

Housing Density Paper

Dartford Borough

This paper looks to analyse the past and present with regard to housing density across Dartford Borough and provide examples of corresponding residential character to establish a thorough overview of the range of densities in Dartford. Wider examples are also provided to allow comparison with neighbouring authorities.

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1. INTRODUCTION AND CONTEXT

Housing density is the established way to quantify the intensity of residential development. It may usefully provide a quantitative indicator of the form of development, and it relates to the sustainability of a development. Similarly by signifying the scale of development accommodated on a land parcel it can influence the overall viability of the site for the local developer.

This paper looks to understand housing density across Dartford through utilising a number of case studies to provide comparative examples and create a clear picture of the different types of development across the Borough.

The paper will analyse a number of examples, new and upcoming residential developments along with those already established, across a range of densities. Examples will give a feel for the character of a development and the surrounding area through looking at layout plans and photos. It will also consider the aspect of dwelling size and the impact densities can have (or not have) on the average house size of an area.

A uniform density calculation will be used for all sites and is outlined below. This will consider density in terms of 'dwellings per hectare' or 'dph' to give a density figure for each site. The associated issue of dwelling size is explored. Reference is also made to garden size, on-site garages and parking provision where possible. This will then enable analysis and further consideration. The provision of other uses within a site will also be considered, with some being included and some excluded.

This will be placed into wider context within the Borough, regionally and elsewhere. Examples from outside the Borough will be provided for comparison.

Key Outcomes:

1. To inform potential density ranges guiding future planning policy work, based on a consistent calculation of density.
2. To give a feel for the character of different densities, especially in modern developments.
3. To show potential density levels that integrate well within an existing/historic town/urban context, looking at established communities and considering small sites.

Local Policy

Core Strategy (CS) Policy 17 on the design of homes looks to give a broad range of appropriate densities as follows:

- Rural Village sites: below 40 dwellings/ha
- Dartford town centre, Northern Gateway, Ebbsfleet Valley Strategic Site, Thames riverside sites (outside the Conservation Area) and other major sites which integrate Fastrack: over 50 dwellings/ha
- Other urban sites: 35-55 dwellings/ha

These are important to consider when looking at the case studies below.

National Guidance

The NPPF Paragraph 47 outlines that local planning authorities should: “set out their own approach to housing density to reflect local circumstances”, While Paragraph 59 considers that “....design policies should avoid unnecessary prescription or detail but should concentrate on guiding the overall scale, density, massing...”

Net Dwelling Density was also considered in the former PPS3:

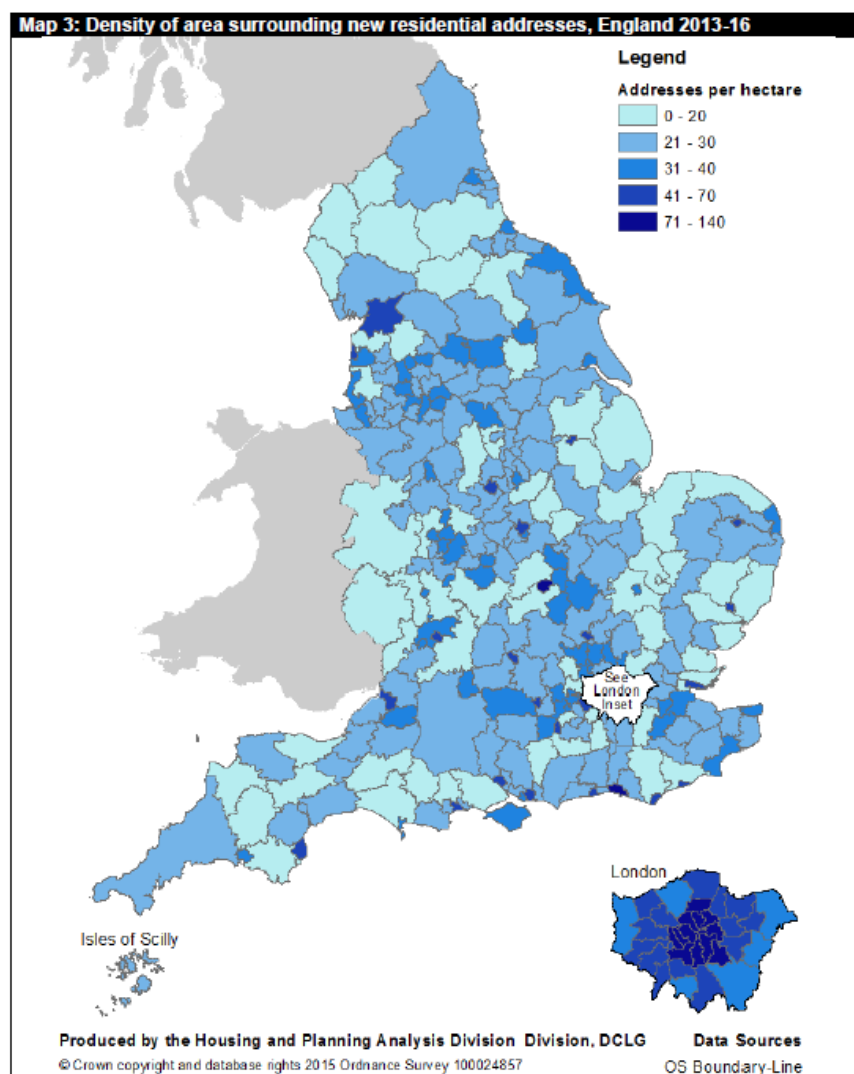
Net dwelling density is calculated by including only those site areas which will be developed for housing and directly associated uses, including access roads within the site, private garden space, car parking areas, incidental open space and landscaping and children’s play areas, where these are provided.

This gives a significant steer in how to create a methodology for this work, which can be found below.

National Density of New Dwellings

The average density reported by the Government was 32 residential addresses per hectare for 2015/16, a rise of 1 since the previous year. For previously developed land (PDL), the density was higher at 37, remaining the same from the previous year. This includes developments in the form of conversions. For non-PDL, the density was lower at 26 addresses per hectare, a decrease of 1.

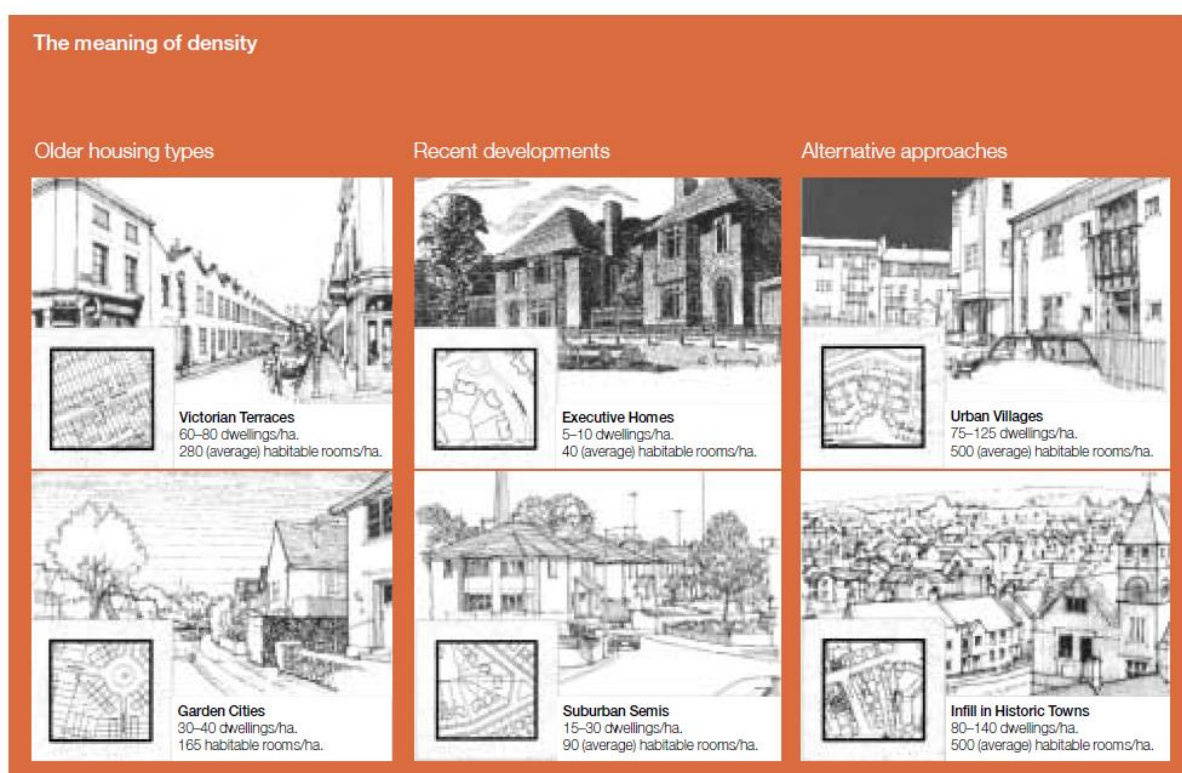
The map to the right indicates the varying densities in England. Using these figures, Dartford is in the 21-30 range for new development in this



particular period. This is typical for Kent; it is below levels achieved in some adjoining authorities but above densities in Sevenoaks.

Further Context

In 2005, the Commission for Architecture and the Built Environment (CABE) (now merged with Design Council), the national advisor on design and the built environment, and the Corporation of London commissioned a report (*Better Neighbourhoods: Making Higher Densities Work*) on density and how to make higher densities work. The diagram below from the report outlines the following for the ‘meaning of density’. This provides an initial overview of the types of development and their corresponding densities.



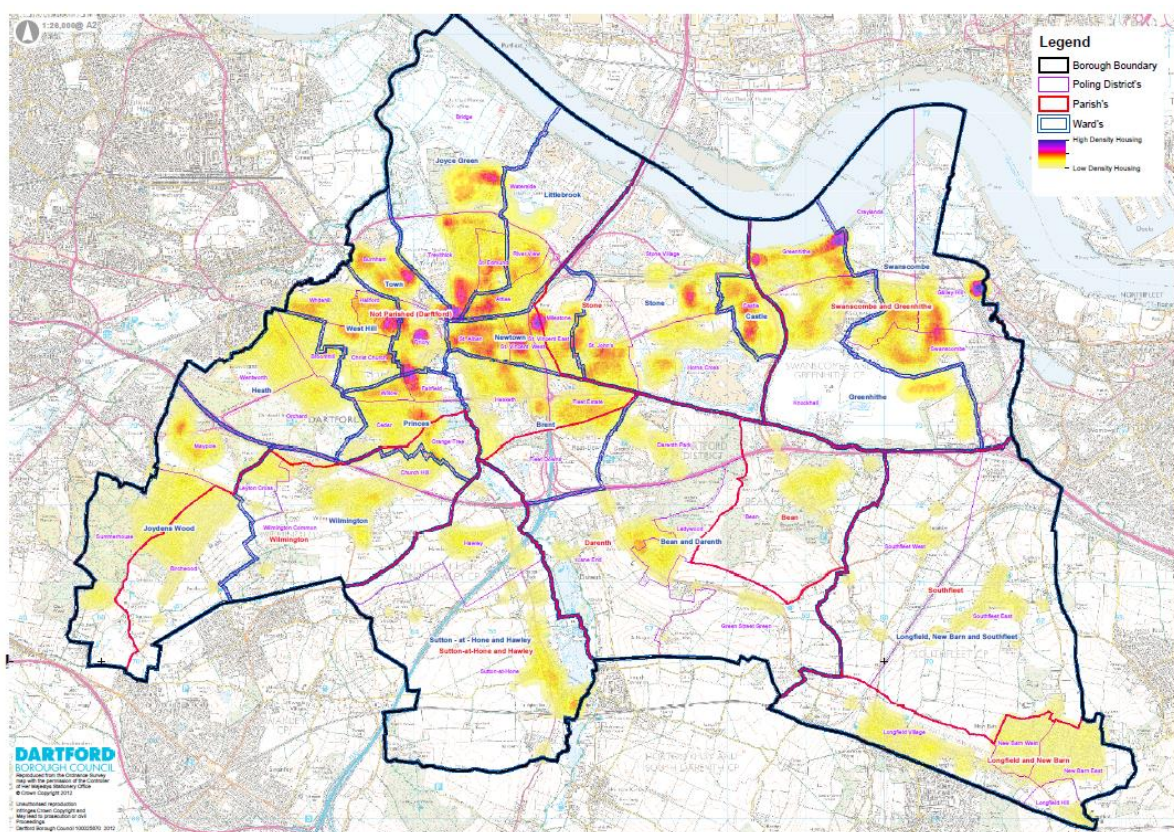
The report considers a ‘Sustainable urban density’ to be 69 dph, much higher than the average 42 dph for Greater London. The argument being that there is capacity to have more people fit into existing towns and cities through utilising higher density; supporting the efficient operation of local services and public transport systems, and avoiding further use of greenfield land.

This provides a greater context than seeing new homes as flats or houses. Clearly, very high densities are typically in the form of apartments for new development. However it should be noted that modern design can achieve popular houses at relatively high densities eg over 100dph.

Approximate density across the Borough

The map below indicates density across the Borough; the more red/purple the colour is, the higher the density. This generally shows higher densities to the north of the A2 and focussed around the Town Centre, as would be expected, whilst rural areas have much lower densities.

Medium/high densities are found in the urban area in both existing popular neighbourhoods and where new neighbourhoods are being developed.



SUMMARY

- As a numeric indicator, density can give indications of the amount of development a site accommodates relative to its land area. However the same density level e.g. 55 dph can be achieved through a variety of different ways, with contrasting developments arising.
- There are different ways to calculate density, with this research working in dwellings per hectare rather than habitable rooms per hectare. The methodology in the next section sets out the process taken for this Paper.
- In the period 2013-2016, which reflects low levels of new flats /apartments in most places, average rural and urban densities of new development generally ranged between 20-40dph. It is likely Kent mirrored the national trend for new brownfield densities to be at least 10dph or more than greenfield sites.
- Research led by CABI suggests that - taking account of the range of issues (including supporting an efficient transport network) – sustainable urban density would be c. 70dph. This is greater than the density of past planned genuinely ‘garden cities’; but less dense than appropriate infill developments in historic towns (as identified in the diagram on page 4). The sustainable form of development has a density calculated to be similar to the density of Victorian Terraces. However this national view by CABI depends on a series of balanced judgements.

2. METHODOLOGY

The methodology for working out housing density is taken in a number of steps, which are outlined below. Assumptions and considerations have been made through this process and are also detailed below.

