WE MADE THAT

TROY
PLANNING + DESIGN

BEXLEY URBAN MORPHOLOGY STUDY
REPORT | NOVEMBER 2019

CONTENTS

INTRODUCTION

Introduction

We Made That and Troy Planning & Design were commissioned by London Borough of Bexley (LBB) to carry out an Urban Morphology Study of the borough.

The report provides detailed Geographical Information System (GIS) mapping of relevant characteristics of the borough, such as Building Heights and Built Period. Clear visualisation of these characteristics is presented using data collected from various sources including GLA data and Open Street Map, combined with data already held by LBB. A clear set of building typologies has then been presented to accurately represent the borough.

The analysis and presentation within this report provides an evidence base from which LBB can develop borough-wide and area-specific design guidance and policies for the emerging Design SPD that will shape future development in the borough.

This evidence base informs the Characterisation Study currently being developed by LBB. An analysis of Urban Morphology is integral to the Characterisation Study, as local character evolves over time, and will need to change to accommodate additional housing provision and an increase in residential density. The Characterisation Study will support the production of several projects, but principally the production of the Design SPD.

Policy Context

The Bexley Growth Strategy, adopted by the Council in December 2017, sets out how Bexley can deliver growth in a sustainable way, creating sustainable, healthy, high quality neighbourhoods where people choose to live, play, learn and earn. It identified the areas that have the highest potential for growth, and the new infrastructure necessary to make sure these areas will function properly.

Bexley's Growth Strategy, published December 2017, has informed the spatial elements of the draft Local Plan, which seeks to deliver the ambitious growth agenda if supporting infrastructure is secured. It reflects the principles of and locations for development including housing, employment and retail whilst preserving and improving the best elements of the borough. The new Local Plan, once adopted, will support the delivery of the Bexley Growth Strategy and provide greater certainty to developers and stakeholders as to where the Council would like development to take place and to what local standards development should achieve.

Approach

This study makes use of quantitative research methods as well as on site exploration and written analysis through observation. Written analysis has been informed by quantitative research in the form of data mapping and visualisation.

The report uses GIS data to categorise the borough's built environment according to each area's dominant building typology and the density of development, as described by Floor Area Ratio (FAR). In this way the typologies can distinguish between densely and sparsely built areas of the borough, as well as giving an indication of architectural and stylistic types.
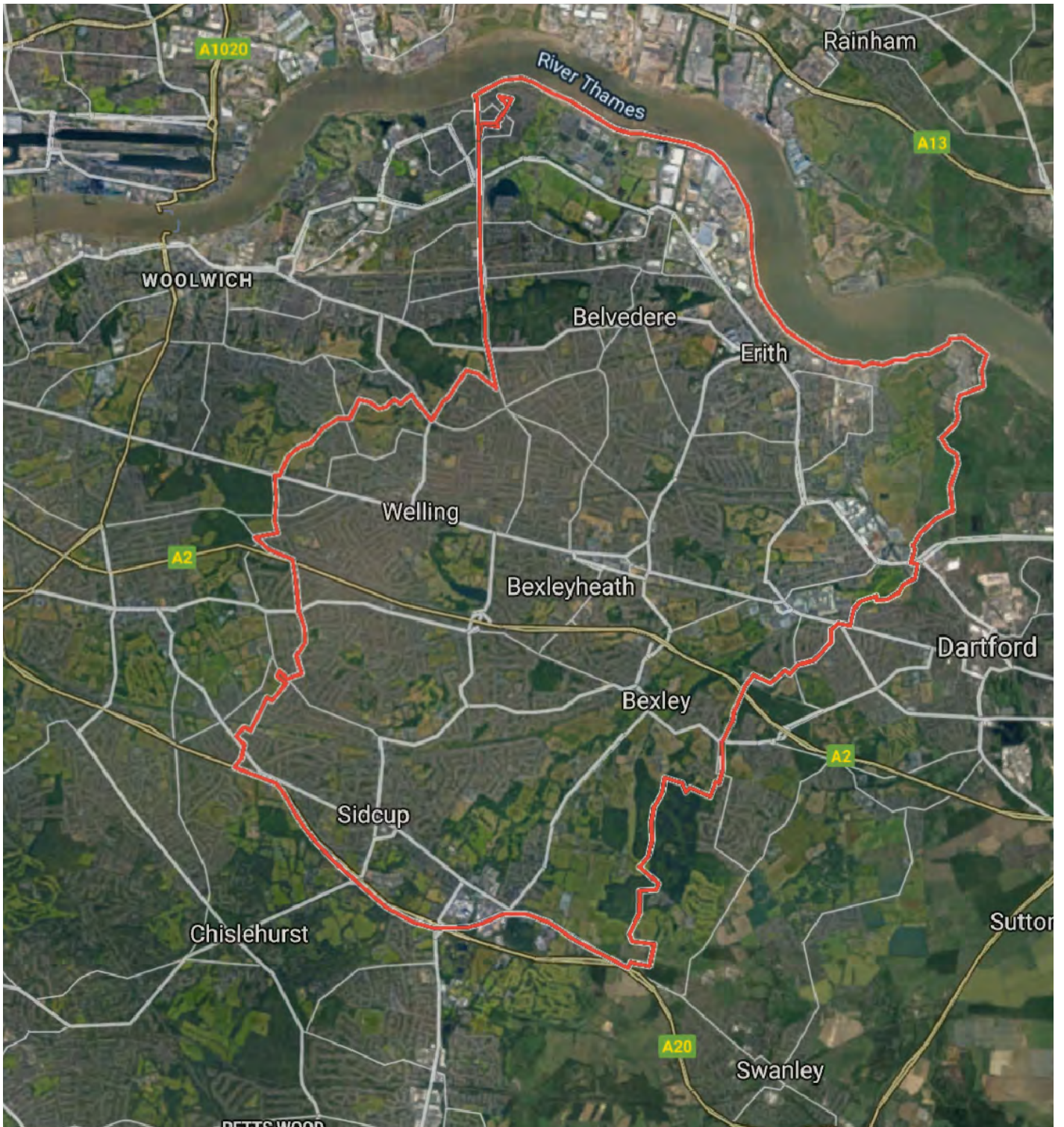
METHODOLOGY

Baseline research was conducted by establishing an understanding of the relevant existing data and evidence base. The table below highlights the characteristics that were examined, and their corresponding data sets. Each characteristic has been mapped from the raw data (see Appendix 1 - Raw Data), giving an initial indication of what each characteristic looked like geographically and/or spatially.

A unit of analysis was developed and each characteristic mapped under this principle, to give a set of uniform maps that could be easily read, compared, and later merged to give defined typologies.

A meeting was held at London Borough of Bexley with a range of officers from different departments where ideas were discussed and feedback was collected on various options for typological classification. The results of the meeting were used to refine a singular typological understanding of the borough's morphology.

On site photography and analysis was then conducted of each area within the defined typology. A character profile has been presented for each typology, along with a commentary on both the data and site observations. Following this analysis, recommendations are provided for how the typology could inform Bexley's ongoing policy work.
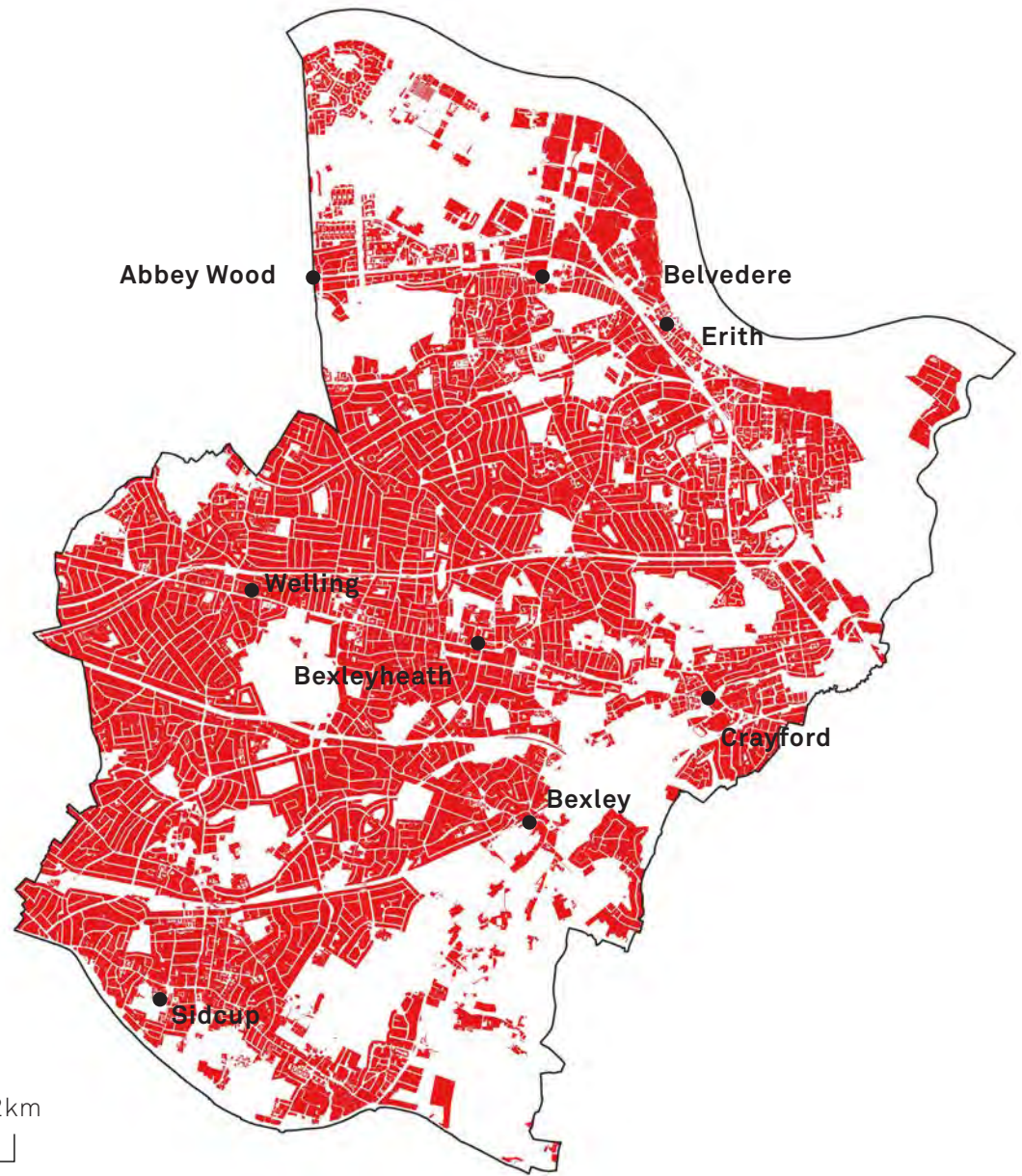
Characteristic	Data Set
Building typology	Ordnance Survey MasterMap (building heights. footprint, land use) PTAL-based character assessment
Townscape/ urban grain/ block pattern	Ordnance Survey MasterMap and other free XYZ datasets (including Open Street Map with different applied styles)
Building heights/ FAR	Ordnance Survey MasterMap (building heights)
Densities (potentially including occupational density)	Ordnance Survey MasterMap, ONS 2011 Census data at LSOA
Extent of frontages/ plot size/ plot proportions	Ordnance Survey MasterMap Land Registry parcels
Building styles	Historic England building age data (to be checked for accuracy) VOA Dwelling age data
Heritage, environment and natural risks and constraints	Historic England, Environment Agency and Natural England datasets
Accessibility to public transport and infrastructure	London PTAL dataset and other relevant distance or time measurements as needed
LiDAR data to determine the height of terrain, buildings, trees and other features	Environment Agency LiDAR DSM/DTM 50cm data released under OGL3

Satalite image taken from Google Maps of London
Borough of Bexley.

UNIT OF
ANALYSIS
Island Method

Abbey Wood

Belvedere

Erith

Welling

Bexleyheath

Crayford

Bexley

Sidcup

N   0   2km

'Islands' were selected as the unit of analysis and are defined as any area that is enclosed but not intersected by vehicle movement routes. The Island format gives a detailed picture of the patterns within the borough, with resolution the individual land parcel data did not provide, but without creating a busy hard-to-read map that was the result of mapping individual parcel data.

All typology characteristics have been presented in Island format apart from the FAR map which has been presented as parcel data so as not to lose the richness of the raw data. Each Island map shows the dominant characteristic within each Island.

Methodological Note
The Islands were formed using road and parcel data. Relevant parcels were firstly extracted from HM Land Registry INSPIRE polygons parcel datasets. The parcels were then dissolved to merge adjacent polygons, and then converted to multi parts which formed the islands.

To fill in any gaps Ordnance Survey MasterMap data was added, manually selecting and editing the relevant parcels. A manual cleaning and selection of wider relevant islands was then performed.

Finally the geographical difference between HMLR islands and OSMM islands was calculated, and the two were merged. The islands were dissolved to a single part and then converted to multipart.
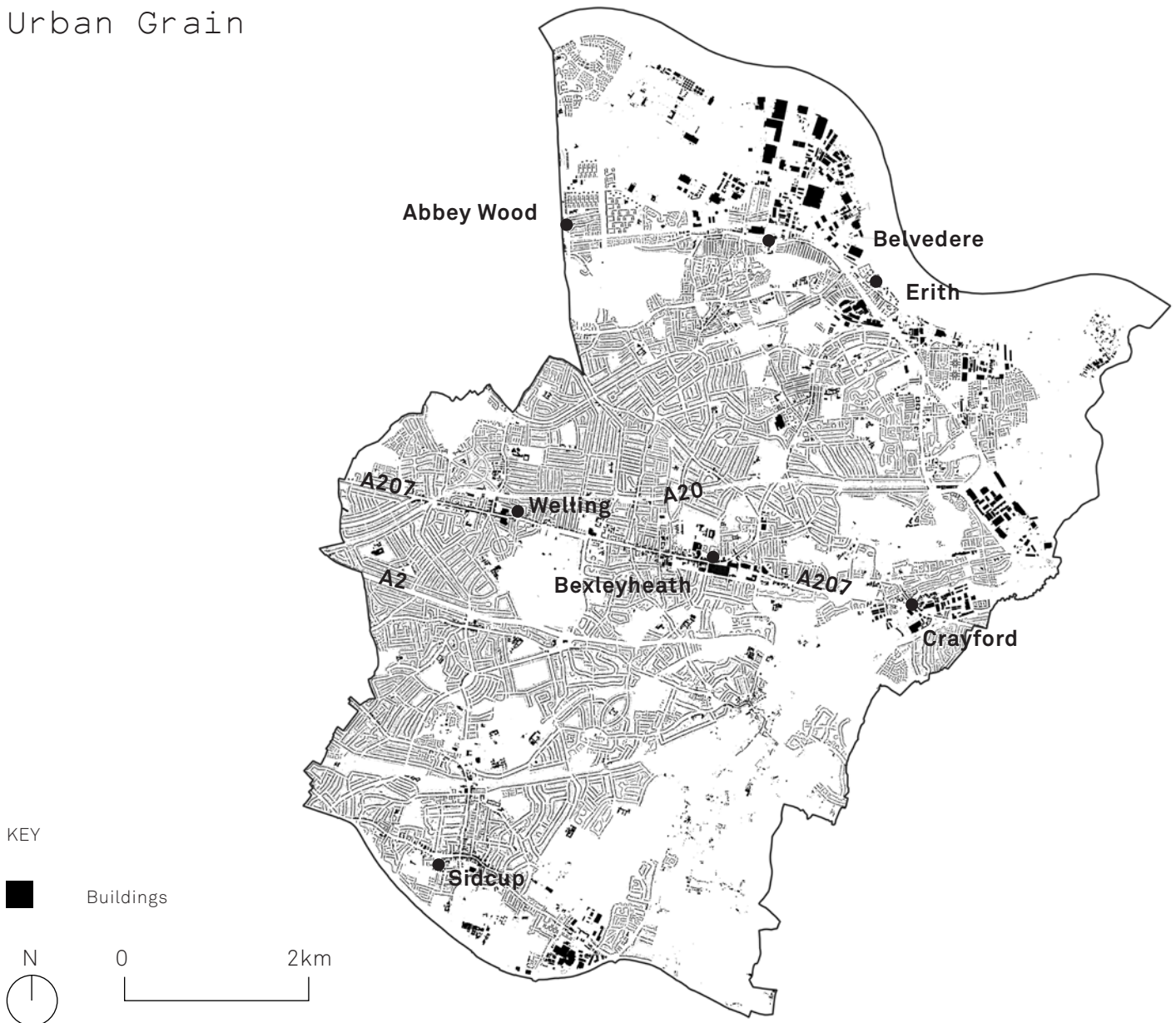
Industrial area, Belvedere

Residential area, Welling

Sidcup Town Centre

BEXLEY IN DATA

Urban Grain

KEY

■ Buildings
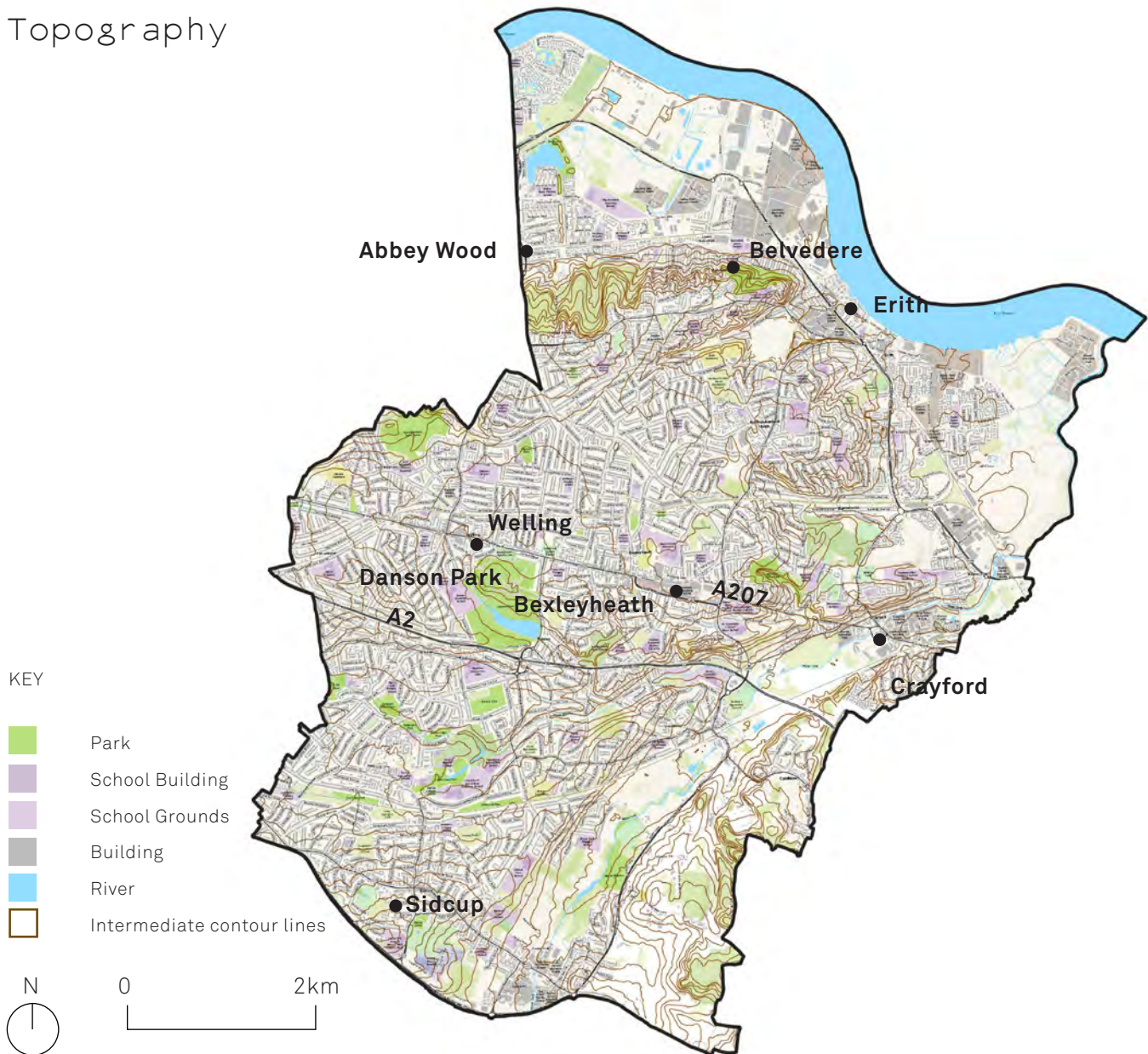
N 0 2km

Urban Grain by Parcel
Source: Ordnance Survey MasterMap

The urban grain map includes the highest resolution of building footprint data from Ordnance Survey MasterMap. It shows that densely grouped buildings are located at local centres and along primary routes such as the A207 through Bexleyheath. The clearly defined historical A2 and A20 roads frame the A207.

There is uniformity in the west of the borough compared with the northern and eastern areas where there is a greater variety of block pattern and grain.

In the northern tip of the map in Thamesmead the grain is sparse showing more space between the buildings, compared to the density in the west of the borough.
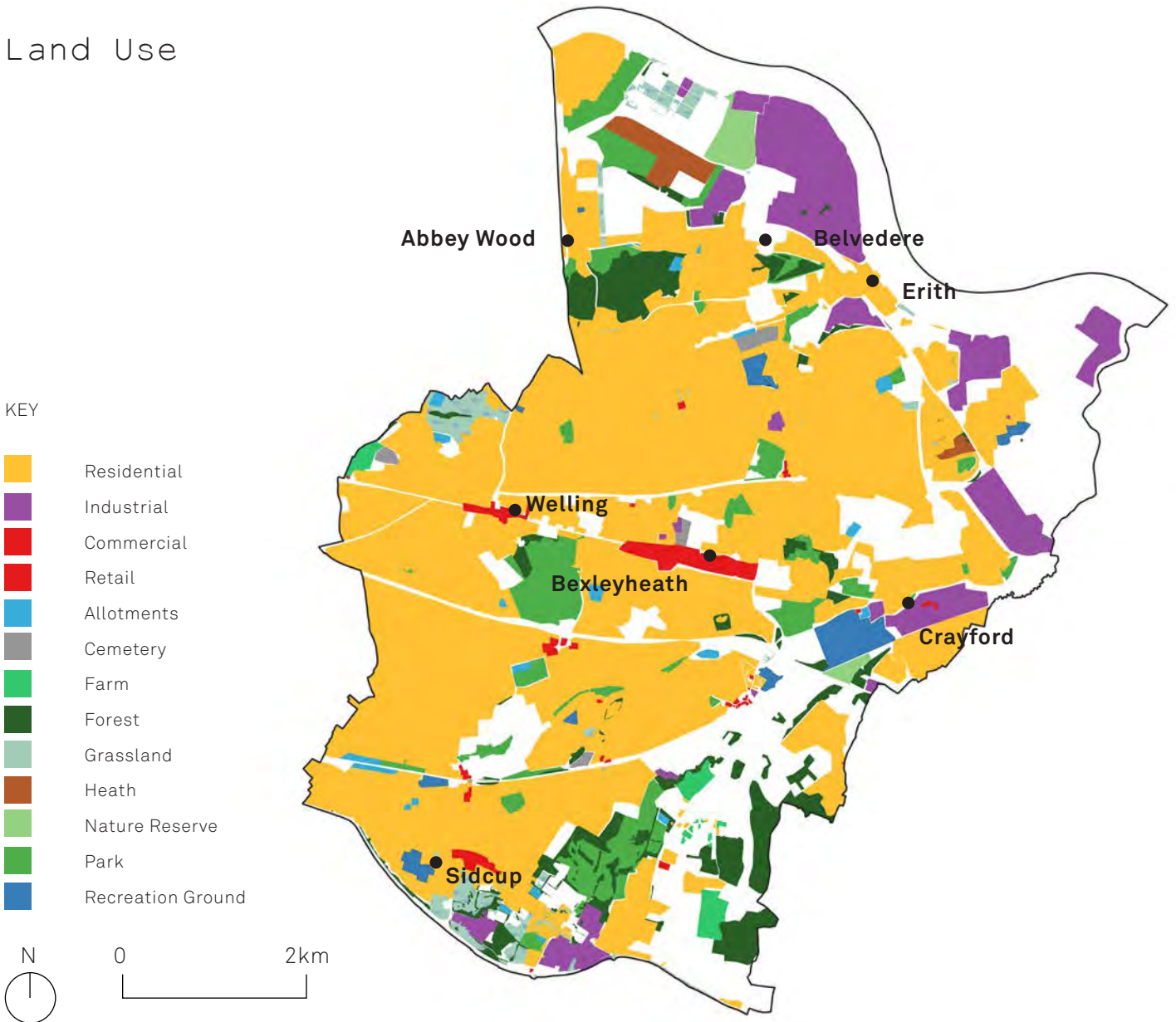
Topography

KEY

🟩	Park
🟪	School Building
🟪	School Grounds
⬜	Building
🟦	River
☐	Intermediate contour lines

N

0   2km

This map shows clearly the areas of high slope, that correlate with parks in the area where development has not taken place such as Abbey Wood and Belvedere. A concentration of flats have been built north of the high sloping area adjacent to Belvedere.

