

Sheffield Central Area Strategy Capacity Report

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SHEFFIELD CENTRAL AREA STRATEGY

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CAPACITY REPORT

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Introduction

The purpose of this report is to provide a well-evidenced capacity for new homes within Sheffield Central Area for the Local Plan Period 2023-2038. It works closely with the Central Area Strategy that is being developed as part of a wider commission by Sheffield City Council with Deloitte Real Estate and Planit-IE. The report presents an initial quantum of residential development for the Central Area based on a density-led approach to capacity testing, creating flexibility through the provision of minimum, maximum and average unit numbers.

The capacity presented in this report has not been incorporated into the current publication of the Housing and Economic Land Availability Assessment (HELAA). It is expected to inform the next version of the HELAA once the wider Central Area Strategy is complete and the Sheffield Plan Issues and Options consultation has been taken into account. This report does not allocate land for housing or economic development; it does not make policy decisions on which sites should be developed; and nor does it pre-judge the strategic approach that the Sheffield Plan will eventually take.

The Capacity Study's role within the wider evidence base will be used in conjunction and alongside other evidence, for example, viability appraisals, employment land reviews, strategic flood risk assessments and sequential tests, strategic housing market assessments, area specific regeneration objectives and spatial priorities set out in the Sheffield Plan.

Both the approach and methodology for capacity testing are explained within the report, as well as the rationale for undertaking a density-led capacity study. In short, a density-led approach provides flexibility through the provision of multiple tenure scenarios and is underpinned by both quantitative and qualitative analysis. The approach enables the calculation of residential capacity without prescribing any specific design outcome to any of the identified sites.

The value of identifying Sheffield's neighbourhoods and using them as spatial units to measure residential capacity is also explained within the report. Neighbourhoods have been grouped into six overarching City Areas, allowing the study to break The City into rational spatial units to which capacity can be applied.

Defining Sheffield's Neighbourhoods

A townscape character appraisal has been undertaken in order to determine Sheffield City Centre's neighbourhoods. Neighbourhoods are sections of The City Centre sharing fundamental similarities in their characteristics. This is often informed by the historical development and morphology of The City over time, with existing neighbourhoods associated with different periods of urban development and transformation.

Neighbourhoods are defined by various elements that fall within two categories: geographical and environmental or social. Their boundaries are often defined by a clearly delineated urban edge, such as a major movement corridor or distinct change in townscape character.

The below list of factors summarise the rationale behind identifying Sheffield's neighbourhoods and using them as spatial units to measure residential capacity.

- » Deliverability - offering short term, medium term and long term strategies.
- » Manageable with a planned approach for sites considering their context.
- » Differing neighbourhood information within studies carried out to date and within various strategic planning documents.
- » To help identify the gaps within each neighbourhood with regards to facility and amenity provision, highlighting the 'missing' elements that contribute to a successful neighbourhood.
- » To define an appropriate mix of housing tenures for each neighbourhood, considering Sheffield today and within the context of The City Centre vision for the future.
- » To consider appropriate land use, including employment growth for now and the future.
- » To inform a deliverable strategy for The City Centre masterplan and future development in a manageable way. The neighbourhood approach helps to localise short term, medium term and long term plans linking into holistic masterplan vision for The City Centre.
- » The approach helps us to draw conclusions on an appropriate scale and massing for each neighbourhood. Furthermore, identifying the key urban features that help structure a neighbourhood, such as; key road corridors, key heritage features or urban nodes, allows us to understand where the scale of buildings may rise or drop from the general height datum. It is the heights of buildings that ultimately determines the density range applied to a site.

The below variables have been used to define neighbourhoods. The neighbourhood boundaries predominantly align with those identified in existing strategic documentation. They have been amended only where a clear difference in townscape character has been identified in the spatial analysis undertaken.

Location

The location can shape a neighbourhood. Sustainable neighbourhoods are often based around an obvious focal point providing various services and amenities.

Existing Land Use

Neighbourhoods can be defined by their predominant land use, such as retail, employment, business or civic uses.

Built Environment Scale, Massing and Density

Building height datums are a major contributor to a neighbourhoods character, and help to differentiate between one urban area and another. The existing height datums of City Centre neighbourhoods have directly informed the building heights proposed within the Capacity Study.

Heritage and History

The City's organic development over time is important in defining the neighbourhood, setting clear boundaries. For example Kelham Island is associated with its time of delivery.

Architectural Character and Appearance

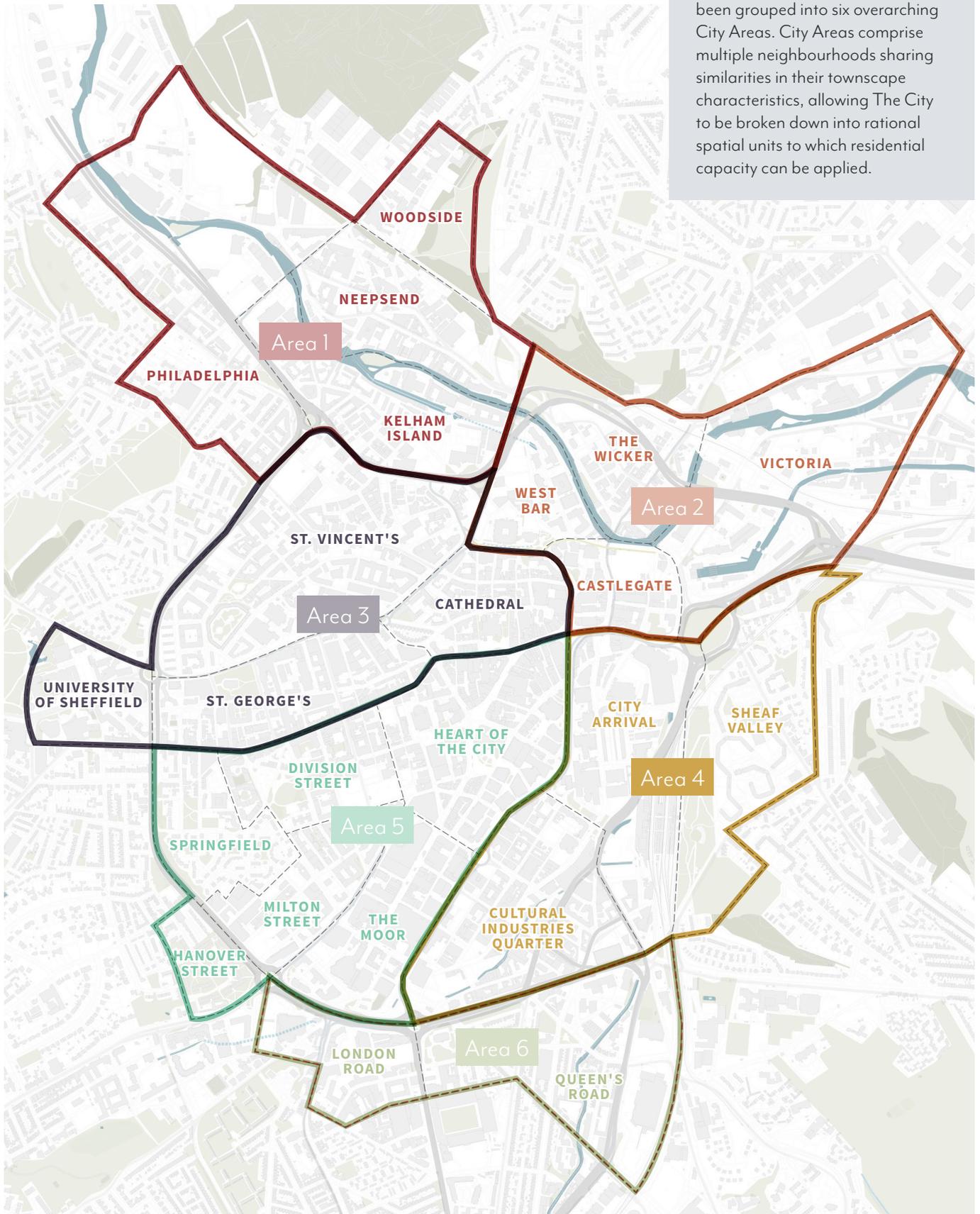
Similarities in the architectural features of groups of buildings, such as roof pitch, window proportions and materials play an important role in defining the distinctive character of a neighbourhood.

