90	43	40	97	305
Rural East	3	10	15	30	30	88
Bovingdon	19	32	5	10	17	83
Markyate	4	49	51	10	10	124
Kings Langley	10	10	5	16	42	83
Rural West	18	68	45	45	65	241
Total	918	2,672	2,721	1,171	1,460	8,942

Source: HCC population projections (see Sheet I1 Table 1). Borough-wide population change has been broken down by sub-area to show the indicative distribution of growth only, based on the current sub-area distribution of housing stock / population.

Residents of new housing calculated as no. of dwellings (see Sheet I1 Table 1) multiplied by forecast av. household size.

Av Household size taken from Hertfordshire Survey of New Housing ('Campion Housing Survey') 2003 - 4. Pers. Comm. P Campion HCC, 17/2/09

See Sheet I1 Table 1.

Business / Office (B1 Class) Projected Growth, 2006 - 2031 (Same in Both Scenarios)

Floorspace	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)
Hemel Hempstead	35,857	35,857	43,061	49,800	164,574
Berkhamsted	1,992	1,992	2,392	2,767	9,143
Tring	1,992	1,992	2,392	2,767	9,143
Rural East					
Bovingdon					
Markyate					
Kings Langley					
Total	39,841	39,841	47,845	55,333	182,860

Assumes 2006-11 already developed - Same in both scenarios. Split of total Dacorum floorspace and jobs estimated as 90% / 5% / 5% for Hemel Hempstead, Berkhamsted and Tring.

Jobs	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)
Hemel Hempstead	1,992	1,992	2,392	2,767	9,143
Berkhamsted	111	111	133	154	508
Tring	111	111	133	154	508
Rural East					
Bovingdon					
Markyate					
Kings Langley					
Rural West					
Total	2,213	2,213	2,658	3,074	10,159

Industrial Projected Decline; 2011 - 2031 (Same in Both Scenarios)

Floorspace	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)
Hemel Hempstead		-15,426	-15,426	-15,426	-3,299	-49,579
Berkhamsted		-857	-857	-857	-183	-2,754
Tring		-857	-857	-857	-183	-2,754
Rural East						
Rural West						
Total		-17,141	-17,141	-17,141	-3,666	-55,088

2006-2031
Split of total Dacorum floorspace and jobs estimated as 90% / 5% / 5% for Hemel Hempstead, Berkhamsted and Tring.

Jobs	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)
Hemel		-571	-571	-215	-103	-1,460
Berkhamsted		-32	-32	-12	-6	-81
Tring		-32	-32	-12	-6	-81
Rural East						
Rural West						
Total		-635	-635	-239	-114	-1,622

2006-2031

Warehousing (B8) Growth; 2011 - 2031 (Same in Both Scenarios)

Floorspace	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)	2006-2031
Hemel Hempstead		21,145	21,145	21,145	6,122	69,558	90,703
Berkhamsted		1,175	1,175	1,175	340	3,864	5,039
Tring		1,175	1,175	1,175	340	3,864	5,039
Rural East							
Rural West							
Total		23,495	23,495	23,495	6,802	77,286	100,781

Split of total Dacorum floorspace and jobs estimated as 90% / 5% / 5% for Hemel Hempstead, Berkhamsted and Tring.

Jobs	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)	2006-2031
Hemel Hempstead		-136	-136	27	87	-157	-293
Berkhamsted		-8	-8	2	5	-9	-16
Tring		-8	-8	2	5	-9	-16
Rural East							
Rural West							
Total		-151	-151	30	97	-174	-325

Total warehousing jobs broken down equally amongst phases.

Retail Projected Growth; 2011 - 2031 (Low)

Floorspace	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)	2009-2031
Hemel Town Centre	1,864	11,800	8,250	10,450	10,450	40,950	42,814
Hemel Non-Central (Convenience)	1,600	0	0	0	10	10	1,610
Hemel Non-Central (Comparison)	83	0	0	0	3,651	3,651	3,734
Hemel Hempstead	3,547	11,800	8,250	10,450	14,111	44,611	48,158
Berkhamsted	554	900	1,000	1,250	1,300	4,450	5,004
Tring	-11	450	550	650	700	2,350	2,339
Rural East							
Bovingdon							
Markyate							
Kings Langley							
Rural West							
Total	4,090	13,150	9,800	12,350	16,111	51,411	55,501

Jobs	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)	2009-2031
Hemel Town Centre (20 sqm net/job)	93	590	413	523	523	2,048	2,141
Hemel Non-C Conv (19 sqm net/job)	84	0	0	0	1	1	85
Hemel Non-C Comp (90 sqm net/job)	1	0	0	0	41	41	41
Hemel Hempstead	178	590	413	523	564	2,089	2,267
Berkhamsted	28	45	50	63	65	223	250
Tring	-1	23	28	33	35	118	117
Rural East							
Bovingdon							
Markyate							
Kings Langley							
Rural West							
Total	205	658	490	618	664	2,429	2,634

Employment density applied to employee figures to estimate floorspace.

Total split of Dacorum jobs estimated as 90% / 5% / 5% for Hemel Hempstead, Berkhamsted and Tring.

Leisure; 2011 - 2031 (Low)

Floorspace	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)
Hemel Hempstead	3,222	3,222	3,222	3,222	12,889
Berkhamsted	320	320	320	320	1,279
Tring	320	320	320	320	1,279
Rural East					
Bovingdon					
Markyate					
Kings Langley					
Rural West					
Total	3,862	3,862	3,862	3,862	15,447

Jobs	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)
Hemel Hempstead	179	179	179	179	716
Berkhamsted	18	18	18	18	71
Tring	18	18	18	18	71
Rural East					
Bovingdon					
Markyate					
Kings Langley					
Rural West					
Total	215	215	215	215	858

Figures are GIA. Employment density of 18 sq m applied to employee figures to estimate floorspace.

Hotel and Leisure jobs from Hertfordshire-London Arc Employment Study (March 09). Defined within the study as SIC code 55: this includes hotels, camping sites, restaurants, take-aways, bars and canteens.

Total split of Dacorum jobs estimated as 90% / 5% / 5% for Hemel Hempstead, Berkhamsted and Tring.

For low scenario for Hemel - all jobs growth reduced by a factor of 0.56% to account for lower dwelling growth and the fact that Leisure jobs are responsive to lower population.