Land Use

KEY

- 🟧 Residential
- 🟪 Industrial
- 🟥 Commercial
- 🟥 Retail
- 🟦 Allotments
- ⬜ Cemetery
- 🟩 Farm
- 🟩 Forest
- ⬜ Grassland
- 🟫 Heath
- 🟩 Nature Reserve
- 🟩 Park
- 🟦 Recreation Ground

N   0   2km

MasterMap designations, by 'Island' (sqm)
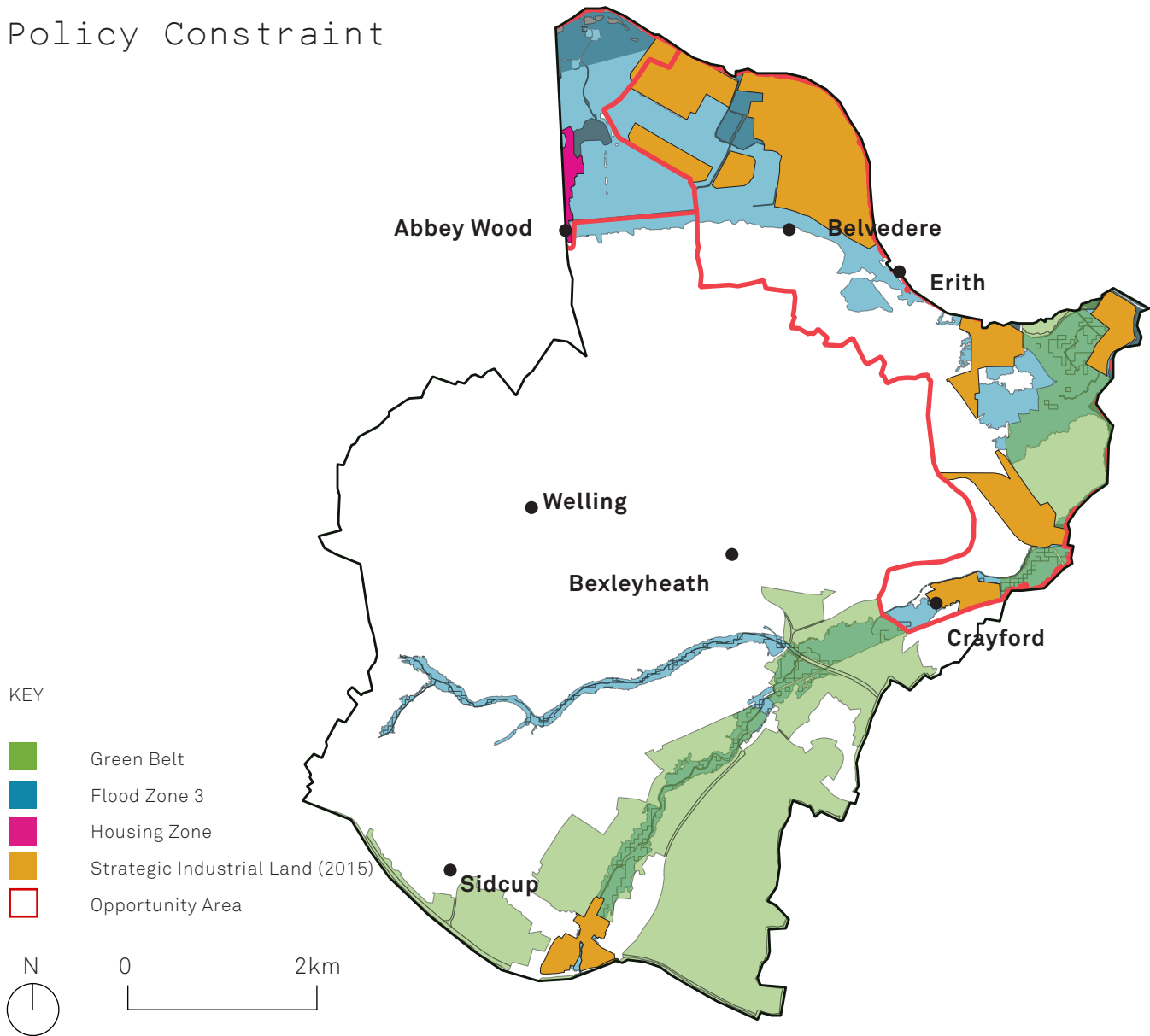Source: Ordnance Survey MasterMap and Open Street Map

This Land Use map shows the predominance of residential areas in the borough. The main source of the land use data is Open Street Map, which provides a fair understanding of the land use at borough-level resolution. Areas in white are where data was not available.

The relationship between residential and non residential uses are of particular interest. Despite the numerous town centres the commercial and retail areas are comparatively small. Industrial space is prolific in comparison to retail and commercial, which gives the impression that the

borough overall is comprised of housing and large industrial units.

Notably there is a good provision of green spaces, parks and recreation grounds. These spaces are not clustered, and are quite well spread throughout the borough.

Policy Constraint

KEY

- 🟩 Green Belt
- 🟦 Flood Zone 3
- 🟪 Housing Zone
- 🟧 Strategic Industrial Land (2015)
- ▢ Opportunity Area

N 0 — 2km

Contains OS data © Crown copyright and database right (2019) © Environment Agency copyright and/or database right 2019

In the low lying areas in the north of the borough, also shown in the Terrain Elevation map, there are vast areas of flood zone 3. The Topography and Urban Grain maps above show that Industrial development has taken place in the flood zone.

Green Belt land remains largely undeveloped although there is evidence from the Predominant Residential Type map that some Detached properties have been built on this land.

Predominant Residential Type

KEY

- 🟥 Detached
- 🟦 Flat
- 🟨 Semi-Detached
- 🟪 Terraced
- ⬛ Industrial Sites

N   0 ——— 2km
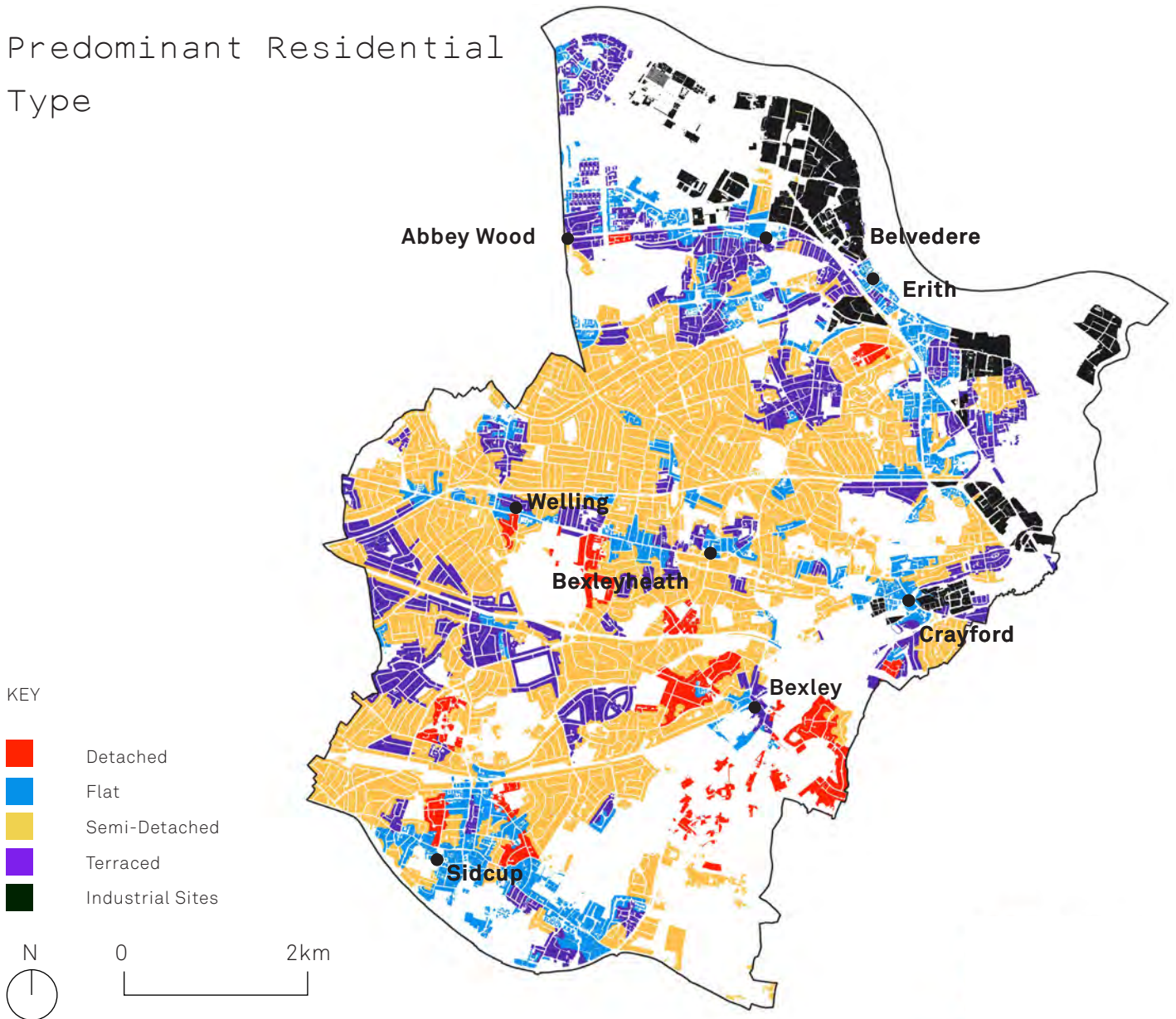
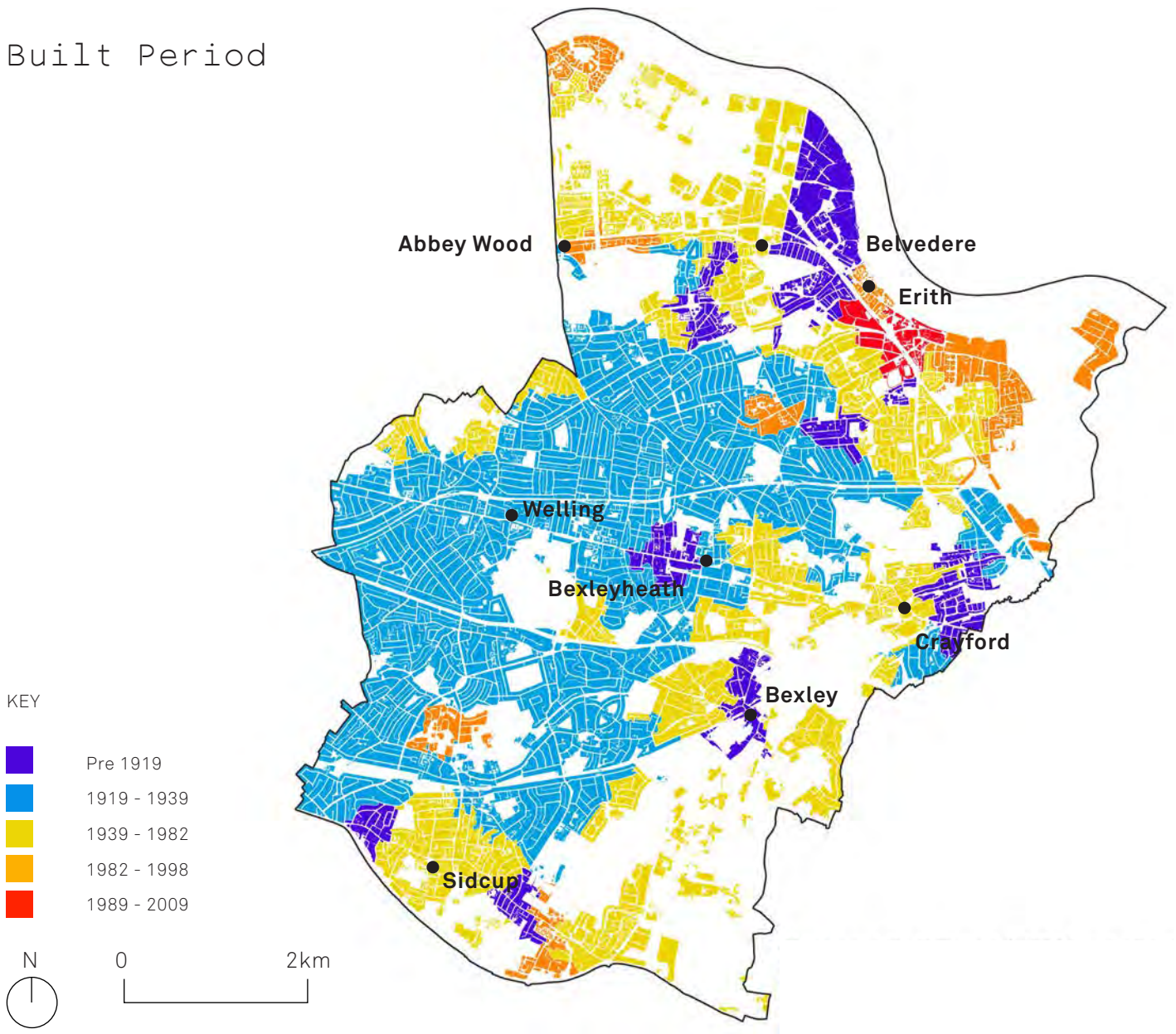Building Type by OA
Source: Ordnance Survey MasterMap

The Predominant Residential Type map shows the dominant type of residential housing by Island at OA level, with the addition of industrial areas. It shows a clear dominance of Semi-Detached housing throughout the borough. Bungalows are not included in this map due to lack of data.

Terraced housing and flats tending to cluster in and dominate the town centres. There is a clear correlation between the positioning of terraced housing and flats, and the main roads (A2, A206 & A207) that cut through the borough.

The map also shows how residential typology changes in the borough. In the centre and north the building type appears 'layered' for example along the riverfront, whereas in the south and east this change is more concentric, such as around Sidcup.

Detached properties are represented the least in the borough, although they have a clear presence particularly in the south, which is a feature typical of the low density of a borough on the outskirts of London. Many detached houses are situated along the River Cray and next to parks (shown as white space).

Built Period

KEY

- **Pre 1919** (purple)
- **1919 - 1939** (light blue)
- **1939 - 1982** (yellow)
- **1982 - 1998** (orange)
- **1989 - 2009** (red)

N   0   2km

Built Period by LSOA (years)

Source: Historic England building age data and VOA Dwelling age data

This map shows the period in which the majority of buildings in each island were built, and gives a clear picture of residential changes over time.

There are some clear clusters of pre 1919 buildings, which vary in type from Industrial to Flats, when compared with the Building Type map above. There is some clear correlation with some town centres and pre 1919 housing. The map shows the importance of topography and landscape; a crescent of the oldest and the newest development in the borough along the river valleys to the north and east of the borough.

The dominant housing was mostly built post 1919, but pre 1939, in the inter war years. This is in the context of the 'Homes for Heros' campaign which promised 500,000 new homes within three years, as well as the housing act of 1935 that introduced a room standard. This period saw a 52% increase in housing stock in the UK.

Much housing was also built post 1945, tending to cluster along the Thames and the River Cray. There was an effort to again increase the supply of housing to meet the post war demand, followed by a focus on the refurbishment of existing homes.

There has been very little new development after 1983.

Building Volume

KEY (m³)

- 20 - 180
- 180 - 330
- 330 - 420
- 420 - 620
- 620 - 870
- 870 - 1090
- 1090 - 4000
- >4000

N   0   2km
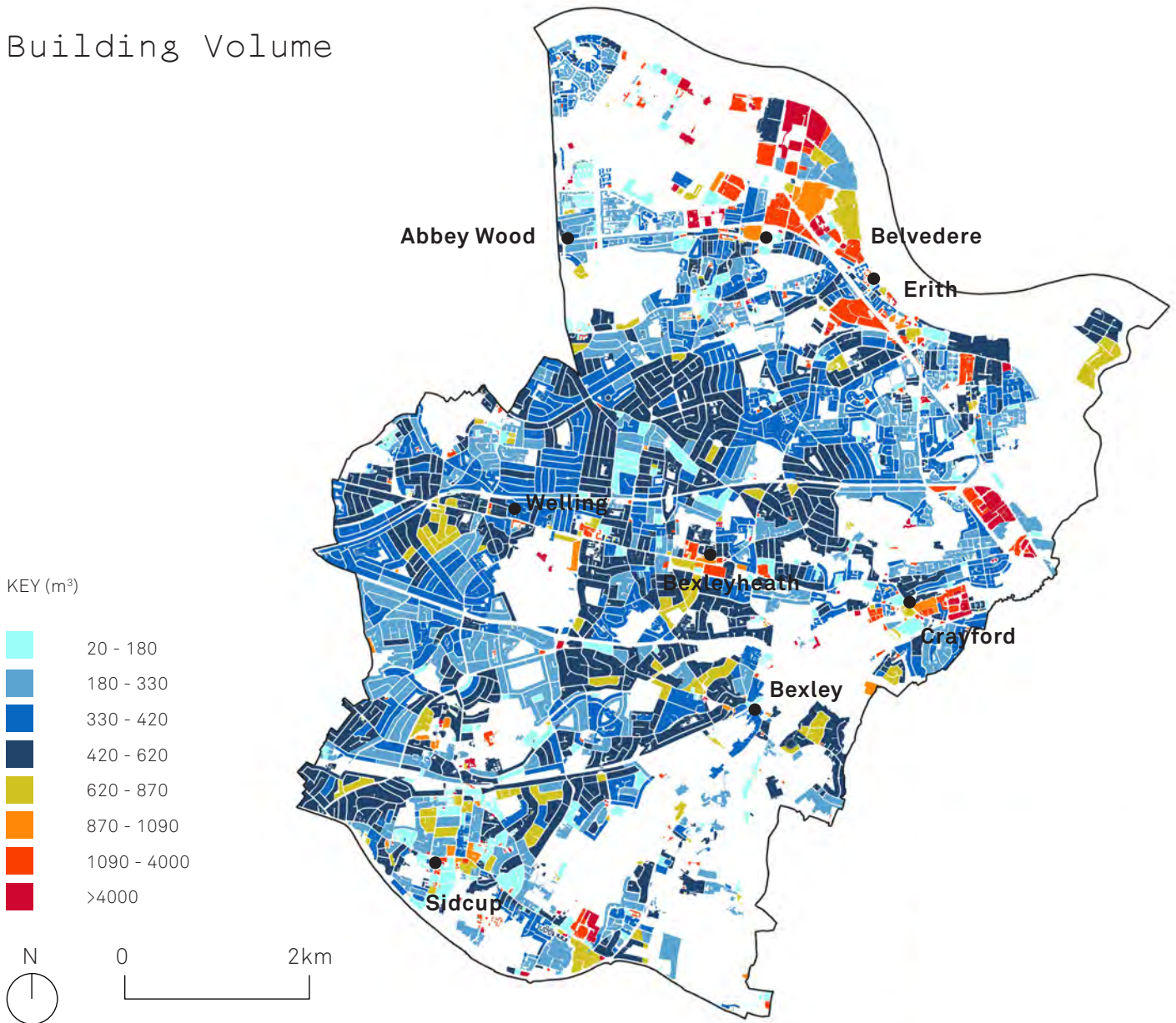
Building Volume by 'Island' (m3)
Source: Ordnance Survey MasterMap and
ONS 2011 Census data at LSOA

This map shows Building Volume which has been calculated using individual building heights and footprints. Each Island shows the dominant Building Volume of properties within the Island.
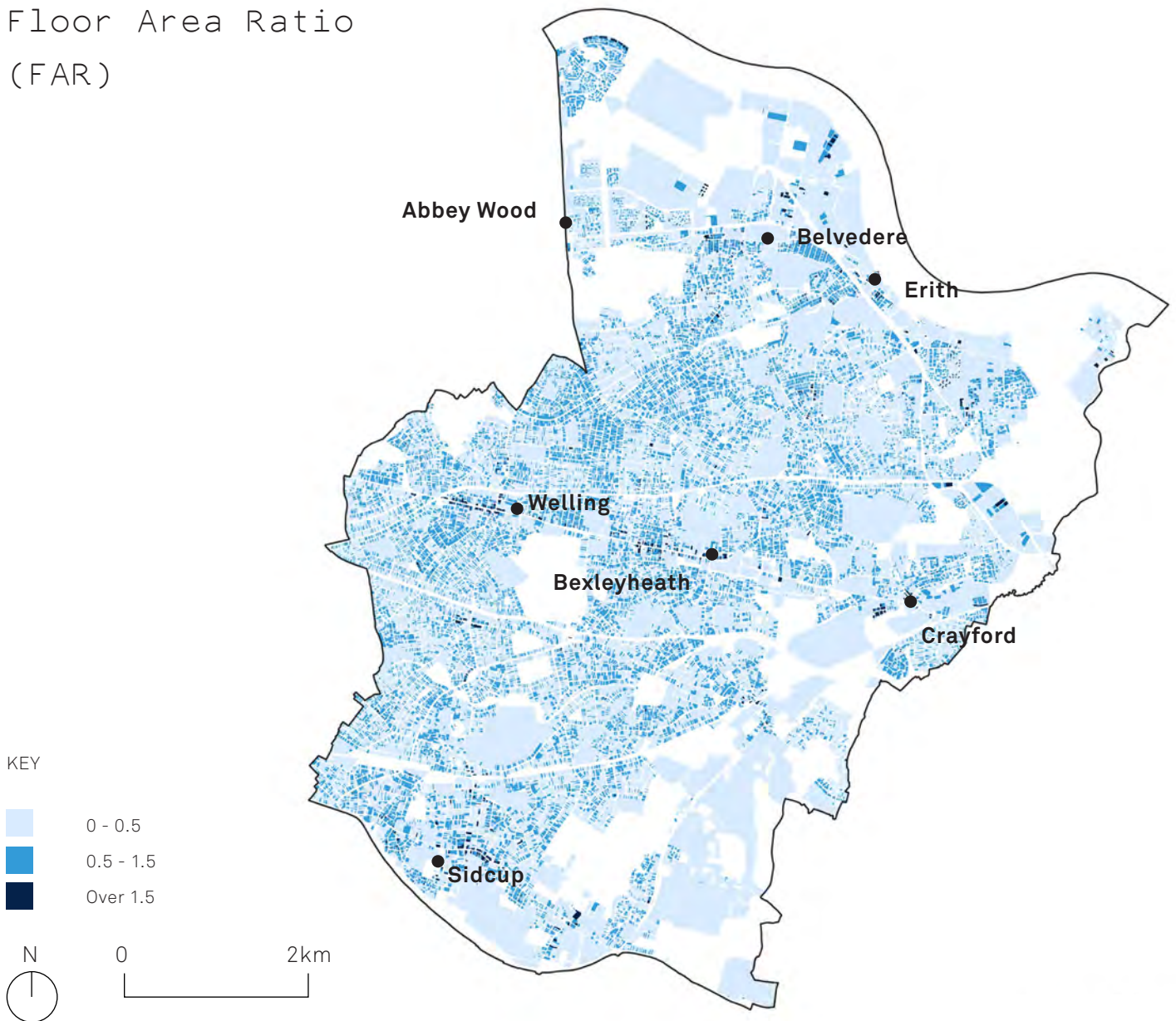
The Building Volume map shows a clear differentiation in the residential areas that previously just showed as a single category such as semi-detached, or built between 1919 and 1939.

Most notably there is a spatial difference within the dominant semi-detached building type category; not all semi-detached buildings are the same size

despite all being built in the same period. This is reflected in the understanding of the built history of the borough, and understanding of different builders. For example, Stevens and Small Stevens housing was built in the 1930's by Messrs Stevens, the local builders and developers who provided affordable homes.

The map also reflects the concentration of flats in town centres and of the larger industrial spaces in the north.

Floor Area Ratio (FAR)

Abbey Wood

Belvedere

Erith

Welling

Bexleyheath

Crayford

Sidcup

KEY

- 0 - 0.5
- 0.5 - 1.5
- Over 1.5

N

0   2km

FAR by Parcel Size
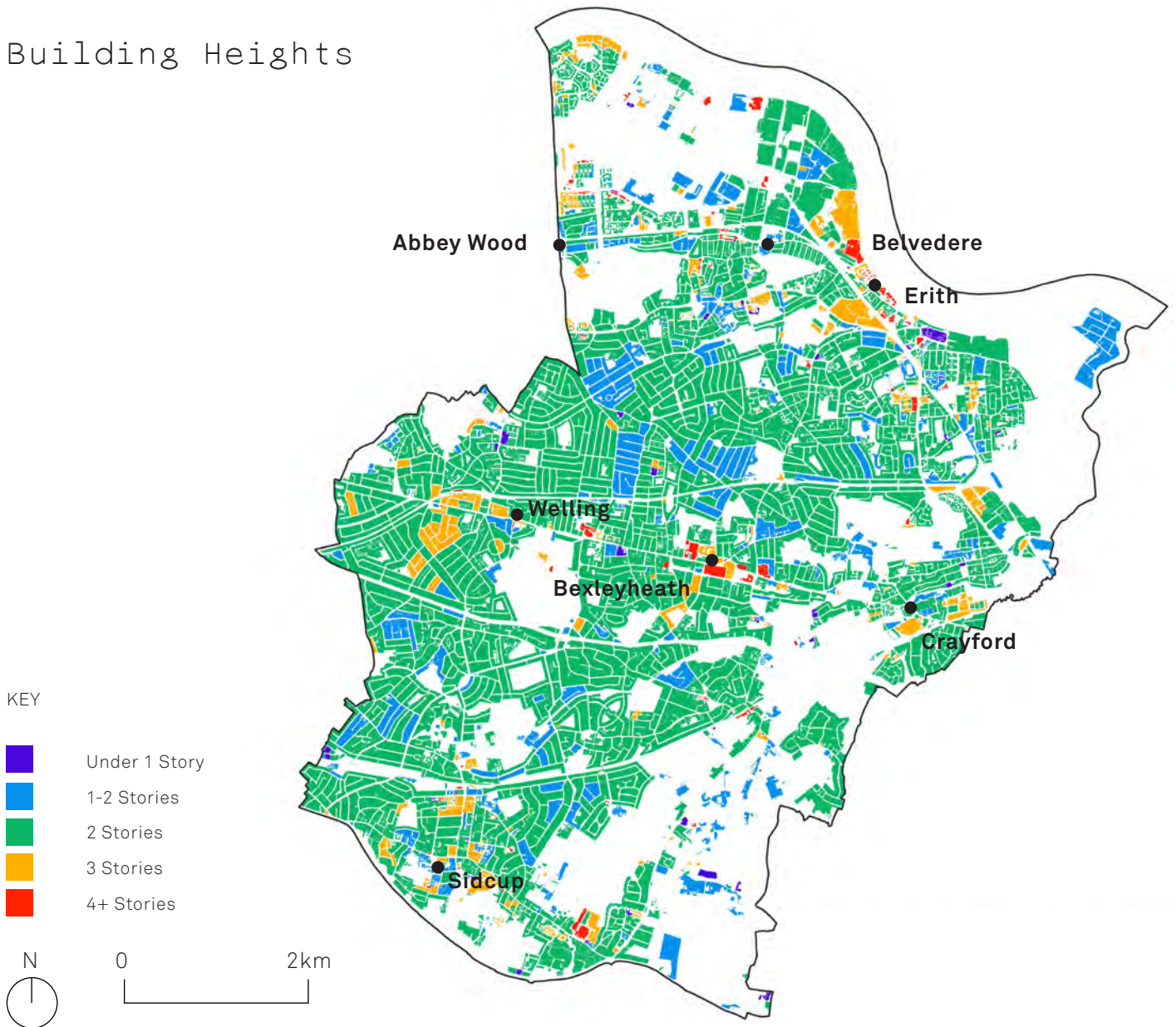Source: Ordnance Survey 100026316

The Floor Area Ratio map has been presented using a geography of individual parcels rather than Islands so as to not lose the detailed pattern presented above.