Social

The most difficult factor to measure, is people's individual perception of a neighbourhood. It is connected to feelings of ownership, belonging and pride. It is also connected to it's social aspects, including culture, social demographics, historical background and employment. Defining Sheffield's neighbourhoods and addressing residential capacity at the neighbourhood scale provides many benefits, above all, allowing the study to respond to the physical, environmental and social context of the identified neighbourhoods and City Areas.

Establishing The City Areas

For the purposes of the Capacity Study, neighbourhoods have been grouped into six overarching City Areas. City Areas comprise multiple neighbourhoods sharing similarities in their townscape characteristics, allowing The City to be broken down into rational spatial units to which residential capacity can be applied.



Assessing The Sites

A thorough assessment of the sites identified within The City has been completed. Sites have been categorised by their planning status, availability and potential for future development.

Multiple sources of information have informed the site categorisation element of the Capacity Study. This information has been collated, mapped and categorised in order to provide a logical structure, with each site being assigned its own unique identification code. The following categories have been created to organise the sites.

Known Sites

These sites are the known development sites and include:

- Known Sites (SHLAA / Brownfield / Call for Sites)
- Known Sites (Council Ownership)
- Known Sites (Non-residential Allocation)
- Known Sites (Non-residential Allocation - Council Ownership)

Gap Sites

Gap sites are individual sites where there is no known planning allocation.

- » Public or private surface car parking
- » Vacant land

Future Potential Sites

Identified through an analysis of the previous headings, walk around of The City Centre and the engagement process, there are a series of sites that have been identified as potential future development sites:

- » Existing uses incompatible with City Centre Vision.
- » Clusters of future potential development sites with no existing allocation. Together these sites present strategic future development opportunities.
- » Sites without an existing allocation included in existing, area-specific Regeneration Strategy documents.

Planning Permission

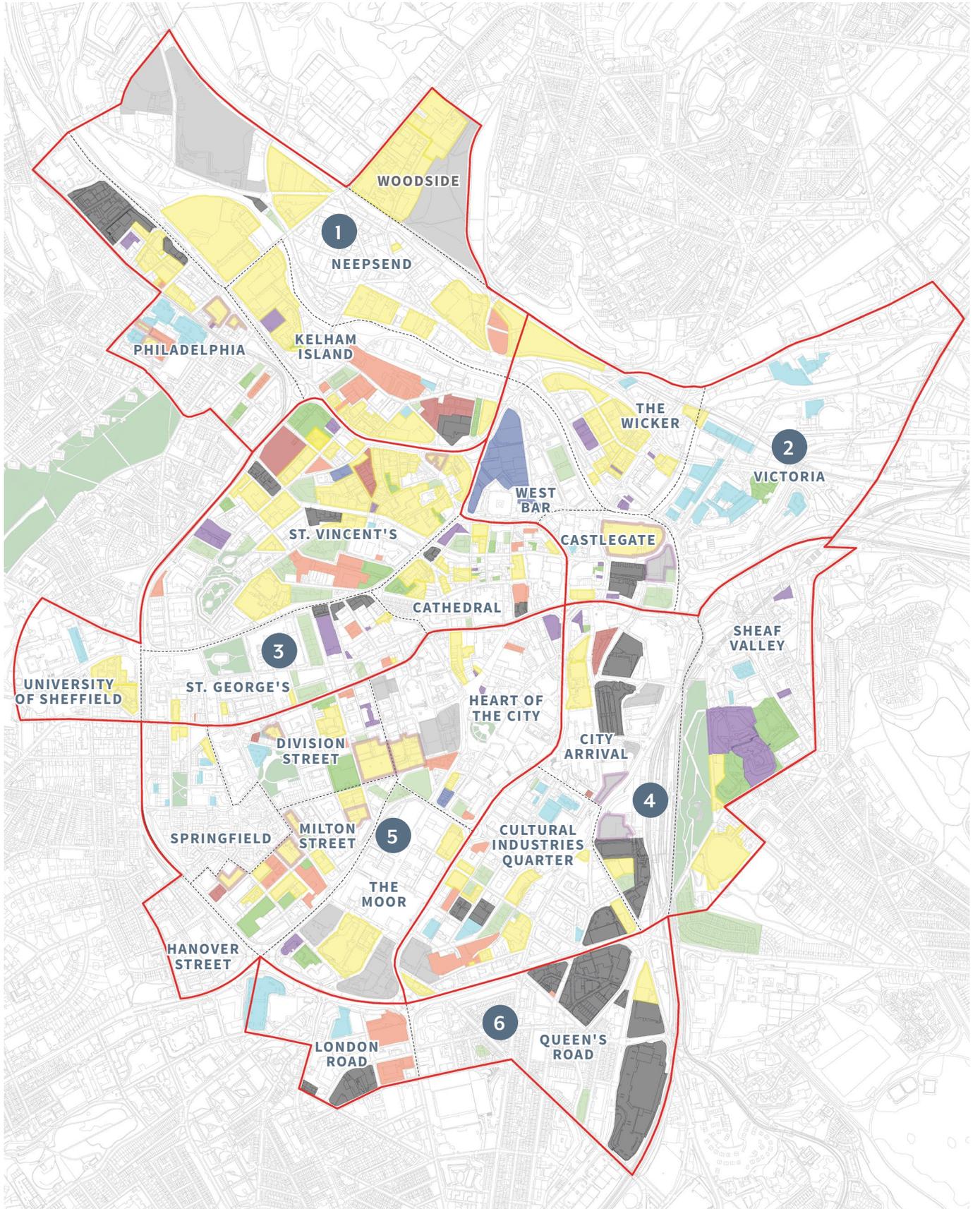
Submitted or known major development sites are assessed to establish the residential quantum of planning permissions currently in the Planning System.