12b DEVELOPMENT TRAJECTORY HIGH SCENARIO

Residential Projected Growth; 2009 - 2031(High)

Population (all housing, including background change)	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2009-2031)
Hemel Hempstead	3,549	3,137	5,627	4,073	3,891	20,276
Berkhamsted	572	156	407	588	561	2,284
Tring	174	89	-29	237	227	699
Rural East	15	10	-42	38	37	58
Bovingdon	94	32	-34	48	46	186
Markyate	20	49	55	89	85	298
Kings Langley	50	10	-46	50	48	112
Rural West	89	68	-30	160	153	440
Population change (all housing)	4,563	3,550	5,908	5,284	5,047	24,352
Population (new housing only)	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2009-2031)
Hemel Hempstead	1,951	8,624	10,378	9,427	7,932	38,311
Berkhamsted	314	429	981	191	262	2,178
Tring	96	246	117	109	265	833
Rural East	8	27	41	82	82	240
Bovingdon	52	87	14	27	46	227
Markyate	11	134	139	27	27	339
Kings Langley	27	27	14	44	115	227
Rural West	49	186	123	123	178	659
Totals	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	
Population change (new housing only)	2,508	9,760	11,807	10,031	8,908	43,014
Forecast Average Household Size						
	2.73	2.73	2.73	2.73	2.73	
Dwellings	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2009-2031)
Hemel Hempstead	714	3,156	3,798	3,450	2,903	14,021
Berkhamsted	115	157	359	70	96	797
Tring	35	90	43	40	97	305
Rural East	3	10	15	30	30	88
Bovingdon	19	32	5	10	17	83
Markyate	4	49	51	10	10	124
Kings Langley	10	10	5	16	42	83
Rural West	18	68	45	45	65	241
Total	918	3,572	4,321	3,671	3,260	15,742

Notes / Sources

Borough-wide population change has been broken down by sub-area to show the indicative distribution of growth only, based on the current sub-area distribution of housing stock / population.

Residents of new housing calculated as no. of dwellings (see Sheet I1 Table 1) multiplied by forecast av. household size.

New Housing ('Campion Housing Survey') 2003 - 4. Pers. Comm. P Campion HCC, 17/2/09

See Sheet I1 Table 1.

% Increase Over Low Scenario
56.8%

Business / Office (B1 Class) Projected Growth, 2006 - 2031 (Same in Both Scenarios)

Floorspace	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)
Hemel Hempstead	35,857	35,857	43,061	49,800	164,574
Berkhamsted	1,992	1,992	2,392	2,767	9,143
Tring	1,992	1,992	2,392	2,767	9,143
Rural East					
Bovingdon					
Markyate					
Kings Langley					
Rural West					
Total	39,841	39,841	47,845	55,333	182,860

Assumes 2006-11 already developed - Same in both scenarios. Split of total Dacorum floorspace and jobs estimated as 90% / 5% / 5% for Hemel Hempstead, Berkhamsted and Tring.

Jobs	2009-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)
Hemel Hempstead	1,992	1,992	2,392	2,767	9,143
Berkhamsted	111	111	133	154	508
Tring	111	111	133	154	508
Rural East					
Bovingdon					
Markyate					
Kings Langley					
Rural West					
Total	2,213	2,213	2,658	3,074	10,159

Industrial Projected Decline; 2006 - 2031 (Same in Both Scenarios)

Floorspace	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)	
Hemel Hempstead		-15,426	-15,426	-15,426	-3,299	0	-49,579
Berkhamsted		-857	-857	-857	-183	0	-2,754
Tring		-857	-857	-857	-183	0	-2,754
Rural East							
Rural West							
Total		-17,141	-17,141	-17,141	-3,666		-55,088

2006-2031
-68,305
-3,795
-3,795
-72,228

Split of total Dacorum floorspace and jobs estimated as 90% / 5% / 5% for Hemel Hempstead, Berkhamsted and Tring.

Jobs	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)
Hemel Hempstead		-571	-571	-215	-103	-1,460
Berkhamsted		-32	-32	-12	-6	-81
Tring		-32	-32	-12	-6	-81
Rural East						
Rural West						
Total		-635	-635	-239	-114	-1,622

2006-2031
-2,031
-113
-113
-2,257

Warehousing (B8) Growth; 2006 - 2031 (Same in Both Scenarios)

Floorspace	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)	2006-2031
Hemel Hempstead		21,145	21,145	21,145	6,122	69,558	90,703
Berkhamsted		1,175	1,175	1,175	340	3,864	5,039
Tring		1,175	1,175	1,175	340	3,864	5,039
Rural East							
Rural West							
Total		23,495	23,495	23,495	6,802	77,286	100,781

Split of total Dacorum floorspace estimated as 90% / 5% / 5% for Hemel Hempstead, Berkhamsted and Tring.

Jobs	2006-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)	2006-2031
Hemel		-136	-136	27	87	-157	-293
Berkhamsted		-8	-8	2	5	-9	-16
Tring		-8	-8	2	5	-9	-16
Rural East							
Rural West							
Total		-151	-151	30	97	-174	-325

Total warehousing jobs broken down equally amongst phases.

Retail Projected Growth; 2011 - 2031 (High)

Floorspace	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)	2009-2031
Hemel Town Centre	2,164	13,000	9,550	12,200	12,250	49,164	49,164
Hemel Non-Central (Convenience)	1,750	0	0	250	1,000	3,000	3,000
Hemel Non-Central (Comparison)	83	0	0	2,271	6,900	9,254	9,254
Hemel Hempstead	3,997	13,000	9,550	14,721	20,150	57,421	61,418
Berkhamsted	554	900	1,000	1,250	1,300	4,450	5,004
Tring	-11	450	550	650	700	2,350	2,339
Rural East							
Bovingdon							
Markyate							
Kings Langley							
Rural West							
Total	4,540	14,350	11,100	16,621	22,150	64,221	68,761

Jobs	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)	2009-2031
Hemel Town Centre (20 sqm net/job)	108	650	478	610	613	2,350	2,458
Hemel Non-C Conv (19 sqm net/job)	92	0	0	13	53	66	158
Hemel Non-C Comp (90 sqm net/job)	1	0	0	25	77	102	103
Hemel Hempstead	201	650	478	648	742	2,518	2,719
Berkhamsted	28	45	50	63	65	223	250
Tring	-1	23	28	33	35	118	117
Rural East							
Bovingdon							
Markyate							
Kings Langley							
Rural West							
Total	228	718	555	743	842	2,858	3,086

Employment density applied to employee figures to estimate floorspace.

Total split of Dacorum jobs estimated as 90% / 5% / 5% for Hemel Hempstead, Berkhamsted and Tring.

Leisure; 2011 - 2031(High)

Floorspace	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)
Hemel Hempstead	5,754	5,754	5,754	5,754	23,017
Berkhamsted	320	320	320	320	1,279
Tring	320	320	320	320	1,279
Rural East					
Bovingdon					
Markyate					
Kings Langley					
Rural West					
Total	6,394	6,394	6,394	6,394	31,968

Employment density of 18 sq m applied to employee figures to estimate floorspace.
 Hotel and Leisure jobs from Hertfordshire-London Arc Employment Study (March 09). Defined within the study as SIC code 55: this includes hotels, camping sites, restaurants, take-aways, bars and canteens.

Total split of Dacorum jobs estimated as 90% / 5% / 5% for Hemel Hempstead, Berkhamsted and Tring.

Jobs	2011-2016	2016-2021	2021-2026	2026-2031	Total (2011-2031)
Hemel Hempstead	320	320	320	320	1,279
Berkhamsted	18	18	18	18	71
Tring	18	18	18	18	71
Rural East					
Bovingdon					
Markyate					
Kings Langley					
Rural West					
Total	355	355	355	355	1,776

A1 Utilities Assumptions

Theme Area

Notes / Sources

Electricity

Land use	Strategic Design (kVA)
Residential Low (GCH)	1.60
Residential Medium (GCH)	1.60
Residential High (GCH)	1.60
Residential High (NGCH)	3.60
Office - Town Centre	0.08
Retail	0.12
Industrial	0.04
Leisure	0.12
Warehousing	0.04

All figures are typical utility company figures, reflecting both development design and strategic planning - please note that the strategic planning figures change with volume and the information is not published as it is commercially sensitive.