The map shows high density in the town centres and in the west of the borough, where there is little variation in Building Type as well as a higher slope in comparison to the lower lying areas of the borough in the north and eastern areas. Lower density occurs in the industrial areas in the north of the borough, and in the south in correlation with Green Belt land. Where there is residential fabric in the lower areas it tends to be quite dense.

The Floor Area Ratio map correlates well with the Urban Grain map, showing the fine grain/high density areas to be those in and around the town centres, as well as in the uniform residential areas in the centre and western areas of the borough. Although the map shows that areas of consistent building typologies or volume can still have varying FAR.

Large areas of low FAR tend to be uses such as schools or other buildings set in larger grounds, and thus why the FAR is very low.

Building Heights

KEY

- ■ Under 1 Story
- ■ 1-2 Stories
- ■ 2 Stories
- ■ 3 Stories
- ■ 4+ Stories

N   0   2km

Average Building Heights by 'Island' - Median Values
Source: Ordnance Survey MasterMap

This map shows building height by storey, which has been calculated by assuming that 1 storey is equal to 3 metres in height. Buildings showing as being under 1 storey are therefore garages or small sheds.
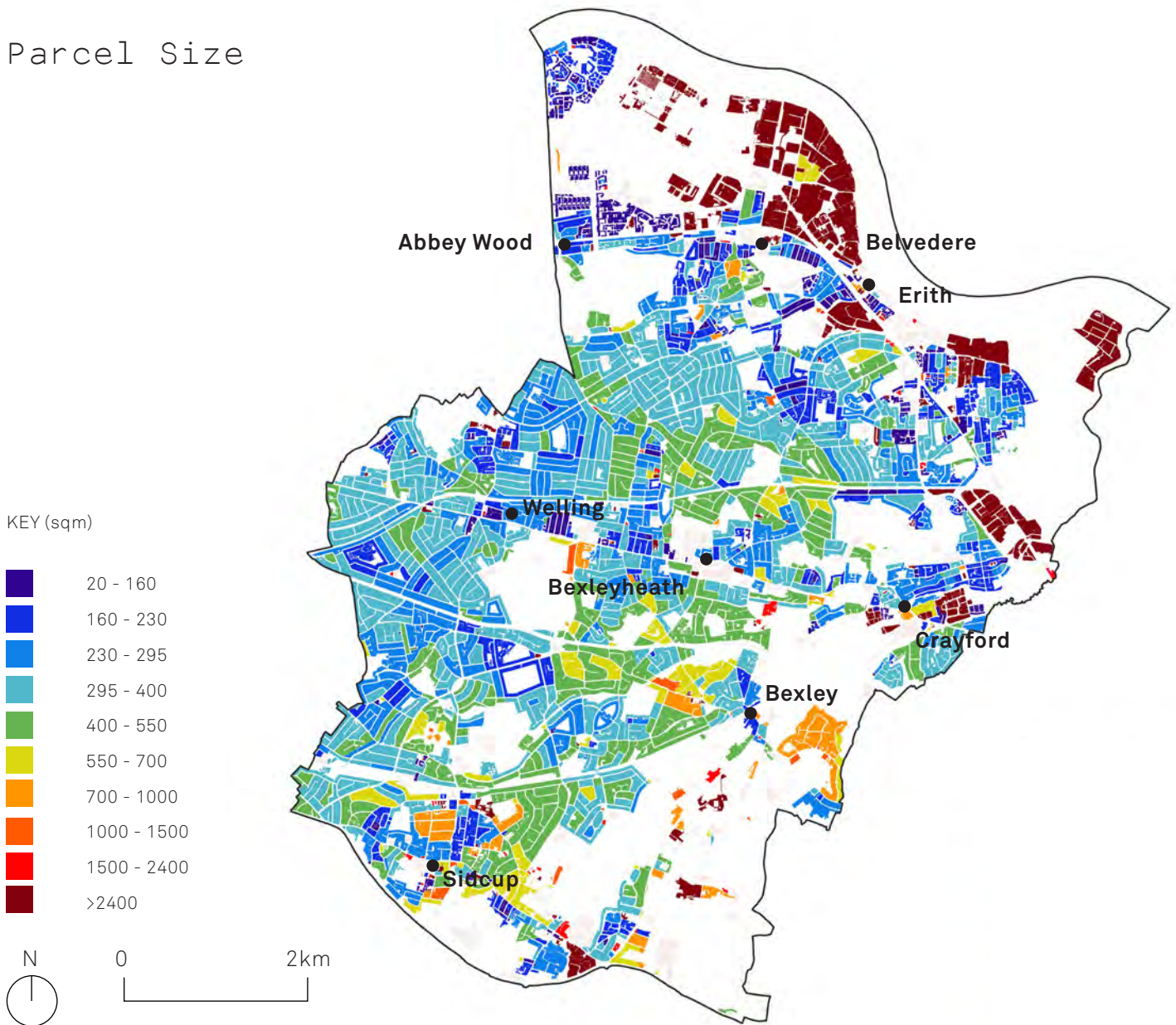
The borough is dominated by two story buildings, which reflects the dominance of Semi-Detached housing.

Scattered throughout the areas of two story buildings are buildings classified as either having 1 or 2 stories. This is an important finding as previously Bungalows were not apparent in the data.

Further desk research showed a clear presence of Bungalows within the 1-2 story islands, and in some cases they were the dominant typology.

There is a clear presence of 3 and 4+ story buildings in the densely populated town centres, that are dominated by flats. There are buildings with 4 or more stories in each town centre apart from Crayford. Welling also has a very small number of 4+ storey buildings.

Parcel Size

KEY (sqm)

- 20 - 160
- 160 - 230
- 230 - 295
- 295 - 400
- 400 - 550
- 550 - 700
- 700 - 1000
- 1000 - 1500
- 1500 - 2400
- >2400

N   0   2km

Land Parcel Size - Median Values, by 'Island' (sqm)
Source: Ordnance Survey MasterMap, Land Registry parcels and
Industrial Land Audit

Data for Industrial building Parcel sizes was
incorporated from the Industrial Land Audit and its
mostly in the highest category of over 1000 sqm.

This map shows a clear dominant presence of medium
land parcels (295-400sqm) outside of the town centres,
and especially in the north of the borough. There is a high
variations in Parcel Size in and around the town centres
of Sidcup and Bexley.

PTAL

KEY

■	0
■	1a
■	1b
■	2
■	3
■	4
■	5
■	6a

N   0   2km
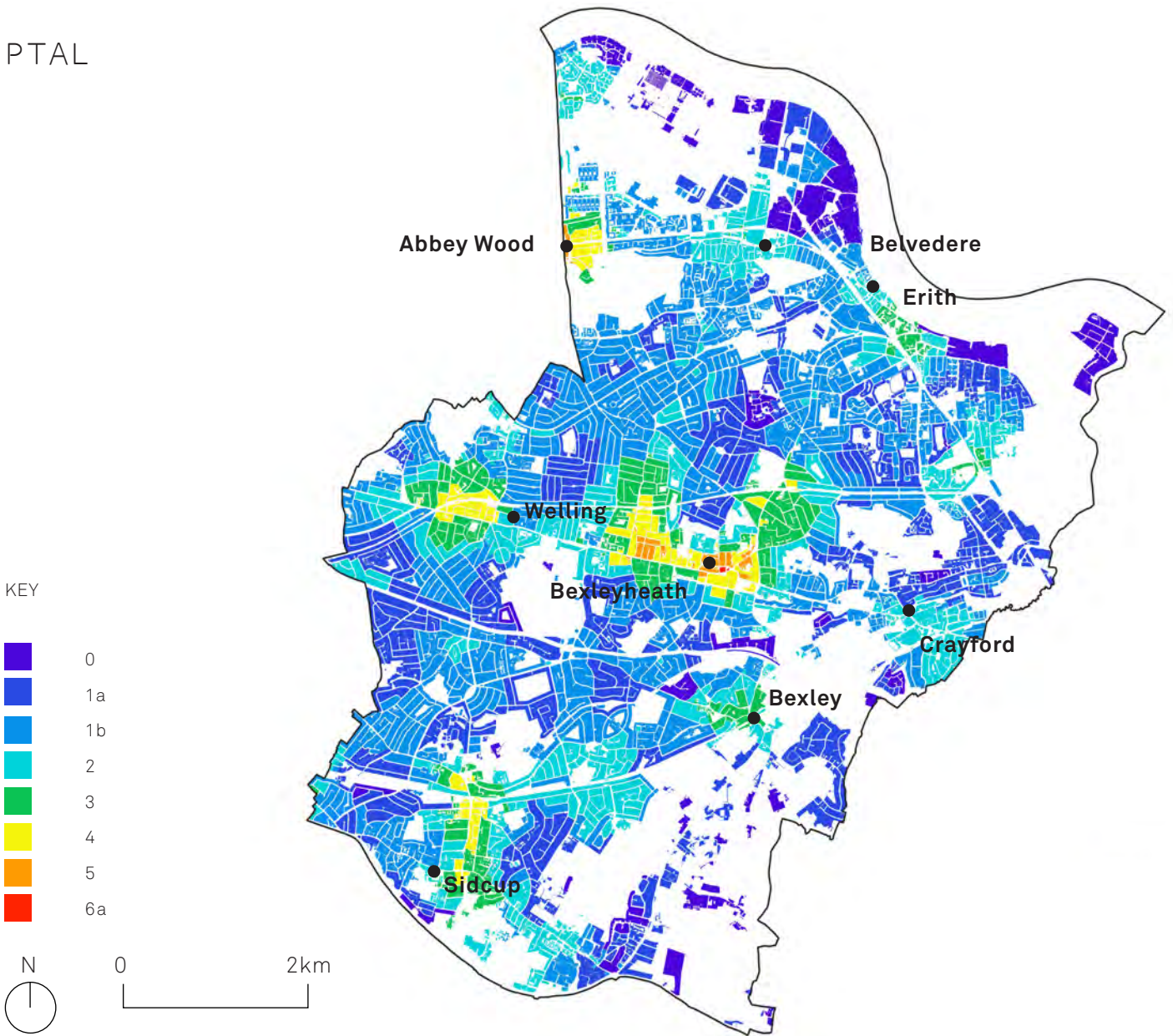
Public Transport Accessibility Level (PTAL), by 'Island'
Source: TfL WebCAT

As a whole the borough has a very low PTAL level in comparison to boroughs in central London.

There is a higher PTAL level within the town centres, with a very low PTAL level outside the town centre boundaries. Significantly there is only 1 small island with the highest PTAL rating of 6a, in the centre of Bexleyheath. The highest PTAL rating in all other town centres is 4, with Erith and Crayford reaching only 3 and 2 respectively.

Despite there being stations in most town centres, this shows that trains run relatively infrequently to this borough, and there is a distinct lack of frequent bus service compared to more densely populated inner London boroughs.

Ground Height

KEY

- 0 - 10
- 10 - 24
- 24 - 37
- 37 - 47
- 47 - 57
- 57 - 81

N

0   2km
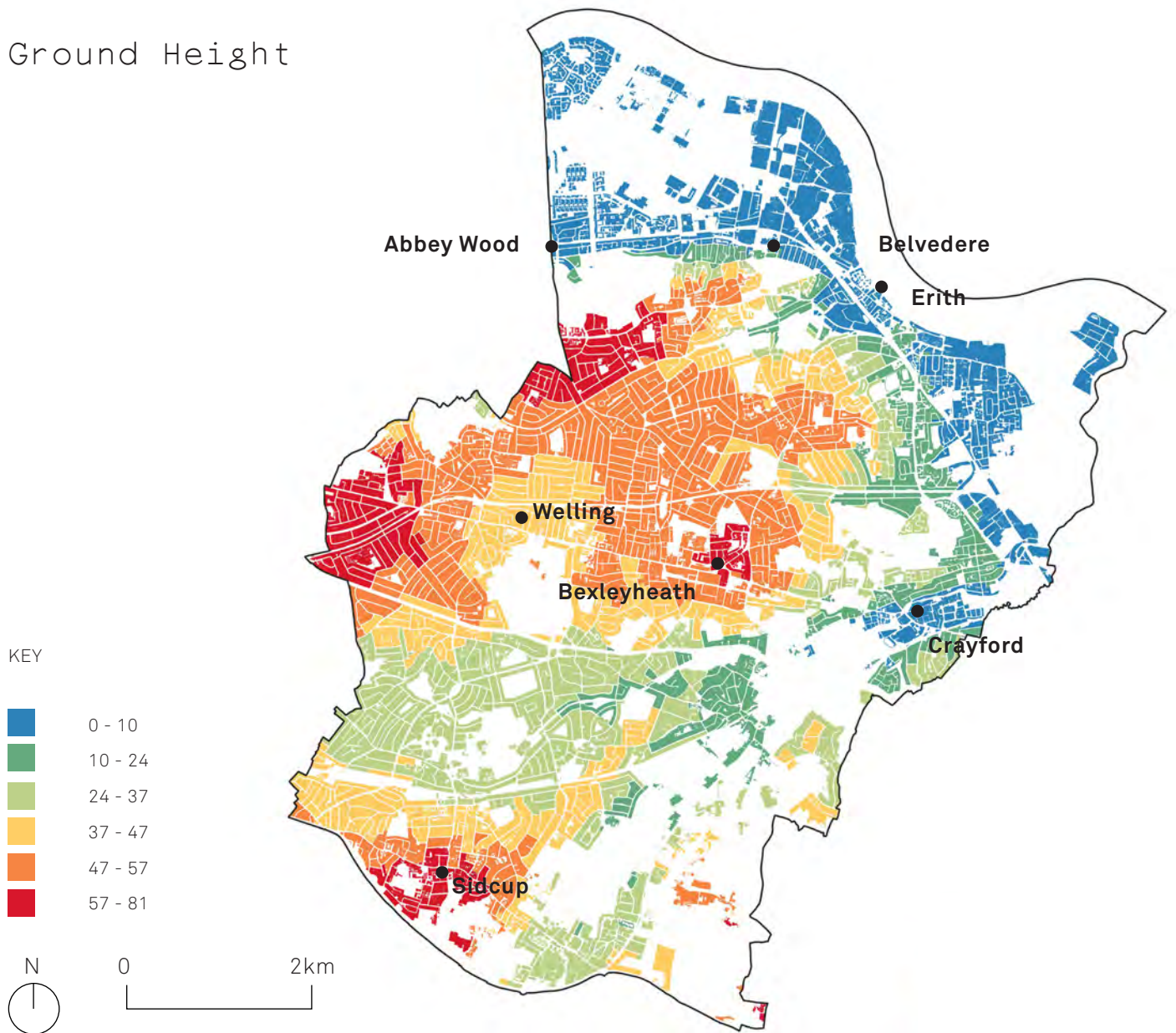
Terrain Elevation (m above MSL), by 'Island'
Source: Environment Agency LiDAR

The Ground Height map shows that the industrial areas in the north clustered around the Thames are the lower points, and that points in the south and west are the highest. The low lying ground clearly follows the Thames, and then the River Cray around the edge of the borough, as expected.

The map shows the steep areas to be less developed; parks and woodland are often shown as being situated in areas on the map where colour changes over a short distance. Residential development has happened in areas that are flattest but also higher areas in the west been developed extensively.
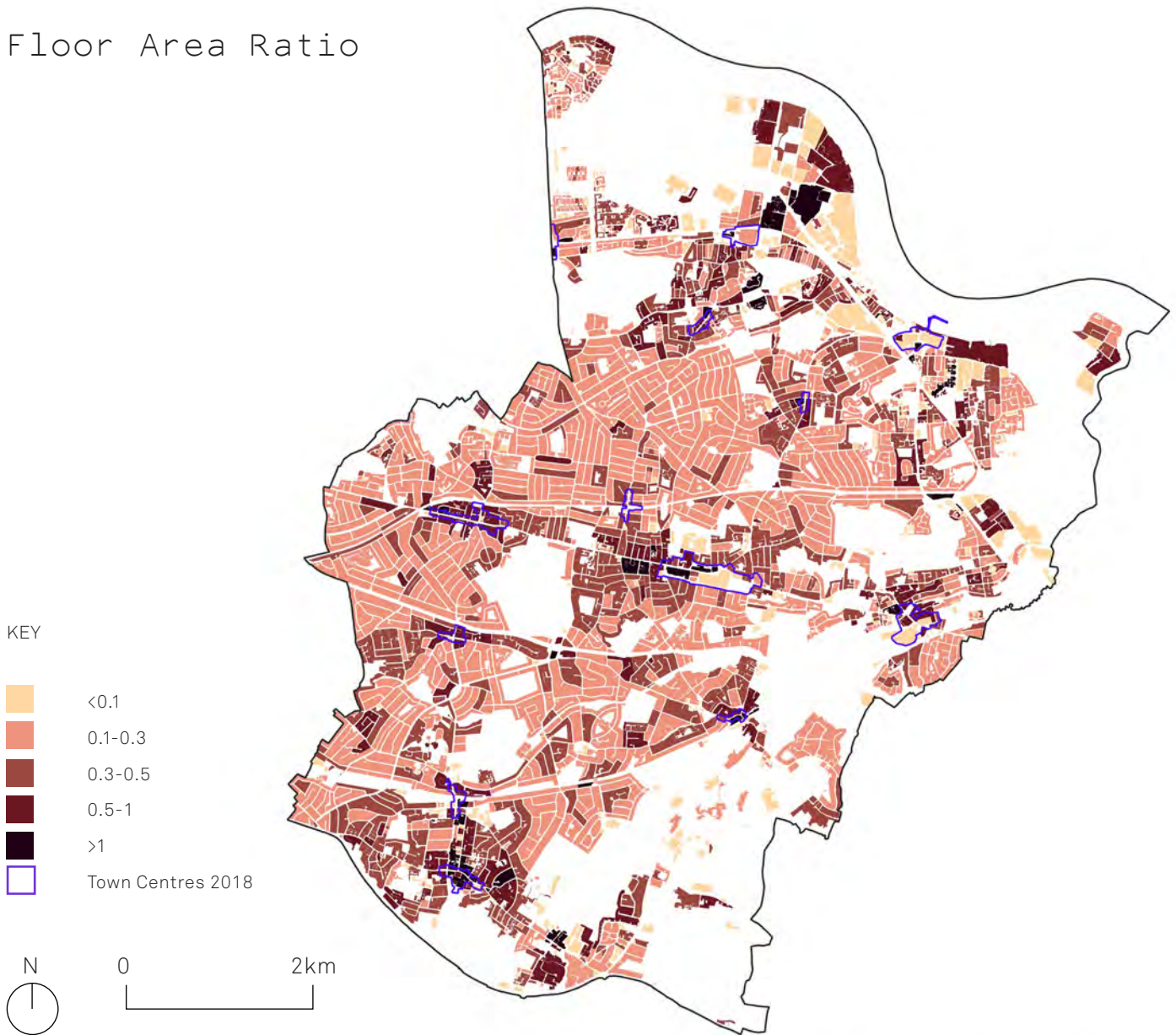
VARIATION MAPS

Introduction

Variation maps have been produced for four key metrics, for which variation mapping could be undertaken.

The maps below show the amount of variation within each Island for each characteristic, in order to give meaning to the Island data mapped previously. This was done by calculating and mapping the standard deviation within each island in the dataset relevant to the specific metric for which parcel-level data was available. Four relevant characteristics are presented; Floor Area Ratio, Building Volume, Parcel Area and Building Height.

This exercise has been used to identify areas of the borough that are cohesive or homogeneous in regard to the selected data sets, but also to highlight some areas with high levels of difference, where typological mapping could risk over-simplifying or missing out morphological characteristics, especially outside of the town centres where less variation has been observed.

Conclusively the maps below show that by mapping the median values by island data, this report gives an overall accurate picture of the morphology of the borough. The levels of variation in each map are predominantly low. In instances of high variation within an Island, the dominant data set identified in Island mapping is still accurate, despite the presence of another characteristic. There are no characteristics that have been identified by the variation mapping that have not been presented in alternative Islands in which they show a dominance.
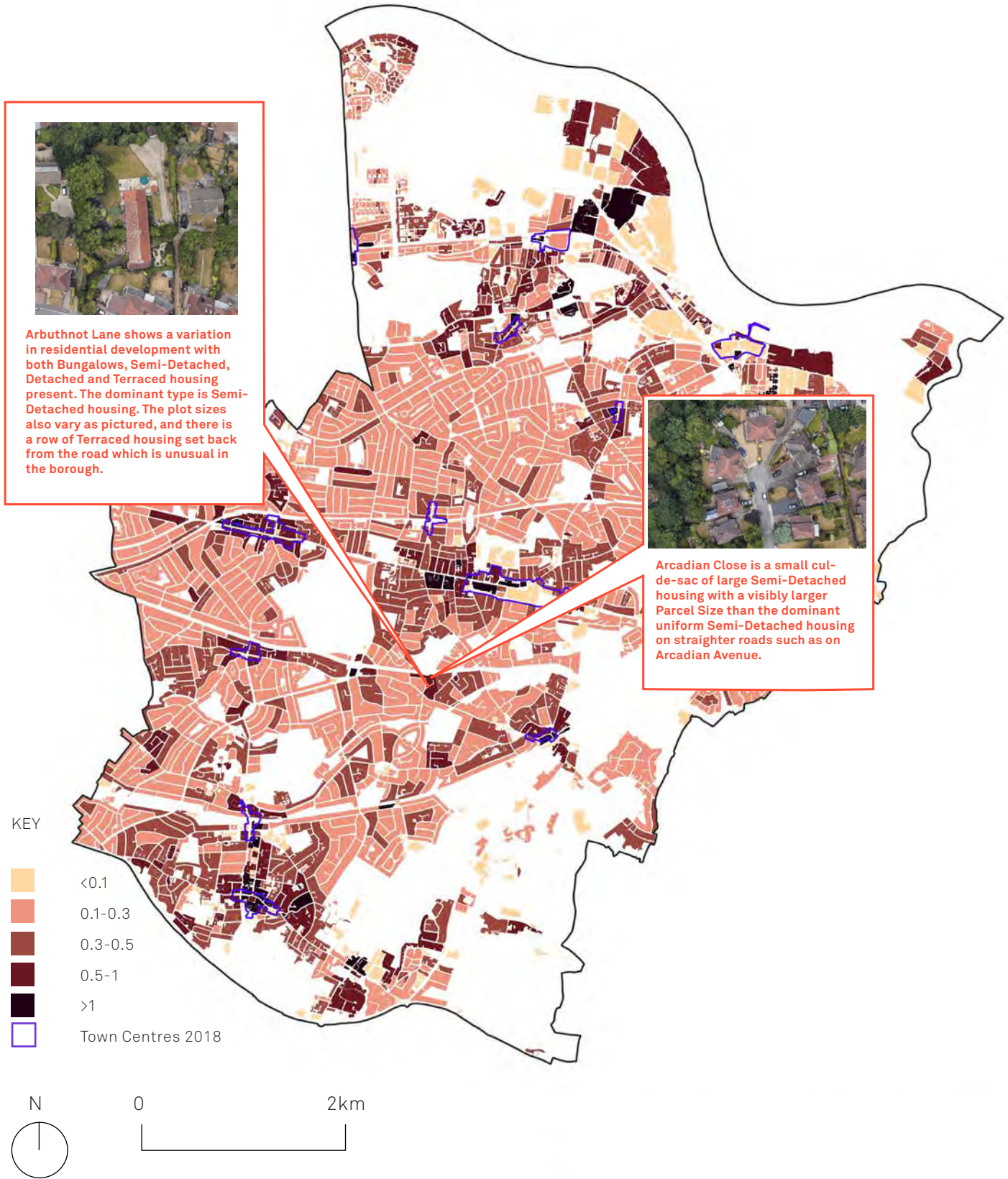
Floor Area Ratio