Initially, the total site area will be taken (in hectares) and will include all aspects of the site. For the purpose of this study, the area that will be used to work out the dwellings per hectare will only include the housing area and directly associated uses, which include:

- Parking areas / driveways
- Access roads
- Incidental open space
- Private gardens / amenity land (see below)

Some aspects will be excluded as they serve a wider function or service:

- Open space (including wider used open spaces such as those likely to attract existing residents in the area or main Green Grid elements, communal open space, Borough Open Space, and any landscape buffers)
- Employment and Community land
- Schools
- Major roads (including adjoining/adjacent roads to site boundaries)

It is not the purpose of this study to examine design details of developments, including solutions to issues of parking provision. However, where appropriate the extent and type of parking facilities provided has been included for additional comparison and consideration in the context of this density study.

Once the site area of those aspects to be excluded has been calculated, this residual residential area is used to find the number of dwellings per hectare:

$$\text{Number of Dwellings per Hectare (dph)} = \frac{\text{Number of Dwellings}}{\text{Residual Residential Site Area (Hectares)}}$$

This calculation has been used for all the case studies and data that are presented below. To undertake this, multiple sources have been used, including GIS mapping and site development plans to work out the required areas in a robust manner.

Assumptions/considerations that have been taken during this exercise include:

- Parts of sites that have residential above commercial have not been removed from the overall calculation.
- Existing neighbourhoods are only part of an area taken within the wider site. The dph may vary.
- The dph for examples outside of Dartford are taken from planning applications and therefore may not have used the methodology outlined in this study.
- Gardens will vary in size across different sites which will have an impact on dph.

Average dwelling size and price

The average dwelling size (m²) has been calculated for existing developments utilising previous Energy Performance Certificates (EPCs) issued for the area. An average sample of 10 has been taken for any given area or street. Data is also provided for all new developments since 2009/10.

The average house price values are provided for further comparison utilising Zoopla data (May 2017).

Parking

The number of dedicated parking spaces (not including on-street parking) has been provided for all new developments in the form of parking spaces per unit. Where possible, context is provided regarding type of off street parking (e.g. allocated spaces or garages) and any other unique characteristics (e.g. provision of undercroft parking).

Parking standards have changed over the plan period. Originally, national standards (PPG3) and highways authority standards prescribed a need for 1.5 spaces per dwelling across a site. Kent County Council's Parking Standards (SPG4) adopted in 2006 and the subsequent Kent County Council Interim Guidance Note 3, set out further details by taking into account the type of development, with the maximum standards outlined below:

Maximum Vehicle Parking Standards

Car Parking	
1 bedroom	1 space per dwelling
2 and 3 bedrooms	2 spaces per dwelling
4 or more bedrooms	3 spaces per dwelling
Sheltered Accommodation	1 space per resident warden + 1 space per 2 units
Notes:	<p>1. For 1-bedroom dwellings the parking will usually be provided as communal spaces. For other dwelling sizes part or all of the parking can be provided on a communal basis.</p> <p>2. The level of car parking provision includes any garages, provided as an integral part of the dwelling or within its curtilage, and/or driveways provided within the curtilage, subject to the preferred sizes set out in Appendix B.</p>

Within developments of varying dwelling size provision should be established initially on the basis of the size mix of the units proposed. Subject to discussion with the local planning authority there may be scope in mixed developments, particularly at higher densities, for sharing of car park spaces resulting in lower overall provision than implied by application of the standards for each dwelling size category. More stringent standards may be acceptable to developments in town centres.

In July 2012, Dartford Borough Council adopted a new Parking Standards document (SPD) that requires:

- 1.2 parking spaces for 2-bedroom dwellings,
- 1.5 parking spaces for 3 bedroom dwellings
- 2 parking spaces for 4-bedroom dwellings.
- In addition, these parking standards now require 3 visitor spaces per 10 homes and 1 van space per 10 homes.

This will primarily be considered in Appendix 4 where graphs show the different large sites and the number of parking spaces per dwelling.

3. EXISTING NEIGHBOURHOODS

This section explores density of a number existing neighbourhood samples that are functioning as established popular communities. They will explore an area in each of the following:

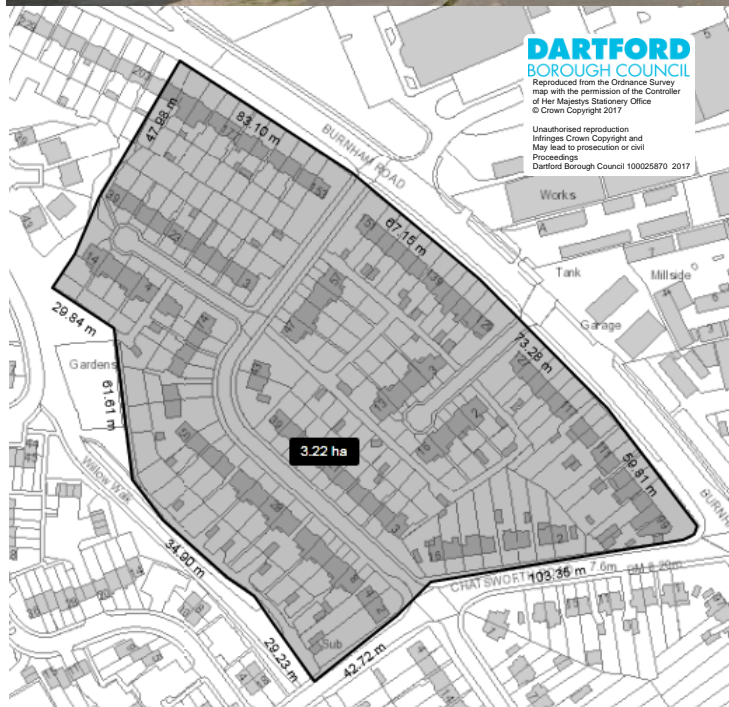
- Burnham Road area
- Princes
- Newtown
- Knockhall
- Swanscombe
- Wilmington

Burnham Road

The first existing example in the 'Burnham Road Area' consists of a number of streets off Burnham Road, incorporating parts of Francis Road/Savoy Road/Mayfair Road. The average house price value on Burnham Road is £280,000.



The second existing example in the 'Burnham Road Area' consists of housing on Burnham Road and on Alan Close, Chatsworth Road, Burnham Crescent and Shirley Close. The average house price value on Burnham Road is £368,000.



Fact File:

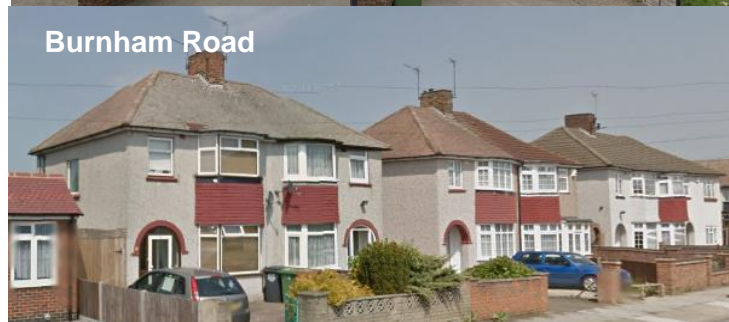
- Site area: 3.22ha
- Residual Site Area: 3.19ha
- Homes: 169
- Density: 53dph
- Main housing type: Maisonettes and Terrace

This site area is primarily made up of maisonettes and terrace streets with small front gardens and larger back gardens. This is in line with the Core Strategy guide of 35-55 dwellings/ha for other urban areas.

Further terraces and semi-detached dwellings surround the area highlighted, along with a garden area and considerable employment land on the other side of Burnham Road.

Size of dwellings

Most of the dwellings are 2 bed maisonettes or 2-3 bed terrace homes. The average 2 bed maisonette size on Burnham Crescent is 46m². The average 3 bed terraced size on Burnham Road is 72m².



Princes

The first existing example in the Princes Ward is an area of housing on Maple Road / Elm Close / Elm Road – part of the Tree Estate that was built in the early 1920s as a municipal housing estate. The average house price value on Maple Road is £299,000.



The second existing example in Princes is an area of housing on Highfield Road South, Heath Lane, Willow Road, Larch Road and Chestnut Road. The average house price value on

Fact File:



A third example in Princes is outlined below to show a higher density site that incorporates flats and houses – also on Tree Estate and involves a mix of council and private developer built housing. This area of dwellings is on Meadowside, Mead Road, Beech Road and Lowfield Street. The average house price value on Meadowside is £299,000.

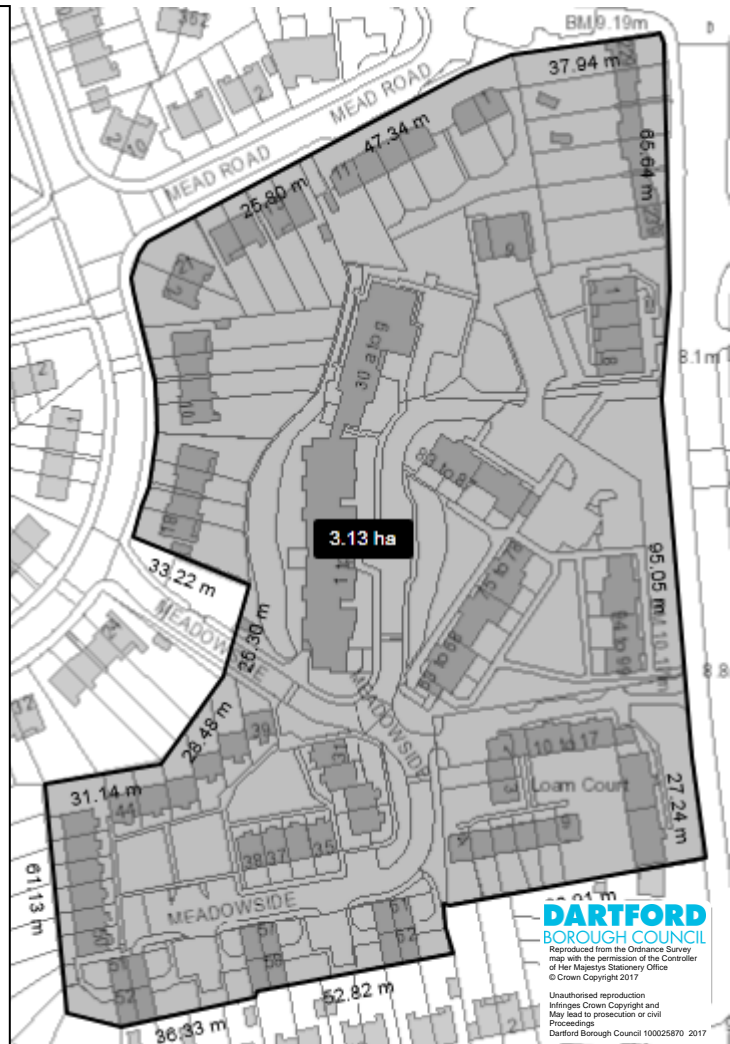
Fact File:

- Total site area: 3.13ha
- Open Space: 0.3ha
- Residual Site Area: 2.83ha
- Homes: 171
- Density: 60dph
- Main housing type: Terraces and flats.

This site area is primarily made up of terraced streets of large homes (2/3 bed terraces), with large rear private garden space and blocks of flats with communal open space. The site exceeds the CS guide of 35-55 dwellings/ha for other urban areas at 60dph.

Further terraces and semi-detached housing surround the area highlighted, along with Beadles and Homebase to the east.

The average size of a flat on Meadowside is 49m^2 .



Newtown

The third example area is the Newtown ward. The first site considered is on St Albans Road. Note: The Fantaseas site development is also in this ward that is outlined in the next section. The average house price value on St Albans Road is £273,000.

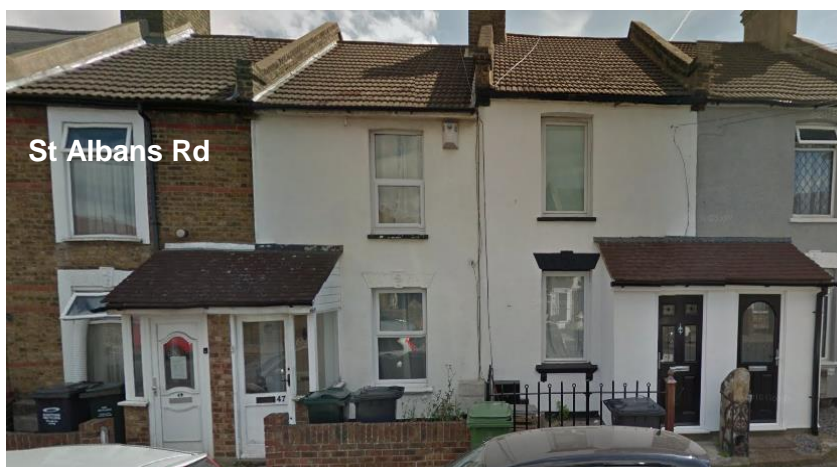
Fact File:

- Total site area: 3.30ha
- Residual Site Area: 2.82ha
- Homes: 154
- Density: 55dph
- Main housing type: Small terraced
- Employment/ retail and community facilities on street
- School

This site area is a terraced street of small 2/3 bed homes, with narrow long private gardens. The site is just within the Core Strategy guide of 35-55 dwellings/ha for other urban areas at 55dph.

Further terraces surround the area highlighted, with some other small employment units intermixed. East Hill Cemetery and St Edmunds Pleasance are also nearby.

The average dwelling size for a 2 bed terrace on St Albans Road is 60m².



The second existing example in Newtown is an area of housing on Howard Road, Carlisle Road, Mildred Close, Ivy Close, Barham Road and St Vincent's Road. The average house price value on Howard Road is £258,000.



narrow long private gardens. The site exceeds the CS guide of 35-55 dwellings/ha for other urban areas at 78dph.

Further terraces surround the area highlighted, with some other small employment units intermixed.

The average dwelling size for a terrace on Howard Road is 63m².



The fourth example area for housing is in the Knockhall area on Ingress Gardens and Dial Close. The average house price value on Ingress Gardens is £297,000.