Consumption rate for residential use given per dwelling (GCH - gas central heating / NGCH - non gas central heating)

Consumption rate for office / retail use given per m2 NIA. These are converted from the GIA figures in the growth trajectory: *0.8 (see Rx).

NB assessment of utility networks takes place at different levels: what is pertinent for a local development is not necessarily the same for strategic planning, given that master planning would assume wholly different diversity factors. As an example, an electricity cable for a site of say 50no. houses will assume a design function of 2kVA for a GCH dwelling. This figure will decrease as the planning gets more high level - so, for strategic local infrastructure, this figure would reduce to 1.6kVA; for strategic regional infrastructure, this would reduce to say 1kVA. Ultimately the utility industry will determine requirements at specific moment in time.

For the Commercial & Industrial sector, there is huge potential variation in impacts of different activities. eg a large B8 distribution unit may use less energy than an industrial unit that houses plastic injection moulding equipment. The factors used are typical utility company values but they will differ to those for individual buildings.

Density of units does not generally materially affect the electricity network but type of heating does. For example, a dwelling will have a cooker regardless of size - so a 4 bedroom house has a cooker that is likely to be the same as a cooker in a 2 bedroom flat; however usage and energy type (gas or electricity) may vary.

Gas

Land use	m3/hour
Residential Low (GCH)	1.13
Residential Medium (GCH)	0.79
Residential High (GCH)	0.51
Residential High (NGCH)	0.00
Office - Town Centre	0.001
Retail	0.01
Industrial	0.05
Leisure	0.01
Industrial	0.05
Warehousing	0.05

All figures are typical utility company figures, reflecting both development design and strategic planning - please note that the strategic planning figures change with volume and the information is not published as it is commercially sensitive.

NB offices with air conditioning are unlikely to use gas unless catering is employed on site.

Water

Land use	Water	
	Litres / Resident / Day	Litres / Day / Emp
Residential	148.00	n/a
Office	n/a	74
Retail	n/a	74
Industrial	n/a	74
Leisure	n/a	74
Warehousing	n/a	74

For residential consumption figures are based on average strategic design figures and was confirmed by Veolia Water.

The non-residential consumption figures represent a residential situation whereby the hours of consumption reflect are 16no amd the workplace typically will reflect only 8no. hours.
The non residential figures also conform with advice given by Anglican Water.

Sewerage

Land use	Sewerage	
	Litres / Resident / Day	Litres / Day / Emp
Residential	148.00	n/a
Office	n/a	74.00
Industrial	n/a	74.00
Warehousing	n/a	74.00
Retail	n/a	74.00
Leisure	n/a	74.00

Sewage outputs are assumed to be 100% of potable water usage. This is broadly consistent with advice from providers, though approach varies between providers.

Waste

	Kg
Dwelling	910.00

A2 Education Assumptions

Theme Area

Early Years Education

Children per form of entry (f.e.) / class	30
Cost per pupil, £	15,519

Primary Schools

1 Form of Entry (f.e.)

F.e.	Pupils	Sq m
1	210	1,750
2	420	2,700
3	630	3,038

Cost per pupil, £	15,519
Ha per new 2 f.e. school site	2.5

Secondary Schools

F.e.	Pupils
No. of children per f.e.	210.00
Children per Class	30.00
Number of years	5.00

Cost per pupil, £	20,149
Ha per new 8 FE school site	14.00

FE

	2009	2011	2016	2021	2026	2031
Population aged 15 to 19	8,382	8,367	8,290	8,224	8,049	7,854
Population aged 16 to 18	5,029	5,020	4,974	4,934	4,829	4,712
FE places required	4,023	4,016	4,974	4,934	4,829	4,712

Take up rate to 2013	0.80
Take up rate 2015 and onwards	1.00

Notes/Sources

Size varies greatly - may be as high as 50 - however 30 is the correct average to use (source: J Higgins HCC 25/6/10). This is in addition to the 7 classes within the primary school so total pupils in 1 f.e. inc nursery = 240.

Range of 2,650 sq m to 2,750 sq m - average used
Range of 2,950 sq m to 3,125 sq m - average used

HIIS p 48

1 f.e. = years 7 to 11 and also 2 sixth form years, ie 7 years in total.

Population projections by 5 year age group were provided by HCC.

HIIS
Education and Skills Act 2008: By 2013 – leaving age will rise to 17; By 2015 – leaving age will rise to 18.

A3 Health Assumptions

Theme Area

Primary Health Care

Standard patients per GP	1,800
Patients per M2	21
Planned, committed provision	
Cost per GP (£)	300,000

Notes / Sources

HIIS, 2009 Final Technical Report

Estates Plan, 2009, DacCom Guildhouse Ltd

Davis Langdon LLP 2009

Cost of a three GP health care centre estimated as £0.9M. Costs include fixed furniture, fittings and equipment, fees (at a rate of 13%) and are based on a new build; exclude cost of land purchase, any loose FF&E and any temporary accommodation requirements during the (re)build.

A4 Sports and Open Space Assumptions

Theme Area			Notes / Sources
OPEN SPACE			
Allotments			
Recommended ha per 1,000 population		0.35	DBC Open Space Study 2008
Current provision, ha, whole of Dacorum		37.60	DBC Open Space Study 2008
Current baseline (surplus / deficit) by sub-area, ha			DBC Open Space Study 2008.
	Hemel Hempstead	-20.51	
	Berkhamsted	10.34	
	Tring	-0.32	
	Rural East	n/a	
	Bovingdon	-1.61	
	Markyate	0.40	
	Kings Langley	1.00	
	Rural West	n/a	
Current baseline (surplus / deficit), ha, whole of Dacorum		-11.23	DBC Open Space Study 2008
Planned, committed provision		0.38	DBC Open Space Study 2008. Reprovision of Bennetts End, Hemel Hempstead.
Cost per ha, £		100,000	HIIS, 2009 Final Technical Report
Natural Green Space (Local Nature Reserves)			
Recommended ha Local Natural Reserve per 1,000 population		1.00	DBC Open Space Study 2008
Current provision, ha, whole of Dacorum		19.30	Baseline by Sub-area not available in Open Space Study.
Current baseline (surplus / deficit), ha, whole of Dacorum		-120.20	
Planned, committed provision			
Cost per ha of Natural Green Space, £		10,000	HIIS, 2009 Final Technical Report
Leisure Space including Child Play Space			
Recommended ha per 1,000 population		2.80	DBC Open Space Study 2008
Current baseline (surplus / deficit) by sub-area			DBC Open Space Study 2008
	Hemel Hempstead	-6.02	
	Berkhamsted	-17.34	
	Tring	7.18	
	Rural East	n/a	
	Bovingdon	-6.53	
	Markyate	-5.26	
	Kings Langley	-8.48	

	Rural West	n/a
	Borough-wide	-45.47
Child Play Space		
Recommended ha per 1,000 population		0.80
Current baseline (surplus / deficit) by sub-area	Hemel Hempstead	-54.80
	Berkhamsted	-6.14
	Tring	-8.33
	Rural East	n/a
	Bovingdon	-3.55
	Markyate	-2.07
	Kings Langley	-3.31
	Rural West	n/a
Current total child play space ha, whole of Dacorum		15.89
Current baseline (surplus / deficit), ha, whole of Dacorum		-95.71
Planned, committed provision (£)		
Construction Cost per ha (£)		1,994,800

Note: Sub-area totals do not sum to Dacorum-wide total because they exclude the baseline for 'Rural East' and 'Rural West' as this information is not available within the Open Space Study.