KEY

<0.1
0.1-0.3
0.3-0.5
0.5-1
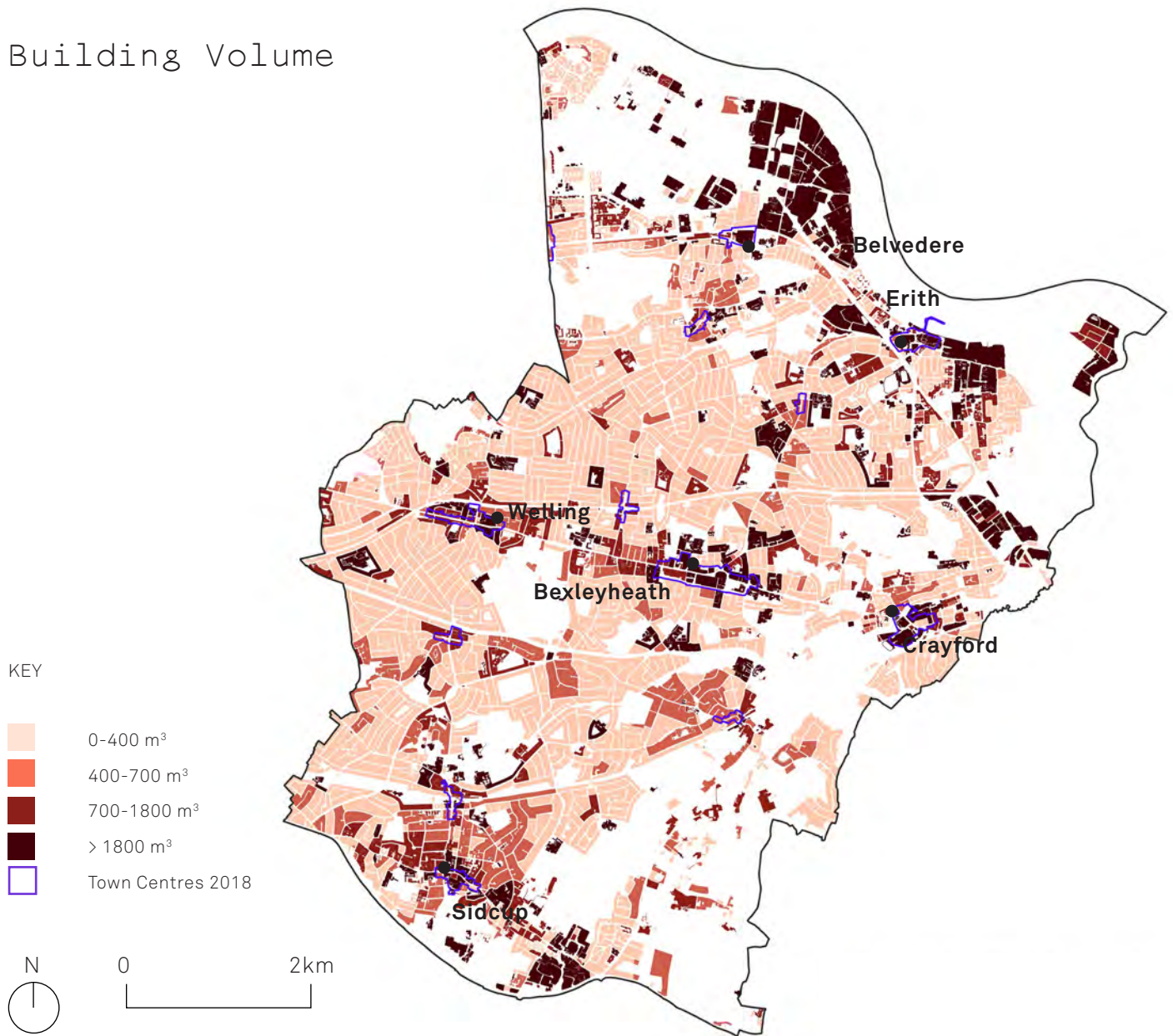>1
Town Centres 2018

N   0   2km

The highest variations in this map are in the town centres, as well as in the large Industrial area in the north of the borough. FAR varies in the Industrial areas because the Building Volumes vary considerably between 180 and >4000 m^3. This is also likely true for the town centres, which have the same variation in Building Volume. In Sidcup particularly the Parcel Size also varies considerably between 230-1500 m^2. An Island with lower variation has been examined, to show the reason for variation when extreme data sets such as schools or varied building volumes are not present. In the case of Arbuthnot Lane, building type is quite varied despite having a dominance of Semi-Detached housing, and

a radial arrangement of properties around a cul-de-sac gives a large Parcel Size for a small number of the Semi-Detached housing within the parcel, in contrast to the dominant smaller Parcel Sizes along the straight road.
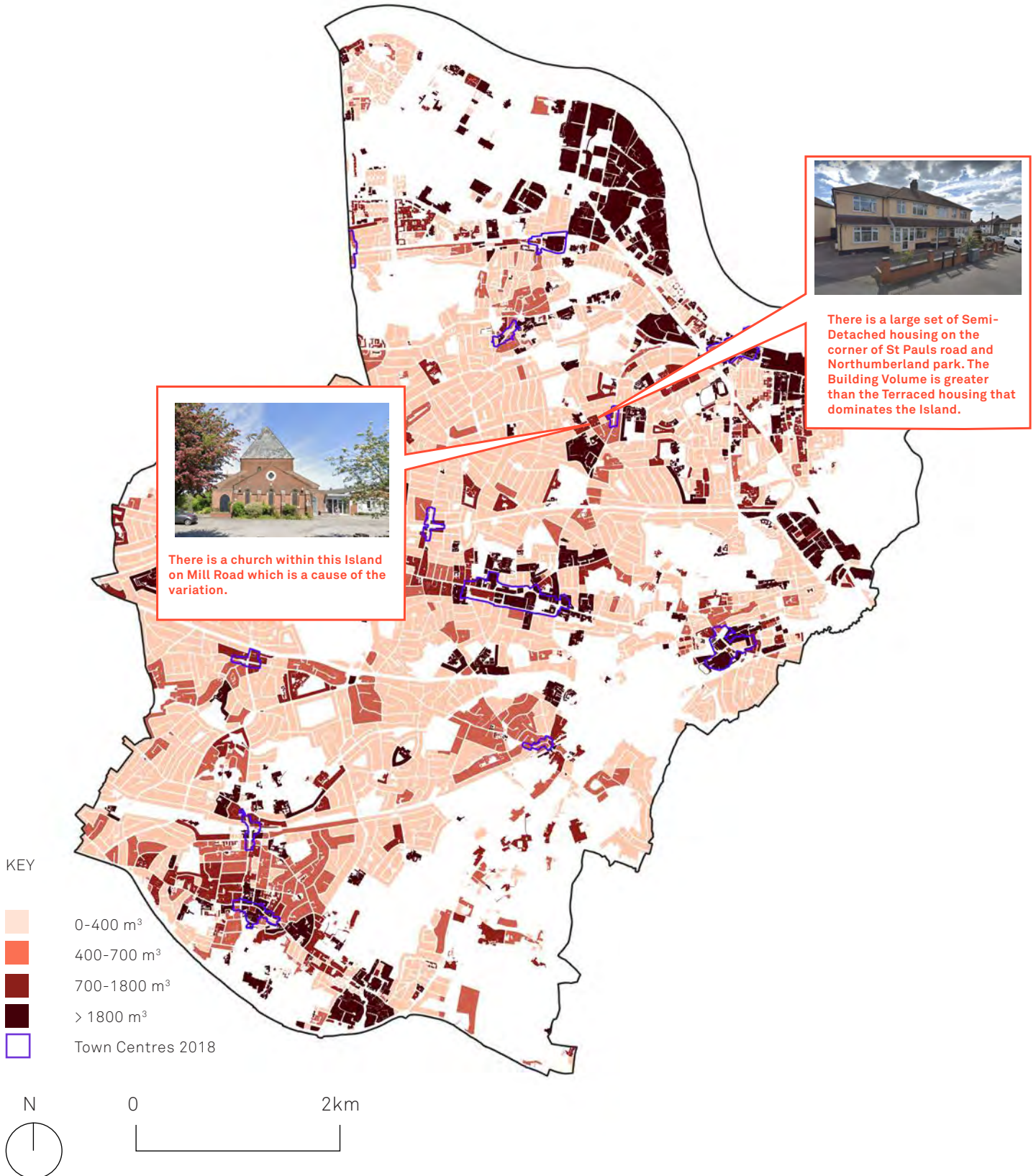
Floor Area Ratio: Arbuthnot Lane

Arbuthnot Lane shows a variation in residential development with both Bungalows, Semi-Detached, Detached and Terraced housing present. The dominant type is Semi-Detached housing. The plot sizes also vary as pictured, and there is a row of Terraced housing set back from the road which is unusual in the borough.

Arcadian Close is a small cul-de-sac of large Semi-Detached housing with a visibly larger Parcel Size than the dominant uniform Semi-Detached housing on straighter roads such as on Arcadian Avenue.

KEY

▨	<0.1
▨	0.1-0.3
▨	0.3-0.5
▨	0.5-1
▨	>1
▭	Town Centres 2018

N

0   2km

Building Volume

KEY

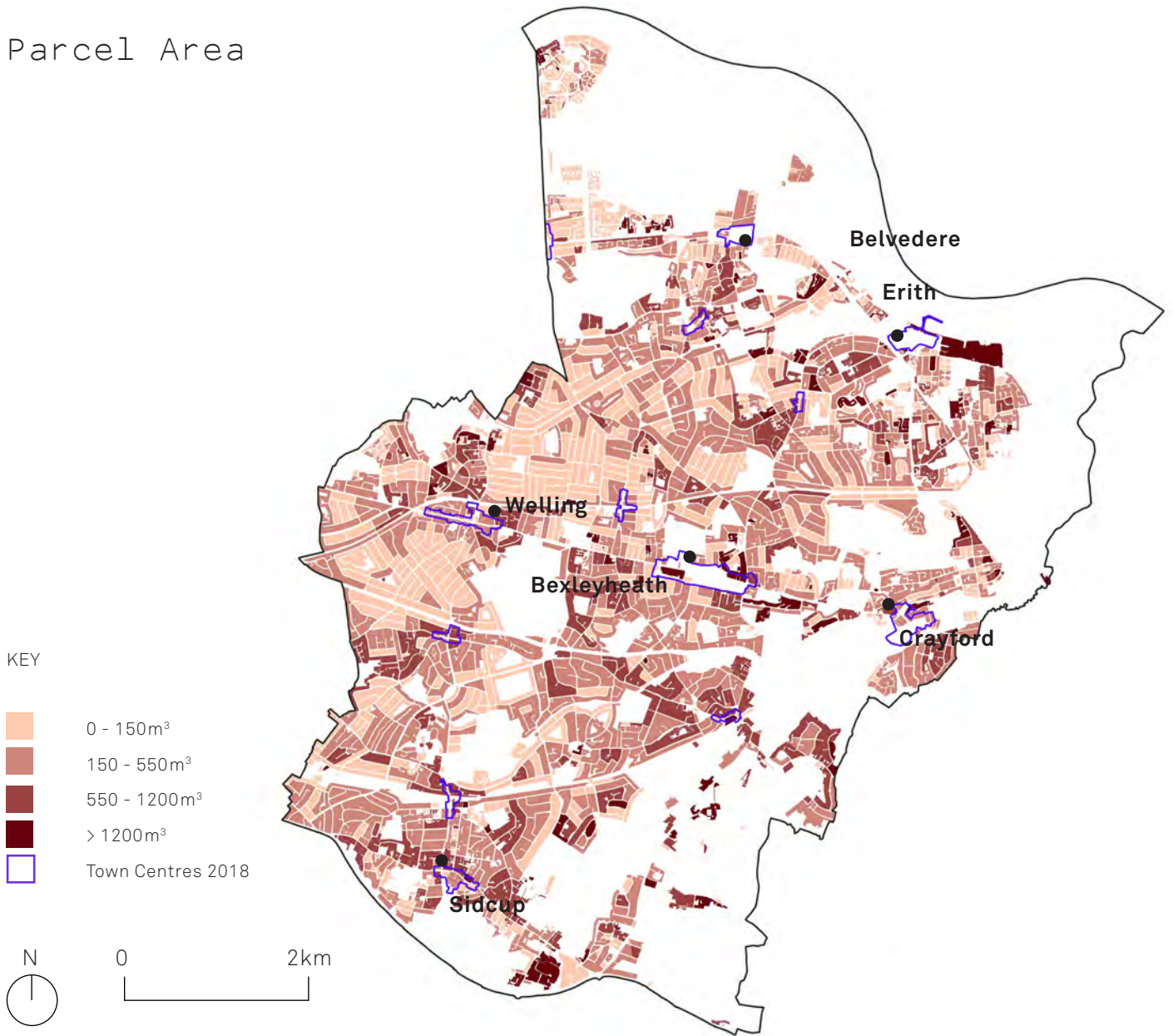|	
▢	0-400 m³
▢	400-700 m³
▢	700-1800 m³
▢	> 1800 m³
▢	Town Centres 2018

N   0   2km

The highest variations in this map predominantly exist within the town centre areas, however there are a few mid to high level areas of variation scattered throughout the residential areas. When examined, these areas show that the high variation is caused by a small presence of the opposing extreme data set. In the case of Mill Road, the Building Type map shows that the dominant type in the area is Terraced housing, yet the presence of a Church and a large set of Semi-Detached housing gives a high Building Volume variation in this area.
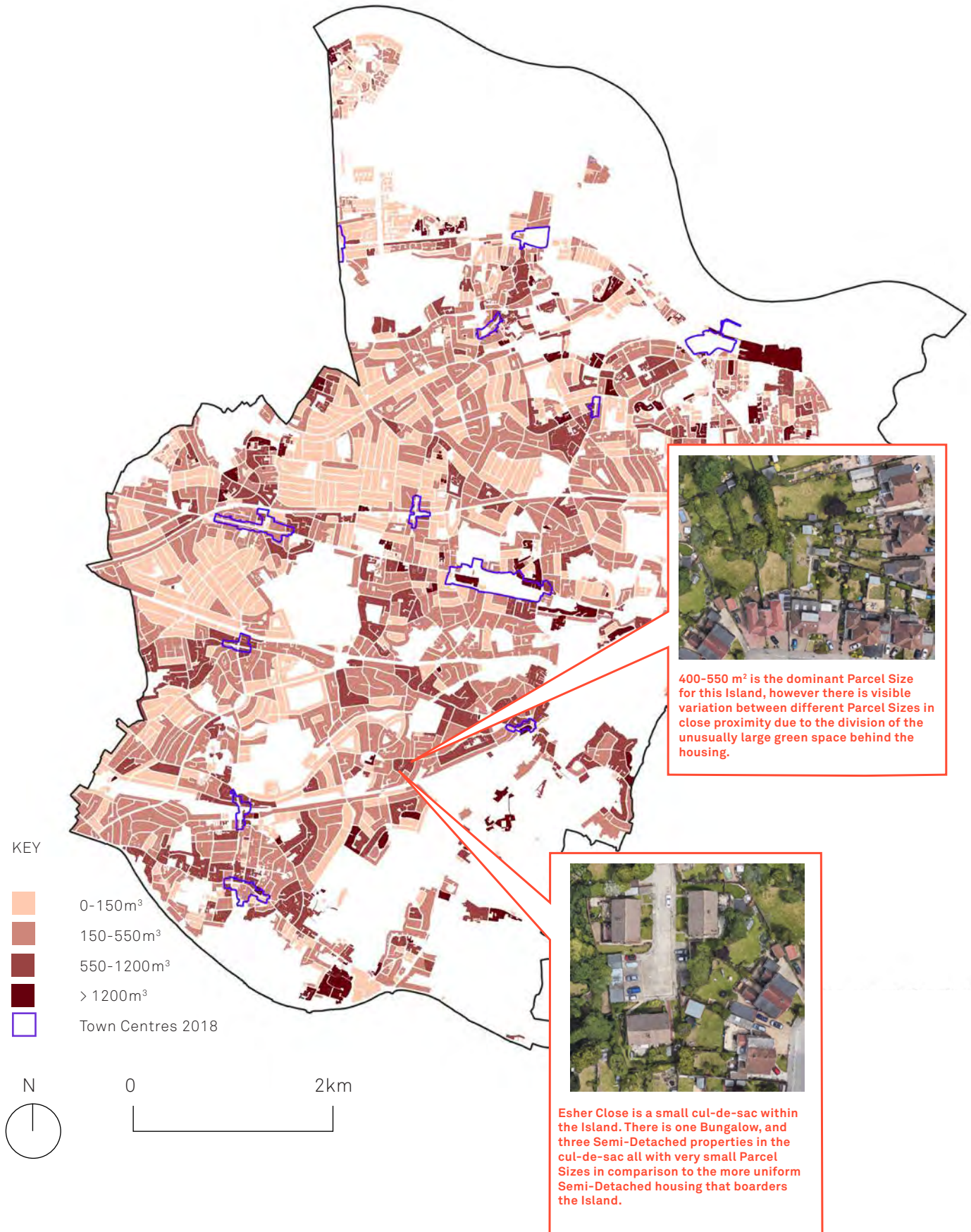
Building Volume: Mill Road

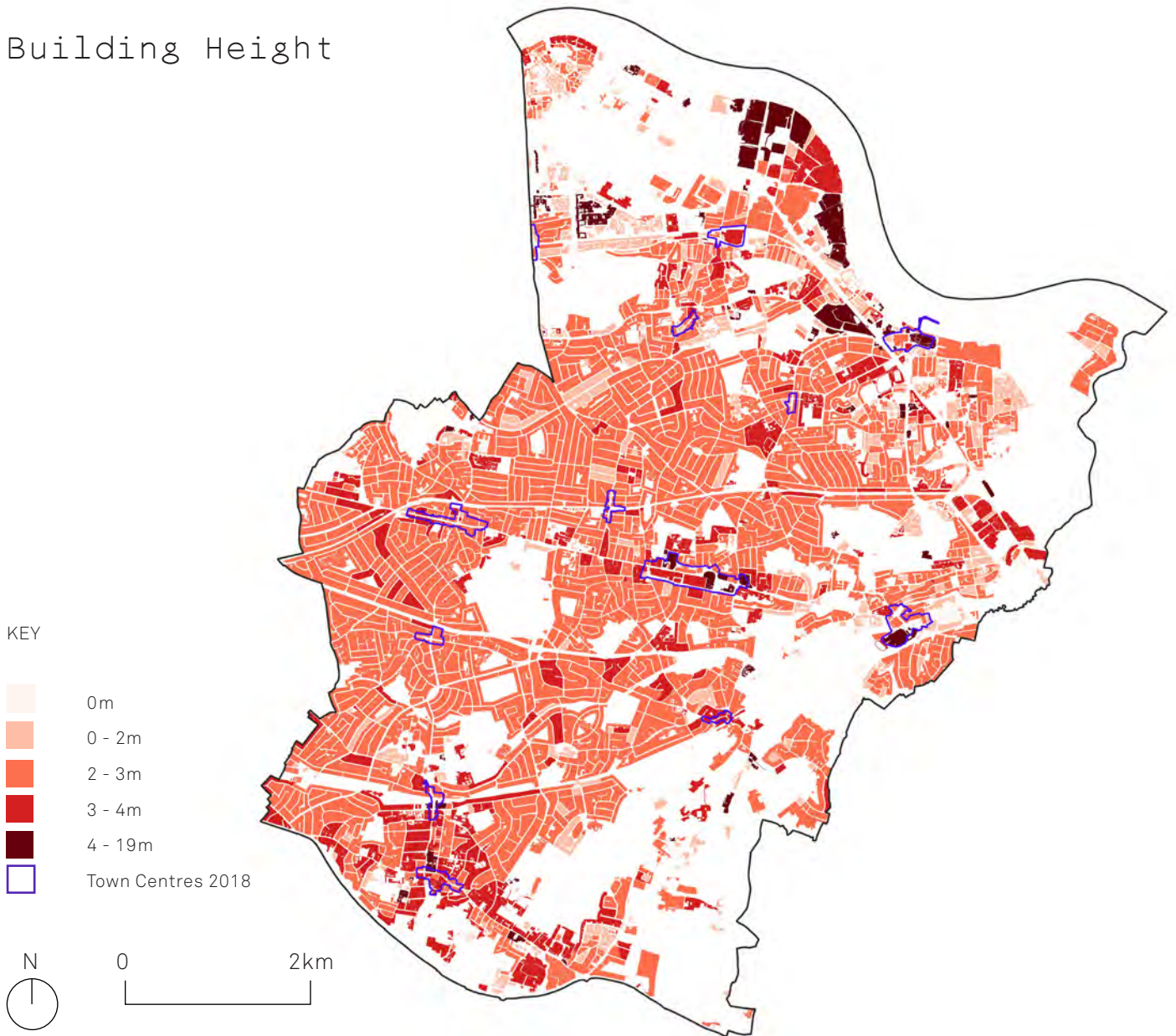There is a large set of Semi-Detached housing on the corner of St Pauls road and Northumberland park. The Building Volume is greater than the Terraced housing that dominates the Island.

There is a church within this Island on Mill Road which is a cause of the variation.

KEY

	0-400 m³
	400-700 m³
	700-1800 m³
	> 1800 m³
	Town Centres 2018

N

0   2km

Parcel Area

KEY

▢	0 - 150m³
▢	150 - 550m³
▢	550 - 1200m³
▢	> 1200m³
▢	Town Centres 2018

N   0   2km

There is considerable variation shown here, with the highest variations predominantly within the town centres. There is a high level of variation to the east of Erith, which is a large supermarket situated next to Industrial land. The high variation south of Sidcup is a large factory and Industrial area. An Island with a smaller variation level has been examined and pictured.

Parcel Area: Valentine Avenue

400-550 m² is the dominant Parcel Size for this Island, however there is visible variation between different Parcel Sizes in close proximity due to the division of the unusually large green space behind the housing.

Esher Close is a small cul-de-sac within the Island. There is one Bungalow, and three Semi-Detached properties in the cul-de-sac all with very small Parcel Sizes in comparison to the more uniform Semi-Detached housing that boarders the Island.

KEY

- 0-150m³
- 150-550m³
- 550-1200m³
- > 1200m³
- Town Centres 2018

N

0   2km

Building Height

KEY

0m
0 - 2m
2 - 3m
3 - 4m
4 - 19m
Town Centres 2018

N   0   2km

The Building Height maps shows relatively high levels of variation. This is because building height is less regulated, with structures like chimneys or other permitted developments such as roof extensions to Bungalows, often creating variance within a characteristic that is otherwise very uniform.

Overleaf is an examination of an Island showing the highest levels of variation in the borough. The island shows a dominant data set, industrial buildings, that is mixed with instances of terraced housing, thereby creating high variations in the data.

The variation for this particular island correlates with the same island on the Building volume variation map, as expected with large industrial buildings being adjacent to small terraced housing.

Building Height: Friday Road

Friday Road shows the existence of Semi-Detached housing that appears to have only 2 stories, but with possibility to extend living space into the roof.

The Building Height map lists this island as having a dominant story level of 3. Sandcliffe Road actually shows that Flats exist in the area that are over 3 stories, as well as tall industrial buildings that despite their height could have just 1 or 2 stories.

Along the A206 road there is a clear presence of industrial buildings, of various heights which will contribute to the high level of variance in this island.

KEY

- 0m
- 0 - 2m
- 2 - 3m
- 3 - 4m
- 4 - 19m
- Town Centres 2018

N

0　　　　　2km

TYPOLOGY EXPLORATION

Introduction
The following four maps present a series of possible typologies that could be used to map the urban morphology of Bexley. These were created by combining two Island data maps. It was quickly established that the Building Type characteristic was the most effective for the purpose of this study, and was therefore chosen as the common data set to be combined with others of interest.

In terms of data reliability, the maps include the LSOA level information about dominating building type, masked by island polygons showing the corresponding data set. As the island polygons do not follow the LSOA boundaries, the dominating building types illustrated in the map might not always reflect the island-level dominating typology.

Four Typologies
— Big/Small/Old/New
This map excludes Building Type, in order to confirm the necessity of including Building Type as a characteristic in the final typology. This map therefore shows Old and New (pre and post 1964) buildings along with the Building Volume. 1964 was established as a mid point date, as the nearest possible split to 1961 in which a new report was issued that set new standards for public housing. The map makes it very clear that the majority of the borough was built pre 1963 which means those houses may not abide by more contemporary space standards. It shows a good level of differentiation in size within residential areas, industrial areas and also the town centres. The major fault with this map is the lack of differentiation of building type and/ or land use.