Fact File:

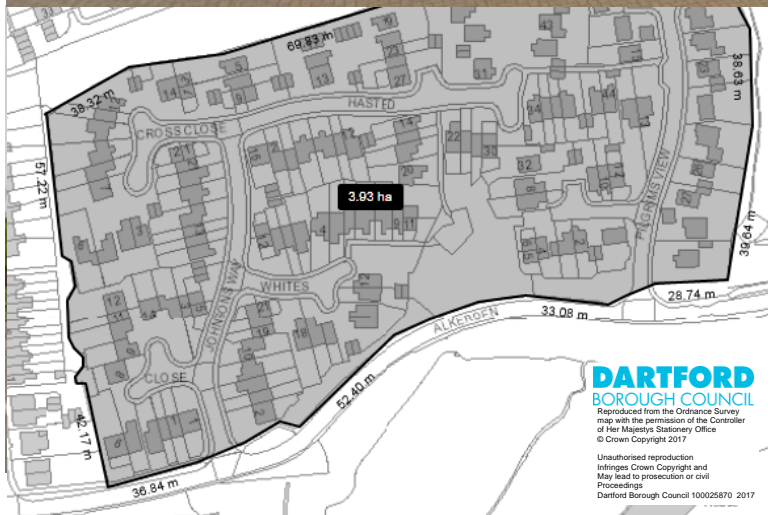
- Site area: 3.05ha
- Open space: 0.15ha
- Residual Site Area: 2.9
- Homes: 131
- Density: 45dph
- Main housing type: Small Terraced
- 69 Lock up garages across 3 sites

This site area is primarily made up of terraced streets of 3 bed homes with back gardens. It meets the Core Strategy guide of 35-55 dwellings/ha for other urban areas with 45dph. The average dwelling size is 86m² on Ingress Gardens.

Further terraces surround the area highlighted, along with woodland, a sports field, railway and some dedicated garages.



The second existing example in Knockhall is an area of housing off Alkerden Lane. This includes Johnsons Way, Bevans Close Whites Close, Cross Close, Hasted Close, and Pilgrims View. The average house price value on Hasted Close is £321,000.



Fact File:

- Site area: 3.93ha
- Open space: 0.27ha
- Residual Site Area: 3.66ha
- Homes: 144
- Density: 39dph
- Main housing type: Terraced / Semi-detached / Detached.

This site area is primarily made up of terraces and semi-detached 2 or 3 bed homes and 3 or 4 bed detached with large gardens. It meets the Core Strategy guide of 35-55 dwellings/ha for other urban areas with 39dph. The average dwelling size is 93m² on Pilgrims Way – primarily 4-bed detached.

Further terraces surround the area highlighted, along with Eastern Quarry to the south and woodland to the east.

Swanscombe

The fifth example area is in the Swanscombe ward. The first residential area considered here is on Lewis Road and Milton Road. Note: Korsnas site development in the next section which is also in this ward. The average house price value on Lewis Road is £239,000.



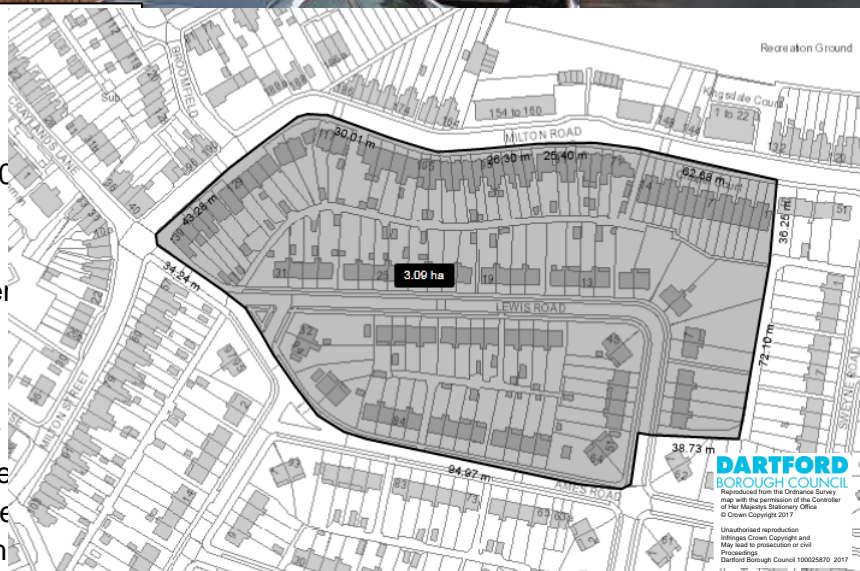
Fact File:

- Site area: 3.09ha
- Open Space: 0.05ha
- Residual Site Area: 3.0
- Homes: 120
- Density: 39dph
- Main housing type: Ter and semi-detached
- Retail units

This site area is primarily up of 3 bed terraced street some areas of small scale terraces and semi-detached homes. The average size on Lewis Road is 83m².

The site meets the CS guide of 35-55 dwellings/ha for other urban areas at 39dph.

Further semi-detached and terraces surround the area highlighted, along with two recreation grounds, Swanscombe Heritage Park and the Ebbsfleet Central site to the West.



The second existing example in Swanscombe is an area of housing on Leonard Avenue, Boleyn Way and Seymour Walk. The average house price value on Leonard Avenue is £242,000.



Leonard Avenue

The site meets the Core Strategy guide of 35-55 dwellings/ha for other urban areas at 46dph. The average terrace dwelling size is 84m².

Further semi-detached and terraced housing surround the area, along with allotments and Eastern Quarry to the south. Manor Primary School is to the east.



The third existing example in Swanscombe is of higher density than previous Swanscombe examples and is in line with much of the ward's eastern area near Swanscombe High Street. This area covers an area of housing on Church Road, Vernon Road, Swanscombe Street and Sun Road. The average house price value on Church Road is £216,000

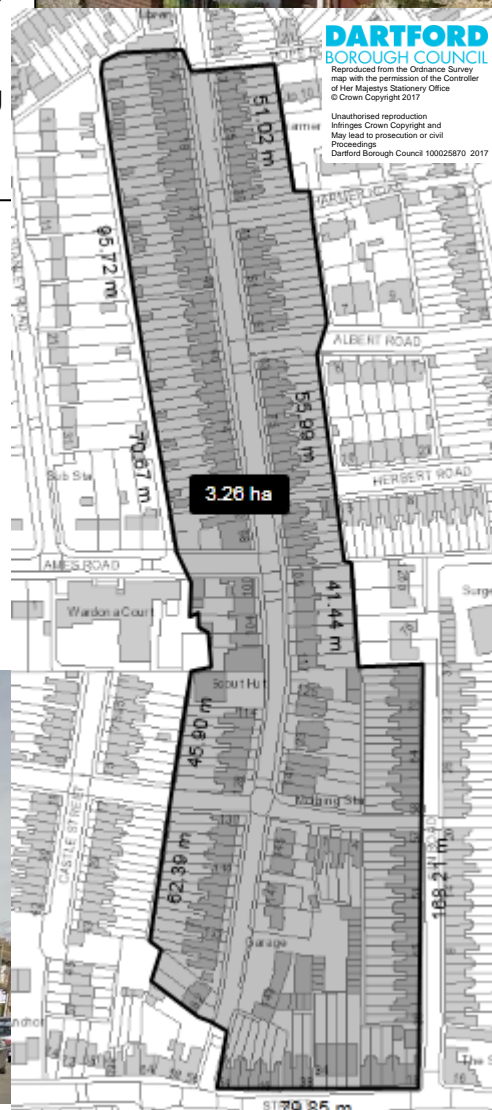
Fact File:

- Site area: 3.269ha
- Employment/Community Space: 0.13ha
- Residual Site Area: 3.13ha
- Homes: 215
- Density: 69dph
- Main housing type: Terraced
- 16 Lock-up garages

This site is primarily made up of 2 and 3 bed terraced streets, with the average size of a 2 bed terrace on Church Road being 57m².

The site exceeds the CS guide of 35-55 dwellings/ha for other urban areas at 69dph.

Further terraces surround the area highlighted, along with Ebbsfleet Central site and station to the east, and a recreation ground and cemetery to the west.



Wilmington

The final existing area is in Wilmington ward, with the first housing site example to the south of the A2 on Whitehead Close, Barn End Lane, Gerdview Drive, Rowlatt Road, Rowlatt Close and Stock Lane. Average house price value on Whitehead Close is £366,000.



Whitehead Close



3.15 ha

DARTFORD BOROUGH COUNCIL
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Fact File:

- Site area: 3.15ha
- Residual Site Area: 3.11ha
- Homes: 79
- Density: 25dph
- Main housing type: semi-detached and detached
- Community facility

This site area is primarily made up of 3/4 bed semi-detached and detached properties. Houses and gardens are larger in size than previous case studies and others in the rural area.

The site meets the CS guide of below 40 dwellings/ha in Rural Village sites: at 25dph. The average dwelling size on Whitehead Close is 97m².

Further semi-detached, detached and terraces homes surround the area highlighted, along with two schools, agricultural lands.

The second example at Wilmington is to the north of the A2 and comprises housing on Warren Road. The average house price value on Warren Road is £368,000.



4. NEW DEVELOPMENTS: LARGE SITES

This section will look at the new large (100+ units) that have come / are coming forward in the Core Strategy plan period (2006-2026). This will include Priority Areas and others.

Northern Gateway

Northern Gateway Strategic Site has nearly 2000 homes with permission which are under construction or completed, the sites and their individual housing density are detailed below (Table 1). Those at Mill Pond/Abbott Murex and Arjo Wiggins South are higher, due to the

flatted development involved. This study does not account for the primary open space identified for the area, located south of Bob Dunn Way.

Table 1: Housing Densities in Northern Gateway

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling	Housing Density (Dph)	Open Space Area (Hectares)
Northern Gateway East	8.08	636	1.41	79	1.65
NG East: Central Road	1.42	95	1.4	67	0.01
Mill Pond	1.85	325	0.87	176	0.62
Abbott Murex	1.44	403	1.11	280	0.52
Arjo Wiggins North	3.45	177	1.76	51	0.65
Arjo Wiggins South	1.11	117	1.16	105	0.21
Former GSK Car Park	3.18	79	1.54	25	0.06
Dunlop Close	0.37	18	1.67	49	0.01
Average (whole site)	20.86	1850	1.28	89	3.77

Northern Gateway East (Medium Density)

Northern Gateway East site is the largest portion of residential development within the strategic site. When complete, over 600 homes will be on site. There will be a mix of houses (82% - 525 units) and flats (18% - 111 units). The images below show earlier phases of the development – both townhouse terraces and blocks of flats. The site will also contain some 1.65ha of open space, which includes a large park to the north of the site and various small public open spaces throughout the site. Parking on this site is 1.41 spaces per dwelling.

Photo 1: Northern Gateway East northern entrance onto Peary Mead



This second photo shows the site entrance from Central Road. Involving three storey houses and blocks of flats seen behind. Photo 3 shows further homes built along Central Road.

Photo 2: Northern Gateway East Central Road Entrance on Peary Mead



Pearly Mead

Photo 3: Further Northern Gateway East properties along Central Road



Central Road

Mill Pond and Abbott Murex (High Density)

Mill Pond is currently under construction (2017) and is of a higher density, containing up to 8 storey blocks of flats. With the recently approved Abbott Murex site, 728 homes are under development. Parking on this site is 1 space per dwelling.

Photo 4: Concept art designs for the new Mill Pond 'Langley Square' development



Photo 5: The new integrated Mill Pond and Abbott Murex sites layout



Photo 6: Concept view of the former Abbott Murex residential development site showing the raised open spaces.



The Abbott Murex site has been integrated in with the master planning for Mill Pond and continues the practices in good design that enable parking to be underneath and open space areas between blocks to be raised up in order to ensure the parking does not detract from residential space but still provides a good amount of open / play space.

Northern Gateway has rapidly transformed from the industrial heartland of Dartford to a new mixed use urban area in close proximity to the Town Centre. Mill Pond and Abbott Murex especially show higher densities are occurring in Dartford, and appear to have been popular so far with prospective residents. This scale of residential growth in this location accords with their proximity to town centre services and Dartford Train Station. Appendix 1 provides other examples of flatted developments in other town centres.

Thames Waterfront Priority Area

The Bridge

The Bridge is a major development of 1485 homes across 30 hectares of land in a number of phases. There are 1024 houses (69%) and 461 flats (31%). Dph varies between 33 and 74 but the average density across the whole site is **49 dph**. Parking averages 1.4 spaces per dwelling.

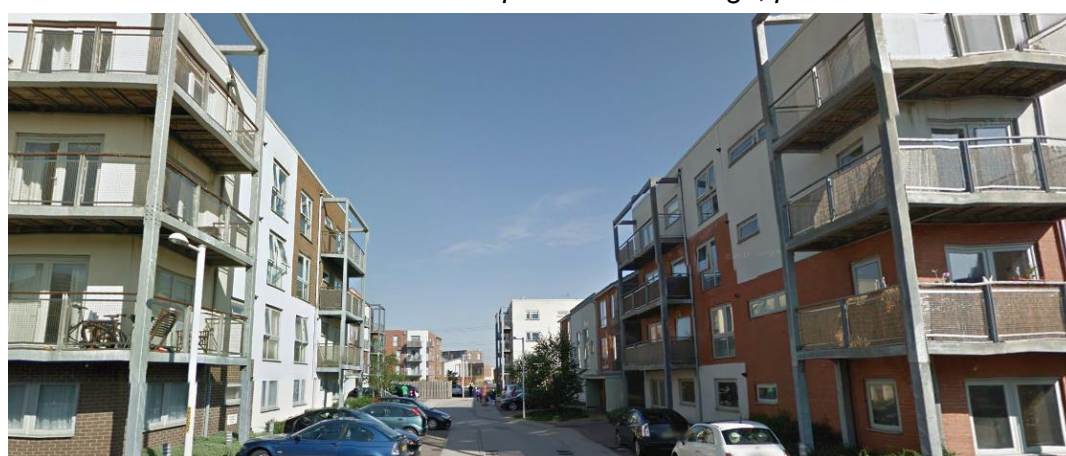
Table 2: Housing Densities at The Bridge

Photo 7: Example of Bridge development phase 1



Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling	Housing Density (Dph)	Open Space Area (Hectares)
The Bridge Phase 1	3.18	235	1.30	74	0.39
The Bridge Phase 2.1			1.16		
The Bridge Phase 2 and 2A	5.92	245	1.99	41	0.84
The Bridge Phase 3 (Tranche 2)			1.00		
The Bridge Phase 3 (Tranche 3)	3.65	256	1.25	70	0.16
The Bridge Lakeside Phase 1	2.43	90	1.77	37	0.38
The Bridge Phase 3 (Tranche 4&5)	7.37	398	1.00	54	0.56
The Bridge Plots 29 And 31A	1.65	92	1.79	56	0.15
The Bridge Plots 5,7, & 8	5.2	169	1.93	33	0.6
Average (whole site)	29.4	1485	1.40	51	3.08

Photo 8: Flatted development at the Bridge, phase 1



Ingress Park

Photo 9: Dwellings fronting the green at Ingress Park



Table 3: Housing Densities at Ingress Park

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling (average)	Housing Density (Dph)	Open Space Area (Hectares)
Ingress Park	18.62	950	1.39 (see below)	51	10.59

Ingress Park is a large development in Greenhithe that will encompass 950 homes around the Ingress Abbey and its green open space. Looking at the phases that have come forward since 2006, 85% of development has been flats, primarily comprising 1 and 2 bed flats. There is a mix of house sizes provided. The dph does vary across the site (40-150 dph), with Table 3 outlining the average across the whole site at **51 dph**. Similar to The Bridge, the number of parking spaces per dwelling is 1.39 for 623 dwellings completed since 2006/07.