DBC Open Space Study 2008

DBC Open Space Study 2008

£52,000 to be spend on Mortimer Park (Play Builder funds; Source: DBC). Not discounted from demand because spend relates to improved space, not new space.
LB Camden Open Space, Sport and Recreation Study Update (Atkins, 2008)

SPORTS FACILITIES

Swimming Pools

Current accessible water space in Dacorum, sq m		3000.00
Requirement based on 2009 population	sq m	1380.01
	lanes	25.98
	pools	6.49
Baseline capacity, water space in Dacorum	sq m	1619.99
Baseline capacity, water space in Dacorum	pools	7.62
Planned, committed provision		

Synthetic Turf Pitches (STPs)

Current synthetic turf pitches in Dacorum, no.		3.00
Requirement based on 2009 population		4.20
Baseline capacity, STPs in Dacorum, no.		-1.20
Planned, committed provision		
Cost per pitch, £		655,398

Sports Halls and Courts

Current sports hall space in Dacorum	courts	78.00
	halls	28.00
Requirement based on 2009 population	courts	38.66
	halls	9.66
Baseline capacity, Dacorum	courts	39.34
	halls	18.34
Planned, committed provision		

Health Workstations

Recommended workstations per 1,000 population		6.13
Current workstations in Dacorum		669.00
Current baseline (surplus / deficit), workstations in Dacorum		-186.13
Sq m required per workstation		5.00
Planned, committed provision		

Draft Facilities Improvement Strategy, SportSpace 2009

Sports England Calculator

Sports Calculator - average of cost of 3G and sand pitch

Draft Facilities Improvement Strategy, SportSpace 2009. This is average for Hertfordshire (2009)

Draft Facilities Improvement Strategy, SportSpace 2009

Draft Facilities Improvement Strategy, SportSpace 2009

Design Guidance Note: Creating an Active Nation through Sport. Sport England, 2008. 5 sq m per piece of equipment.

A5 Other Social Infrastructure Assumptions

Theme Area		Notes / Sources
Libraries		
Recommended library space per 1,000 Resident Population, sq m	30.0	Museums Libraries Archives Council (Public Libraries, Archives and New Development A Standard Charge Approach, 2008); also Hertfordshire Planning Obligations Toolkit 2008 Appendix 1
Current library space, whole of Dacorum	1,696.0	
Baseline (existing surplus / deficit)	-2488.97	
Planned, committed provision		
Construction Cost per Sqm (£)	3,000.0	
Community Space		
Recommended community space per 1,000 Population, sq m	61.1	61 sqm per 1,000 population based on the 'Milton Keynes Planning Obligations for Leisure, Recreation and Sports Facilities' (Milton Keynes Council, 2005).
Current provision, sq m	13,228.1	
Baseline (existing surplus / deficit)	4,704.7	
Planned, committed provision		
Construction Cost per Sqm (£)	1,700.0	
Cemeteries		
Construction Cost per Ha (£)	378,000.0	Source: 'The Cost and Funding of Growth in the South East England' (Roger Tym & Partners, 2005) (2005 prices), confirmed by Davis Langdon (2009) The figure would exclude any built facility (e.g. crematoria, chapels etc.).

R1 Utilities Results

Electricity

kVA

Current Usage	No / sq m	kVA
Dwellings	59,957.0	95,931.2
Office	337,000.0	26,960.0
Industry	185,000.0	7,400.0
Warehouse	497,000.0	19,880.0
Retail	101,094.0	12,131.3
Total		162,302.5

Low Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Residential	Hemel Hempstead	1,142.4	3,609.6	3,516.8	1,520.0	1,764.8	11,553.6
	Other sub-areas	326.4	665.6	836.8	353.6	571.2	2,753.6
Non- residential	Hemel Hempstead	425.6	4,900.0	4,474.0	5,314.3	6,176.9	21,290.8
	Other	65.2	582.9	606.9	712.9	771.9	2,739.7
Total	Hemel Hempstead	1,568.0	8,509.6	7,990.8	6,834.3	7,941.7	32,844.4
	Other	391.6	1,248.5	1,443.7	1,066.5	1,343.1	5,493.3
	Dacorum	1,959.6	9,758.0	9,434.4	7,900.8	9,284.8	38,337.7
High Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Residential	Hemel Hempstead	1,142.4	5,049.6	6,076.8	5,520.0	4,644.8	22,433.6
	Other sub-areas	326.4	665.6	836.8	353.6	571.2	2,753.6
Non- residential	Hemel Hempstead	479.6	5,347.8	4,933.8	6,130.6	7,205.4	24,097.3
	Other	65.2	582.9	606.9	712.9	771.9	2,739.7
Total	Hemel Hempstead	1,622.0	10,397.4	11,010.6	11,650.6	11,850.2	46,530.9
	Other	391.6	1,248.5	1,443.7	1,066.5	1,343.1	5,493.3
	Dacorum	2,013.6	11,645.9	12,454.3	12,717.1	13,193.3	52,024.2

Gas
m3

Current Usage		No / sq m	m3
	Dwellings	59,957.0	48,705.6
	Office	337,000.0	337.0
	Industry	185,000.0	9,250.0
	Warehouse	497,000.0	24,850.0
	Retail	101,094.0	1,002.7
	Total		84,145.3

Gross New Demand

Low Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Residential	Hemel Hempstead	580.0	1,832.6	1,785.5	771.7	896.0	5,865.9
	Other sub-areas	165.7	337.9	424.9	179.5	290.0	1,398.0
Non- residential	Hemel Hempstead	117.0	470.8	470.8	478.0	339.9	1,876.5
	Other	5.4	55.5	57.5	61.7	47.4	227.5
Total	Hemel Hempstead	697.0	2,303.4	2,256.3	1,249.7	1,235.9	7,742.5
	Other	171.1	393.4	482.3	241.3	337.4	1,625.5
	Dacorum	868.2	2,696.9	2,738.6	1,491.0	1,573.3	9,368.0
High Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Residential	Hemel Hempstead	580.0	2,563.8	3,085.3	2,802.6	2,358.2	11,389.9
	Other sub-areas	165.7	337.9	424.9	179.5	290.0	1,398.0
Non- residential	Hemel Hempstead	39.6	507.8	473.6	532.1	447.8	2,001.0
	Other	5.4	55.5	57.5	61.7	47.4	227.5
Total	Hemel Hempstead	619.7	3,071.6	3,558.9	3,334.7	2,806.1	13,390.8
	Other	171.1	393.4	482.3	241.3	337.4	1,625.5
	Dacorum	790.8	3,465.0	4,041.2	3,575.9	3,143.5	15,016.3

Water
litres / day

Current Usage		People / employees	L/day
	Population	139,499.0	20,645,852.0
	Office	14,454.0	1,069,596.0
	Industry	7,074.0	523,476.0
	Warehouse	8,235.0	609,390.0
	Retail	5,054.7	374,047.8
	Total		23,222,361.8