- Full Planning Permission - Construction Suspended
- Outline Planning Permission (at 01.04.2019)
- Full Planning Permission - Not Started (at 01.04.2019)
- Full Planning Permission (granted permission post - 01.04.2019)
- Full Planning Permission - Under Construction (at 01.04.2019)
- Recently Completed

City Area Capacity

All of the Known Sites identified within the Central Area have been tested as part of the Capacity Study. The number of proposed residential units from all relevant planning permission sites has also been provided for each City Area.

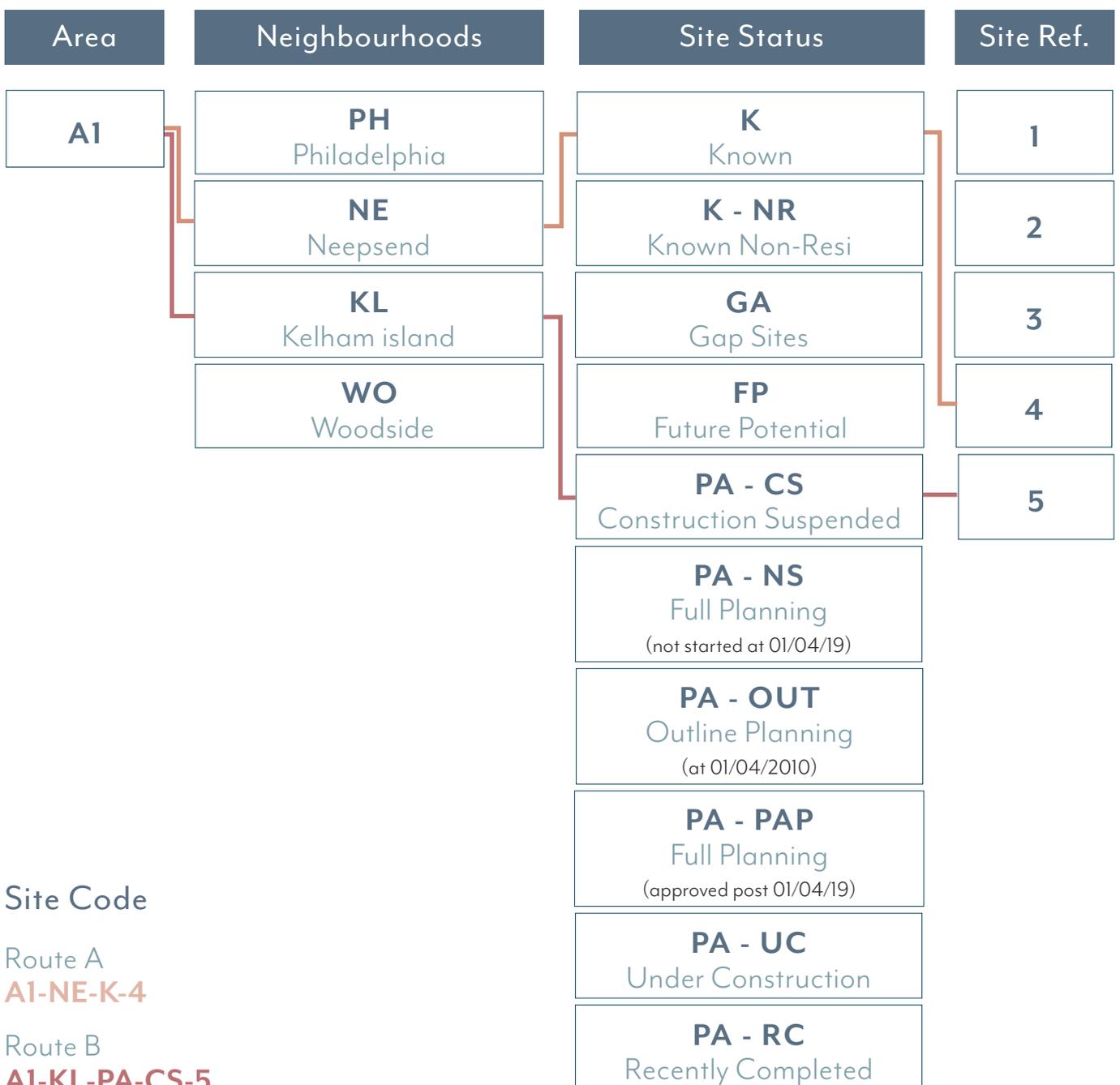
The two totals combine to provide a Total Capacity for each of the identified City Area's of Sheffield.



Site Coding

A coding system has been developed in order to provide each site with a unique reference number. The codes are stored within a master schedule and inputted into the capacity calculator (explained on page), which generates a capacity for each site.

The coding system allows us to identify sites by both neighbourhood and City Area. This in turn allows for an appropriate mix of residential tenures to be applied to the site based on its context and location in The City, as well as being able to summarise capacity by City Area or neighbourhood.



Introducing A Density-led Approach To Capacity Testing

Density brings with it opportunities to mitigate constraints. An example of this is lower density housing nestled within steeply sloping topography, or high density terraced housing and apartments proposed to mitigate noise from railway lines or industrial uses.

Increased density provides support for non-residential uses and increased footfall to community hubs. Density and increased amounts of people activates and provides purpose for open space, it can help to animate the water edges and key movement corridors. New developments allows re-framing of our views and connection with nature in a positive way.

The challenge is to intensify The City, whilst maintaining characteristics which make Sheffield unique. The methodology to testing capacity has been developed to sensitively integrate into The City and its environment.

Why use dwellings per hectare to test residential capacity?

Density can be measured in a number of different ways, the most common of which is dwellings per hectare (dph).

A dph calculation provides a quick total of residential capacity by applying an appropriate density range. The following pages set out how an appropriate density range has been calculated, which has been further tested around The City through more detailed site drawings. A dph calculation ensures residential numbers can be totalled without requiring a detailed masterplan - and is also not predicated on a single drawing, ensuring residential capacity is still valid if alternative schemes are proposed.

In order to test if a density range is appropriate for particular sites, a Floor to Area Ratio (FAR) has been calculated - which is another measure of density. FAR measures physical density, or more specifically how an area is massed. The study tests the likely massing of assumed density ranges around The City in order to understand if they conform with, or purposefully challenge, the FAR ratio or massing of the surrounding townscape.

Defining Appropriate Densities

The following pieces of analysis combine to inform appropriate density ranges within the Capacity Study.

- » Understanding Sheffield Existing Densities (Contextual Density Study - Qualitative).
- » Best Practise Case Study Analysis (Qualitative)
- » Plot Testing using the Capacity Calculator (Quantitative)

The qualitative analyses are used only as a visual aid to support the capacity figures generated by the Capacity Calculator.

Defining Appropriate Building Heights

City Area Building Heights

The CAS has developed an initial building heights framework for each City Area, informed by a series of desktop analyses. The heights frameworks set an appropriate height datum for each City Area, whilst also capturing locations within The City where building heights may fluctuate from these standard datums. The height datums set inform the proposed building heights that have been inputted into the capacity calculator, and therefore have a direct impact on the overall capacity of The City.