Everards

Table 4: Housing Densities at Everards

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling	Housing Density (Dph)	Open Space Area (Hectares)
Everards	1.47	211	1.1	173	0.25

This site is adjacent to Ingress Park and the Thames. It comprises 211 1 and 2 bed flats across a number of modern blocks. This has a higher density of **173 dph**. The site was approved on appeal after a Council refusal of planning permission. Undercroft parking is provided at a level of 1.1 space per dwelling.



Photo 10: Former Everards site now flatted development

Ebbfleet to Stone Priority Area

Waterstone Park

Photo 11: Waterstone Park: row of three storey houses



Table 5: Housing Densities at Waterstone Park

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling	Housing Density (Dph)	Open Space Area (Hectares)
Waterstone Park	8.51	450	1.5	53	2.9

Waterstone Park is a residential development completed in 2010 and comprises 450 dwellings, 58% of which are flats, 42% being houses. The number of dwellings per hectare ranges from 40 to 80 dph but has an overall site density of **53 dph**. A previous satisfaction survey indicated appreciation of the style, layout and variety of houses at Waterstone Park. 7% were concerned with the density of the site. Similar to The Bridge and Ingress Park, this site has 1.5 parking spaces per dwelling across both allocated and visitor spaces.

Photo 12: Blocks of flats at Waterstone Park with an open space frontage.



Stonehouse Hospital and Former Fantaseas Sites

Photo 13: Stonehouse Hospital site with new residential and old converted hospital buildings



Table 5: Housing Densities at Waterstone Park

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling	Housing Density (Dph)	Open Space Area (Ha)
Stonehouse Hospital	6.82	322	2.04	47	1.11
Fantaseas	2.86	156	1.49	55	1.24

Stonehouse Hospital was a partial new build, partial conversion of a former hospital site. This was completed in 2015 and comprises 322 dwellings, 54% of which are houses, 46% being flats. The number of dwellings per hectare ranges from 30 to 100 dph but has an overall site density of **47 dph**. Parking was provided at a higher level here with 2.04 spaces per dwelling, in the form of onsite parking, garages and tandem parking. Furthermore, garden size averaged over 100m² for many 3 and 4 bed properties.

The former Fantaseas site was completed in 2016 and comprises of 156 units, 62% of which are houses, 38% being flats. The site has a density of 55 dph. There are 1.49 parking spaces per dwelling.

Photo 14: View of the new residential development at Fantaseas: showing Laurence Rise



St Clements

Photo 15: Early completions at St Clements entrance, with further dwellings under construction in the background.



Table 6: Housing Density at St Clements

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling	Housing Density (Dph)	Open Space Area (Hectares)
St Clements	8.46	362	1.96	43	3.61

St Clements began construction in 2015 and is ongoing. The site will have 362 dwellings, with a 50% split for flats and houses. The number of dwellings per hectare for the site is 43. Parking provision is higher than seen elsewhere at 1.96 through a variety of on-plot spaces, garages, car ports and driveways.

Photo 16, 17 and 18: Concept art for the St Clement residential development site





Ebbsfleet Garden City

Table 7: Housing Density at Ebbsfleet Garden City

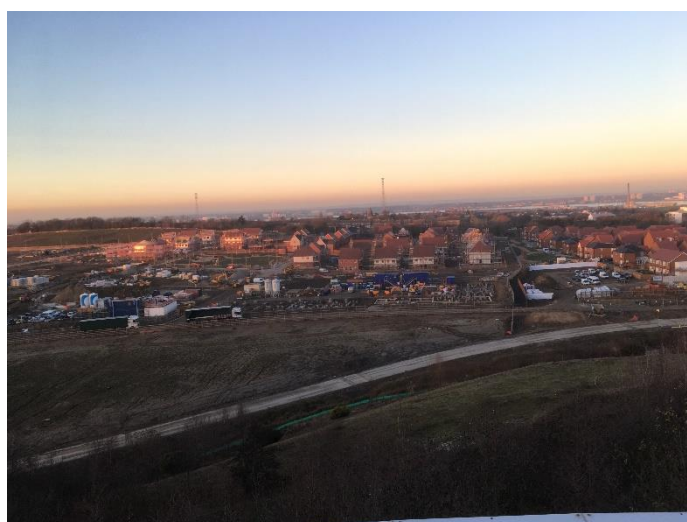
Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling	Housing Density (Dph)	Open Space Area (Hectares)
Eastern Quarry Phase 1	4.68	150	1.35	32	0.30
Eastern Quarry Phase 2A	3.73	170	2.12	46	0.40
Eastern Quarry Phase 2B	1.74	125	1.56	72	
Ebbsfleet Green Phase 1	6.07	180	1.95	30	0.25

Eastern Quarry

Photo 19: Progress at Eastern Quarry

6,250 dwellings are permitted at the Eastern Quarry site which is 250ha in total. Phase 1 of 150 homes is complete, with phase 2 of 295 units now well underway. Densities so far vary from 32 to 72 which is low-medium level density.

85% of the dwellings in phase 1 and 2 are houses, with the remaining 15% being flats (all in Phase 2B). Further flatted developments are expected in later phases and will be of higher density.



Phase 3B of 112 flats in a site of 1.52ha will have a 74 dph (approx.) with 1.41 parking spaces per dwelling provided.

Photo 20: Concept art for flats at Eastern Quarry and their proximity to FastTrack routes



Photo 21: Design art for dwellings at Ebbsfleet which shows car parking underneath.

Ebbsfleet Green

Photo 22: The master plan for the Ebbsfleet Green site



Ebbsfleet Green is the development site that was the former Northfleet West Substation. This parcel will eventually have 950 homes. The site is lower density than elsewhere in Ebbsfleet and provides significant green spaces and open space.

The first phase of 180 dwellings is under construction, comprising of 67% houses and 33% flats.

The dwellings per hectare for phase 1 will be 30 dph, with 1.95 parking spaces per dwelling also provided.



Photo 23: Concept art illustrating what Ebbsfleet Green could look like.



Photo 24: New dwellings at the Ebbsfleet Green.

Other Sites

Korsnas, Northfleet

Table 8: Housing Density at Korsnas

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling	Housing Density (Dph)	Open Space Area (Hectares)
Korsnas	2.63	370	1.11	141	0.76

The form Korsnas site is an example of higher density in Dartford. Completed in 2008, the 370 (82% flats and 18% houses) dwelling site has a density of 141 dph. This makes it one of the highest in the Borough currently completed (the aforementioned Mill Pond/Abbott Murex Sites will be slightly higher). Note: This site was approved pre adoption of the CS.

Photo 25: Flatted development at the Korsnas development site



NW Kent College, Dartford

Table 9: Housing Density at NW Kent College

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Housing Density (Dph)	Open Space Area (Hectares)
NW Kent College	2.44	160	66	0.17

This site was completed in 2007 for 160 new dwellings (53% flats, 47% houses) on the former North West Kent College site. The site has a **66 dph** density and is connected in with the wider Dartford urban area. Note: This site was approved pre adoption of the CS.

Photo 26: Residential development at NW Kent College



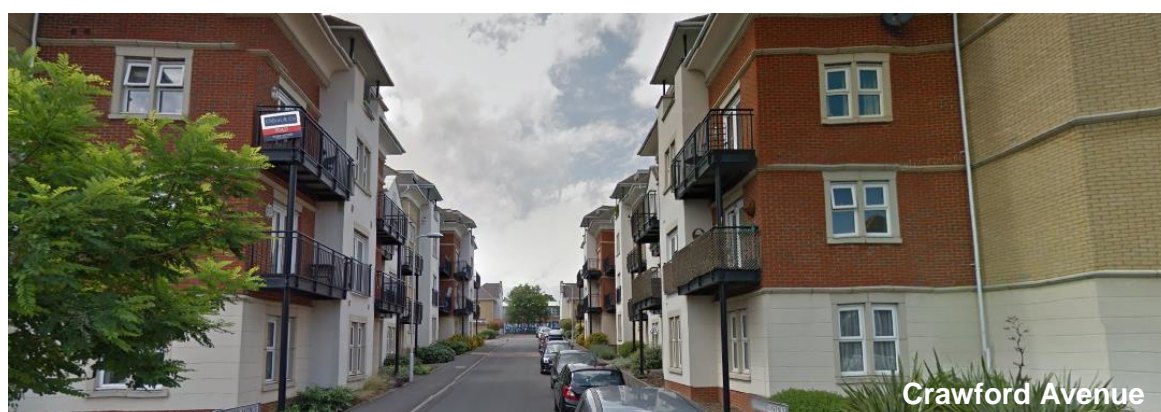
West Hill, Dartford

Table 10: Housing Density at West Hill

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling	Housing Density (Dph)	Open Space Area (Hectares)
West Hill	3.67	244	1.35	66	0.53

This site is similar to the North West Kent site in that it has close proximity to the Town Centre and has a **dph of 66**. This site includes 244 dwellings on a 3.67ha site. Note: This site was also approved pre adoption of the CS. 492 parking spaces were provided.

Photo 26: Residential development at West Hill



Axton Chase, Longfield

Table 11: Housing Density at Axton Chase

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling	Housing Density (Dph)	Open Space Area (Hectares)
West Hill	5.05	149	1.44	30	1.27

This was a residential development on the Former Axton Chase School site in Longfield, a rural village. Complete in 2016, the site was for 149 dwellings, with all but 12 being houses and has a density of **30 dph**. This is in line with what is expected in the rural area (<40dph). This development is made up of primarily large (4 bed+) family houses. Dwelling size ranges from 87 sqm (3 bed) to 150 sqm (5 bed) for open market housing. 214 parking spaces provided.

Photo 27: Residential development at Axton Chase



Darenth Road, Dartford

Table 12: Housing Density at Darenth Road

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Parking Spaces per Dwelling	Housing Density (Dph)	Open Space Area (Hectares)
Darenth Road	5.16	148	2.51	29	1.04

This development on Darenth Road started construction in 2016 and is for 148 houses. These are 2-4+ bed homes within 1mile of Dartford Town Centre. This site has a density of **29 dph**.

This is a fairly low density site adjoining the Green Belt and open countryside. 372 parking spaces are to be provided at the site, at a level of 2.51 per dwelling.

Photo 28: Site layout plan for Darenth Road



Dartford Town Centre

Lowfield Street, Dartford Town Centre

Lowfield Street re-development was recently approved and sees the development of 548 flats and other uses. A range of 1 bed, 2 bed and 3 bed flats are included. The site has a higher dph than seen elsewhere in Dartford, due to it being exclusively flats. It also has a lower number of parking spaces, at 0.67 spaces per dwelling.



The average net density for the site is **218dph**. However, it was considered this was very sustainable and suitable in the Town Centre location and made the best use of a PDL site in line with local and national policy. Appendix 1 provides other examples of flatted developments in Town Centres.

5. NEW DEVELOPMENTS: SMALL SITES

St Mary's Road, Stone

This urban example of a small site is a site bounded by Crossways Business Park and the railway line, in close proximity to Stone Crossing station. This site for 53 units was completed in 2017, and has a density of **48 dph**.

Table 13: Housing Density at Land Rear of St Mary's Road

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Housing Density (Dph)	Open Space Area (Hectares)
Land Rear of St Mary's Road	1.11	53	48	0.14

Photo 30: Site layout for Land Rear of St Mary's Road



Land at Temple Hill Square

This second urban example is a council owned site for affordable housing in Temple Hill for 12 three storey 3 bed houses and a three storey block of 13 flats. This is a total of 25 units on a site area of 0.38ha. This being a small site, the density is higher when compared to St Mary's Road site above. This site was also completed in 2017.

Table 14: Housing Density at Temple Hill Square

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Housing Density (Dph)	Open Space Area (Hectares)
Temple Hill Square	0.37	25	68	0.01

Photo 31: Site layout for Temple Hill Square



Hook Place Farm

This rural example of a small site is in Southfleet and involves the demolition of an existing factory and erection of 9 x 5 bed, 7 x 4 bed, 11 x 3 bed and 3 x 2 bed houses on a 2.4 ha site. All 30 units were completed in 2016 and 2017.

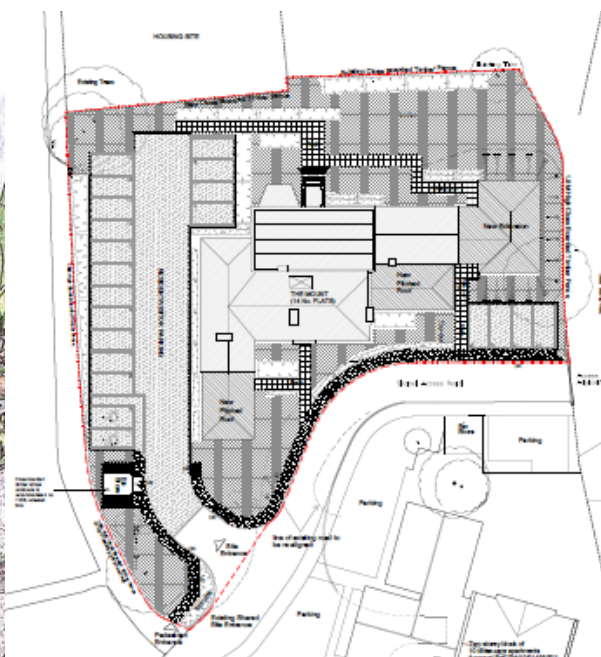
Table 15: Housing Density at Hook Place Farm

Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Housing Density (Dph)	Open Space Area (Hectares)
Hook Place Farm	2.04	30	15	0.36

Photo 31: Concept art for Hook Place Farm



Photo 32: Site plan for The Mount



The Mount, Shirehall Road

This second rural example of a small site is in Wilmington and was a part demolition, part conversion and part extension site of a former care home, a grade II listed building. Completed in 2016, 14 units were provided on a site of 0.22ha. Due to the nature of the site and being a conversion, the density is quite high for a rural area. This indicates that there can be exceptions where higher densities are found in the rural area.