Forecast Demand		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Residential	Dacorum	200,392.0	363,488.0	366,892.0	(248,492.0)	(245,088.0)	437,192.0
Non-residential	Hemel Hempstead	13,196.6	152,012.3	138,877.3	215,015.9	258,549.6	777,651.9
	Other	2,009.1	18,190.7	18,930.7	27,781.1	32,650.3	99,561.8
Total	Dacorum	215,597.7	533,691.0	524,700.0	(5,695.0)	46,111.9	1,314,405.7

High Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Residential	Dacorum	675,324.0	525,400.0	874,384.0	782,032.0	746,956.0	3,604,096.0
Non-residential	Hemel Hempstead	14,890.8	166,861.1	154,096.1	234,740.7	282,145.6	852,734.3
	Other	2,009.1	18,190.7	18,930.7	27,781.1	32,650.3	99,561.8
Total	Dacorum	692,223.9	710,451.8	1,047,410.8	1,044,553.8	1,061,751.9	4,556,392.2

Sewerage
litres / day

Current Usage		People / employees	L/day
	Population	139,499.0	20,645,852.0
	Office	14,454.0	1,069,596.0
	Industry	7,074.0	523,476.0
	Warehouse	8,235.0	609,390.0
	Retail	5,054.7	374,047.8
	Total		23,222,361.8

Forecast Demand

Low Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Residential	Dacorum	200,392.0	363,488.0	366,892.0	(248,492.0)	(245,088.0)	437,192.0
							-
Non- residential	Hemel Hempstead	13,196.6	152,012.3	138,877.3	215,015.9	258,549.6	777,651.9
	Other	2,009.1	18,190.7	18,930.7	27,781.1	32,650.3	99,561.8
Total	Dacorum	215,597.7	533,691.0	524,700.0	(5,695.0)	46,111.9	1,314,405.7

High Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Residential	Dacorum	675,324.0	525,400.0	874,384.0	782,032.0	746,956.0	3,604,096.0
Non- residential	Hemel Hempstead	14,890.8	166,861.1	154,096.1	234,740.7	282,145.6	852,734.3
	Other	2,009.1	18,190.7	18,930.7	27,781.1	32,650.3	99,561.8
Total	Dacorum	692,223.9	710,451.8	1,047,410.8	1,044,553.8	1,061,751.9	4,556,392.2

Waste (household waste only)
kg

Low Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Residential	Hemel Hempstead	649,740	2,052,960	2,000,180	864,500	1,003,730	6,571,110
	Other sub-areas	185,640	378,560	475,930	201,110	324,870	1,566,110
	Dacorum	835,380	2,431,520	2,476,110	1,065,610	1,328,600	8,137,220
High Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Residential	Hemel Hempstead	649,740	2,871,960	3,456,180	3,139,500	2,641,730	12,759,110
	Other sub-areas	185,640	378,560	475,930	201,110	324,870	1,566,110
	Dacorum	835,380	3,250,520	3,932,110	3,340,610	2,966,600	14,325,220

R2 Education Results

Early Years Education

FE / Classes

	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead						
North East	-	2.0	2.0	-	4.0	4.0
East	1.0	2.0	3.0	1.0	10.0	11.0
South East	2.0	2.0	4.0	2.0	2.0	4.0
West	-	2.0	2.0	-	2.0	2.0
Town Centre	-	2.0	2.0	-	2.0	2.0
North West	-	-	-	-	-	-
Reserve	-	4.0	4.0	-	4.0	4.0
Tring	2.0	-	2.0	2.0	-	2.0
Berkhamsted	-	6.0	6.0	-	6.0	6.0
Bovingdon	-	-	-	-	-	-
Markyate	-	-	-	-	-	-
Kings Langley	-	2.0	2.0	-	2.0	2.0
Total	5.0	22.0	27.0	5.0	32.0	37.0

Pupils

	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead						
North East	-	60.0	60.0	-	120.0	120.0
East	30.0	60.0	90.0	30.0	300.0	330.0
South East	60.0	60.0	120.0	60.0	60.0	120.0
West	-	60.0	60.0	-	60.0	60.0
Town Centre	-	60.0	60.0	-	60.0	60.0
North West	-	-	-	-	-	-
Reserve	-	120.0	120.0	-	120.0	120.0
Tring	60.0	-	60.0	60.0	-	60.0
Berkhamsted	-	180.0	180.0	-	180.0	180.0
Bovingdon	-	-	-	-	-	-
Markyate	-	-	-	-	-	-
Kings Langley	-	60.0	60.0	-	60.0	60.0
Total	150.0	660.0	810.0	150.0	960.0	1,110.0

Costs, £						
	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead						
North East	-	931,140.0	931,140.0	-	1,862,280.0	1,862,280.0
East	465,570.0	931,140.0	1,396,710.0	465,570.0	4,655,700.0	5,121,270.0
South East	931,140.0	931,140.0	1,862,280.0	931,140.0	931,140.0	1,862,280.0
West	-	931,140.0	931,140.0	-	931,140.0	931,140.0
Town Centre	-	931,140.0	931,140.0	-	931,140.0	931,140.0
North West	-	-	-	-	-	-
Reserve	-	1,862,280.0	1,862,280.0	-	1,862,280.0	1,862,280.0
Tring	931,140.0	-	931,140.0	931,140.0	-	931,140.0
Berkhamsted	-	2,793,420.0	2,793,420.0	-	2,793,420.0	2,793,420.0
Bovingdon	-	-	-	-	-	-
Markyate	-	-	-	-	-	-
Kings Langley	-	931,140.0	931,140.0	-	931,140.0	931,140.0
Total	2,327,850.0	10,242,540.0	12,570,390.0	2,327,850.0	14,898,240.0	17,226,090.0

Primary Schools

f.e.						
	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead						
North East		2.0	2.0		4.0	4.0
East	1.0	2.0	3.0	1.0	10.0	11.0
South East	2.0	2.0	4.0	2.0	2.0	4.0
West / North West		2.0	2.0	-	2.0	2.0
Town Centre		2.0	2.0	-	2.0	2.0
Reserve		4.0	4.0	-	4.0	4.0
Tring	2.0		2.0	2.0	-	2.0
Berkhamsted		6.0	6.0	-	6.0	6.0
Bovingdon			-	-	-	-
Markyate			-	-	-	-
Kings Langley		2.0	2.0	-	2.0	2.0
Total	5.0	22.0	27.0	5.0	32.0	37.0

Sq m						
	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead						
North East	-	2,700.0	2,700.0	-	5,400.0	5,400.0
East	1,750.0	2,700.0	4,450.0	1,750.0	13,500.0	15,250.0
South East	2,700.0	2,700.0	5,400.0	2,700.0	2,700.0	5,400.0
West	-	2,700.0	2,700.0	-	2,700.0	2,700.0
Town Centre	-	2,700.0	2,700.0	-	2,700.0	2,700.0
North West	-	-	-	-	-	-
Reserve	-	5,400.0	5,400.0	-	5,400.0	5,400.0
Tring	2,700.0	-	2,700.0	2,700.0	-	2,700.0
Berkhamsted	-	8,100.0	8,100.0	-	8,100.0	8,100.0
Bovingdon	-	-	-	-	-	-
Markyate	-	-	-	-	-	-
Kings Langley	-	2,700.0	2,700.0	-	2,700.0	2,700.0
Total	7,150.0	29,700.0	36,850.0	7,150.0	43,200.0	50,350.0