— Building type + Built Period
This gives insight into stylistic differences, but it does not include any spatial understanding or qualities such as the size of the property, the FAR or the plot size. It may be possible to reference policy and housing space standards for each period to determine a spatial understanding of buildings. However a simple categorisation between pre- and post 1964 is unlikely to give a very robust or rich understanding of architectural style.
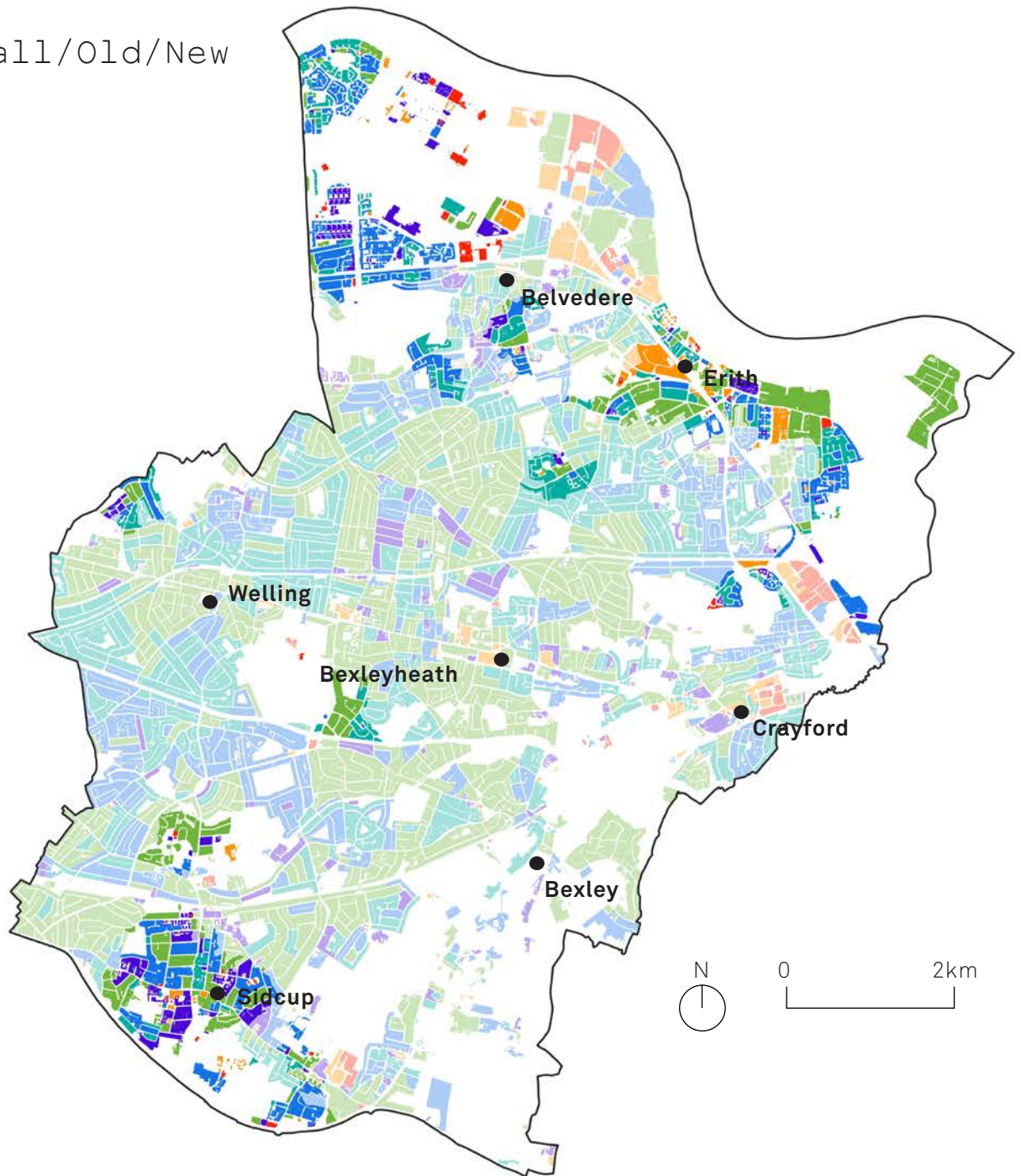
— Building Type + Volume
Spatially this is an interesting map. But the interest for this report is in the morphology of the borough rather than individual buildings, and this map provides less information about the possibility for intensification. It also does not take into account the plot size.

— Building Type + FAR
The difference between this map and Building Type by Building Volume is significant. It shows areas that are less densely built in a more compelling way as it takes into account the Plot Size as well as the Building Volume. It also shows a clear differentiation in the residential areas that in 'Type + Built period' map just showed as a single category, for example semi-detached built between 1919 - 1939 or industrial buildings built pre 1919. This differentiation is based on this typology combining information about the building (typology and volume) and the plot that it sits on (FAR). As such this describes both the quality of the street, as defined by buildings, and the grain behind the buildings, as defined by the plot.
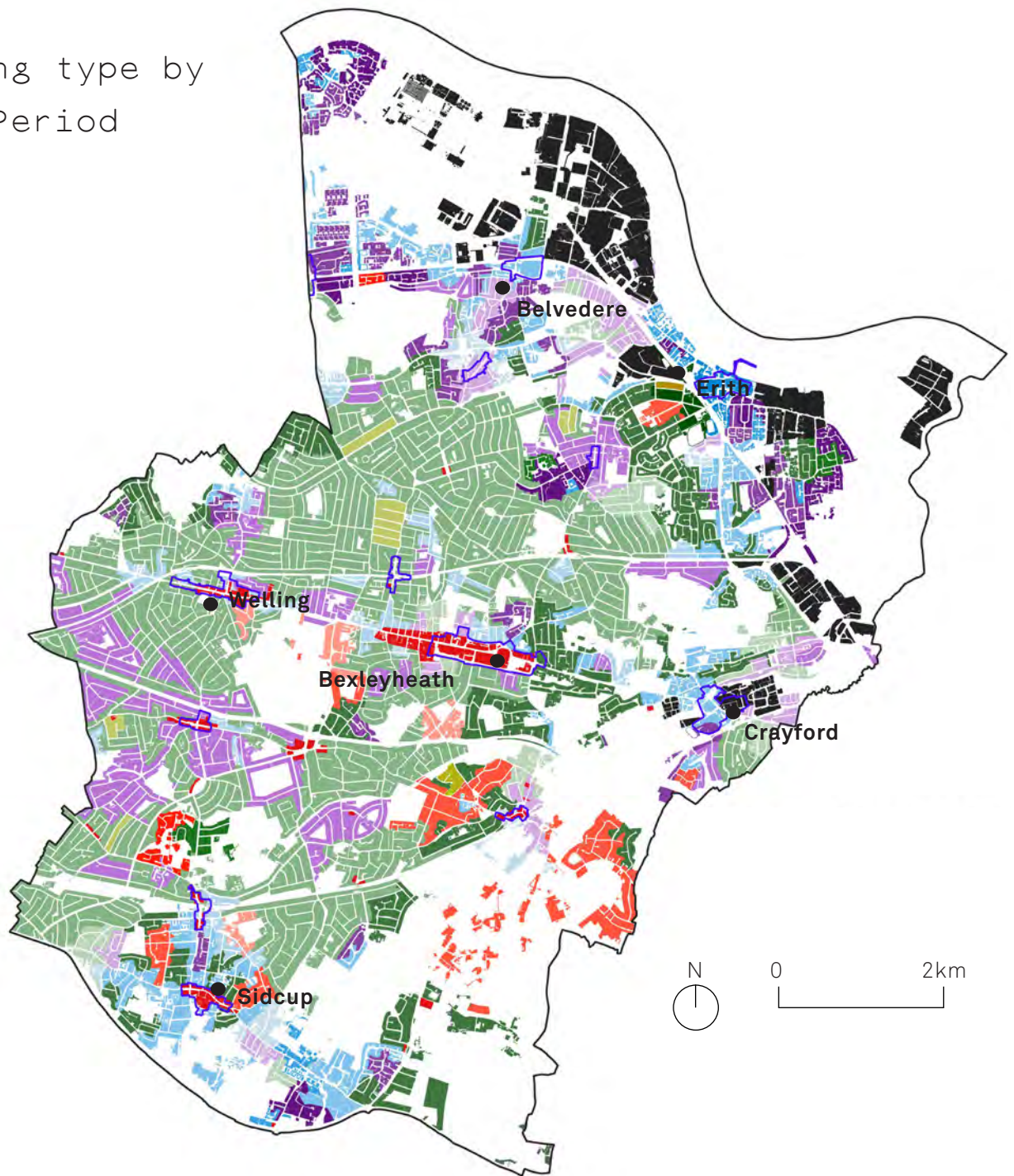
Big/Small/Old/New

KEY

Old (pre 1964)   New (post 1964)

		20 - 176 m³
		176 - 333 m³
		333 - 423 m³
		423 - 1092 m³
		1092 - 3991 m³
		3991 - 97046 m³

Building type by Built Period

Belvedere

Erith

Welling

Bexleyheath

Crayford

Sidcup

N

0   2km

KEY

Detached

	1919 - 1939
	1939 - 1983
	1983 - 1999

Flat

	Pre 1919
	1919 - 1939
	1939 - 1983
	1983 - 1999
	1999 - 2009

Semi-Detached

	Pre 1919
	1919 - 1939
	1939 - 1983
	1983 - 1999
	1999 - 2009

Terraced

	Pre 1919
	1919 - 1939
	1939 - 1983
	1983 - 1999

Bungalow

	1919 - 1939
	1939 - 1983
	1999 - 2009

Other

| | Commercial |
| | Industrial |

Building type by
Building Volume
(footprint * height)

Belvedere

Erith

Welling

Bexleyheath

Crayford

Sidcup

N   0   2km
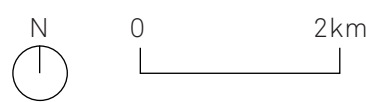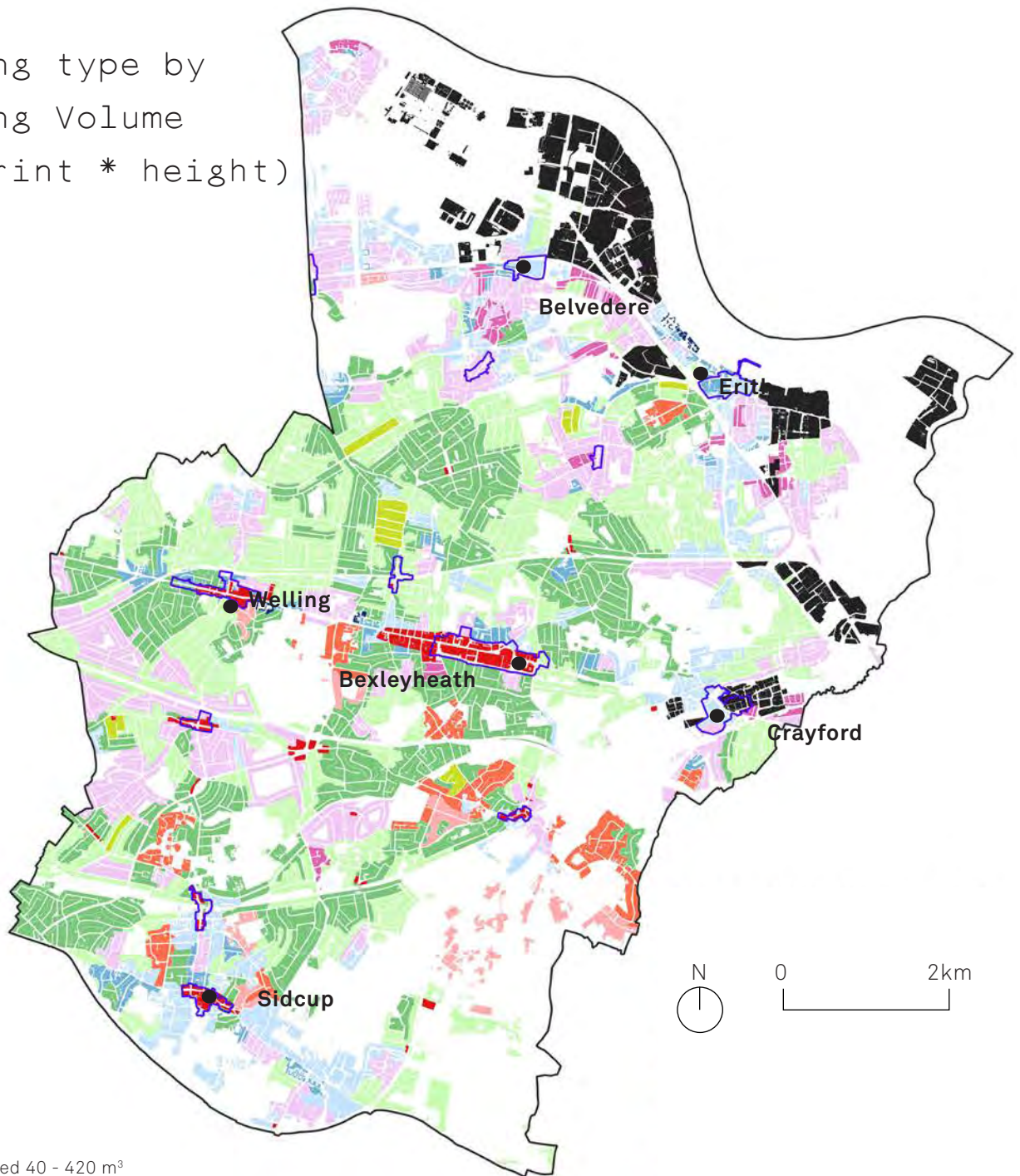
KEY

- Detached 40 - 420 m³
- Detached 420 - 1000 m³
- Flats 40 - 420 m³
- Flats 420 - 1000 m³
- Flats 1000 - 3000 m³
- Semi-Detached 40 - 420 m³
- Semi-Detached 420 - 1000 m³
- Terraced 40 - 420 m³
- Terraced 420 - 1000 m³
- Bungalow 40 - 420 m³
- Commercial
- Industrial

Building type by
Floor Area Ratio

Belvedere

Erith

Welling

Bexleyheath

Bexley

Crayford

Sidcup

N

0   2km
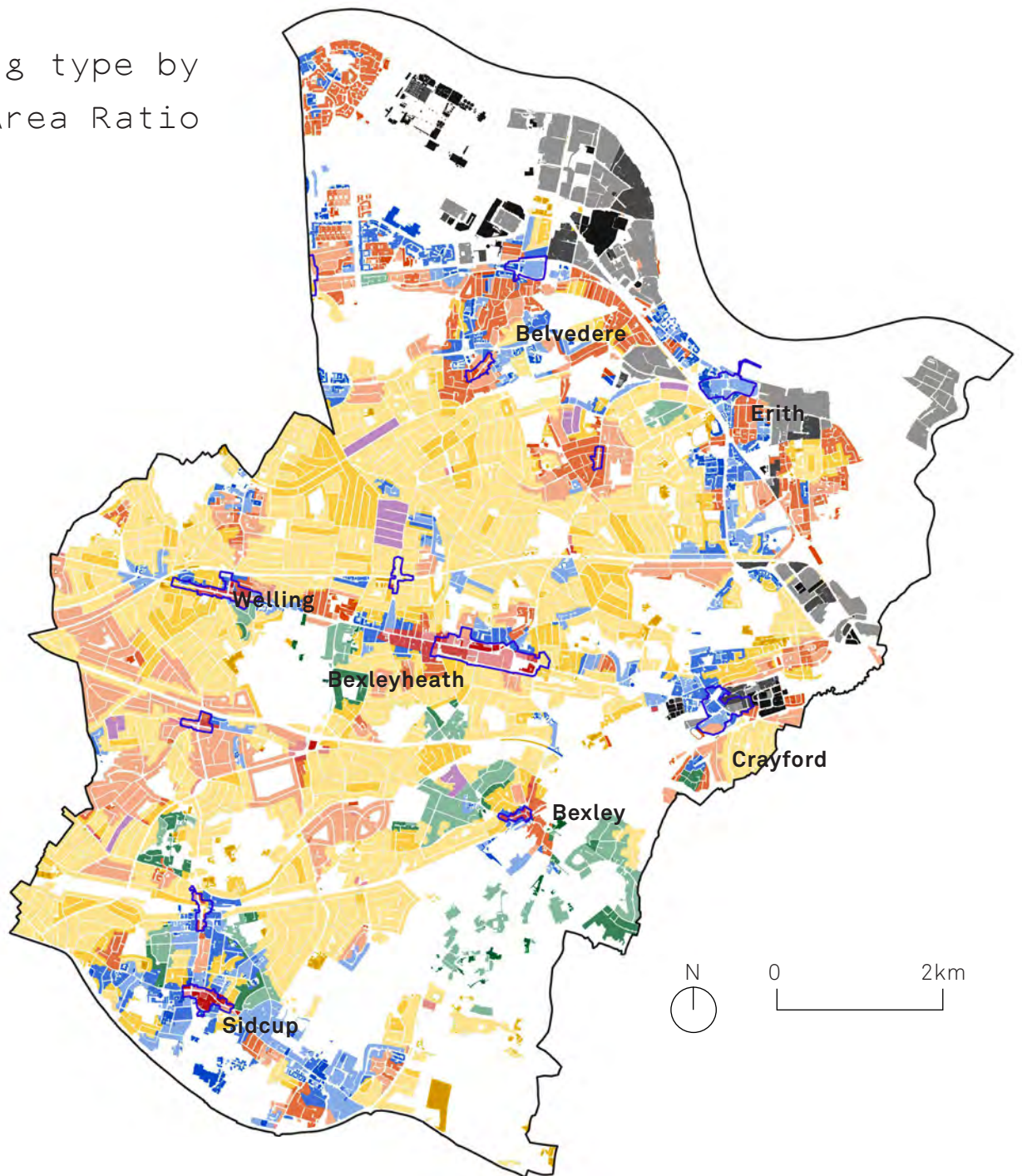
KEY

0 - 0.5	0.5 - 1.32	1.32 - 6.22

	Detached		Detached		Detached
	Flat		Flat		Flat
	Semi-Detached		Semi-Detached		Semi-Detached
	Terraced		Terraced		Terraced
	Bungalow		Bungalow		Bungalow
	Industrial		Industrial		Industrial
	Commercial		Commercial		Commercial
	Town Centre		Town Centre		Town Centre

BEXLEY'S URBAN TYPOLOGY

Building Type by Floor Area Ratio

Building Type + Floor Area Ratio was selected as the preferred typology structure to understand Bexley's urban morphology.

Building Type is integral in telling the story of the characteristics of the borough. It shows both commercial and industrial use, as well as the five different residential buildings and their prevalence throughout the borough. Typology is also important in determining how buildings have been adapted and extended, and the types of streets created by development.

FAR shows the relationship between the total amount of usable floor area that a building has, or has been permitted to have and the total area of the lot on which the building stands. A low FAR is indicative of sparse development, potentially with capacity for intensification, although it may also be associated with owner-occupier residential areas where development may be challenging to deliver. Conversely, a high FAR shows dense or urban construction. In the typology maps, FAR shows differentiation in residential areas as well as details of development limitations, which is interesting in understanding the possible intensification of housing in the borough.

The typology map has been adapted to give varying FAR boundaries for each building type. Each boundary was determined firstly by using the 'Jenks' system which presents the natural breaks in the data, and then confirmed using on-the-ground observations.

This chapter structure presents images of each characteristic within this typology, and gives a data table of typical values for each sub-characteristic.

As FAR does not necessarily show how many storeys a building has, Building Type works in conjunction to give some indication of this.

Building type by
Floor Area Ratio

KEY

Detached
- < 0.2
- 0.2 - 0.5
- 0.5 - 1.0

Bungalow
- < 0.15
- 0.15 - 0.25
- 0.25 - 0.35

Semi-Detached
- < 0.25
- 0.25 - 0.45
- 0.45 - 1.25

Commercial
- < 0.5
- 0.5 - 1.32
- 1.32 - 1.8

Flat
- < 0.4
- 0.4 - 1.0
- 1.0 - 3.0

Terraced
- < 0.35
- 0.35 - 0.85
- 0.85 - 1.35

Industrial
- < 0.75
- 0.75 - 1.75
- 1.75 - 2.70

TYPOLOGY IMAGES

Detached
Sparse
FAR: < 0.2

Denson Road

Character Profile	Value
Building Height	3-9 m (1-3 storeys)
Building Volume	420 -1090 m^3
Parcel Size	700-1500 m^2
Built Period	1919-1983
PTAL	1a-2

All detached houses are almost exclusively in the south of the borough. Older examples within this typology that date between 1919 and 1939 are found nearer the town centres, whereas newer examples built between 1939 and 1983 are found in the south east near the river Cray. Large detached Bungalows can often appear in the parcels within this typology. Typically each building will have a large front drive and rear garden, as pictured.

Danson Road

Detached
Medium
FAR: 0.2 - 0.5

Danson Road

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	330 -870 m³
Parcel Size	400-1000 m²
Built Period	1919-1983
PTAL	1a-1b

Stylistically the buildings in this catagory vary. Each owner is able to add an individual particular style to the house.

There is a large concentration of medium detached houses in the town centre of Bexley which typically fall within the higher Parcel Size of 700 -1000 m². The front drives and rear gardens are visibly smaller than the sparse detached housing.

Sydney Road, Dallin Road

Detached

Dense

FAR: 0.5 - 1.0

Manor Lane

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	330 -870 m^3
Parcel Size	230 - 550 m^2
Built Period	1939-1983
PTAL	1a - 1b

Dense detached housing near Bexleyheath has a Parcel Size of 400-550 m^2 . There is also a cluster of detached housing with a smaller Parcel Size of 230 - 295 m^2 in the south east corner on the outskirts of Bexley town centre. The vast majority of this housing was built 1939 - 1983, however there is one instance of newer housing built 1983 - 1999 just north of Sidcup station. Dense detached housing has visibly the smallest rear gardens out of the three detached typologies, although the front drives remain generous.

Alers Road

Flat
Sparse
FAR: < 0.4

Bedwell Road

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	420 -1090 m^3
Parcel Size	550 - 1000 m^2
Built Period	1939-1983
PTAL	2

Flats with a low FAR exist predominantly in the town centres. Although they exhibit a typical character profile, there is some variation in Volume; there is a notable presence of islands with a smaller dominant Building Volume of 20-180 m^3 in the town centre of Sidcup and Erith. Both images show the same example of flats within this same characteristic that are stylistically different. This building was built pre 1919 and has been converted into flats.

A206

Flat

Medium

FAR: 0.4 - 1.0

A206

Character Profile	Value
Building Height	6-12 m (2-4 storeys)
Building Volume	180 -620 m³
Parcel Size	230-400 m²
Built Period	1939-1983
PTAL	2

Flats with a medium FAR rating are usually found near or inside the town centres, along with flats with a lower density. There is some variation in Building Height, although the typical height is 6-9m there are examples of flats in this same characteristic that have 4 stories. These cases are also predominant in Welling town centre.

Building Volume is notably varied between 180 - 620 m³. In Belvedere flats also tend to be smaller at 330-420 m³ and in Bexleyheath and Crayford tend to be larger at 420-620 m³.

Upper Park Road

Flat

Dense

FAR: 1.0 - 3.0

Aspen Green

Character Profile	Value
Building Height	6-12 m (2-4 storeys)
Building Volume	180-330 m^3
Parcel Size	20 - 160 m^2
Built Period	1939-1983
PTAL	2-3

There is a very small presence of this typology in the borough. These flats are also located amongst flats of a lower FAR but are found both within the town centres (for example in Erith) and on the outskirts of the town centres (for example in Belvedere represented in the adjacent picture).

There is a notable variation in Built Period, with 1939-1983 being typical, but with a clear presence

of flats built later between 1999-2009 for example in Erith. There is a high variation in Building Volume in Sidcup with one instance of both larger (up to 620 m^3) and smaller (20-180 m^3) volume flats.

Yarnton Way

Semi-Detached

Sparse

FAR: < 0.25

Grace Avenue

Character Profile	Value
Building Height	3-9 m (1-3 storeys)
Building Volume	180 - 620 m^3
Parcel Size	400 - 550 m^2
Built Period	1919-1983
PTAL	1a - 2

There is one instance of the lowest Building Volume 20 - 180 m^3 in this typology although the typical size is between 180 - 620 m^3. This example is in the residential area north of Bexleyheath. Typically these houses have a generous front and back garden with room for at least two car parking spaces.

Melville Road

Semi-Detached

Medium

FAR: 0.25 - 0.45

Brampton Road

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	330 -620 m³
Parcel Size	230-400 m²
Built Period	1919-1939
PTAL	1b

There is minimal variation within this typology. Although architecturally similar to lower FAR examples, properties in these areas are built on smaller plots and have smaller front and/ or rear gardens as shown in the adjacent picture.

Brampton Road

Semi-Detached

Dense

FAR: 0.45 - 1.25

Brampton Road

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	160-620 m³
Parcel Size	230-400 m²
Built Period	1919-1939
PTAL	2

The typical height for this typology is 2-3 storeys, although there is one instance of a 3-4 storey building dominance just south of Bexleyheath town centre. The housing is typically in quieter cul-de-sacs, away from main roads or town centres. Parcel Size is varied throughout the residential areas. The surrounding areas are also dominated by semi-detached housing, of both a sparse and medium FAR. The picture below shows the similarities stylistically, and that the smaller rear garden gives the housing its high FAR.

Northall Road

Terraced

Sparse

FAR: < 0.35

Shelbury Close

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	180-420 m³
Parcel Size	230 - 400 m²
Built Period	1919-1939
PTAL	1a - 1b

There is a clear typical character profile within this catagory with little variation apart from Building Volume which is evenly split between 180 - 330 m³ and 330 - 420 m³. The properties tend to have a front garden space as either a grass area or used for parking, and a large rear garden whether the property is situated within or outside of the town centres.

Portland Avenue

Terraced
Medium
FAR: 0.35 - 0.85

Hurst Road

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	180-420 m³
Parcel Size	160-295 m²
Built Period	1939-1983
PTAL	1b-2

There is notable variation in Built period in this typology. Terraced housing of this particular FAR rating has been built from pre 1919 up until 1983. There is one single instance of this typology of housing being built in the period between 1983 - 1999 in Northumberland Heath town centre. The picture below shows a visibly higher density in comparison to the sparse terraced housing.