Table 16: Housing Density at The Mount

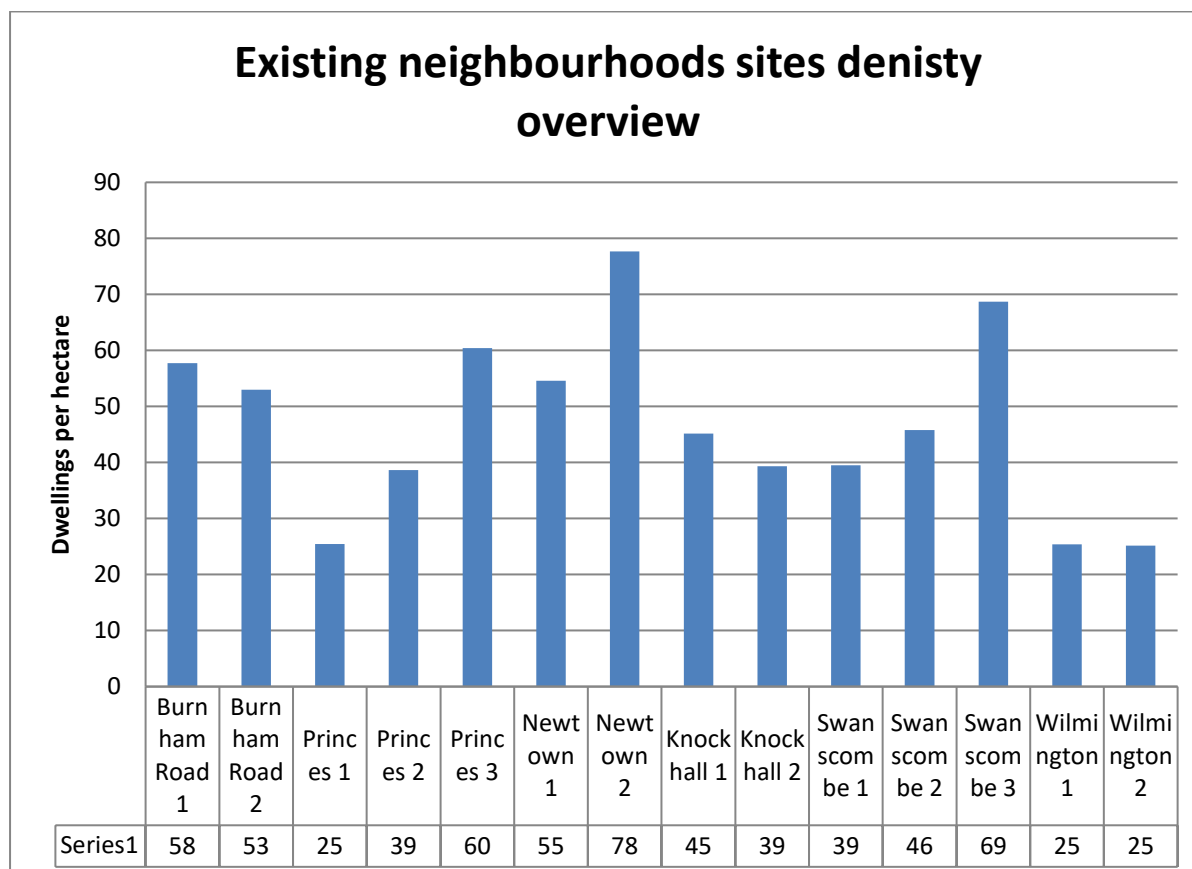
Site	Residual Residential Site Area (Hectares)	Number of Dwellings	Housing Density (Dph)	Open Space Area (Hectares)
The Mount	0.22	14	64	0

6. BOROUGH WIDE DENSITY AND AVERAGE DWELLING SIZE

General Overview of Density

Existing Neighbourhoods

The bar chart below outlines densities across the existing neighbourhoods in the Borough.



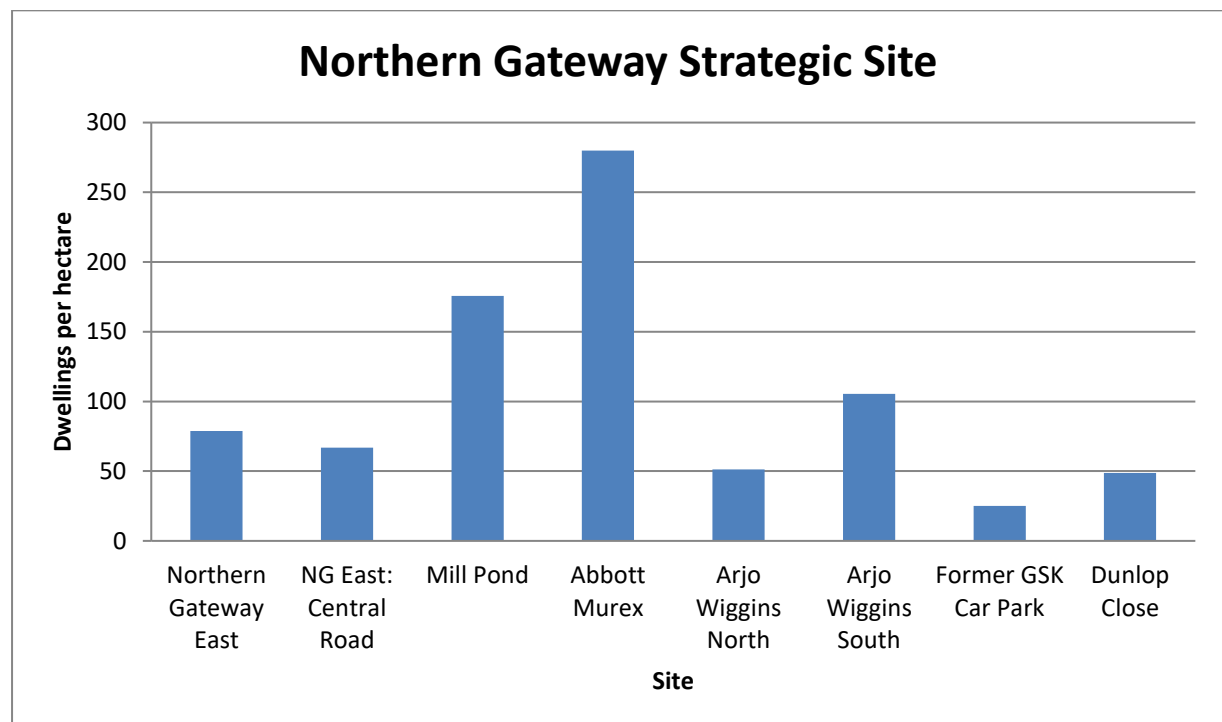
SUMMARY

- Residential densities within existing neighbourhoods vary significantly. In our sample locations (not including rural villages, Dartford town centre or mostly flatted areas) they are found to vary from approximately 25 to about 80 dph. This can even be seen within the same ward area.
- Apart from at Wilmington and one example in Princes Ward, densities are c.40dph or above. If the highest density area at Newtown is set aside, this suggests a core density of approximately 40 to 60 or 70dph in existing areas.
- As identified in the methodology, every effort has been made to use a clear definition of density and to sample suitable areas. However, some may also include small elements of non-residential uses associated with the neighbourhood and its residential character; potentially reducing their calculated density slightly compared to new residential proposals.

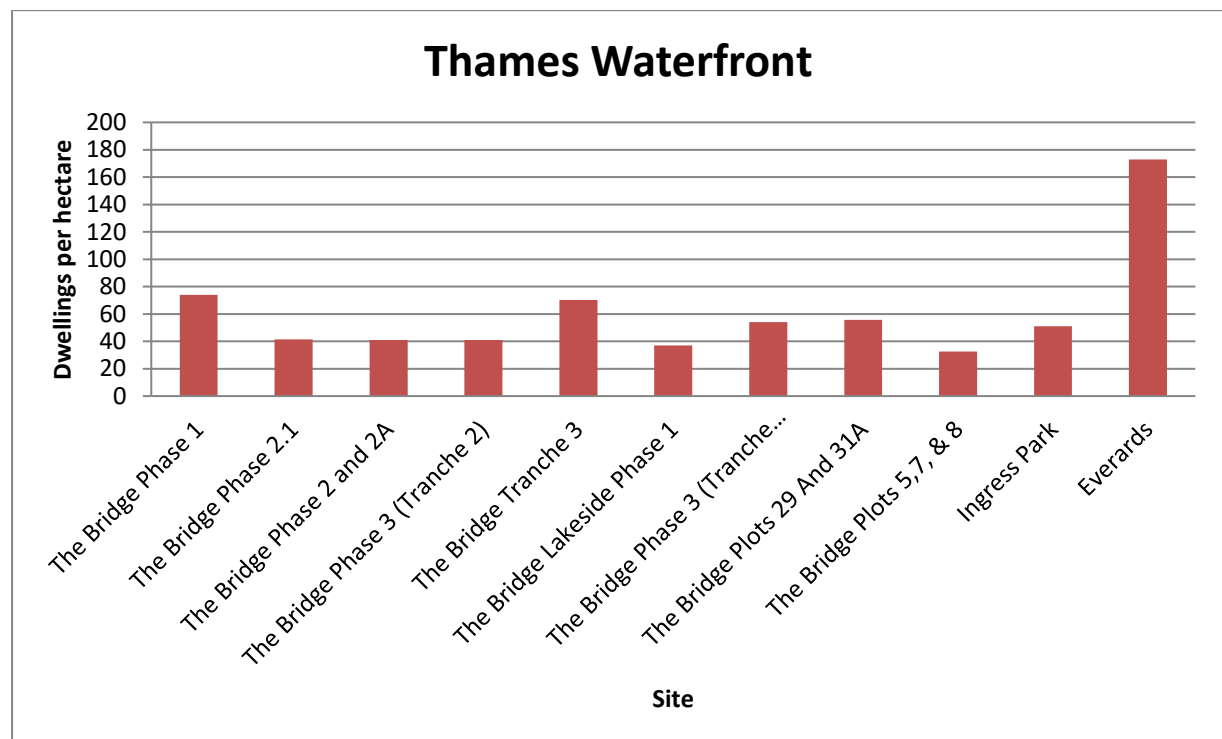
New Developments

The bar charts below outline densities across the new large sites in the Borough according to each of the Core Strategy Priority Areas and other sites.