Ha						
	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead						
North East	-	2.5	2.5	-	5.0	5.0
East	-	2.5	2.5	-	12.5	12.5
South East	-	2.5	2.5	-	2.5	2.5
West	-	2.5	2.5	-	2.5	2.5
Town Centre	-	2.5	2.5	-	2.5	2.5
North West	-	-	-	-	-	-
Reserve	-	5.0	5.0	-	5.0	5.0
Tring	-	-	-	-	-	-
Berkhamsted	-	7.5	7.5	-	7.5	7.5
Bovingdon	-	-	-	-	-	-
Markyate	-	-	-	-	-	-
Kings Langley	-	2.5	2.5	-	2.5	2.5
Total	-	27.5	27.5	-	40.0	40.0

Pupils						
	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead						
North East			420.0			840.0
East			630.0			2,310.0
South East			840.0			840.0
West			420.0			420.0
Town Centre			420.0			420.0
North West			-			-
Reserve			840.0			840.0
Tring			420.0			420.0
Berkhamsted			1,260.0			1,260.0
Bovingdon			-			-
Markyate			-			-
Kings Langley			420.0			420.0
Total	-	-	5,670.0	-	-	7,770.0

Costs, £						
	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead						
North East			6,517,980.0			13,035,960.0
East			9,776,970.0			35,848,890.0
South East			13,035,960.0			13,035,960.0
West			6,517,980.0			6,517,980.0
Town Centre			6,517,980.0			6,517,980.0
North West			-			-
Reserve			13,035,960.0			13,035,960.0
Tring			6,517,980.0			6,517,980.0
Berkhamsted			19,553,940.0			19,553,940.0
Bovingdon			-			-
Markyate			-			-
Kings Langley			6,517,980.0			6,517,980.0
Total			87,992,730.0			120,582,630.0

Secondary

f.e.

	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead		8.0	8.0		16.0	16.0
Tring	2.0		2.0	2.0		2.0
Berkhamsted			-			-
Bovingdon			-			-
Markyate			-			-
Kings Langley			-			-
Total	2.0	8.0	10.0	2.0	16.0	18.0

Ha

ha

	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead		14.0			28.0	
Tring						
Berkhamsted						
Bovingdon						
Markyate						
Kings Langley						
Total	-	14.0		-	28.0	

Pupils						
	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead			1,680.0			3,360.0
Tring			420.0			420.0
Berkhamsted						
Bovingdon						
Markyate						
Kings Langley						
Total			2,100.0	-	-	3,780.0

Cost, £						
	Low Growth Scenario			High growth scenario		
	Expansion on existing site	New site	Total	Expansion on existing site	New site	Total
Hemel Hempstead			33,850,320.0			67,700,640.0
Tring			8,462,580.0			8,462,580.0
Berkhamsted						
Bovingdon						
Markyate						
Kings Langley						
Total			42,312,900.0			76,163,220.0

FE

Places						
Low Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
	(7.2)	957.8	(39.6)	(105.0)	(117.0)	689.0

R3 Health Results

Primary Health Care WTE GPs

Low Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Hemel Hempstead	1.1	3.4	3.3	1.4	1.7	11.0
Berkhamsted	0.2	0.2	0.5	0.1	0.1	1.2
Tring	0.1	0.1	0.1	0.1	0.1	0.5
Rural East	0.0	0.0	0.0	0.0	0.0	0.1
Bovingdon	0.0	0.0	0.0	0.0	0.0	0.1
Markyate	0.0	0.1	0.1	0.0	0.0	0.2
Kings Langley	0.0	0.0	0.0	0.0	0.1	0.1
Rural West	0.0	0.1	0.1	0.1	0.1	0.4
Total	1.4	4.1	4.1	1.8	2.2	13.6

High Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Hemel Hempstead	1.1	4.8	5.8	5.2	4.4	21.3
Berkhamsted	0.2	0.2	0.5	0.1	0.1	1.2
Tring	0.1	0.1	0.1	0.1	0.1	0.5
Rural East	0.0	0.0	0.0	0.0	0.0	0.1
Bovingdon	0.0	0.0	0.0	0.0	0.0	0.1
Markyate	0.0	0.1	0.1	0.0	0.0	0.2
Kings Langley	0.0	0.0	0.0	0.0	0.1	0.1
Rural West	0.0	0.1	0.1	0.1	0.1	0.4
Total	1.4	5.4	6.6	5.6	4.9	23.9

Sq m

Low Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Hemel Hempstead	92.9	293.5	286.0	123.6	143.5	939.6
Berkhamsted	15.0	20.4	46.7	9.1	12.5	103.7
Tring	4.6	11.7	5.6	5.2	12.6	39.7
Rural East	0.4	1.3	2.0	3.9	3.9	11.5
Bovingdon	2.5	4.2	0.7	1.3	2.2	10.8
Markyate	0.5	6.4	6.6	1.3	1.3	16.1
Kings Langley	1.3	1.3	0.7	2.1	5.5	10.8
Rural West	2.3	8.8	5.9	5.9	8.5	31.4
Total	119.4	347.7	354.0	152.4	190.0	1,163.5

High Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Hemel Hempstead	92.9	410.6	494.2	448.9	377.7	1,824.4
Berkhamsted	15.0	20.4	46.7	9.1	12.5	103.7
Tring	4.6	11.7	5.6	5.2	12.6	39.7
Rural East	0.4	1.3	2.0	3.9	3.9	11.5
Bovingdon	2.5	4.2	0.7	1.3	2.2	10.8
Markyate	0.5	6.4	6.6	1.3	1.3	16.1
Kings Langley	1.3	1.3	0.7	2.1	5.5	10.8
Rural West	2.3	8.8	5.9	5.9	8.5	31.4
Total	119.4	464.8	562.2	477.7	424.2	2,048.3

Cost £

Low Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Hemel Hempstead	325,158.9	1,027,392.7	1,000,979.2	432,634.3	502,311.2	3,288,476.3
Berkhamsted	52,371.5	71,498.5	163,490.2	31,878.3	43,718.8	362,957.4
Tring	15,939.2	40,986.4	19,582.4	18,216.2	44,174.2	138,898.4
Rural East	1,366.2	4,554.0	6,831.1	13,662.1	13,662.1	40,075.6
Bovingdon	8,652.7	14,572.9	2,277.0	4,554.0	7,741.9	37,798.6
Markyate	1,821.6	22,314.8	23,225.6	4,554.0	4,554.0	56,470.2
Kings Langley	4,554.0	4,554.0	2,277.0	7,286.5	19,127.0	37,798.6
Rural West	8,197.3	30,967.5	20,493.2	20,493.2	29,601.3	109,752.5
Total	418,061.4	1,216,841.0	1,239,155.8	533,278.7	664,890.7	4,072,227.6
High Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand
Hemel Hempstead	325,158.9	1,437,256.8	1,729,626.5	1,571,145.7	1,322,039.4	6,385,227.4
Berkhamsted	52,371.5	71,498.5	163,490.2	31,878.3	43,718.8	362,957.4
Tring	15,939.2	40,986.4	19,582.4	18,216.2	44,174.2	138,898.4
Rural East	1,366.2	4,554.0	6,831.1	13,662.1	13,662.1	40,075.6
Bovingdon	8,652.7	14,572.9	2,277.0	4,554.0	7,741.9	37,798.6
Markyate	1,821.6	22,314.8	23,225.6	4,554.0	4,554.0	56,470.2
Kings Langley	4,554.0	4,554.0	2,277.0	7,286.5	19,127.0	37,798.6
Rural West	8,197.3	30,967.5	20,493.2	20,493.2	29,601.3	109,752.5
Total	418,061.4	1,626,705.1	1,967,803.1	1,671,790.1	1,484,618.9	7,168,978.6