The heights frameworks are driven by the following key variables:

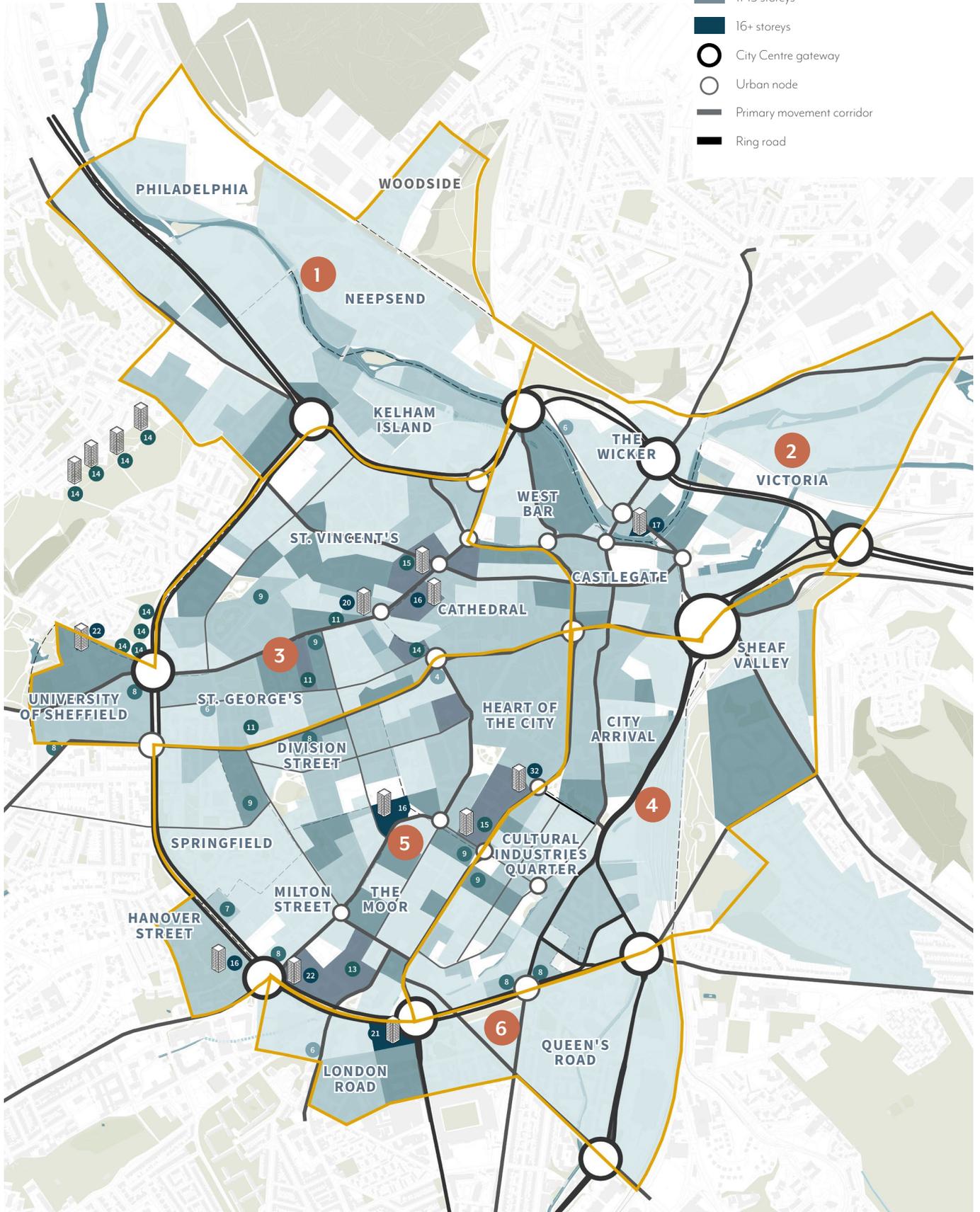
- » Existing height datums
- » Primary movement corridors
- » Key urban nodes
- » Primary City Centre gateways
- » Heritage
- » Topography
- » Under construction planning permissions

Where a site is located around a City Centre 'gateway', a key 'urban node' or along primary movement corridors, an increased building height has been proposed within the capacity calculator as a response to the sites strategic location within The City. The heights frameworks refer to these areas as 'Tall Building Zones'.

There are few buildings of over 20 storeys located within Sheffield City Centre today, with many of the cities taller buildings standing between 15 and 20 storeys. Resultantly, the study uses 15 storeys as a reasonable benchmark maximum height for tall buildings across The City. This is assessed on a site by site basis, and buildings of over 15 storeys have been proposed or are considered acceptable around City Centre 'gateway' locations.

KEY

- 1-3 storeys
- 4-6 storeys
- 7-10 storeys
- 11-15 storeys
- 16+ storeys
- City Centre gateway
- Urban node
- Primary movement corridor
- Ring road



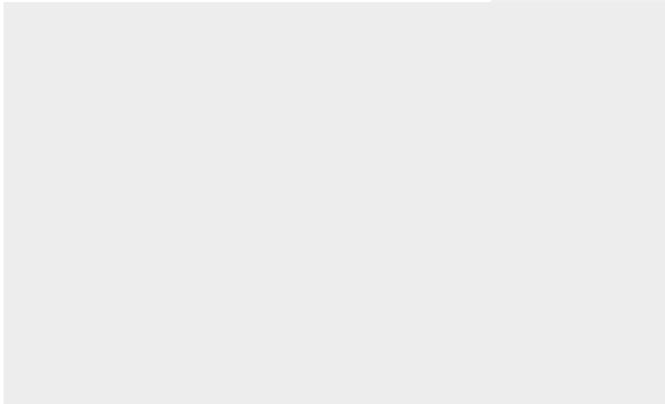
Existing Building Heights

Understanding Existing Sheffield Densities

‘Very High Density’ Sheffield Blocks

Palatine Gardens, Sheffield

540dph*



Approx. Block Area
0.1 ha

Street Width
8.6 m

Unit No and Dwelling Mix
54 units

Communal External Space
0 ha

Average Building Height
4.5 storeys

**High density is achieved here as the building footprint covers the most of the site. Higher dph is common on smaller sites where building footprint covers much of the site.*

CODE Co-Living

1757dph*
Density



Approx. Block Area
0.7 ha

Average Building Height
12, 17 and 38 storeys

Unit No and Dwelling Mix
1,230 units, 75% studios,
25% 1- and 2-storey flats

**High density is achieved here through provision of extremely tall buildings. Whilst the site area is greater, and other uses are incorporated in the site envelope, the scale of the building delivers a high dph.*

‘High Density’ Sheffield Blocks

Hanover Tower, Broomhall



220dph
Density



Approx. Block Area
0.582 ha

Street Width
7.2 m

Average Building Height
16 storeys

Communal External Space
0.446 ha

UNITE, St Vincent's Place



173dph
Density



Approx. Block Area
0.82 ha

Street Width
10 m

Average Building Height
5 storeys

Following an analysis of best practice block typologies from both within Sheffield and other cities, appropriate benchmark density ranges have been developed and applied to each framework area / neighbourhood.