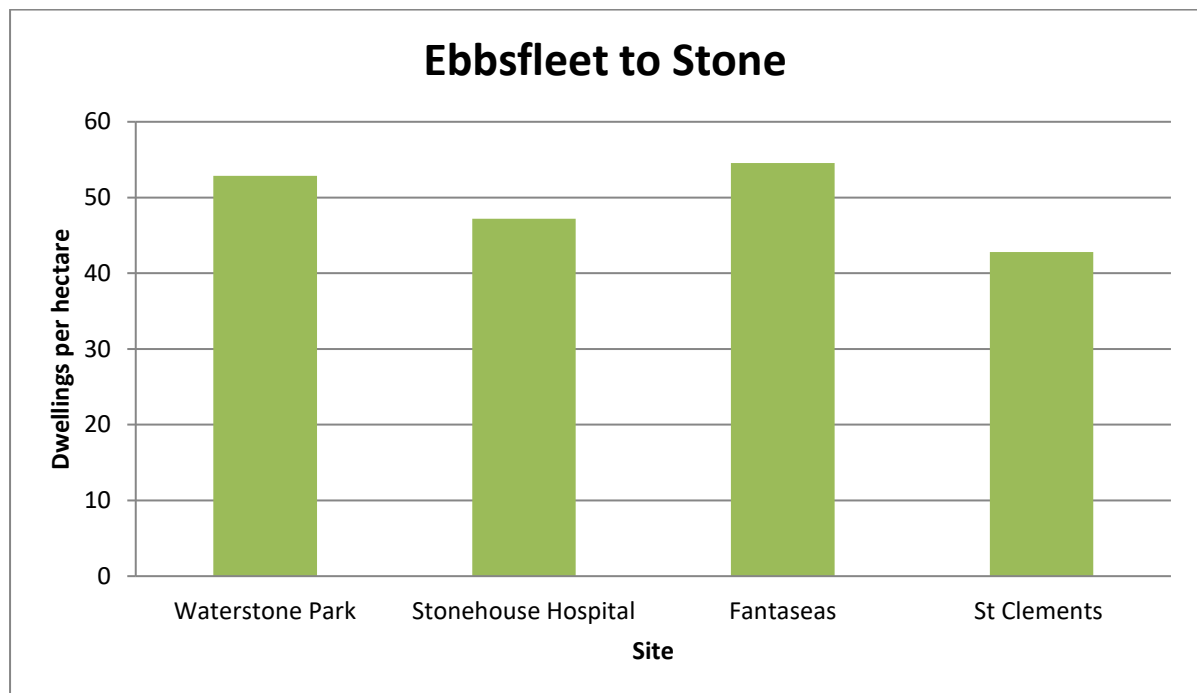
Northern Gateway



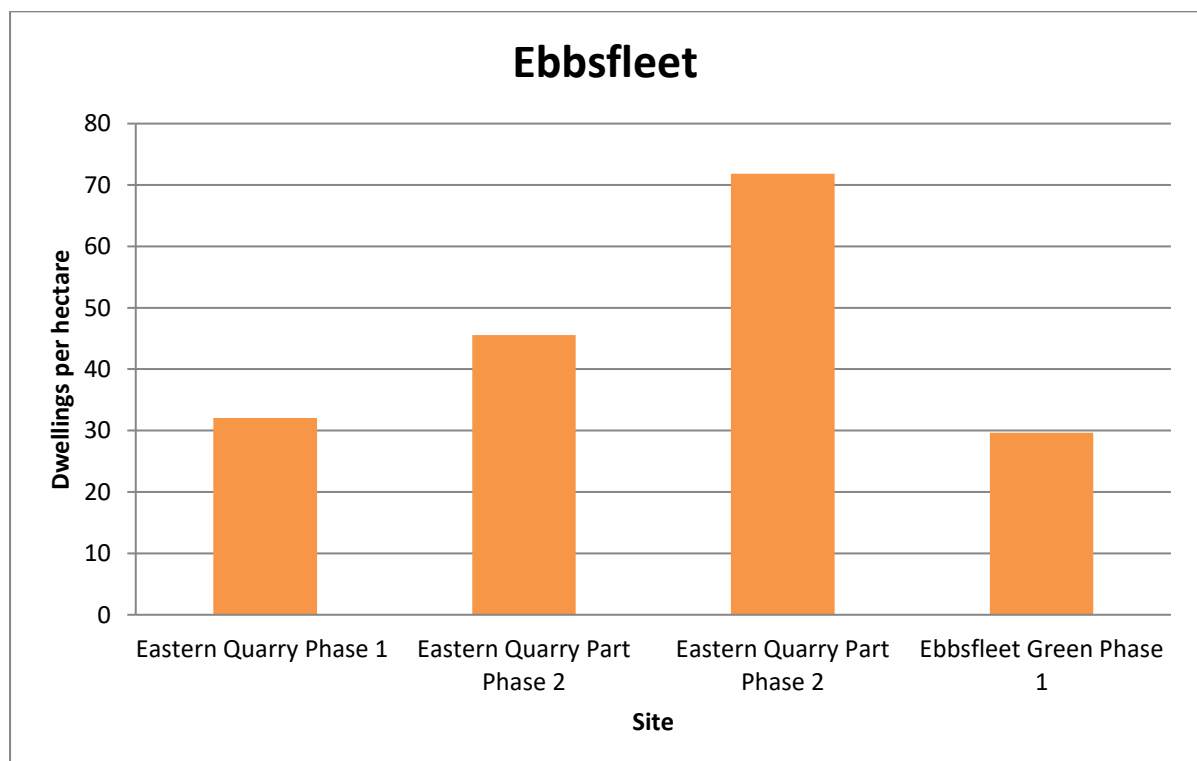
Thames Waterfront Priority Area



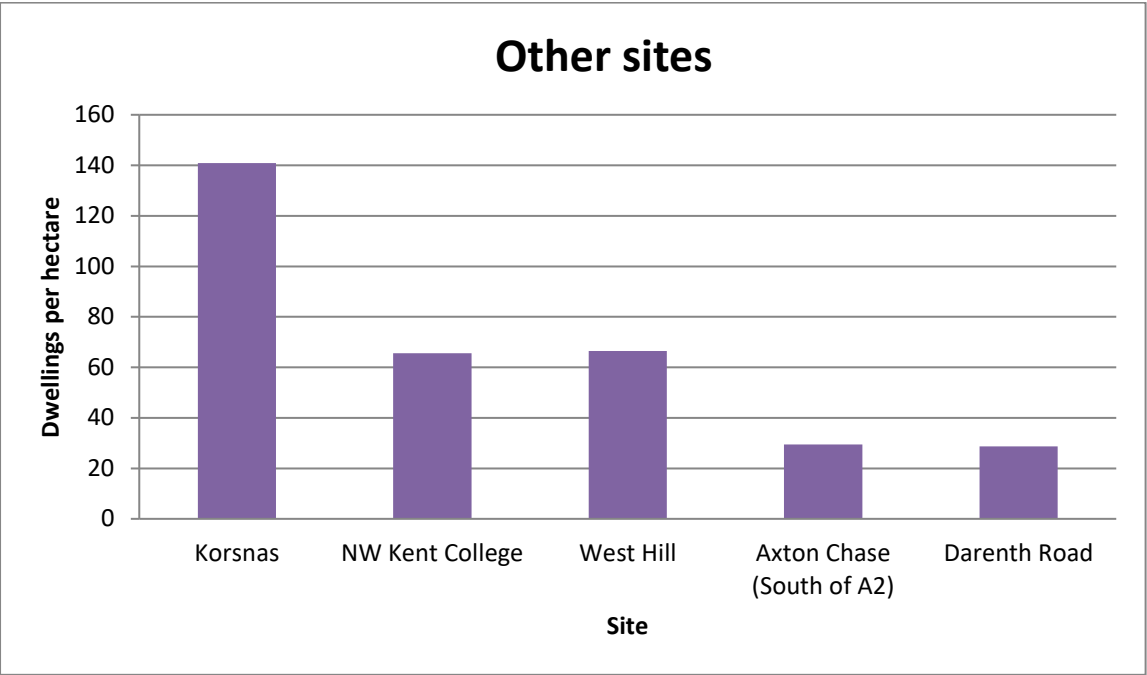
Ebbsfleet to Stone Priority Area



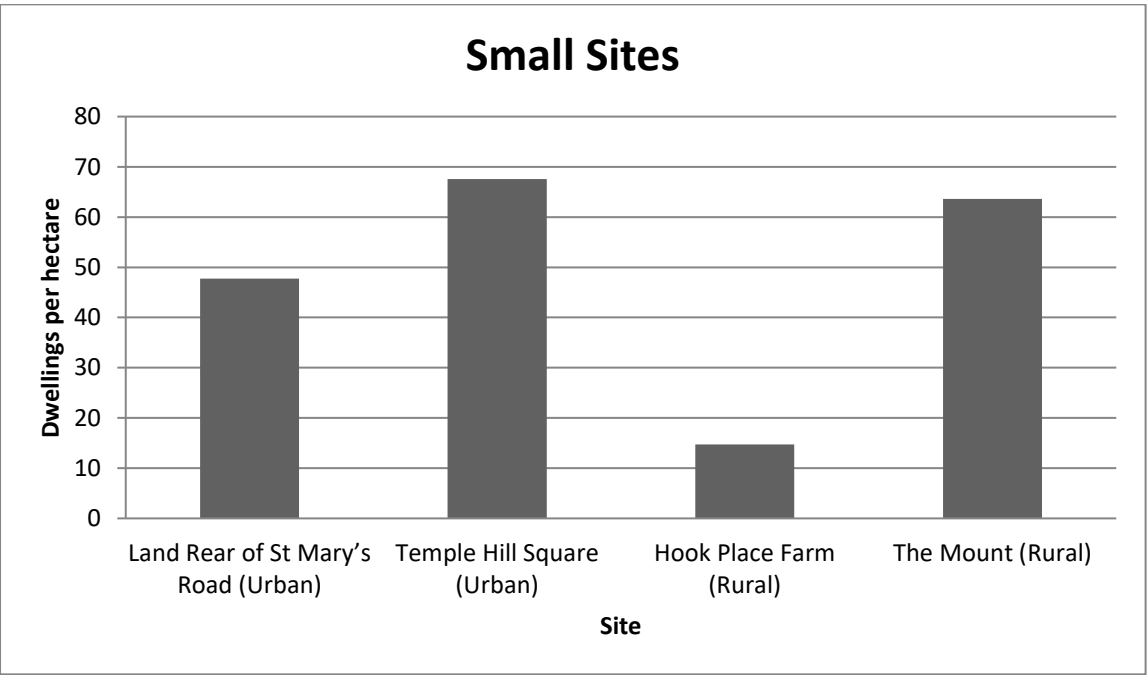
Ebbsfleet Strategic Site



Other large sites



Small sites



SUMMARY

- There are no major examples of recently completed residential-led developments in the heart of Dartford Town Centre, but typologies from/ proposed in town centres elsewhere can be seen in the Appendix 1. This has a wide selection from a variety of areas ranging up to 300 dph.
- Northern Gateway varies greatly in density across the different sites. With the flatted sites of Mill Pond and Abbott Murex being c.180 & 280 dph on a fairly small site area of 3.3ha. These particular density levels are similar to the examples in Appendix 1 with sites D, E and H; whereas, the remainder across the 18ha averages at 63 dwellings per hectare, approximately in line with existing neighbourhoods in Dartford town and in line with the Northern Gateway SPD. The close proximity to the town centre and rail services helps support efficient re-use of land. Mill Pond and Abbott Murex have high levels of access to facilities and transport offered in the Town Centre allowing for the higher density.
- Thames Waterfront and Ebbsfleet to Stone Priority Areas are of lower density than that of Northern Gateway, with The Bridge sites averaging 50dph, and Ingress Park at 51 dph and the Ebbsfleet to Stone sites averaging 49dph. This is in line with existing neighbourhoods and the Core Strategy range for the urban area of 35-55dph. Other examples in the built up areas of densities can be found in Appendix 1 with sites A, C and I all being similar.
- Ebbsfleet Garden City is beginning to develop, with the planned earlier phase's lower density development. This is on average lower than much of the rest of the Borough, only being slightly higher than the more rural area of Wilmington; however, this is expected to rise as further stages are completed. Eastern Quarry Part Phase 2 indicates the start of this (>70 dph), as the site also includes some flatted development. Moreover, a highly intense form of development can be expected under current plans around Ebbsfleet International rail station, including office and residential buildings (with active uses such as retail likely on the ground floor).
- Other sites provide information on a mix of densities. Korsnas is a completely flatted development, and is an example of higher density already existing in the Borough. West Hill and Kent College are sites near Dartford Town Centre and match in with pre-existing neighbourhoods at 66dph. Axton Chase, in the south of the Borough, and Darenth Road on the green belt border, are lower density to reflect the character of their relative surroundings.
- In theory, larger area sites may be of sufficient scale that they are not dominated by the need for a built form acceptable to adjoining areas, a logic opening up the possibility of higher densities in more central parts of sites. However, the small sites indicate that density, although varied, can still be relatively high (also see Appendix 1 Site F), with the rural sites in particular showing a disparity between what can be delivered (15 dph and 64 dph). The smaller urban sites fall into the pre-existing neighbourhood range set out above at 48 and 68 dph. Therefore, there is not necessarily a link between densities being greater on larger sites than smaller as the latter less often need to provide other uses - such as major open spaces - for use by the wider community (and also may have less issues due to yielding only small numbers of new dwellings individually).

Dwelling Size and Density

It is clear that the new developments are occurring at, and sometimes above, medium high densities, for instance 70 dph, which have so far proved popular with purchasers. These developments are therefore at (and sometimes above) the calculated densities for established neighbourhoods in Dartford (see Chapter 3). This is consistent with the fact that there are very few areas of existing purpose-built flats in the Borough (less than a quarter of the Borough's housing stock is flatted, and this includes flats created by conversion of dwellings); but it is nevertheless generally suitable for new developments to include some flatted development where appropriate.

If more homes are being accommodated per hectare of land, an important question arises - for quality of life and for the character of the Borough – of whether this is occurring just by providing smaller units, or whether land is genuinely being used efficiently in terms of the total square metres of residential provided (not just squeezing out more smaller units). Accordingly, data on size is considered below.

Average size of units

As outlined in the existing neighbourhoods section, an example dwelling size was given for each area – the average for the most common type of property. The table below outlines this in full to give comparatives for the different types and sizes of dwellings.

Average Size of Dwellings across Existing Neighbourhoods in Dartford Borough

Area	m ²	Area	m ²
Burnham Road Area		Knockhall Area	
<u>Mayfair Road</u>		<u>Ingress Gardens</u>	
3 Bed Terrace	75	3 Bed Terrace	86
<u>Burnham Road</u>		<u>Pilgrims Way</u>	
3 Bed Terrace	72	4 Bed Detached	93
2 Bed Maisonette	46	Swanscombe Area	
Princes Area		<u>Lewis Road</u>	
<u>Maple Road</u>		3 Bed Terrace	83
2/3 Bed Terraces	76	<u>Leonard Way</u>	
<u>Willow Road</u>		3 Bed Terraces	84
3 Bed Terrace	74	<u>Church Road</u>	
<u>Meadowside</u>		2 Bed Terrace	57
1/2 Bed Flat	49	Wilmington Area	
Newtown Area		<u>Whitehead Close</u>	
<u>St Albans Road</u>		3/4 Bed Semi-Detached	97
2 Bed Terrace	60	<u>Warren Road</u>	
<u>Howard Road</u>		3 Bed Semi-Detached	87
2 Bed Terraces	63		

This research can be carefully contrasted against work undertaken by KCC (using Energy

Performance Certificates) which indicates average dwelling size in Dartford since 2009/10 – new developments. The following table outlines the average of the average over the past 8 years for different types of dwelling.

Type	Size (average m2 since 2009/10)
Bungalow	89
Flat	61
House	101
Maisonette	77
Average	81

The samples of established neighbourhoods in Dartford found houses (not bungalows/flatted units) to vary from an advertised 60 to 97 sqm (in a range from 2 to 4 bedroom houses). The 'typical' (median) house in the established areas is a **79.5sqm** 3 bed terrace.

This is substantially smaller than the recorded size of new build house (101sqm) over past years. There are insufficient samples from existing areas to properly study the size of new build flats/maisonettes versus properties in the established areas. (The two established properties found of this kind were smaller than the new build averages of 61/77sqm).

This indicates that with the EPC new build data, houses and flats have 'got larger' in Dartford, with the new developments being a higher average size than those in existing neighbourhoods studied.

For national comparison, CABE published a research report¹ in 2010 that considered dwelling size across the UK, the table below provides the mean and median results from the survey undertaken for the different typologies used (studio, 1 bed flat, 2 bed flat etc). This involved data from 200 housing schemes from a range of typologies, with 'typical' or 'standard' types selected. 22 schemes were chosen for each typology.

<i>Typology</i>	<i>Mean</i>	<i>Median</i>
Studio	32.1	31.9
1 Bedroom flat	46.6	46.3
2 Bedroom flat	60.7	59.1
3 Bedroom flat	86.5	89.6
1 Bedroom house	64.3	69.1
2 Bedroom house	71.2	69.2
3 Bedroom house	95.6	92.1
4 bedroom house	120.6	117.0
5 bedroom house	163.5	158.7

Table 3.3 Mean and median areas for each typology

Although direct comparisons are difficult versus the EPC derived data for Dartford, it would appear that the Borough is comparable. The CABE averages for 2-bed flats are just under the

¹ CABE (2010) Dwelling Size Survey. Access here:
<http://webarchive.nationalarchives.gov.uk/20110118095356/http://www.cabe.org.uk/files/dwelling-size-survey.pdf>

61sqm recorded for new flats as whole (not maisonettes) in Dartford. The CABI national averages for 2 and 3 Bed houses are smaller than the average for all new houses in Dartford (101sqm).

Finally, nationally described space standards for internal space currently exist in government policy (and feature as a minimum requirement for Dartford via the new Development Policies Local Plan). These are set out and explained in Appendix 3 for further comparison.

SUMMARY

- The size of dwellings from samples in the existing areas studied varied from 60 to 97sqm for houses (excluding flats).
- The size of new build development in the Borough averages 101sqm for houses and 61sqm for flats.
- National research by CABI breaks new house type down by bedroom number. It may not be fully comparable, but suggests new build development in Dartford is unlikely to have been smaller than the national average new build size of units.
- In short, although methodologies cannot be guaranteed to be fully reconciled in all respects, there is no evidence that new build developments in the Borough, at the medium / high densities illustrated above, have been achieved through dwelling sizes that are smaller than those found at the more historic communities in /around Dartford, or compared to new build dwellings elsewhere. It would appear that overall, new developments in the Borough have genuinely used land more efficiently to provide a greater level of residential floorspace.

7. OUR NEIGHBOURS

Policy

Gravesham

Policy CS15: Housing Density

5.11.5 Sites will be developed at a variety of densities, depending on their location and accessibility to public transport. The form and density of housing will vary across the larger sites, in response to accessibility and other characteristics of each part of the site. Variations in density across a site should be used to develop different character areas.