Hengist Road

Terraced

Dense

FAR: 0.85 - 1.35

Mayfield Road

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	330 -620 m³
Parcel Size	20-160 m²
Built Period	Pre 1919-1939
PTAL	1b-2

There are few examples of dense terraced housing in the borough. There is a typical character profile without much variation. Each island is exclusively dominated by parcels sized between 20 m² and 160 m². Terraced housing with a dense FAR is predominantly situated near the town centres. There is one notable instance in Belvedere of terraced housing with a small Building Volume of 20-180 m³.

Coleman Road

Bungalow
Sparse
FAR: < 0.15

Dorcis Avenue

Character Profile	Value
Building Height	3-6 m (1-2 storeys)
Building Volume	20-330 m^3
Parcel Size	400-550 m^2
Built Period	1919-1939
PTAL	3

The majority of Bungalows were built in the period 1919-1939, although stylistically there are some variations. Typically sparse Bungalows have private parking on a front driveway as well as a small garden space, and a large garden space at the rear of the property. There is much evidence of building into the roof under permitted development, as pictured.

King Harolds Way

Bungalow
Medium
FAR: 0.15 - 0.25

Bowford Avenue

Character Profile	Value
Building Height	3-6 m (1-2 storeys)
Building Volume	20-330 m^3
Parcel Size	295-400 m^2
Built Period	1919-1939
PTAL	1b-3

There is a high variation in Building Volume in medium Bungalows, that is evenly distributed throughout the borough. Typically these Bungalows have a front drive with space enough for two cars, and a rear garden that is visibly smaller than for the sparse Bungalows.

Shakespear Road

Bungalow

Dense

FAR: 0.25 - 0.35

Wavell Drive

Character Profile	Value
Building Height	3-6 m (1-2 storeys)
Building Volume	180-330 m³
Parcel Size	295-400 m²
Built Period	1919-1939
PTAL	3

The dense Bungalows are exclusively also Semi-Detached properties. They have a front drive space for two cars, but the rear garden is visibly the smallest of the three Bungalow typologies.

The buildings typically are larger than the medium Bungalow typology, with a front room that extends into the drive.

Alexander Close

Industrial

Sparse

< 0.75

Church Manorway Industrial Estate

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	180-330 m^3
Parcel Size	>2400 m^2
Built Period	1939-1983
PTAL	0-1b

There are two extreme cases of Building Height being 3-6 metres or 9-12 metres, but the majority and typical height for this typology is 6-9 metres (2-3 storeys). Building Volume is similarly varied, typically the buildings are 180-330 m^3 but there are a few extreme cases of larger volume buildings at 1090-4000 m^3. The Parcel sizes are large, and typically the building covers a very small portion of the parcel, prioritising open space for car parking, machinery and other goods or materials.

Church Manorway Industrial Estate

Industrial
Medium
0.75-1.75

Church Manorway Industrial Estate (Viking Way)

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	870-4000 m^3
Parcel Size	>2400 m^2
Built Period	1939-1983
PTAL	0-2

Medium Industrial buildings vary considerably in height, with examples ranging from 3-over 12 metres. The majority of building however are between 6-9 metres. Volume also varies considerably; typically the buildings are 870-4000 m^3 but extremities include a Building Volume of 180-330m^3 in the more densely packed industrial area. The dominant built period is 1939-1983 although there are cases of pre 1919 and more recent building in the period 1999-2009 further into Erith.
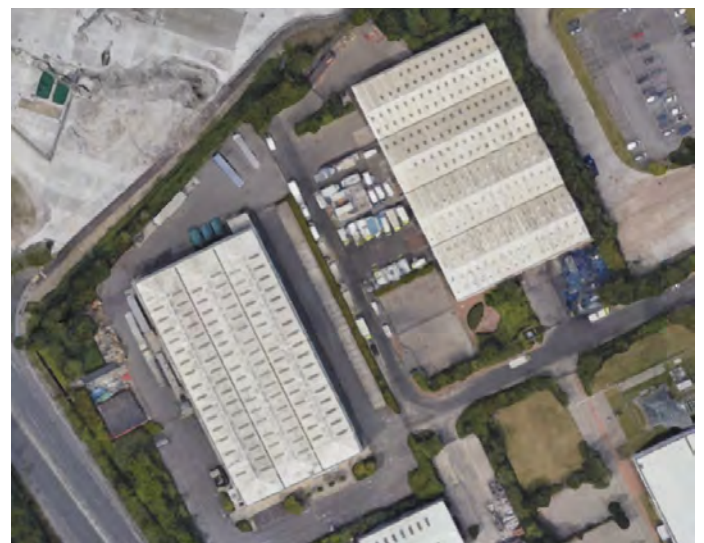
Church Manorway Industrial Estate (Viking Way)

Industrial
Dense
1.75 - 2.70

Church Manorway Industrial Estate

Character Profile	Value
Building Height	6-12+ m (2-4+ storeys)
Building Volume	420 -4000 m^3
Parcel Size	>2400 m^2
Built Period	1939-1983
PTAL	0-1a

The majority of industrial buildings in this typology were built between 1939-1983, however the data shows a few areas as having a majority being built pre 1919, as pictured. Building Volume is highly varied again, but the majority of buildings fall within the larger half of the scale. There is one case where Building Volume is 180-330 m^3 situated in the more densely packed industrial area. These buildings typically have very limited external space, with enough room for vehicle access only.

Fisher's Way

Commercial

Sparse

0-0.5

Sidcup

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	330 -620 m³
Parcel Size	550-700 m²
Built Period	1919-1983
PTAL	3-5

The typical building height is 6-9m, although there are building heights reaching the higher categories of 9-12m and 12-45m in Bexleyheath town centre. Building Volume is quite consistent, with just one case of a larger Building Volume of 1090-4000m³ present again in Bexleyheath. The more recent developments happened in the south of the borough, around Sidcup town centre, whereas the older wartime commercial developments were in Bexleyheath and Welling.

Typically areas classed as commercial are often mixed use in nature and can include employment uses as well as residential accommodation on upper floors. The parcels tend to also incorporate large public spaces, such as a wide pavement or rear car parking.

High Street, Sidcup

Commercial

Medium

0.5-1.32

Sidcup

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	870 -4000 m^3
Parcel Size	230-295 m^2 & 400-700 m^2
Built Period	Pre 1919 & 1939-1983
PTAL	3-5

There is a large amount of variance in Parcel Size for this typology. The typical size in Sidcup is 400-700 m^2 which is pictured above, but there are notable instances of a smaller Parcel Size of 230-295 m^2 in Bexleyheath.

Built period is quite evenly split between Pre 1919 (predominantly in Bexleyheath) and 1939-1983 (predominantly in Sidcup). An anomaly lies in Welling as being mostly built in 1919-1939.

High Street, Sidcup

Commercial

Dense

1.32-6.22

Sidcup

Character Profile	Value
Building Height	6-9 m (2-3 storeys)
Building Volume	620-4000 m^3
Parcel Size	160-400 m^2
Built Period	1939-1983
PTAL	3-5

The vast majority of buildings within this typology are in Sidcup town centre. Typically, all commercial buildings in this typology are on a main road. The whole block tends to extend backwards to cover the parcel, with commercial space on the ground floor, and at least two floors of residential above. There are typically no pedestrian access routes through this block and little to no parking available, as the space is occupied by building. There is one case of a large plot size of over 1000 m^2 in Sidcup on Jenner Close.

Edges

Brampton Road

There are a few moments throughout the borough that can be referred to as 'edges', or a road in which two characteristics meet on opposing sides of the street. Town centres often exhibit edges due to the high volume of typology variation.

Pictured above is Brampton road, where there is a clear divide between Semi-Detached on the left, and Bungalows on the right. Adjacent is an example looking at the start of the town centre of Belvedere where there is a real mix of Bungalow and Semi-Detached.

Other notable examples can be found on Foots Cray Lane with Terraced and Semi-Detached on either side of the street, and on Martens Avenue where blocks of flats can be found opposite Semi-Detached housing.

Belvedere

BEXLEY'S TOWN CENTRES

A closer examination of Bexley's town centres has been carried out to show the different commercial typologies. Two maps for each town centre are presented, and in both cases the units have been decided using the Jenks system, the natural breaks given in the data.

The variation maps presented on pages 18-23 show that the highest variations in data occur in the town centres due to the high amount of mixed use buildings, which is also why a closer examination is necessary.

Town centres are a key part of the Council's overall strategy for delivering good growth in the borough as they provide central points of identity as well as places that provide employment, local services and opportunities to socialise for local residents. The Draft Town Centres Strategy (2019) proposes measures to protect the town centres and encourage economic growth.

Bexley has a hierarchy of town centres, ranging from Major Centre to Neighbourhood Parades. In the London Plan, Bexley has five main town centres – Bexleyheath is defined as a Major Centre and Crayford, Erith, Sidcup and Welling as Major District Centres. Bexleyheath has a diverse offering that includes retail, offices, leisure and entertainment facilities, while the District Centres tend to meet a more local need.

The data illustrated reflects the building and parcel-level information with the highest precision available from the OS MasterMap and OS Building Height Attribute. The volume and FAR categories were chosen based on natural break clustering methods aligned with Town Centre-level relevance.

Abbey Wood
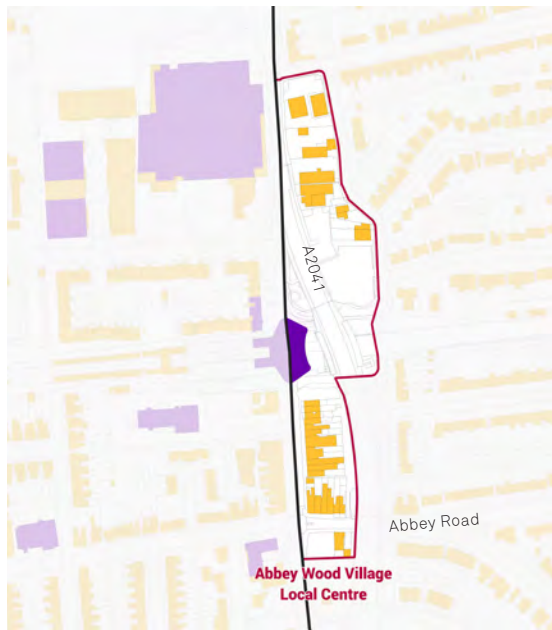
KEY

🟧	Small Units < 3500 m³
🟪	Large Units > 3500 m³
⬜	Town Centre Boundary

KEY (FAR)

🔲	< 0.5 (Sparse)
🟦	0.5-1.5 (Medium)
🟦	> 1.5 (Dense)

Abbey Wood is a small town centre on the border of Bexley and Greenwich. The introduction of Crossrail to the area has begun with a new station building, which will be serviced by the Elizabeth line when the route opens.

The town centre is currently dominated by small units. These commercial properties are occupied by both independent retailers and small chains, as well as restaurants and takeaways. The small units in the north are typically garages offering services such as MOT. The large unit is a supermarket chain surrounded by large car parking space.

The small units in the north are showing as sparse, as they are typically surrounded by space to park cars, or other machinery for more industrial purposes. The small units in the south are more typical of a high street, with higher density due to mixed use buildings with commercial on the ground floor and residential above.

Belvedere
Station
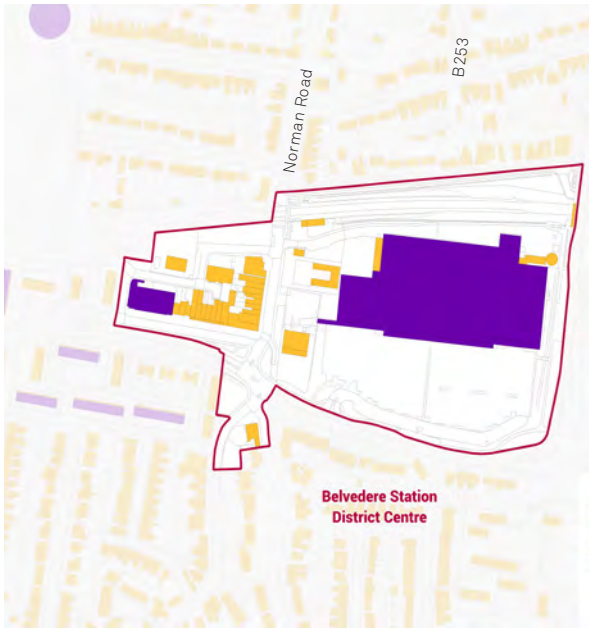
Belvedere Station
District Centre

KEY

KEY (FAR)

🟧	Small Units < 3500 m³
🟪	Large Units > 3500 m³
⬜	Town Centre Boundary
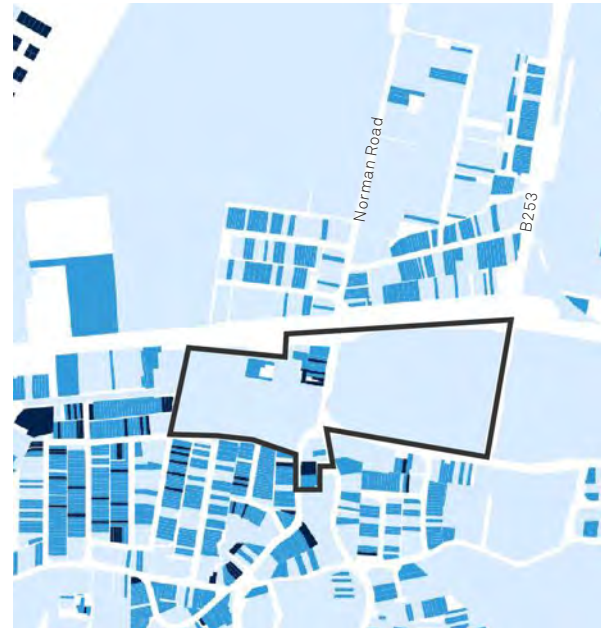
	< 0.5 (Sparse)
	0.5-1.5 (Medium)
	> 1.5 (Dense)

Belvedere is a comparatively small town centre within the borough and lies in the north adjacent to the large industrial areas in Bexley.

There is one dominant large unit in Belvedere town centre which is a supermarket chain with space just south for customer parking.

The small units west of the town centre are independent shops offering local services, such as a barbers, dry cleaners and a pharmacy.

Each small unit in Belvedere has residential above. The sparse small units shown above typically also have large parking or storage space at the rear of the property. The dense small units have open gable roofing, providing the option for permitted development or use of the roof space. These properties also have limited to no rear outside space.

The large unit in the east is sparse to accommodate parking facilities for customers.
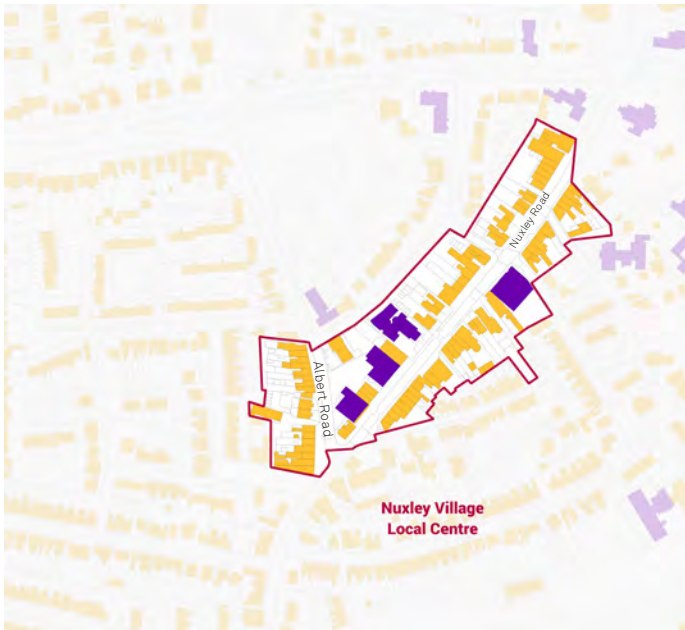
Nuxley

Nuxley town centre is situated just south of Belvedere, although has comparatively fewer large industrialised units.

The large units in Nuxley are two local supermarkets, and one social club for community activities. Each unit has car parking facilities both at the rear of the building and on the street at the front.

The small units are typically occupied by takeaways and services such as a barbers or opticians, and have predominantly remained within the boundaries of the original parcel rather than expanding to cover two.

Nuxley town centre is characterised by medium density although both high and low densities are present. There is one storey of residential above the local supermarkets in this case, with up to two residential storeys above commercial in the high density parcels. There are also some stand alone residential properties along the high street intermittently with the commercial properties. These are typically two or three storey houses with a small rear garden, and parking space at the front.

Bexleyheath

Bexleyheath is the only Major Centre in Bexley, and is therefore the main retail, commercial and leisure hub of the borough.

The Broadway Shopping Centre is the largest block visible in these maps. The unit size map above shows that the shopping centre is made up of both small and large units, all situated within one building. The high street to the west is dominated by small units which on observation are typically independent retailers, bars and restaurants.

Large units dominate the east of the high street and are typically large supermarket chains with one Casino.

The higher densities in Bexleyheath Town Centre are in the small units to the west of the high street. Large units in the east are surrounded by car parks for grocery shoppers which creates low density.

The highest densities typically have at least two levels of residential above the commercial ground floor space. Medium densities typically have at least one floor above which is either residential or often office space.

Bexleyheath
Station

KEY

🟧 Small Units < 3500 m³

🟪 Large Units > 3500 m³

⬜ Town Centre Boundary

KEY (FAR)

🟦 < 0.5 (Sparse)

🟦 0.5-1.5 (Medium)

🟦 > 1.5 (Dense)
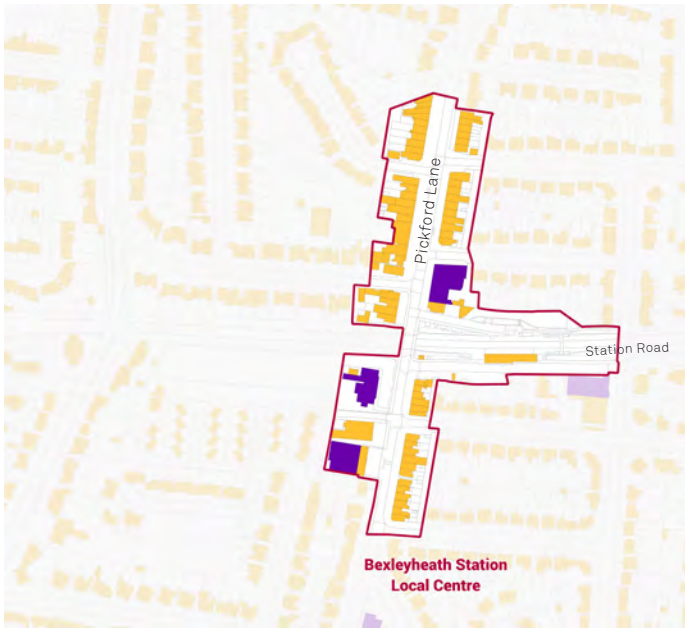
Bexleyheath Station town centre is just north of Bexleyheath town centre. Is it closely surrounded by residential buildings and is not characterised by the large units dominant in Bexleyheath.

The large units in Bexleyheath station are also supermarket chains, as well as a large pub with considerable customer parking space.

The small units are independent retail and chains providing services for the area such as a barbers, a bank and a pharmacy. There are also many restaurants and cafés as well as a notable presence of furniture and home goods shops.

Despite a dominance of small units in the Bexleyheath Station area, there is a high variety in density.

Both the pub and large supermarket is listed as sparse, however the supermarket in the south west is of medium density due to reduced car park space at the front of the building, and no space at the rear.

The small units showing high density typically have residential both above and at the rear of the properties, whereas the sparse small units have large car parking or storage space behind.

Bexley Village

Bexley Village
Local Centre

KEY

■ Small Units < 3500 m³
■ Large Units > 3500 m³
□ Town Centre Boundary

KEY (FAR)

■ < 0.5 (Sparse)
■ 0.5-1.5 (Medium)
■ > 1.5 (Dense)

Bexley Village is the only town centre without large retail units.

There are no large supermarket chains in Bexley Village. Instead, typically along the high street are bars, restaurants and cafés with some services such as beauty or estate agents.

The majority of buildings were built pre 1900 and exhibit the dense spatial characteristics of development in that period.

Bexley Village is characteristically dense, with narrow roads and typically at least two stories of residential development above commercial ground floor space.

There are only two large car parks, one which services a pub which is listed as sparse, and another used as storage or parking for a taxi company.

The two large areas of medium density in the west are pockets of similar retail and services with residential above, but do offer parking space to the rear of the development, which the dense areas of the town centre do not.

Blackfen

KEY

🟧	Small Units < 3500 m³
🟪	Large Units > 3500 m³
⬜	Town Centre Boundary

KEY (FAR)

◻	< 0.5 (Sparse)
🟦	0.5-1.5 (Medium)
◼	> 1.5 (Dense)

Blackfen is a small town centre, situated south of Welling adjacent to the A2 main road.

There is a supermarket and car park dominating the north, listed as a large unit.

Small units are then found extending east and west of the crossroads. These are very typically mixed use buildings providing services, with car parking space on the street in front of the buildings rather than the rear. As a result there are few cafés or restaurants that make use of the street space.

The two large sparse units on the western side of the crossroads in Blackfen are a pub with a large rear car park and spacious outdoor seating at the front, and a large independent shop selling children's goods with parking space available on the street in front. These work together to present a very spacious feel to the crossroads.

High density then extends further west, as well as east, particularly on the southern side of the road where two storeys of residential building sit above a commercial ground floor. The northern side of the street has just one storey of residential above the ground floor commercial space.

Welling
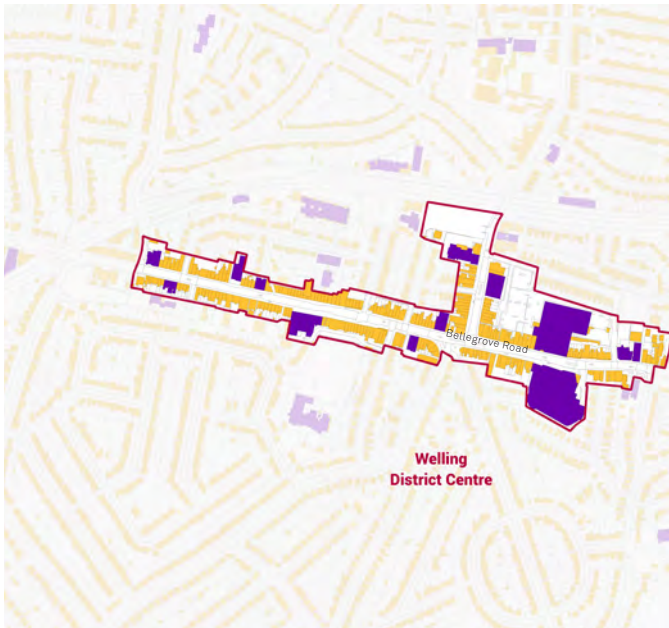
Welling District Centre

Bellegrove Road

KEY

🟧	Small Units < 3500 m³
🟪	Large Units > 3500 m³
☐	Town Centre Boundary

Burnell Avenue

Bellegrove Road

Hook Lane

Danson Crescent

KEY (FAR)

🟦	< 0.5 (Sparse)
🟦	0.5-1.5 (Medium)
🟦	> 1.5 (Dense)

Welling is one of the four Major District Centres in Bexley, situated in the west of the borough along the A207 Roman Road from Kent into London.

According to the Bexley Town Centre Strategy, Welling is seen as a retail and dining destination for residents in the surrounding area, and the large units pictured above which are supermarkets attract a further catchment still.

Welling is known as a successful high street with many small units expanding into adjacent units to create larger retail. Both independents and chains operate on the high street, as well as many banks.

There is generally high density in Welling town centre, with the only sparse areas being the large supermarkets in the east, one of which offers a large car parking facility for the high volume of customers.

There are three storeys of residential buildings above the large supermarket in the south, however this is still considered sparse as the flats are serviced by a large area of public space in the centre of the development, with a children's play park.

Areas of high density here are typically mixed use with ground floor commercial and at least two storeys of residential above.