Further consideration of the constraints, opportunities and townscape characteristics of each neighbourhood / framework area have helped to refine these ranges, ensuring the proposed range is both appropriate and achievable within the different townscape contexts.

- KEY**
PARKING
-  On Street
 -  Car Park
 -  Courtyard
 -  Garage
 -  Drive

'Medium Density' Sheffield Blocks

Edward Street Flats



130dph
Density



Approx. Block Area
1 ha

Street Width
10 m

Average Building Height
3-4 storeys

Communal External Space
0.45 ha

Sheffield Townhouse / Terrace Blocks

Castle Croft Drive



45dph
Density



Approx. Block Area
1.88 ha

Street Width
8.7 m

Average Building Height
2.5-3.5 storeys

Communal External Space
250 m² / 0.025 ha

Cornish Steelworks, Dun Fields



Approx. Block Area
0.277 ha

Communal External Space
0.03 ha

Average Building Height
3-4 storeys

Little Kelham



90dph
Density



Approx. Block Area
1.19 ha

Street Width
6.8 m

Average Building Height
2-4 storeys

Best Practice Density Study

'Very High Density' Blocks

Camden Courtyards, London

400dph
Density



Approx. Block Area
0.41 ha

Average Building Height
5-7 storeys

Unit No and Dwelling Mix
164 units, 48x1-bed,
97x3-bed, 3x4-bed

Street Width
6.6m, 15.6m, 21.5m

Communal External Space
Courtyard and rooftop

High Density Blocks (200+ dph)

Royal Wharf, London



220dph
Density



Approx. Block Area
15 ha

Average Building Height
3-19 storeys

Unit No and Dwelling Mix
3300 units

Street Width
20 m

Aldgate Place, London



609dph
Density



Approx. Block Area
0.76 ha

Average Building Height
10, 23 and 25 storeys

Unit No and Dwelling Mix
463 units, 165x1-bed, 185x2-
bed, 111x3-bed, 2x4-bed

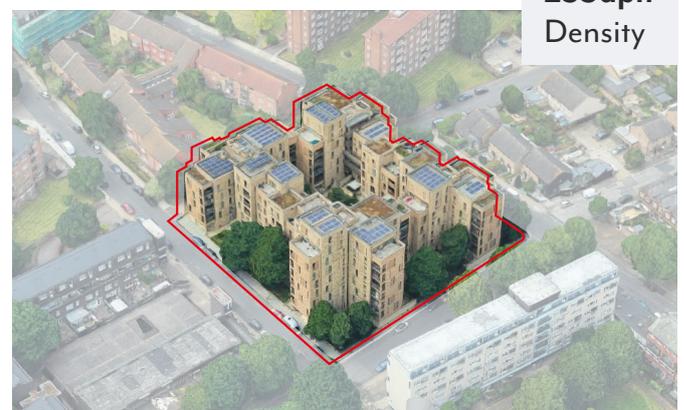
Street Width
13.5m

Communal External Space
0 ha, courtyard and roof

Royal Road, London



253dph
Density



Approx. Block Area
0.5 ha

Average Building Height
4-9 storeys

Unit No and Dwelling Mix
96 units, 13 x1-bed, 51x2-bed,
26x3-bed, 6x4-bed

Street Width
12.5 m

Communal External Space
0.025 ha

KEY

PARKING

-  On Street
-  Car Park
-  Courtyard
-  Garage
-  Drive

Medium Density Blocks (100-200 dph)

Vimto Gardens, Salford



154dph
Density



Approx. Block Area
0.63 ha

Street Width
9.6 m

Unit No and Dwelling Mix
83 apartments and
14 townhouses

Communal External Space
0.08 ha, podium

Average Building Height
3-6 storeys

Townhouse / Terrace Blocks (~70 dph)

Irwell Riverside, Salford



55dph
Density



Approx. Block Area
1.3 ha

Street Width
5.8 m

Unit No and Dwelling Mix
72 units

Communal External Space
0.02 ha

Average Building Height
3 storeys

Laurieston, Glasgow



170dph
Density



Approx. Block Area
5.2 ha

Average Building Height
4-7 storeys

Unit No and Dwelling Mix
880 units

Street Width
20 m

Timekeepers Square



58dph
Density



Approx. Block Area
0.62 ha

Average Building Height
2-4 storeys

Unit No and Dwelling Mix
36 townhouses
(2-,3- and 4-bedroom)

Street Width
13 m

Communal External Space
0.052 ha

Benchmark Densities and Variables

Sheffield Central Area

Measuring by Gross or Net Site Area Typologies, Mix and Floor Area

It is important to note one key variation in the method used to generate site capacity within this study. Where a smaller infill site has been tested, the gross and net site area are inevitably very similar, with the building footprint covering much of the overall site area.

Where a larger site has been tested, gross calculations have been used. The gross calculation factors in townscape elements such as, new and proposed streets and public realm and other elements that aren't included in the building GEA. This results in a lower site density (dph), as the proposed building footprint covers less of the overall site area.

The master schedule highlights which approach has been used to test capacity on each site in the notes column. The Sheffield Tissue Study, which has analysed the built form of existing residential densities within Sheffield City Centre, contained within this document, are based on gross area measurements.

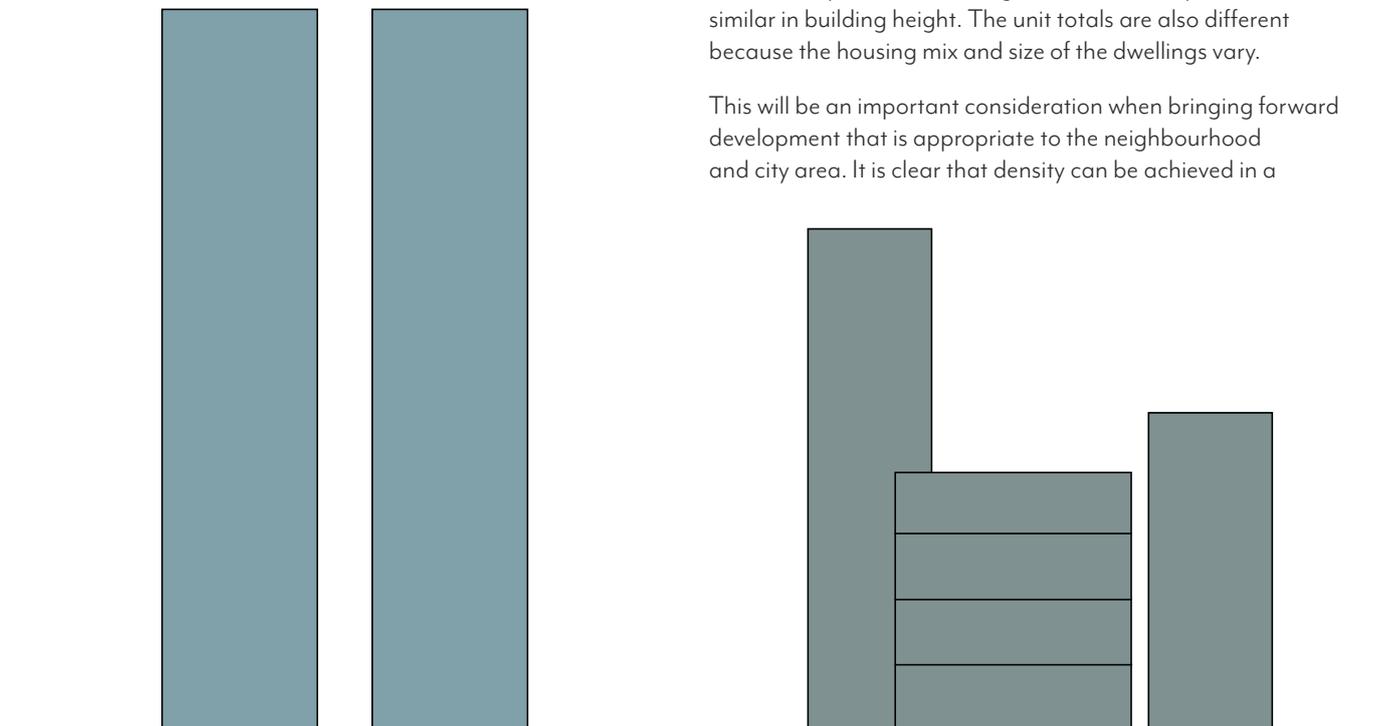
Housing typologies, housing mix and floor space areas are key variables to consider when measuring the benchmark density ranges for Sheffield's Central Area. These variables impact on the overall density of the developments studied.