5.11.6 All new housing will be developed at a density that is consistent with achieving good design and does not compromise the distinctive character of the area in which it is situated. Subject to this overriding consideration:

Within the urban area, new residential development will be expected to achieve a minimum density of 40 dwellings per hectare. In suitable locations close to the transport hubs of Gravesend Town Centre and Ebbsfleet higher densities will be encouraged.
In the rural area, new residential development will be expected to achieve a minimum density of 30 dwellings per hectare.

5.11.7 Development proposals that fail to make efficient use of land for housing, having regard to the character and location of the area, may be refused planning permission.

Sevenoaks

Policy SP 7 Density of Housing Development

All new housing will be developed at a density that is consistent with achieving good design and does not compromise the distinctive character of the area in which it is situated.

Subject to this overriding consideration:

1. Within the urban areas of Sevenoaks, Swanley and Edenbridge new residential development will be expected to achieve a density of 40 dwellings per hectare. In suitable locations close to Sevenoaks and Swanley town centres higher densities will be encouraged.
2. Within Sevenoaks and Swanley town centres, as defined under Policies LO3 and LO5, new residential development will be expected to achieve a density of 75 dwellings per hectare.
3. In other settlements not listed above new residential development will be expected to achieve a density of 30 dwellings per hectare.

Development proposals that fail to make efficient use of land for housing, having regard to the character and location of the area, may be refused permission.

London

New London Plan

The recent draft of the new London Plan takes a new design-led approach to site capacities and density. This departs from the current approach through the density matrix. However, this does not completely set aside the original approach which is set out below regarding the setting classifications and PTAL test. An extract of new Policy D6 is set out as follows:

- A. Development proposals must make the most efficient use of land and be developed at the optimum density. The optimum density of a development should result from a design-led approach to determine the capacity of the site. Particular consideration should be given to:
1. the site context
 2. its connectivity and accessibility by walking and cycling, and existing and planned public transport (including PTAL)
 3. the capacity of surrounding infrastructure.

Proposed residential development that does not demonstrably optimise the housing density of the site in accordance with this policy should be refused

Current London Plan

The London Boroughs utilise the London Plan's policy on housing density, which outlines a guide of different levels across the 'setting' classifications of 'central', 'urban' and 'suburban', although these need not apply rigidly. The density ranges from 35 dph to 405 dph. Below outlines the initial outlook for the policy.

London Plan Policy 3.4

A Taking into account local context and character, the design principles in Chapter 7 and public transport capacity, development should optimise housing output for different types of location within the relevant density range shown in Table 3.2. Development proposals which compromise this policy should be resisted.

Table 3.4 provides a guide of rates for housing density in applying local context to the settings defined in the London Plan. This includes looking at different ranges depending on the Public Transport Accessibility Level (PTAL), the location, existing building form and massing.

The detailed guide can be found in the [London Plan itself](#).

Bexley Borough

The Bexley Growth Strategy is based on maximising aspirations by quantifying the impact of change, though applying certain housing-based development typologies. This produces a very wide range of densities (as summarised in Table 1 of their draft documentation):

- The 'Suburban Medium' ranges from **35-95** dph.

- The 'Urban Medium' typology had sub-types stretching from **45 to 170 dph**. The lowest maximum density is 120dph for transitional sites, with the very densities of 145-170pdh found at town centre and riverside locations, for example.
- The 'Urban High' typology had sub-types **up to 260 dph**, but is not used at all in some areas identified for change.

Some of the sub-types/ illustrative examples are shown as extracts in Appendix 2.

The London Infrastructure Plan documents looked at broad calculations for growth outside of London, along railway lines. This applied a proxy density for intensification of developing at **100dph** in town centres in Kent, but also recognised that sometimes a **70dph** level may be applicable.

8. CONCLUSIONS

The densities across Dartford vary between 15dph and 280dph across new developments (25-80 for existing neighbourhoods) as calculated. The average density across all the sites considered new developments is 67dph. As a Borough with a clear urban area this is in line with traditional/sustainable urban densities.

Rural areas experience lower densities, with Wilmington Neighbourhood and Axton Chase development in Longfield being 30dph or below. This is in line with the Core Strategy. A number of other developments also have fairly low density, particularly Darenth Road (29dph | urban fringe), phase 1 of Eastern Quarry (32dph | garden city), phase 1 of Ebbsfleet Green (30dph | garden city) and Northern Gateway's Former Car Park Site (25dph | urban).

Northern Gateway sites have the biggest variation in density. Excluding Mill Pond and Abbott Murex, the average dph is 63 which is in line with other development sites in Dartford Town (West Hill and NW Kent College), and those in Bexley and Sevenoaks highlighted. Mill Pond and Abbott Murex have an average of 228 dph, which is similar to Athena House in Sidcup at 250dph, which is also next to a train station.

Other flat-only developments include Lowfield Street at 218dph and Everards at 173dph. These higher densities can be expected for flatted developments and are in line with the examples outlined in other Boroughs. This is justified through the excellent access to facilities and public transport that are available.

The Bridge residential development has an average of 51 dph, which is in line with Ingress Park and sites in the Stone to Ebbsfleet Priority Area. All of these are of medium level density and a mix of houses and flats.

Existing neighbourhood analysis reveals a range of 25-78dph for sites in the urban north. Many of the developments in the last 10 years have been within this range, with only 3 of the 15 large sites being above this (when Northern Gateway is taken as a whole average).

As we look to consider what densities should be allowed in Dartford in the future, this report shows that sites within the Borough are of varying density. It is only in recent years that some sites of higher densities have been permitted, particularly in close proximity to the Town Centre and Dartford Train Station as demand for homes continues to be high and the pressure to meet housing targets grows.

Although this study has not sought to analyse the design characteristics or perceived quality of existing and emerging development, some evidence has been outlined in relation to the characteristics of the communities. In particular data is available on the size of dwellings and shows that existing areas range from 60 to 97sqm for houses, and that new developments average 101sqm for houses and 61sqm for flats. This indicates that there is nothing to suggest that dwelling size is getting smaller to accommodate higher densities. Further, it can generally be concluded that land has been used more effectively to provide larger housing at a higher scale in some areas.

APPENDIX

Appendix 1 – Other Site Examples of density from Kent and the South East

(A) Christianfields, Gravesham

Photo 30: Homes built as part of the Christianfields redevelopment in Gravesham



Gravesham redevelopment of the Christianfields Avenue, Palmer Avenue, Ferguson Avenue and Hawkins Avenue area involved the erection of 426 new dwellings in replacement of the original 1930s 208 'Wates' prefab homes. The reported density for the new build was **55dph** for this site. The final phase was completed in 2013. The site is approximately 1.5 miles distant from Gravesend Town Centre.

(B) Dunton Green (former West Kent Cold Storage), Rye Lane Redevelopment, Sevenoaks

This site is situated on the edge of Dunton Green village (3 miles north of Sevenoaks), and it is currently under construction in Sevenoaks for 500 new homes. The density for the site is **66 dwellings per hectare** which is in line with a number of Dartford urban sites.

Photo 31: Homes built as part of the West Kent Cold Storage redevelopment in Sevenoaks



(C) Re-development of Larner Road Estate, Bexley

Currently under construction (2017), this site for c.600 homes is to completely replace the existing Larner Road Estate.

The site will be a mixture of flats and homes; phase 1 has a split of 203 flats and 140 houses and has a **dph of 64** (based on a site area of 5.32ha).



Photo 32 & 33: Artist impressions of the Larner Road re-development



(D) Athena House 112 Station Road, Sidcup, Bexley

The redevelopment of this site for mixed use incorporating 2 new buildings varying in height up to 17 storeys.

This includes 120 flats. With a site area of 0.48ha, this means the **dph is 250**. This is a high density development adjacent to Sidcup station.

Note: This application was approved on appeal.

Photo 34: Athena House in Sidcup



(E) Royal Arsenal Riverside, Woolwich, Greenwich

This example is one of London's biggest developments that is set to deliver 5,000 homes across 88 acres. This is therefore important to consider when thinking about Ebbsfleet Central development that is anticipated in the future.

The 2005 application at The Warren, Royal Arsenal for 2,500 homes along with a variety of other uses (bars/restaurants, hotel, officers leisure) covered an area of 12.9ha. The approximate density for this site was **296 dph**. Royal Arsenal is a high density development that does conform to the London Plan.

Photo 35: Artist impressions of the Royal Arsenal development from the master plan



(F) Fulham Island, Fulham Broadway, West London

This was a mixed use conversion and new build scheme that provided retail, commercial and residential homes. 38 homes were provided at an average density of **132 dph**. It is located in the heart of the town centre, and by London Underground services.

(G) Kidbrooke Village, Greenwich



Photo 37 & 38: Concept art for the Kidbrooke Village

35ha

The whole and was

At

Kidbrooke, Berkeley Homes have developed the *Berkeley Urban House* which reinterprets the traditional terraced home and provides three bed homes with just a 148m² footprint, including devoted outside space. This is an example of intensifying development to provide higher housing density –without building at greater height (flats). This allows density of 120dph, approximately double the density of traditional terraced homes.

(H) Former Powergen site on Victoria Way, Ashford

In 2016, an application was approved for 660 dwellings on brownfield land that is very closely located to Ashford International Station. It will consist of 1, 2 and 3 bed flats and a small number of houses. The homes were designed by Guy Hollaway, a RIBA award winner. The site has an average density of **181 dph**.

(I) Royal Wells Park, Tunbridge Wells

The redevelopment of the former Kent and Sussex Hospital Site includes 190 homes in the form of two bed flats to six bed houses. The approximate site net density is **59 dph**.



CGI of approved scheme in Victoria Way

Appendix 2 – Example of Housing Typologies from the Bexley Growth Strategy

Code: H2c

Urban medium buffer typology, with green and blue spaces

Example scheme

Stanmore Place, Harrow

- 798 homes over 6.2 hectares
- **Density: 129 units per hectare**
- 20% 3-bed plus family units
- 697 parking spaces (0.9 per unit)
- Car parking is provided mainly in a screened multi-storey car park, which provides a buffer from the industrial estate beyond.



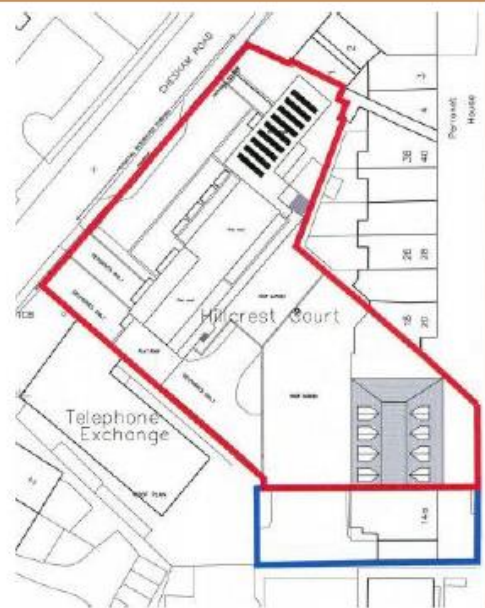
Code: H2e



Urban medium mixed-use typology




Example scheme

Hillcrest Court, Amersham

- 31 residential dwellings
- **Density: 129 units per hectare**
- Car parking: 53 spaces (1 per unit plus for retail)
- A mix of 1, 2 and 3 bedroom apartments with private and shared amenity space, and three ground floor retail units (including a restaurant)
- Design is modern but sensitive to surrounding properties



Code	H3b	Name	Urban high riverside mixed-use typology
<p>Example scheme</p> <p><u>Charter Quay, Kingston-upon-Thames</u></p> <ul style="list-style-type: none"> • 244 residential dwellings over 1.3 hectares • Density: 188 units per hectare • Car parking (underground): 244 (1 per unit) • Eight commercial units, business centre, gym and theatre • 239 flats in six and seven storey blocks arranged around two pedestrian squares, with five town houses along the riverside 			
			
			

Code	H3d	Name	Urban high typology
<p>Example scheme</p> <p><u>Crayford Town Hall, Crayford</u></p> <ul style="list-style-type: none"> • 186 residential dwellings over 1.1 hectares • Density: 169 units per hectare • Car parking: 215 spaces (1.2 per unit) • 30% affordable • One, two and three bedroom apartments with 2,298m² of non-residential uses including library, community centre, surgery and shops 			
			
			
			

Appendix 3 – Technical housing standards – nationally described space standard

Introduction

1. This standard deals with internal space within new dwellings and is suitable for application across all tenures. It sets out requirements for the Gross Internal (floor) Area of new dwellings at a defined level of occupancy as well as floor areas and dimensions for key parts of the home, notably bedrooms, storage and floor to ceiling height.
2. The requirements of this standard for bedrooms, storage and internal areas are relevant only in determining compliance with this standard in new dwellings and have no other statutory meaning or use.

Using the space standard

3. The standard Gross Internal Areas set out in Table 1 are organised by storey height to take account of the extra circulation space needed for stairs to upper floors, and deal separately with one storey dwellings (typically flats) and two and three storey dwellings (typically houses).
4. Individual dwelling types are expressed with reference to the number of bedrooms (denoted as 'b') and the number of bedspaces (or people) that can be accommodated within these bedrooms (denoted as 'p'). A three bedroom (3b) home with one double bedroom (providing two bed spaces) and two single bedrooms (each providing one bed space) is therefore described as 3b4p.
5. This allows for different combinations of single and double/twin bedrooms to be reflected in the minimum Gross Internal Area. The breakdown of the minimum Gross Internal Area therefore allows not only for the different combinations of bedroom size, but also for varying amounts of additional living, dining, kitchen and storage space; all of which are related to the potential occupancy.
6. Relating internal space to the number of bedspaces is a means of classification for assessment purposes only when designing new homes and seeking planning approval (if a local authority has adopted the space standard in its Local Plan). It does not imply actual occupancy, or define the minimum for any room in a dwelling to be used for a specific purpose other than in complying with this standard.
7. Minimum floor areas and room widths for bedrooms and minimum floor areas for storage are also an integral part of the space standard. They cannot be used in isolation from other parts of the design standard or removed from it.
8. The Gross Internal Area of a dwelling is defined as the total floor space measured between the internal faces of perimeter walls¹ that enclose the dwelling. This includes partitions, structural elements, cupboards, ducts, flights of stairs and voids above stairs. The Gross Internal Area should be measured and denoted in square metres (m²).
9. The Gross Internal Areas in this standard will not be adequate for wheelchair housing (Category 3 homes in Part M of the Building Regulations) where additional internal area is required to accommodate increased circulation and functionality to meet the needs of wheelchair households.