R4 Sports and Open Space Results

OPEN SPACE

Allotments (ha)

Low Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Hemel Hempstead	0.68	2.16	2.10	0.91	1.05	6.91	(20.13)	27.03
Berkhamsted	0.11	0.15	0.34	0.07	0.09	0.76	10.34	(9.58)
Tring	0.03	0.09	0.04	0.04	0.09	0.29	(0.32)	0.61
Rural East	0.00	0.01	0.01	0.03	0.03	0.08	n/a	
Bovingdon	0.02	0.03	0.00	0.01	0.02	0.08	(1.61)	1.69
Markyate	0.00	0.05	0.05	0.01	0.01	0.12	0.40	(0.28)
Kings Langley	0.01	0.01	0.00	0.02	0.04	0.08	1.00	(0.92)
Rural West	0.02	0.07	0.04	0.04	0.06	0.23	n/a	
Total	0.88	2.56	2.60	1.12	1.40	8.55	(10.84)	19.39
Cost						855,167.79		1,939,292.79

High Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Hemel Hempstead	0.68	3.02	3.63	3.30	2.78	13.41	(20.13)	33.53
Berkhamsted	0.11	0.15	0.34	0.07	0.09	0.76	10.34	(9.58)
Tring	0.03	0.09	0.04	0.04	0.09	0.29	(0.32)	0.61
Rural East	0.00	0.01	0.01	0.03	0.03	0.08	n/a	
Bovingdon	0.02	0.03	0.00	0.01	0.02	0.08	(1.61)	1.69
Markyate	0.00	0.05	0.05	0.01	0.01	0.12	0.40	(0.28)
Kings Langley	0.01	0.01	0.00	0.02	0.04	0.08	1.00	(0.92)
Rural West	0.02	0.07	0.04	0.04	0.06	0.23	n/a	
Total	0.88	3.42	4.13	3.51	3.12	15.05	(10.84)	25.90
Cost						1,505,485.51		2,589,610.51

Natural Green Space / Local Nature Reserves (ha)

Low Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Hemel Hempstead	2.0	6.2	6.0	2.6	3.0	19.7		
Berkhamsted	0.3	0.4	1.0	0.2	0.3	2.2		
Tring	0.1	0.2	0.1	0.1	0.3	0.8		
Rural East	0.0	0.0	0.0	0.1	0.1	0.2		
Bovingdon	0.1	0.1	0.0	0.0	0.0	0.2		
Markyate	0.0	0.1	0.1	0.0	0.0	0.3		
Kings Langley	0.0	0.0	0.0	0.0	0.1	0.2		
Rural West	0.0	0.2	0.1	0.1	0.2	0.7		
Total	2.5	7.3	7.4	3.2	4.0	24.4	(120.2)	144.6
Cost						244,333.7		1,446,323.7

High Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Hemel Hempstead	2.0	8.6	10.4	9.4	7.9	38.3		
Berkhamsted	0.3	0.4	1.0	0.2	0.3	2.2		
Tring	0.1	0.2	0.1	0.1	0.3	0.8		
Rural East	0.0	0.0	0.0	0.1	0.1	0.2		
Bovingdon	0.1	0.1	0.0	0.0	0.0	0.2		
Markyate	0.0	0.1	0.1	0.0	0.0	0.3		
Kings Langley	0.0	0.0	0.0	0.0	0.1	0.2		
Rural West	0.0	0.2	0.1	0.1	0.2	0.7		
Total	2.5	9.8	11.8	10.0	8.9	43.0	(120.2)	163.2
Cost						430,138.7		1,632,128.7

Leisure Space (ha)									
Low Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
	Hemel Hempstead	5.5	17.3	16.8	7.3	8.4	55.2	(6.0)	61.3
	Berkhamsted	0.9	1.2	2.7	0.5	0.7	6.1	(17.3)	23.4
	Tring	0.3	0.7	0.3	0.3	0.7	2.3	7.2	(4.8)
	Rural East	0.0	0.1	0.1	0.2	0.2	0.7	n/a	0.7
	Bovingdon	0.1	0.2	0.0	0.1	0.1	0.6	(6.5)	7.2
	Markyate	0.0	0.4	0.4	0.1	0.1	0.9	(5.3)	6.2
	Kings Langley	0.1	0.1	0.0	0.1	0.3	0.6	(8.5)	9.1
	Rural West	0.1	0.5	0.3	0.3	0.5	1.8	n/a	1.8
	Total	7.0	20.4	20.8	9.0	11.2	68.4	(45.5)	113.9
High Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
	Hemel Hempstead	5.5	24.1	29.1	26.4	22.2	107.3	(6.0)	113.3
	Berkhamsted	0.9	1.2	2.7	0.5	0.7	6.1	(17.3)	23.4
	Tring	0.3	0.7	0.3	0.3	0.7	2.3	7.2	(4.8)
	Rural East	0.0	0.1	0.1	0.2	0.2	0.7	n/a	0.7
	Bovingdon	0.1	0.2	0.0	0.1	0.1	0.6	(6.5)	7.2
	Markyate	0.0	0.4	0.4	0.1	0.1	0.9	(5.3)	6.2
	Kings Langley	0.1	0.1	0.0	0.1	0.3	0.6	(8.5)	9.1
	Rural West	0.1	0.5	0.3	0.3	0.5	1.8	n/a	1.8
	Total	7.0	27.3	33.1	28.1	24.9	120.4	(45.5)	165.9

Childrens Play Space (ha)

Low Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand	
Hemel Hempstead	1.6	4.9	4.8	2.1	2.4	15.8	(54.8)	70.6	
Berkhamsted	0.3	0.3	0.8	0.2	0.2	1.7	(6.1)	7.9	
Tring	0.1	0.2	0.1	0.1	0.2	0.7	(8.3)	9.0	
Rural East	0.0	0.0	0.0	0.1	0.1	0.2	n/a	0.2	
Bovingdon	0.0	0.1	0.0	0.0	0.0	0.2	(3.6)	3.7	
Markyate	0.0	0.1	0.1	0.0	0.0	0.3	(2.1)	2.3	
Kings Langley	0.0	0.0	0.0	0.0	0.1	0.2	(3.3)	3.5	
Rural West	0.0	0.1	0.1	0.1	0.1	0.5	n/a	0.5	
Total	2.0	5.8	5.9	2.6	3.2	19.5	(95.7)	115.3	
Cost							38,991,742.0		229,914,449.0

High Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand	
Hemel Hempstead	1.6	6.9	8.3	7.5	6.3	30.6	(54.8)	85.4	
Berkhamsted	0.3	0.3	0.8	0.2	0.2	1.7	(6.1)	7.9	
Tring	0.1	0.2	0.1	0.1	0.2	0.7	(8.3)	9.0	
Rural East	0.0	0.0	0.0	0.1	0.1	0.2	n/a	0.2	
Bovingdon	0.0	0.1	0.0	0.0	0.0	0.2	(3.6)	3.7	
Markyate	0.0	0.1	0.1	0.0	0.0	0.3	(2.1)	2.3	
Kings Langley	0.0	0.0	0.0	0.0	0.1	0.2	(3.3)	3.5	
Rural West	0.0	0.1	0.1	0.1	0.1	0.5	n/a	0.5	
Total	2.0	7.8	9.4	8.0	7.1	34.4	(95.7)	130.1	
Cost							68,643,256.9		259,565,963.8

SPORTS FACILITIES

Workings for sports halls, swimming pools and workstations from the Sports Calculator based on population projects for all housing as below.