Crayford
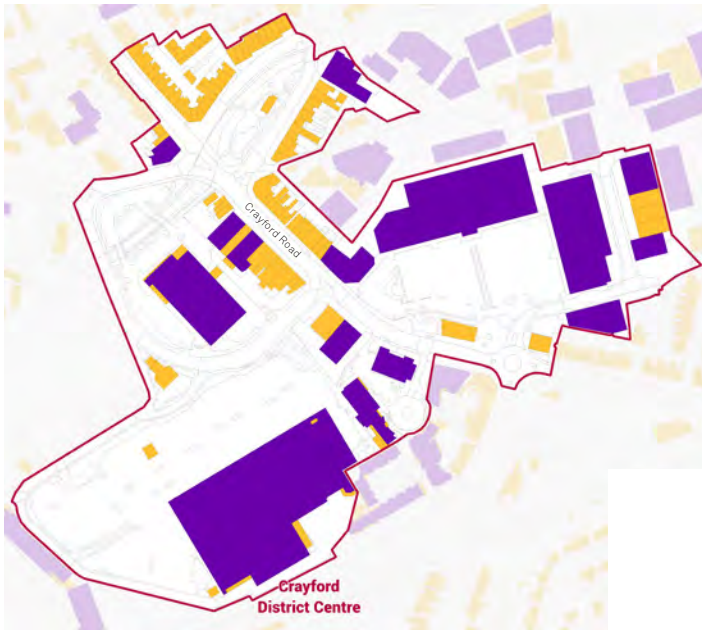
KEY

🟧	Small Units < 3500 m^3
🟪	Large Units > 3500 m^3
⬜	Town Centre Boundary
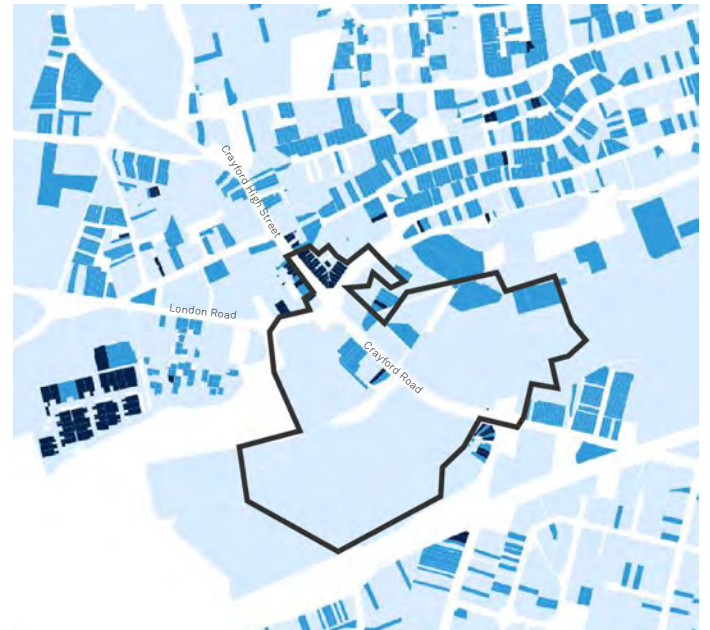
KEY (FAR)

◻	< 0.5 (Sparse)
🟦	0.5-1.5 (Medium)
⬛	> 1.5 (Dense)

Crayford is one of four town centres classified as a Major District Centre in Bexley. The area was industrialised in the 19th Century and is clearly still dominated by large units.

The large units mapped above are typically supermarkets, but also retail parks comprised of large stylistically uniform commercial spaces surrounding customer parking.

The small units in the northern area along the high street are typical independent retail spaces offering local services as well as takeaway food.

The large retail and supermarket spaces that dominate the borough are characterised by the high volume of parking available to service customers who require transport to carry goods to and from the area.

The small area of high density in the northern tip of the town centre is typically made up of mixed use buildings with at least two storeys of residential above. These units also typically do not have front or rear parking for customers, and only one rear private car parking space.

Erith

KEY

🟧	Small Units < 3500 m³
🟪	Large Units > 3500 m³
⬜	Town Centre Boundary

KEY (FAR)

⬜	< 0.5 (Sparse)
🟦	0.5-1.5 (Medium)
⬛	> 1.5 (Dense)

Erith is situated on the Thames Riverside and boasts London's longest pier. It is designated as one of Bexley's four Major District Centres, and like Crayford is dominated by large units. It also falls within the Opportunity Area designated by the Mayor of London.

The large unit in the east is a supermarket with a characteristically large car park to service customers. Other large units to the east are retail parks comprised of smaller units.

The few small units are situated on a pedestrianised street with some available public parking behind.

The town centre is predominantly sparse given the dominance of large units with car parking facilities. Typically the buildings do not have residential above and are high volume, however there are some instances of residential flats above areas of the retail space.

The small units on pedestrianised streets typically have two storeys of residential above, and don't have immediate parking facilities included in the parcel.

Northumberland
Heath

Northumberland Heath is just south of Erith town centre, which provides more retail and leisure for residents living in Northumberland Heath.

The three large units pictured are small local supermarkets with limited parking facilities, and one social club for community activities.

The town centre is dominated by small retail units that typically offer local services such as a pharmacy, a hospice and a children's day centre. There is typically only one retail unit per parcel, although there is evidence of single business expansion over 2-3 units.

Northumberland Heath town centre is dense in character. There is one sparse area which in this instance is not listed as a large unit. This is because there is a large public car park behind the smaller units that services the entire town centre.

Each unit typically has one residential storey above ground floor commercial space, and has comparatively little space to the rear of the building with room for a single private car park space.

Sidcup

KEY

🟧 Small Units < 3500 m³
🟪 Large Units > 3500 m³
▢ Town Centre Boundary

KEY (FAR)

▨ < 0.5 (Sparse)
▨ 0.5-1.5 (Medium)
▨ > 1.5 (Dense)

Sidcup is a Major District Centre, and cultural capital of the borough.

Sidcup town centre interestingly presents units which sizes fall near to the boundaries defined as small and large. There are therefore notably large units mixed with small units along the high street which characterises Sidcup particularly. The larger high street units are purpose built units that double the size of the small units typically found in high streets. The residential flats above are the same width as these larger units. Small units are the typically sized commercial ground floor unit found on all high streets within the borough.

Sidcup is characterised by medium to high density, with one area of sparse development in the south which is a supermarket, and another in the south east which is made up of mixed use buildings. Although these are classed as mixed use small units in the adjacent map, they have a sparse density due to large private rear gardens as well as car parking space that service each residential first floor.

Typically the high density buildings have two storeys of residential above the commercial ground floor, with no private garden and limited rear parking.

Sidcup Station

KEY

- 🟧 Small Units < 3500 m^3
- 🟪 Large Units > 3500 m^3
- ⬜ Town Centre Boundary

KEY (FAR)

- 🟦 < 0.5 (Sparse)
- 🟦 0.5-1.5 (Medium)
- ⬛ > 1.5 (Dense)

Sidcup station is functionally within the Sidcup area, although it is treated separately in the planning hierarchy.

The town centre is dominated by small units, which offer a moderate amount of paved pedestrian area at the front, and typically offer local services such as an accountants, a dry cleaners and a hairdressers.

The large unit to the west is a premier inn, with the other large units being local supermarkets. The second largest unit has a learning centre at street level, with eight storeys of new-build flats above.

There is medium density in the Sidcup Station area.

The high density areas are the new-build flats, as well as some mixed use small unit buildings along the high street with limited rear parking space.

The premier inn is listed as sparse due to the high volume of parking facilities that service the building, and the customer outside space in the centre of the building.

Medium densities in the south of the town centre typically have two storeys of residential above a commercial ground floor.

FORCES INFLUENCING BEXLEY'S MORPHOLOGY

Development (by Planning Permissions):
Source: London Datastore

There have been comparatively few planning applications large enough for referral to the Mayor of London according to the London Data Store and since 2010.

Major applications have been focused around Erith's hinterland and include industrial intensification within employment areas, estate regeneration at the Larner Road Estate and re-purposing the Bexley College, Tower Road Campus site for housing; amongst a handful of other developments around Erith and at Bexleyheath and Thamesmead.

More generally, the borough's development profile is comparable with others including neighbouring Greenwich and other outer-London borough's. However, the neighbouring outer-London boroughs: Bromley, Barking and Dagenham and Havering are changing at a variety of paces with Havering matching Bexley most closely.

The pattern for larger developments follows the boroughs defined Opportunity Area along the Thames, however, in correlation with the various mappings, the sites don't tend to relate directly to those Town Centre's.

Householder planning permissions in the borough have increased since 2012/13 with all other applications falling, towards a relatively low 112 compared to 463 in Greenwich and 195 in Havering. The number of Householder Applications beating all neighbours other than the larger Bromley and standing at 1,285 in 2018/19. Suggesting a tendency towards refurbishment and extension of owner-occupied properties over developer lead proposals.

Given the prevalence of adaptable building stock within the predominantly residential areas, it is challenging to establish where refurbishment and extension has lead to FAR increases when compared to original building FAR. However, the distinction is evident in the chosen typology for the current stock, showing good variety within the residential areas.

Though minimal information is available, the data for larger developments is also reflected in the chosen typology, with more intensive development (measured by more an assumption of more intense use by building type i.e.. flats and terrace properties, as well as by FAR) falls within the hinterland of Town Centre's in particular within the Opportunity Area at Abbey Wood, Belvedere and Erith but noticeably also at Sidcup. Other Town Centres are relatively contained, with having stretched liner form along the A207.

Socio-economic considerations
Source: London Datastore, Greater London Authority LSOA Atlas

Bungalows are typically occupied by residents aged 65+ living as a couple without dependant children. Around 90% of bungalows are owned outright or owned with a mortgage. Around 10% of bungalows are rented, most typically privately rented rather than socially.

Detached housing is typically occupied by residents aged 45-64. Of those that are a couple, there is an even split between those with dependant children, and those without. Around 46% of detached houses are owned outright, but this drops to 37% in the town centre of Sidcup. Around 40% of detached houses are owned with a mortgage.

Semi-Detached housing with a low FAR is typically occupied by residents aged 65+, whereas Semi-Detached housing with a high FAR are typically occupied by residents aged 45-64. These residents are also typically couples with dependant children. Roughly 30% of Semi-Detached housing is owned outright. Neither the FAR rating nor proximity to town centres noticeably effects outright ownership of Semi-Detached housing. The large area of low FAR Semi-Detached housing on the outskirts of Sidcup town centre has around 50% outright ownership, but simultaneously the large area to the west of Bexley town centre with a medium FAR has 33% outright ownership. There are also many cases of Semi-Detached housing being owned with a mortgage.

There are very few instances of Semi-Detached housing being privately or socially rented.

Terraced housing is evenly split between residents aged 30-44 and 44-64. Terraced housing with a high FAR is typically occupied by residents aged 30-44. In both instances the residents typically will have dependant children. The Terraced housing in the north with a high FAR is less likely to be owned outright (around 19%) than the terraced housing in the south west with a low FAR (around 37%). Terraced housing with a low FAR in the south and south west is typically owned with a mortgage, whereas terraced housing in the north of the borough is more likely to be rented socially or privately.

In Sidcup, it is notable that flats are more typically occupied by residents in their 20's, in comparison to the borough as a whole where flats are typically occupied by residents aged 30-44. Single parent households are more common in the north of the borough in the areas dominated by flats. Typically there are no couples living with dependant children in flats. Flats are the least likely housing typology to be owned outright at around 16%. Flats in the south around Sidcup are more likely to be owned outright than flats in the north around Belvedere and Erith. Although around 35% of flats are owned with a mortgage, typically flats are rented in both the north and the south of the borough both privately and socially. There is a much higher percentage of high FAR flats in the north and north west that are socially rented.

Summary Points

— The morphology of development is complex, though there are identifiable areas, related, in particular, to the presence of semi-detached housing across large parts of the Borough.

— Where development form is varied, based on different use types, densities and building age, further opportunities might exist to explore ongoing change that optimises the use of land.

— The industrial legacy of the riverfront, with a mix of densities, may present opportunities for intensification, though also correlate with areas of highest flood risk.

— There is a slight disconnect between railway stations, centres and levels of accessibility, with higher PTAL ratings associated with local centres and bus provision. The presence of a railway station does not automatically equate to higher PTALs nor potential for higher density development.

— The presence of larger format retail stores and car parking in centres provides an opportunity to rationalise these land uses and intensify activities.

— Potential for intensification in local centres is perhaps more complex, with the characteristics of the built form being similar to the surrounding hinterland.

— The well-established residential areas dominated by semi-detached homes may be less susceptible to change than other parts of the borough, but are areas where design coding might help visualise how any change could come forward whilst responding to the defining characteristics and qualities of those areas.

[1] Para 1.0.1A, Emerging London Plan, Consolidated Changes version, July 2019

[2] See, for example, research by the Federation of Master Builders, 2017, Homes on our High Streets.

Recommendations

The context for this study is set by the emerging London Plan. Subject to examination earlier this year a 'consolidated changes' version showing proposed modifications resulting from the hearing sessions was published in July 2019. The Panel Report of the examination was issued to the Mayor in September and, subject to the Report and the response to this, adoption of the new London Plan may come in Spring 2020. The Panel Report may recommend changes to the emerging London Plan and these will need to be reviewed in time. However, the 'consolidated changes' version presents a clear direction of travel for implementation at the Borough level and at Neighbourhood Plan level too.

Central to the emerging London Plan is the concept of 'good growth': that which is 'socially and economically inclusive and environmentally sustainable'[1]. Quality of place is core to delivery of 'good growth', particularly given the scale of change envisaged through the housing targets for each Borough set out in the emerging London Plan.

The emerging London Plan recognises the importance of the existing character and context of different areas and the need to evaluate these to best inform how they might change over time. It recognises the need for character assessments in their widest sense, covering social, cultural, physical and environmental influences. This study is focused on built form and will come together with other assessments prepared by Bexley to help understand the character of the Borough. Importantly, it is stressed in the emerging London Plan that character should not be used as a means to restrict the potential for growth and change, but rather that future growth is undertaken in the most appropriate way.

Policy D1 (in the July 2019 version of the emerging London Plan) lists (in Part A) a series of factors to be used to assess the characteristics of an area (e.g.: open space, housing types, topography and accessibility etc) and then (in Part B) sets out that Boroughs should use this assessment to inform suitable locations for growth, the scale and type of growth.

This study has assessed and mapped a range of physical qualities which, when combined, result in a series of identifiable typologies across the Borough. The messages from this work are complex: in large parts the built form across the borough is similar, but in others is highly varied, and reflects a combination of factors, including age of development, type and location. Much of the semi-detached housing stock in the borough for example was constructed in the inter-war years and where public transport accessibility is lowest. But the reality is more nuanced than this: this building type is found across much of Bexley and the size of this building type also varies (as shown in the building type by volume maps), with some larger units close to centres (e.g.: immediately south of Bexleyheath), with others in the residential hinterland between Bexleyheath and Belvedere. Further investigation may help draw out the distinguishing features and characteristics of the semi-detached building type depending on age and location. Some observations are outlined below.

Most recent development has taken place in places such as Sidcup, Erith and in the Thamesmead area to the north of the Borough. The built form here is quite varied and has included a mix of uses, housing types and sizes. This might provide an opportunity for ongoing change, making optimal use of plot size and additional height.

Much of the riverfront is industrial in nature, but with variety in terms of plot ratios. Opportunities for intensification might exist here: either for further employment activities, or where these might be intensified to help release land for other complementary uses. This might help rediscover the riverfront, reconnecting this with the rest of the borough across the twin physical barriers created by the Abbey Wood to Dartford railway line and the route of the A2016 (comprising Eastern Way and Bronze Age Way). This correlates with a combination of opportunity area and strategic industrial land designations, but also where land is at highest risk of flooding.

The location of railway stations in the Borough is interesting, particularly in respect of Welling and Bexleyheath town centres, where the stations are some way removed from the centre. Areas of high public transport accessibility correlate with provision of bus routes, which focus on the central areas. As might be expected, the built form in the main town centre areas is quite varied, including small, fine grained units as well as larger footprint stores, but where the floor area ratio of these is relatively low. This would suggest potential may exist in the centres for intensification of the larger units: an approach that breaks these into small, more flexible and manageable plots may allow for greater change over time, enabling more people to live in the centre and other mixed uses to locate here. The Belvedere station area, Bexleyheath town centre, Crayford and Erith, for example, show great variety and potential for intensification.

The network of local and, to some extent, district centres, are somewhat different in nature though and display characteristics, in terms of grain and floor area ratio, that are similar to the immediate residential hinterland. However, some upwards extension to provide additional residential units above retail and other ground floor uses might be appropriate (in parts of Welling for example). Such change is inherently difficult to deliver though[2] and may require a more proactive approach to site identification and promotion by the Council, in partnership with landowners.

Predominantly residential areas in the Borough, comprising, in the main, semi-detached homes, are perhaps less susceptible to change than other areas. But this does not mean that change has not and will not take place, through extension, conversion and small infill development for example. These are areas where design coding, based around different typologies, would be of benefit, illustrating how future change might take place within the overarching character of the area. Those residential areas where parcel size is particularly large, but where the building type is still dominated by semi-detached (and in some places, detached) housing may, subject to

further analysis (including townscape and urban design analysis at the local level, coupled with an understanding of infrastructure capacity), be places where contextual infill and intensification might be appropriate. This includes residential land running south from Bexleyheath through to Sidcup for example. Intensification in such locations may also be complicated by the presence of multiple land ownerships, the need to gain access to infill or intensification sites, respecting local character in terms of scale, massing and the form of the street, and residential amenity in terms of issues such as overlooking.

The nature of this study allows for its morphological understanding of the borough to be updated in future using refreshed data sets, as and when they become available. The approach of the study has also created a comprehensive data resource by which local stakeholders can understand the borough, and which could potentially form the basis of a publicly-accessible, navigable mapping tool. Such an approach to understanding the borough's character and its related capacity for growth through data is innovative, and as such it is anticipated that further applications for the research may become apparent into the future.

ABBREVIATIONS & GLOSSARY

PTAL
Public Transport Accessibility Levels

Typology
A classification according to general
type. This refers to the predominant typology
(Building Type + FAR) for this report as well as the
key characteristics within this typology

Floor Area Ratio (FAR)
Gross Floor Area divided by total area of the plot

LSOA
Lower super output area

Building Volume
Ground Floor*Height

APPENDIX – DATA RELIABILITY

Unit of Analysis

There are minor geometrical anomalies in the HM Land Registry INSPIRE polygons parcels which might have distorted the block-led island format and the island shape in some industrial areas where the parcel polygons are not necessarily reflecting the urban pattern.

Building Type

The map includes the OA level information about dominating building type, masked by island polygons. As the island polygons are not following the OA boundaries, the dominating building types illustrated in the map might not reflect the island-level dominating typology.

Building Period and Building Volume

The map includes the LSOA level information about dominating building type and volume, masked by island polygons. As the island polygons are not following the LSOA boundaries, the dominating building types illustrated in the map might not reflect the island-level dominating typology.

Building Volume

The building volume is calculated by multiplying the area from the OS MasterMap building footprint and the relative maximum height (RelHMax) from the OS Building Heights Attribute (BHA). The BHA covering Bexley area is mostly categorised in the 'Not Assessed' confidence level (over 99.3%), i.e. 'buildings for which the confidence level of the BHA values has not been assessed' and under 0.7% are categorised as 'Incomplete', i.e. building for which OS has not been able to calculate some or all of the Building Height Attribute values. The building volume values are summarised by the median values per island to reflect the most dominating values and exclude extreme anomalies in the interval.

FAR

The FAR is calculated by multiplying the area from the OS MasterMap building footprint and the number of stories and then dividing by the parcel area from the HM Land Registry INSPIRE polygons. The number of stories is calculated by dividing relative maximum height (RelHMax) by 3 from the OS Building Heights Attribute (BHA). The BHA covering Bexley area is mostly categorised in the 'Not Assessed' confidence level (over 99.3%), i.e. 'buildings for which the confidence level of the BHA values has not been assessed' and under 0.7% are categorised as 'Incomplete', i.e. building for which OS has not been able to calculate some or all of the Building Height Attribute values.

Building Height

The building heights are retrieved from the relative maximum height (RelHMax) from the OS Building Heights Attribute (BHA). The BHA covering Bexley area is mostly categorised in the 'Not Assessed' confidence level (over 99.3%), i.e. 'buildings for which the confidence level of the BHA values has not been assessed' and under 0.7% are categorised as 'Incomplete', i.e. building for which OS has not been able to calculate some or all of the Building Height Attribute values. The building height values are summarised by the median values per island to reflect the most dominating values and exclude extreme anomalies in the interval and present island-level standard deviation of 2 to 3 in most of the residential areas, 3 to 4 in retail areas and town centres and between 4 to 19 in industrial areas.

Parcel Area & Parcel Size

In terms of data reliability, there are minor geometrical anomalies in the HM Land Registry INSPIRE polygons parcels which might have distorted the block-led island format and the island shape in some industrial areas where the parcel polygons are not necessarily reflecting the urban pattern. For this reason, some areas were excluded from the calculation as they are not reflecting relevant insights regarding the parcel area or size.
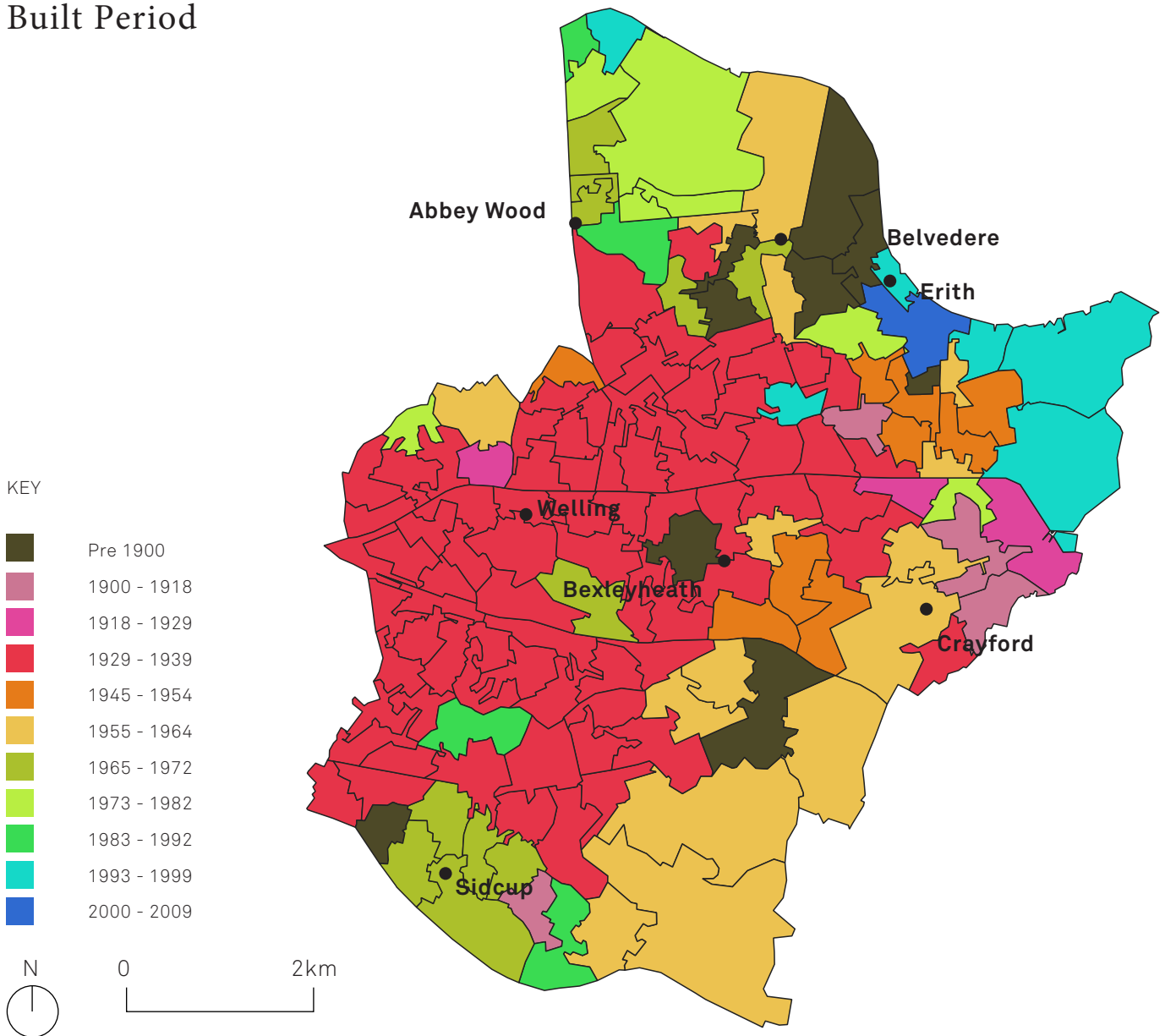
PTAL

The island-level PTAL was calculated by incorporating the first PTAL value intersecting the island, which in most cases is the most dominating value covering the island area. As the PTAL areas are not following the island geometry, the level of accessibility of some areas inside the islands might vary by 1-2 points.

Terrain Elevation

The terrain elevation is calculated by aggregating the median point values of buildings' AbsHMin attribute from OS Building Heights (BHA), i.e. the absolute minimum height of the intersection of the external building walls and the underlying ground surface. In steep areas, the terrain elevation standard deviation is between 4 to 10 meters.