Technical requirements

10. The standard requires that:

- a) the dwelling provides at least the gross internal floor area and built-in storage area set out in Table 1 below
- b) a dwelling with two or more bedspaces has at least one double (or twin) bedroom
- c) in order to provide one bedspace, a single bedroom has a floor area of at least 7.5m² and is at least 2.15m wide
- d) in order to provide two bedspaces, a double (or twin bedroom) has a floor area of at least 11.5m²
- e) one double (or twin bedroom) is at least 2.75m wide and every other double (or twin) bedroom is at least 2.55m wide
- f) any area with a headroom of less than 1.5m is not counted within the Gross Internal Area unless used solely for storage (if the area under the stairs is to be used for storage, assume a general floor area of 1m² within the Gross Internal Area)
- g) any other area that is used solely for storage and has a headroom of 900-1500mm (such as under eaves) is counted at 50% of its floor area, and any area lower than 900mm is not counted at all
- h) a built-in wardrobe counts towards the Gross Internal Area and bedroom floor area requirements, but should not reduce the effective width of the room below the minimum widths set out above. The built-in area in excess of 0.72m² in a double bedroom and 0.36m² in a single bedroom counts towards the built-in storage requirement
- i) the minimum floor to ceiling height is 2.3m for at least 75% of the Gross Internal Area

Table 1 - Minimum gross internal floor areas and storage (m²)

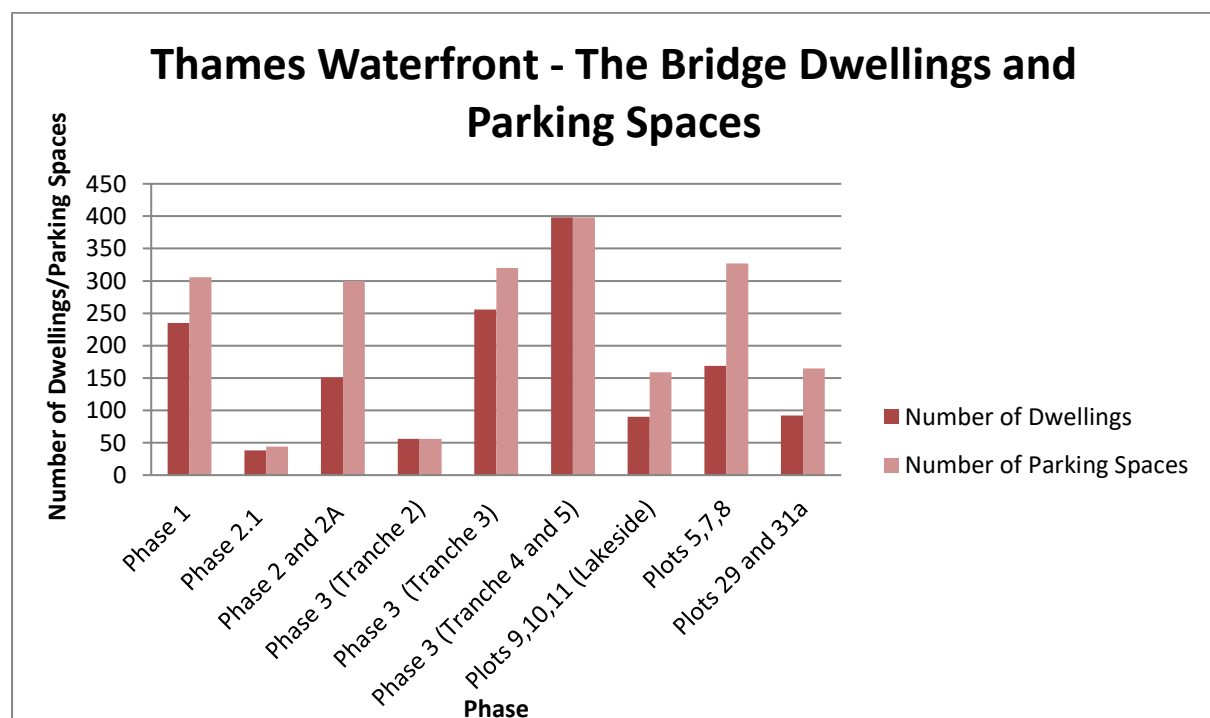
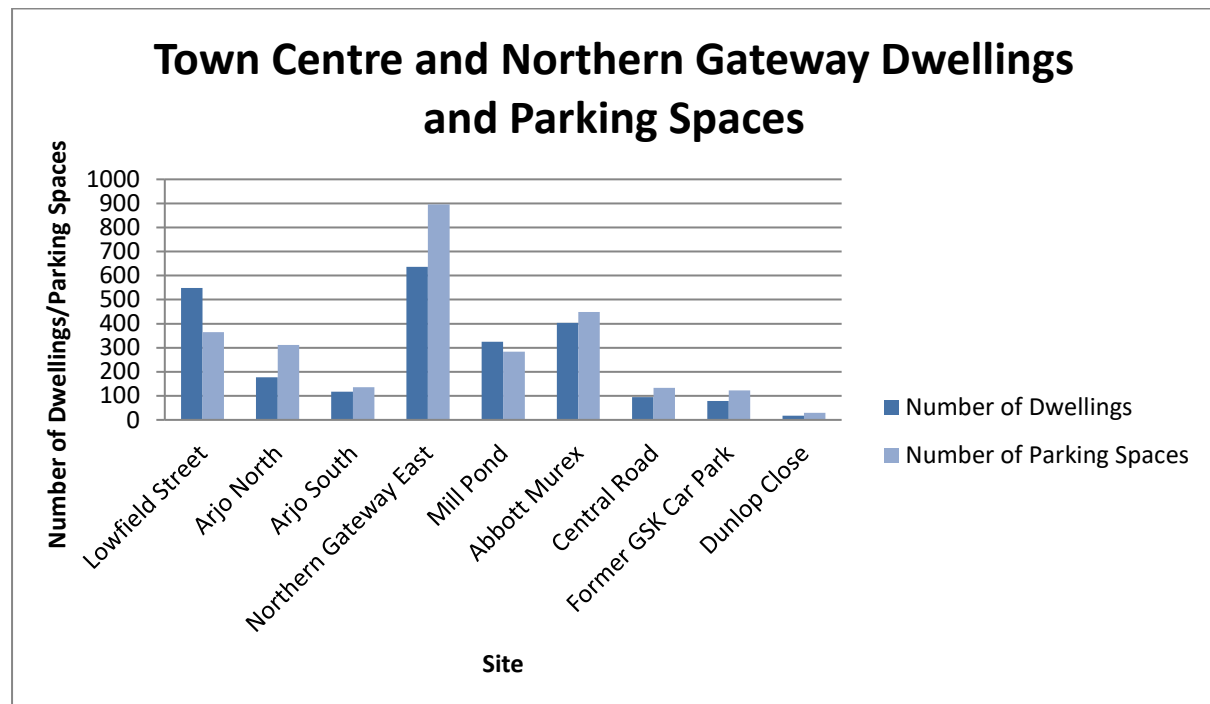
Number of bedrooms(b)	Number of bed spaces (persons)	1 storey dwellings	2 storey dwellings	3 storey dwellings	Built-in storage
1b	1p	39 (37) *			1.0
	2p	50	58		1.5
2b	3p	61	70		2.0
	4p	70	79		
3b	4p	74	84	90	2.5
	5p	86	93	99	
	6p	95	102	108	
4b	5p	90	97	103	3.0
	6p	99	106	112	
	7p	108	115	121	
	8p	117	124	130	
5b	6p	103	110	116	3.5
	7p	112	119	125	
	8p	121	128	134	
6b	7p	116	123	129	4.0
	8p	125	132	138	

* Notes (added 19 May 2016):

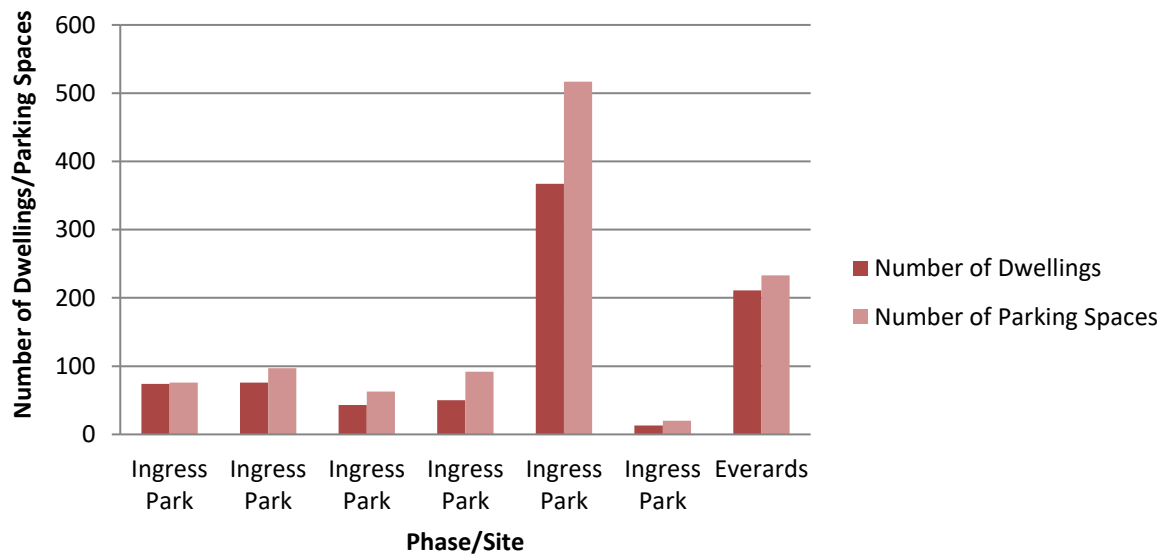
1. Built-in storage areas are included within the overall GIAs and include an allowance of 0.5m² for fixed services or equipment such as a hot water cylinder, boiler or heat exchanger.
2. GIAs for one storey dwellings include enough space for one bathroom and one additional WC (or shower room) in dwellings with 5 or more bedspaces. GIAs for two and three storey dwellings include enough space for one bathroom and one additional WC (or shower room). Additional sanitary facilities may be included without increasing the GIA provided that all aspects of the space standard have been met.
3. Where a 1b1p has a shower room instead of a bathroom, the floor area may be reduced from 39m² to 37m², as shown bracketed.
4. Furnished layouts are not required to demonstrate compliance.

Appendix 4 – Parking spaces per dwelling across new developments

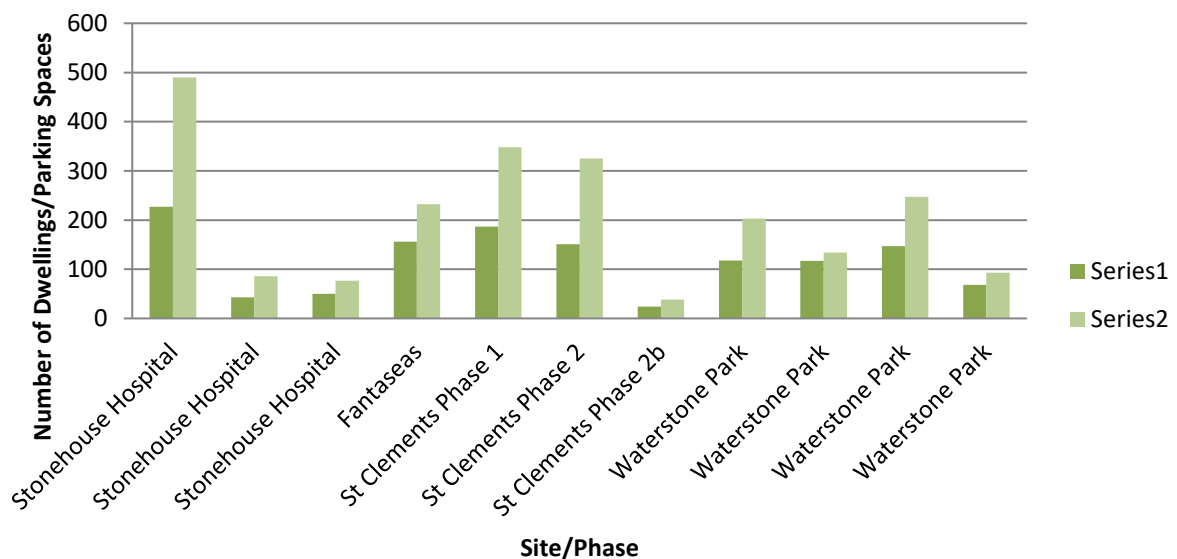
This appendix outlines further the number of dwellings compared with the number of parking spaces provided to allow for further comparison and context with other sites.



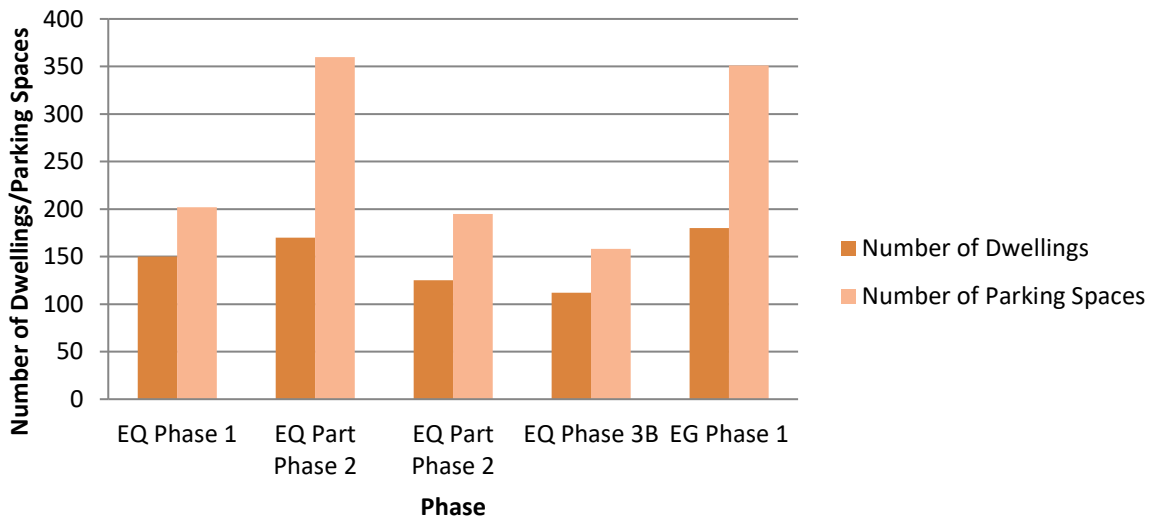
Thames Waterfront - Ingress Park and Everards Dwellings and Parking Spaces



Ebbfleet to Stone Priority Area Dwellings and Parking Spaces



Eastern Quarry and Ebbsfleet Green Dwellings and Parking Spaces



Other Large Sites Dwellings and Parking Spaces



Number of Parking Spaces Per Dwelling