A good example to illustrate this variable is to compare two developments with similar heights in Sheffield's Central Area, for instance, 'Palatine' and 'Unite'.

Development:	Palatine	Unite
Building Height:	4.5	5
Tenure / Mix:	Individual Flats	Student Cluster Flats
Density:	540dph	140dph

Palatine is 4.5 storey at 540 dph and consists of small individual flats. UNITE is 5 storey at 140 dph and consists of student cluster flats. Therefore, the densities vary considerably, notwithstanding that both developments are similar in building height. The unit totals are also different because the housing mix and size of the dwellings vary.

This will be an important consideration when bringing forward development that is appropriate to the neighbourhood and city area. It is clear that density can be achieved in a



Very High Blocks

20+ Storeys	250+ dph Density
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Sheffield Central Area Benchmark Density ranges

Average Building Height

High Density Blocks

4-19 Storeys	170-250 dph Density
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Average Building Height

variety of ways. Sheffield has a high number of student accommodation and this impacts on density, distorting the density ranges of some developments. This can be misleading, therefore benchmark density is only used as a visual guide, not to calculate capacity. The approach to calculate density and capacity is explained in the next chapters.

Considerations To Inform Capacity Testing

- » Benchmarking is used to provide a visual representation of the density ranges proposed within the capacity study.
- » Benchmarking is not used to test capacity, but is a visual aid to accompany the quantitative element of the study.
- » Measuring densities in gross and net areas can distort overall densities.
- » Housing typologies, mix and floor areas can vary density and can be misleading when comparing densities.
- » Capacity should be tested and measured considering all variables including housing mix, floor areas and building heights to ensure a robust approach is applied.
- » A flexible approach is required to allow for variation in housing mix, typologies and floor area for future development.



Tall Buildings



Medium Density

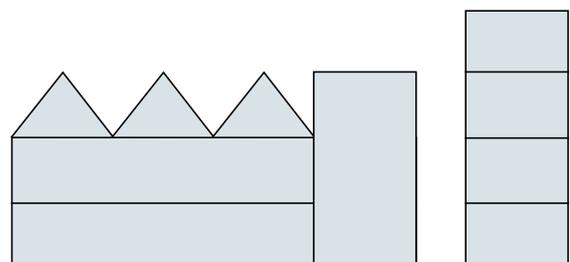
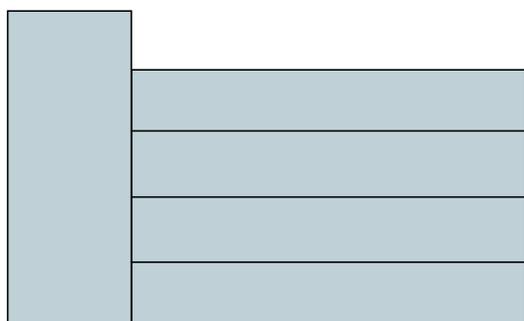


High Density



Townhouse / Terraces

Images above show a variety of typologies to achieve density



Medium
Density
Blocks

3-7
Storeys **90-170 dph**
Density

Average
Building Height

Townhouse /
Terrace Blocks

2-4
Storeys **55-90 dph**
Density

Average
Building Height

Site Testing to Determine Density

The Capacity Calculator

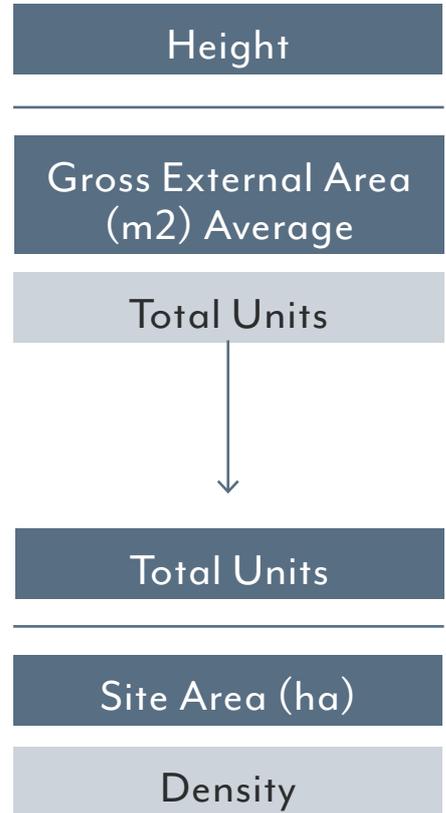


The diagram presents the capacity testing calculator that has been used to determine the residential densities (in dph) that will be applied to each site.

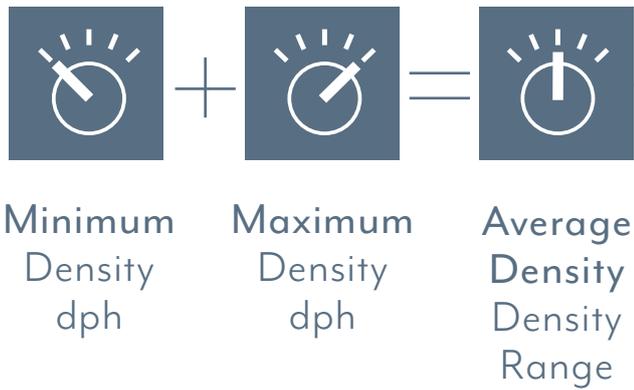
The calculator uses the proposed Gross External Area (GEA) of each site, determined by the Nationally Described Space Standard, and multiplies this by the proposed building height. Appropriate building heights for neighbourhoods have been informed by a thorough building heights analysis of The City, taking into account site location, existing height datums and planning permissions under construction.