Built Period

KEY

- Pre 1900
- 1900 - 1918
- 1918 - 1929
- 1929 - 1939
- 1945 - 1954
- 1955 - 1964
- 1965 - 1972
- 1973 - 1982
- 1983 - 1992
- 1993 - 1999
- 2000 - 2009

N

0   2km

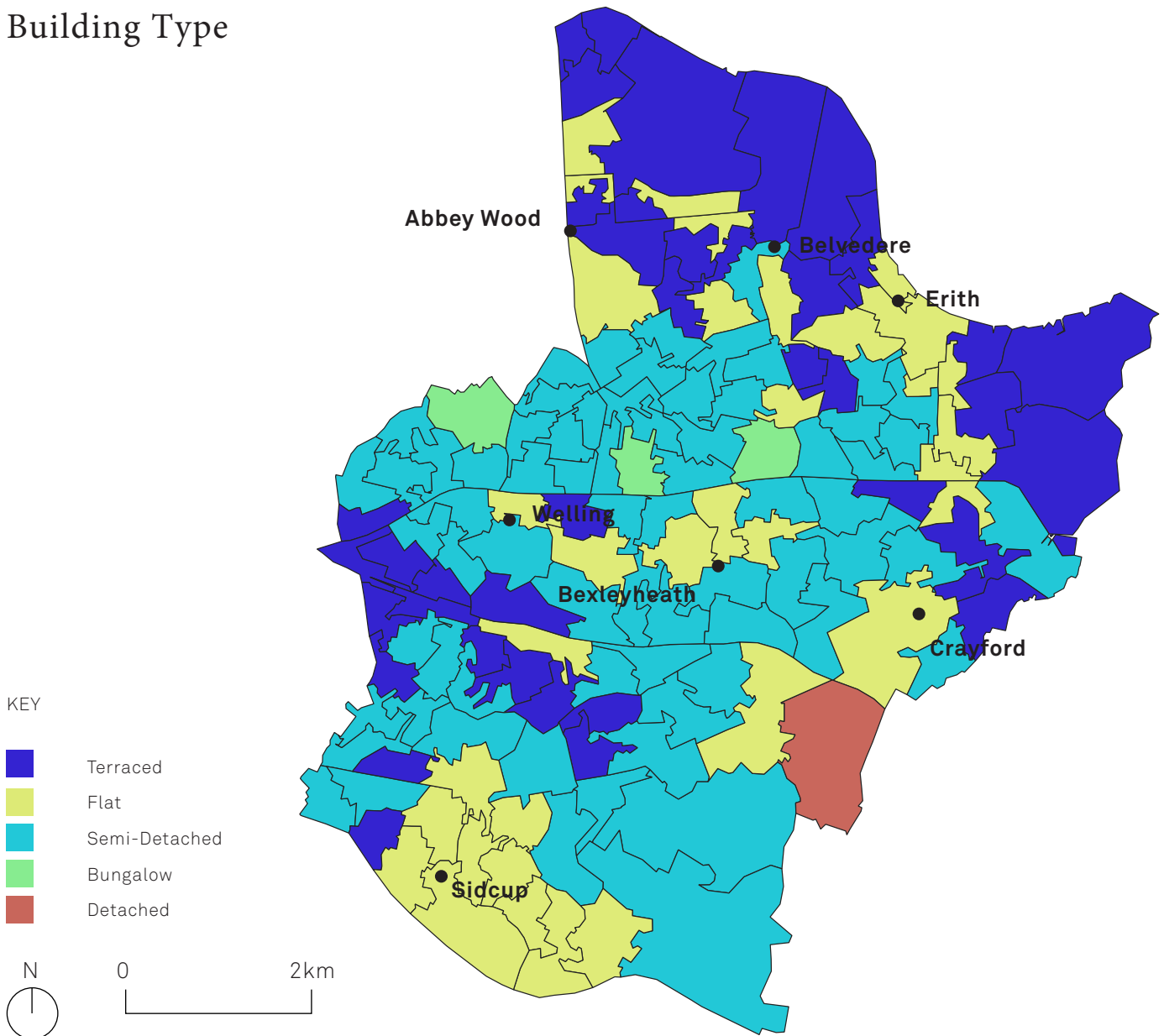Ref: Valuation Office Agency, Dwellings by Property Build Period and Type, LSOA and MSOA. CSV.

The Built Period map gives a good initial picture of different pockets of buildings that are either stylistically grouped together, or grouped by responding to the need at the time, for example an increase in Semi-Detached housing in the post war years to respond to the 'Homes for Heros' campaign.

Some clear patterns have been formed, with a strong uniformity in the centre and west of the borough, and more variation around the outskirts.

The majority of the borough was built in the period 1929-1939 with only a small amount of recent development occurring in the north of the borough after 1993.

There are also small variations around the town centre areas, which are better understood in the more detailed maps that follow.

Building Type

KEY

- ■ Terraced
- ■ Flat
- ■ Semi-Detached
- ■ Bungalow
- ■ Detached

N   0   2km

Ref: Valuation Office Agency, Dwellings by Property Build Period and Type, LSOA and MSOA. CSV.

The Building Style map gives a slightly different pattern to Built Period, although some similarities can be seen such as a dominant central characteristic, understood now as semi-detached housing.

In the south around Sidcup, the large area of flats was built in the 60's and 70's. There is a large area of postwar housing in the south east, built in the 50's and are varied in type, with detached, semi-detached and flats. The area in the north is less varied than built period, with only flats and terraced housing.

Further detailed maps in this report reveal more instances of detached housing and bungalows, which were known to be present in the borough. The later addition of commercial and industrial buildings is also valuable. For example, it is known that the north of the borough holds many large industrial buildings, but currently these areas are showing to have a dominance of terraced housing.

Building Height

KEY

- ■ 5.5 - 6.2
- ■ 6.2 - 7.2
- ■ 7.2 - 7.8
- ■ 7.8 - 8.3
- ■ 8.3 - 9.3

N

0   2km
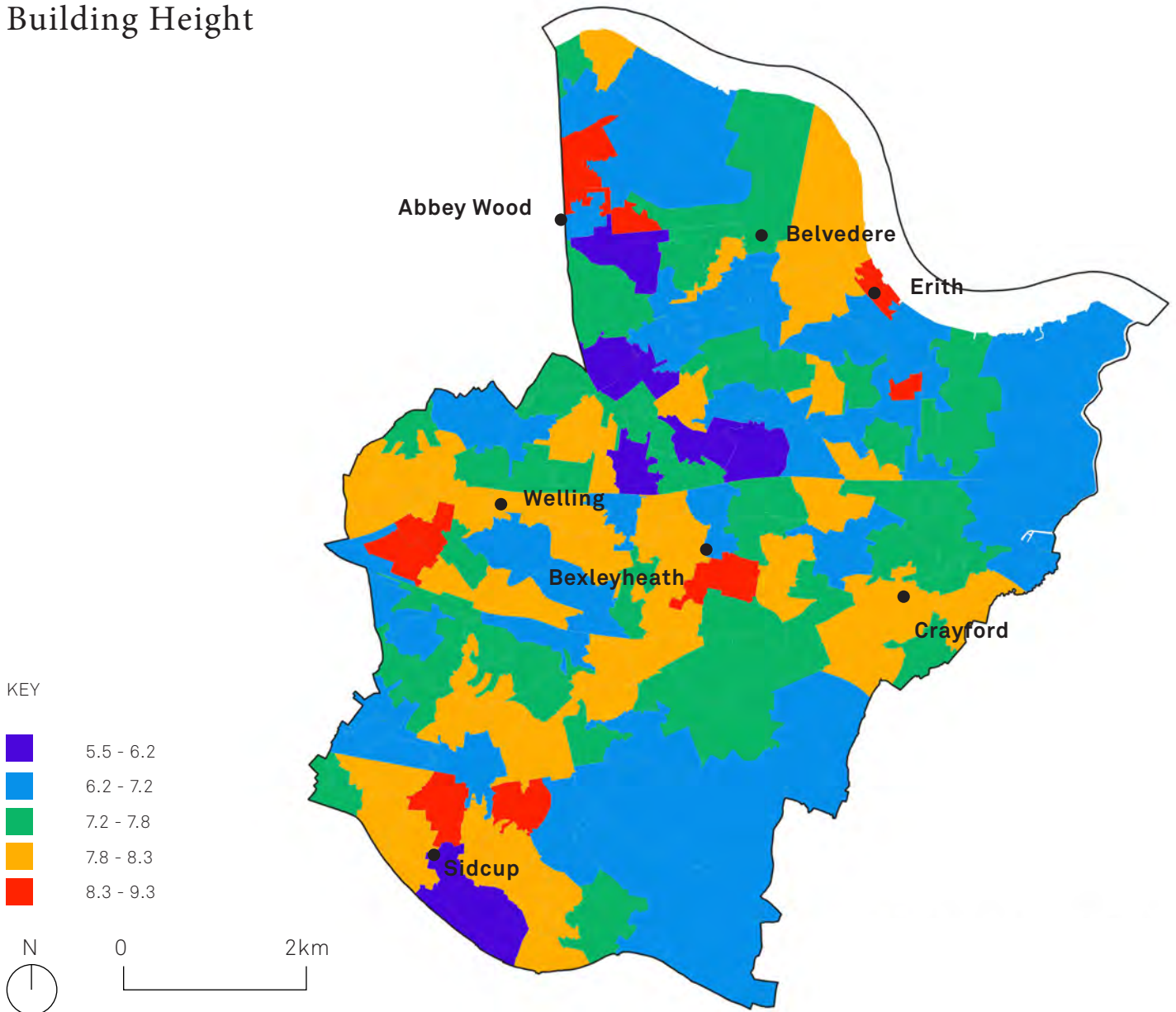
The Building Height map is an accurate map for median value for each LSOA, and it corresponds quite well with Building Type, notably the areas of Bungalows are all of a low height in this map. However it doesn't give a completely accurate picture of the borough and much higher detail is needed because of the amount of variation within this characteristic.

The Sidcup area has the highest volume of high buildings, but as expected and reflected in property type, taller buildings are found clustered around the town centres and growth areas.
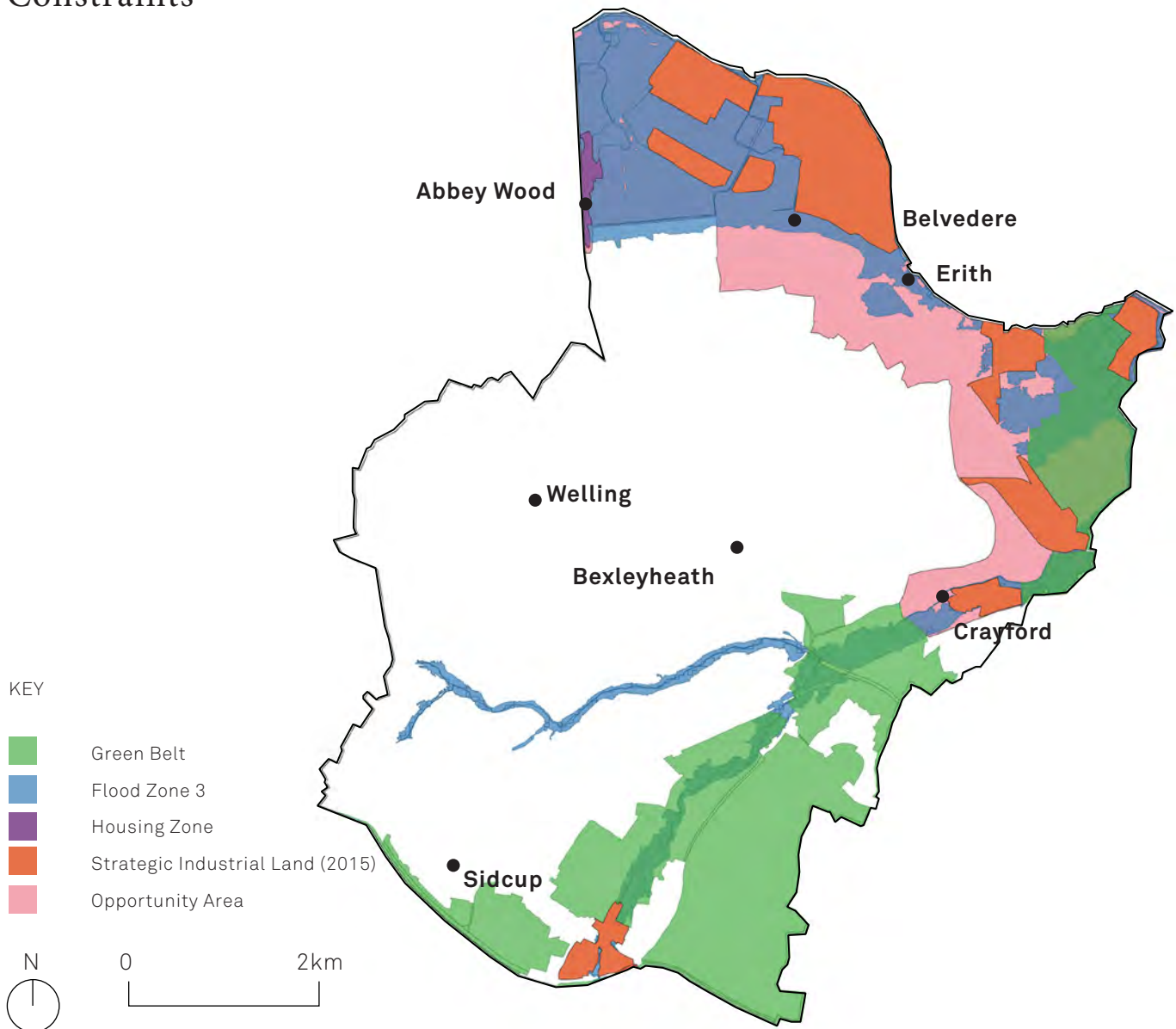
Plot Size

KEY

- ⬛ 94 - 189 sqm
- ⬛ 189 - 265 sqm
- ⬛ 265 - 330 sqm
- ⬛ 330 - 400 sqm
- ⬛ 400 - 496 sqm
- ⬛ 496 - 675 sqm
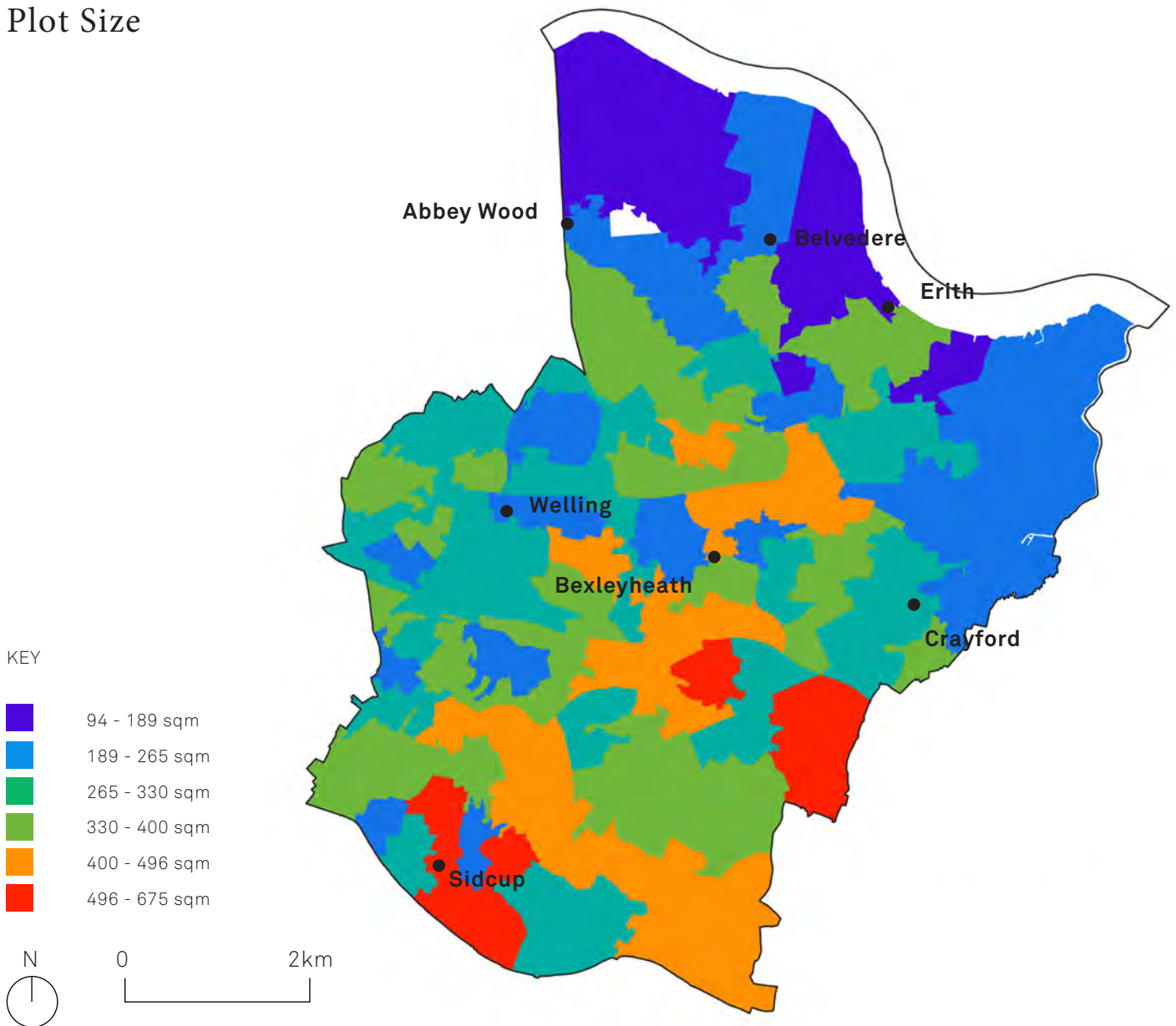
The Plot Size map surprisingly shows that the smallest plot sizes are in the industrialised north of the borough, so a more detailed examination of this will need to take place.

The highest plot sizes also show a low FAR, suggesting that these areas would be ideal for intensification, although ownership of the land may create restrictions.

Constraints

Abbey Wood

Belvedere

Erith

Welling

Bexleyheath

Crayford

Sidcup

KEY

- Green Belt
- Flood Zone 3
- Housing Zone
- Strategic Industrial Land (2015)
- Opportunity Area

N

0   2km

As expected, the geographical constrains map shows that there is a large flood zone in the north by the river, encompassing Thamesmead and Slade Green, and bordering with Belvedere, Erith and Abby Wood. Crayford in the east is also within a flood zone. Notably, the entire area marked as opportunity area is in flood zone 3.

Any intensification in Sidcup that involved expansion to the south would be limited due to Green Belt, but constraints completely diminish further towards the centre of the borough.

PTAL

KEY

- 0
- 1a
- 1b
- 2
- 3
- 4
- 5
- 6a

N

0   2km
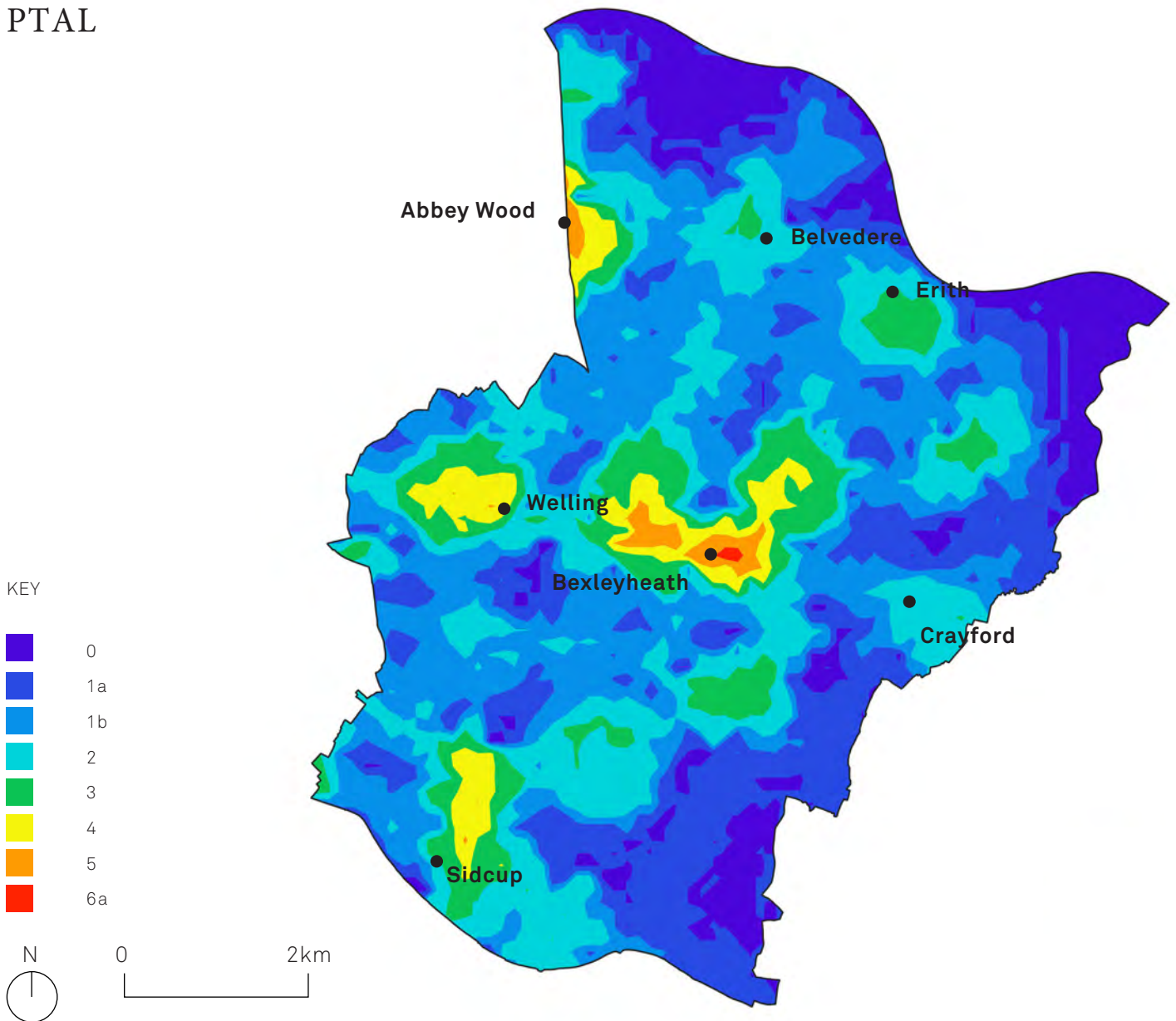
As the borough is on the outskirts of London, it's PTAL compared to inner London is exceedingly low.

There is one small central point in Bexleyheath marked with the highest PTAL rating of 6a.

The opportunity area in the north inclusive of Thamesmead, Erith and Slade Green has a rating of 1a – 0 so any development here will potentially need to consider transport infrastructure.

There are clustering's of rating 3 & 4 in all other town centres and growth areas, except for Crayford which is rated 2. Sidcup and Welling both have ratings of 4.

Terrain
Elevation

Abbey Wood

Belvedere

Erith

Welling

Bexleyheath

Crayford

Sidcup

N   0   2km
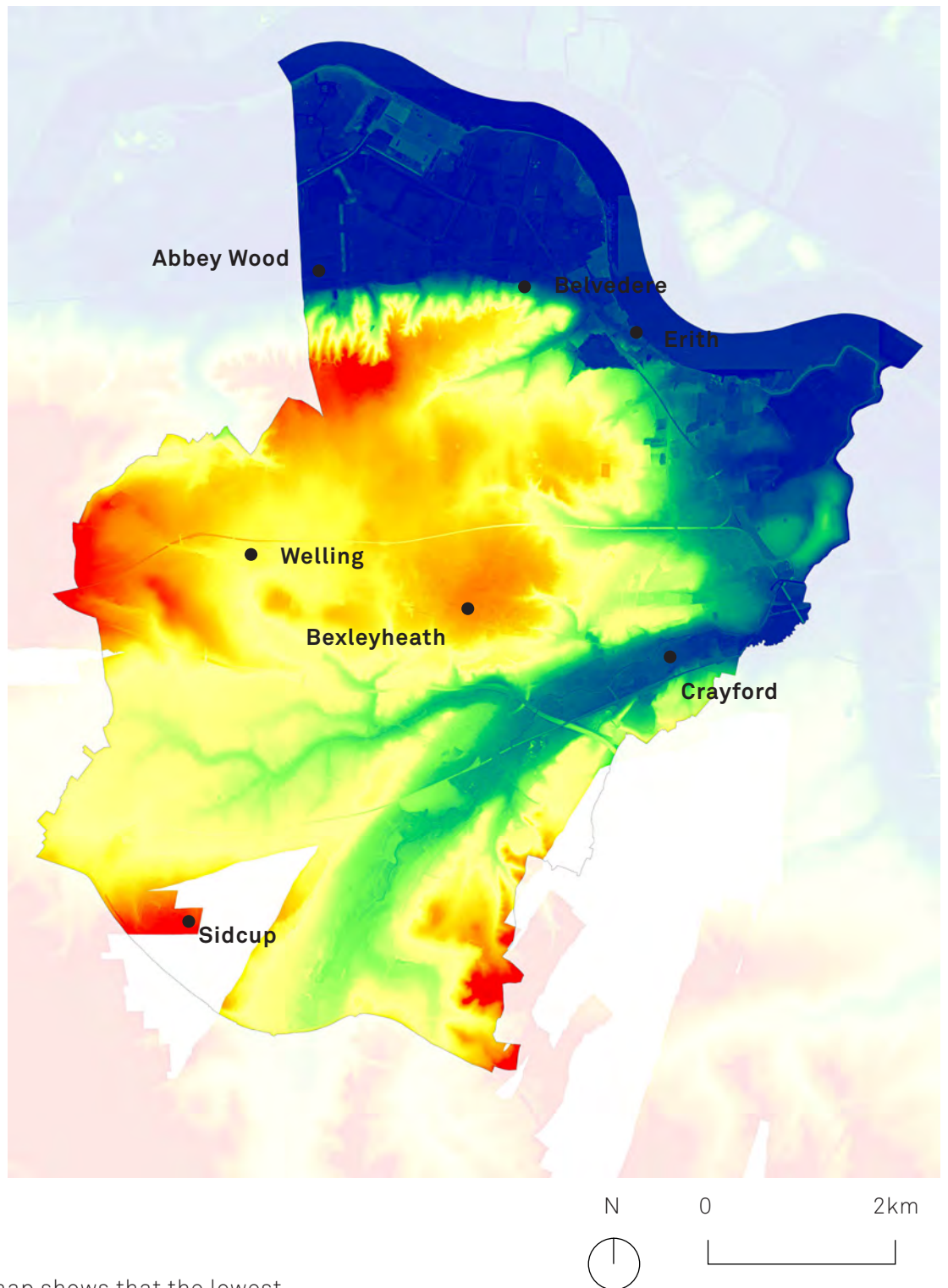
The Terrain Elevation map shows that the lowest terrain elevations are in the north, consistent with being situated on the banks of the River Thames, and being within flood zone 3. Despite this, 50% of new growth areas and development focus are located on the flood zone boundary.

The highest elevations are in the south and central west. In the south, these are represented by Greenbelt land and parks.