	2,009.0	2,011.0	2,016.0	2,021.0	2,026.0	2,031.0
Low Scenario						
Population	139,499.0	140,853.0	143,309.0	145,788.0	144,109.0	142,453.0
Population Change		1,354.0	2,456.0	2,479.0	(1,679.0)	(1,656.0)
High Scenario						
Population	139,499.0	144,062.0	147,612.0	153,520.0	158,804.0	163,851.0
Population Change		4,563.0	3,550.0	5,908.0	5,284.0	5,047.0

Halls

Low Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Courts	0.4	1.0	0.7	(0.5)	(0.5)	1.1	39.3	(38.2)
Halls	0.1	0.2	0.2	(0.1)	(0.1)	0.3	18.3	(18.1)
Costs	257,956.6	658,418.0	472,285.3	(319,873.8)	(315,491.9)	753,294.2		
High Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Courts	1.3	1.0	1.6	1.5	1.4	6.7	39.3	(32.6)
Halls	0.3	0.2	0.4	0.4	0.3	1.7	18.3	(16.6)
Costs	869,317.5	676,326.3	1,125,559.4	1,006,678.4	961,526.5	4,639,408.1		

Pools

Low Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Sqm		13.4	34.2	24.5	(16.6)	(16.4)	39.1	1,620.0	(1,580.9)
Lanes		0.3	0.6	0.5	(0.3)	(0.3)	0.7		
Pools		0.1	0.2	0.1	(0.1)	(0.1)	0.2	7.6	(7.4)
Costs		145,704.2	371,900.8	266,765.7	(180,677.5)	(178,202.5)	425,490.7		
High Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Sqm		45.1	35.1	58.4	52.3	49.9	240.9	1,620.0	(1,379.1)
Lanes		0.8	0.7	1.1	1.0	0.9	4.5		
Pools		0.2	0.2	0.3	0.2	0.2	1.1	7.6	(6.5)
Costs		491,025.3	382,016.2	635,761.0	568,612.2	543,108.6	2,620,523.2		

Workstations

Low Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
No.		8.3	15.1	15.2	(10.3)	(10.2)	18.1	(186.1)	204.2
Sq m		41.5	75.3	76.0	(51.5)	(50.8)	90.5	(930.6)	1,021.2
High Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Workstations		28.0	21.8	36.2	32.4	30.9	149.3	(186.1)	335.4
Sq m		139.9	108.8	181.1	162.0	154.7	746.4	(930.6)	1,677.0

Synthetic Turf Pitches

Low Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Pitches		-	0.1	0.1	(0.1)	(0.1)	-	(1.2)	1.2
									788,150.9
High Scenario		2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Pitches		0.1	0.3	-	0.2	0.1	0.7	(1.2)	1.9
							458,778.7		1,246,929.5

R5 Other Social Infrastructure Results

Libraries

Low Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Hemel Hempstead	31.6	62.2	67.8	2.5	(27.9)	136.1		
Berkhamsted	5.1	4.3	9.6	(26.9)	(10.6)	(18.5)		
Tring	1.5	2.5	(0.7)	(7.9)	(4.3)	(8.8)		
Rural East	0.1	0.3	(1.0)	(2.1)	(0.7)	(3.4)		
Bovingdon	0.8	0.9	(0.8)	(2.9)	(0.9)	(2.9)		
Markyate	0.2	1.4	1.3	(4.4)	(1.6)	(3.2)		
Kings Langley	0.4	0.3	(1.1)	(2.0)	(0.9)	(3.3)		
Rural West	0.8	1.9	(0.7)	(6.6)	(2.9)	(7.5)		
Total	40.6	73.7	74.4	(50.4)	(49.7)	88.6	(2,489.0)	2,577.6
Cost						265,860.0		7,732,770.0

High Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Hemel Hempstead	106.5	94.1	168.8	122.2	116.7	608.3		
Berkhamsted	17.1	4.7	12.2	17.6	16.8	68.5		
Tring	5.2	2.7	(0.9)	7.1	6.8	21.0		
Rural East	0.4	0.3	(1.3)	1.1	1.1	1.7		
Bovingdon	2.8	1.0	(1.0)	1.4	1.4	5.6		
Markyate	0.6	1.5	1.7	2.7	2.6	8.9		
Kings Langley	1.5	0.3	(1.4)	1.5	1.4	3.4		
Rural West	2.7	2.0	(0.9)	4.8	4.6	13.2		
Total	136.9	106.5	177.2	158.5	151.4	730.6	(2,489.0)	3,219.5
Cost						2,191,680.0		9,658,590.0

Community Space

Low Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Hemel Hempstead	119.2	376.6	367.0	158.6	184.1	1,205.6		
Berkhamsted	19.2	26.2	59.9	11.7	16.0	133.1		
Tring	5.8	15.0	7.2	6.7	16.2	50.9		
Rural East	0.5	1.7	2.5	5.0	5.0	14.7		
Bovingdon	3.2	5.3	0.8	1.7	2.8	13.9		
Markyate	0.7	8.2	8.5	1.7	1.7	20.7		
Kings Langley	1.7	1.7	0.8	2.7	7.0	13.9		
Rural West	3.0	11.4	7.5	7.5	10.9	40.2		
Total	153.3	446.1	454.3	195.5	243.7	1,492.9	4,704.7	(3,211.8)
Cost						2,537,893.7		

High Scenario	2009-2011	2011-2016	2016-2021	2021-2026	2026-2031	Gross New Demand	Baseline	Net New Demand
Hemel Hempstead	119.2	526.9	634.1	576.0	484.7	2,340.8		
Berkhamsted	19.2	26.2	59.9	11.7	16.0	133.1		
Tring	5.8	15.0	7.2	6.7	16.2	50.9		
Rural East	0.5	1.7	2.5	5.0	5.0	14.7		
Bovingdon	3.2	5.3	0.8	1.7	2.8	13.9		
Markyate	0.7	8.2	8.5	1.7	1.7	20.7		
Kings Langley	1.7	1.7	0.8	2.7	7.0	13.9		
Rural West	3.0	11.4	7.5	7.5	10.9	40.2		
Total	153.3	596.4	721.4	612.9	544.3	2,628.1	4,704.7	(2,076.6)
Cost						4,467,850.8		

Cemeteries

Dacorum-wide requirement	4.9 ha	12 acres identified as required by DCB.
Total cost	1,835,654.1 £	