A series of appropriate residential mixes are then applied to the overall GEA to determine the number of units on the site. The total number of units is then divided by the site area to provide a density range to apply to each site. The density range is applied to each site by multiplying the site area by the lower and upper number that define the density range, providing a minimum and maximum number of units for each site. From these figures, the average number of units can be calculated.

 Benchmark building height is determined by analysis of existing heights



Density Range

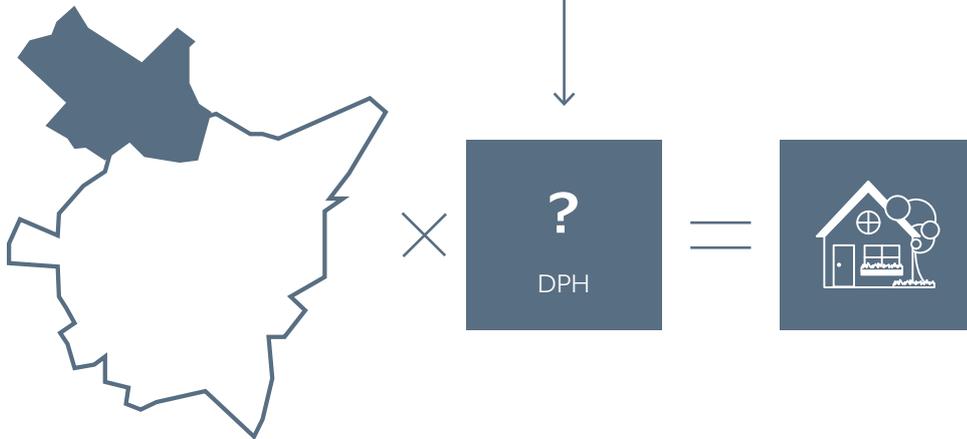


The density range produced by the Capacity Testing Calculator are applied to each site.

Flexibility is built into the capacity study by providing a minimum, maximum and average number of units to inform the overall totals.

Area Capacity

A minimum, maximum and average capacity is provided based on an appropriate density range for each site..



A Flexible Approach

The calculator provides flexibility in a number of ways. Firstly, it requires a minimum and maximum building height to be applied to each site. It also allows sites to be tested based on different housing mix scenarios. Both of these elements help to define a flexible density range used to generate the site capacity. Finally, capacity is provided using a minimum, maximum and average number of units, allowing informed decision-making based on housing need and demand.

Housing Mix Scenarios



An average 5% increase in GEA ensures capacity proposals are above minimum standards

Gross External Area (GEA)

GEA to GIA Assumption

80%

Flexibility above minimum standards

5%

Nationally Described Space Standard

Minimum gross internal floor areas and storage (m²)

Number of Bedrooms	Number of bed spaces (<i>persons</i>)	1 Storey Dwellings	2 Storey Dwellings	3 Storey Dwellings	Built in Storage
1 Bedroom	1p	39 (37)			1.0
	2p	50	58		1.5
2 Bedrooms	3p	61	70		2.0
	4p	70	79		
3 Bedrooms	4p	74	84	90	2.5
	5p	86	93	99	
	6p	95	102	108	
4 Bedrooms	5p	90	97	103	3.0
	6p	99	106	112	
	7p	108	115	132	
	8p	117	124	130	
5 Bedrooms	6p	103	110	116	3.5
	7p	112	119	125	
	8p	121	128	134	
6 Bedrooms	7p	116	123	129	4.0
	8p	125	132	138	

Sheffield City Council Previous Average Mix

Flat Type	Average GIA Floorspace (<i>sqm</i>)	Proposed Mix	Weighted Average	
1 Bedroom	50	45%	22.5	
2 Bedroom	61	50%	30.5	
3 Bedroom	86	5%	4.3	
4 Bedroom	0	0%	0.0	
			57.3	GIA
			68.8	GEA
			72.2	GEA + Flex

This mix is underpinned by the nationally described space standard. As the capacity study is exploring such a large area on a density basis, the nationally described space standard has been extrapolated into gross external area to keep all calculations in GEA. The assumption utilised for this is GIA at 80% of GEA, however this is flexible in the table to change if required. An additional 5% over minimum space standards is applied throughout, however the total is provided without this flexibility if required.

Developing Housing Mix Scenarios

Scenario 1 (New Mix - Apts - High to Very High Density)

House/Flat Type	Average GIA Floorspace (sqm)	Proposed Mix	Weighted Average	
1 Bed	50	40%	20.0	
2 Bed	70	50%	35.0	
3 Bed	95	10%	9.5	
4 Bed	0	0%	0.0	
			64.5	GIA
			77.4	GEA
			81.3	GEA + Flex

 **81.3 m²** is the average GEA used to allow for flex

Scenario 2 (Family- Low Density)

House Type	Average Townhouse GIA (sqm)	Proposed Mix	Weighted Average	
3B Townhouse	108	50%	54.0	
4B Townhouse	130	50%	65.0	
	0			
	0			
			119	GIA
			143	GEA
			143.9	GEA + Flex

 Housing mix can be changed according to the neighbourhood, this will alter the average GEA

Scenario 3 (Family / Apt - Medium Density)

Flat Type	Average Townhouse GIA (sqm)	Proposed Mix	Weighted Average	
1 Bed	50	15%	7.5	
2 Bed	70	30%	21.0	
3 Bed	108	35%	37.8	
4 Bed	130	20%	26.0	
			92.3	GIA
			10.18	GEA
			107.3	GEA + Flex

 Family housing mixed with apartments provides a medium density mix

Plot Testing

Density Framework

The building heights and residential mix scenarios inputted into the Capacity Calculator are determined by a sites location within The City. These include, but are not limited to, existing building height datums, proximity to amenities or existing residential tenures.

The table below explains the method through which the density range for each site is calculated.

Sketch GEA - this is based on a sketch layout assuming depth of block suitable for resi and includes movement considerations

Non-resi percentage allows for other uses such as ground floor retail, community or commercial use, or parking incorporated within the building footprint

Plot Code	Hectarage Gross	Min. Framework Height (Storeys)	Max. Framework Height (Storeys)	Sketch GEA Footprint (sqm)	Total GEA at Min. Height (sqm)	Total GEA at Max. Height (sqm)	Non-Resi Assumption	Total Residential GEA at Min. Height (sqm)	Total Residential GEA at Max. Height (sqm)	No. Homes at Min. Height and Unit Mix (SCC Mix)	No. Homes at Max. Height and Unit Mix (SCC Mix)
AI-WO-K-1	3.58	2	3	7,550	15,100	22650	10%	13590	20385	188	
AI-WO-KN-NR-2	open space										
AI-WO-K-3	1.70	2	3	3900	7,800	11700	10%	7020	10530	102	
AI-NE-K-7	1.25	3	4	4150	12,450	16600	10%	11205	14940	155	
*AI-NE-K-5	0.81	4	5	3860	15,440	19300	10%	13896	17370	192	
AI-NE-K-6	3.92	4	5	14660	58,640	73300	10%	52776	65970	865	
AI-PH-PA-8	0.13	Plan Perm	Plan Perm	Plan Perm	Plan Perm	Plan Perm	Plan Perm	Plan Perm	Plan Perm	Plan Perm	Plan Perm
AI-PH-K-1	1.08	3	5	1650	4,950	8250	10%	4455	7425	62	
AI-PH-K-2	0.27	4	5	2690	10,760	13450	10%	9684	12105	134	
AI-PH-K-3	0.33	4	5	1720	6,880	8600	10%	6192	7740	86	
AI-PH-K-4	0.29	3	4	2920	8,760	11680	10%	7884	10512	109	
AI-PH-K-5	0.10	4	5	350	1,400	1750	10%	1260	1575	17	
AI-NE-K-1	0.04	2	3	350	700	1050	10%	630	945	9	
AI-NE-K-2	1.01	3	5	3957	11,871	19785	10%	10683.9	17806.5	148	
AI-NE-K-3	0.46	3	5	1759.8	5,279	8799	10%	4751.46	7919.1	66	
AI-NE-K-4	1.75	3	4	7037	21,111	28148	50%	10555.5	14074	146	
AI-KI-K-1	2.73	3	7	9265	27,795	64855	10%	25015.5	58369.5	346	
AI-KI-K-2	1.56	3	6	9473	28,419	56838	10%	25577.1	51154.2	354	
AI-KI-K-3	0.27	6	8	1162.7	6,976	9302	10%	6278.58	8371.44	87	
AI-KI-K-4	0.10	6	7	1218	7,308	8526	10%	6577.2	7673.4	91	
										3159	

Options for a variety of housing unit mixes can be applied to allow for a variety of accommodation typologies

FAR ratio uses site 'massing' as an alternative method of measuring density. The FAR ratio is calculated by dividing total GEA by the plot size.

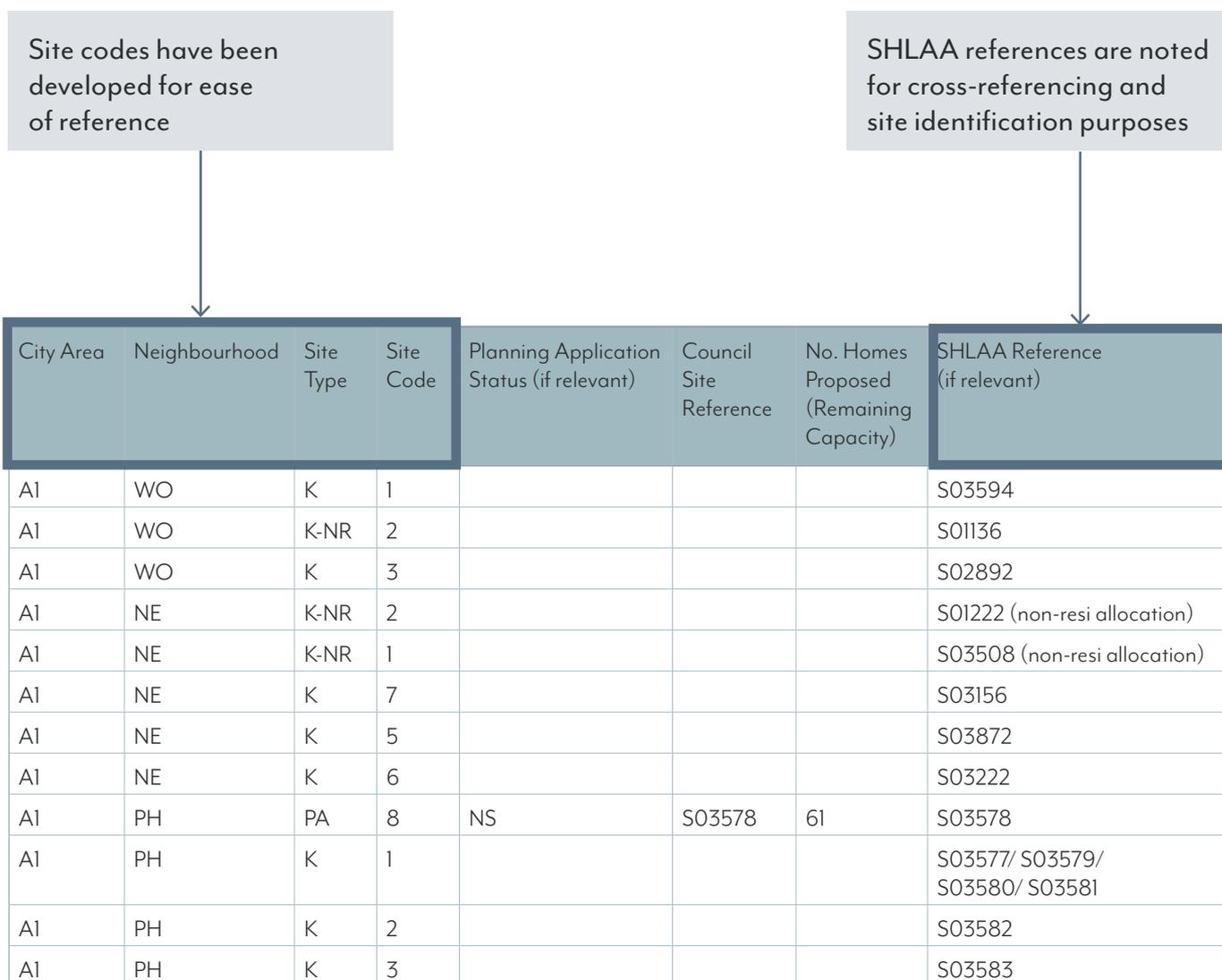
The site FAR ratio can then be referenced against the average FAR ratio for a neighbourhood (included in the townscape character summaries) to identify over or under development. Notes justifying why something might be higher than the neighbourhood FAR ratio (such as a key gateway location) or lower than the neighbourhood FAR ratio (such as heritage) help to draw a picture on appropriate density which isn't affected by the complications of dwellings per hectare.

Homes at Max. Height and Unit Mix Scenario 1 (New Mix - Apts)	No. Homes at Min. Height and Unit Mix Scenario 1 (New Mix - Apts)	No. Homes at Max. Height and Unit Mix Scenario 1 (New Mix - Apts)	No. Homes at Min. Height and Unit Mix Scenario 2 (Family)	No. Homes at Max. Height and Unit Mix Scenario 2 (Family)	No. Homes at Min. Height and Unit Mix Scenario 3 (Family/Apt)	No. Homes at Max. Height and Unit Mix Scenario 3 (Family/Apt)	Min. Height Scenario Density	Max. Height Scenario Density	Plot Testing Density Range (dph)	Max FAR Ratio	Gross/net density
			91	136			25	38	30 - 40	0.6	Gross
											Open Space
			47	70			28	41	30 - 40	0.7	Gross
					96	128	77	103	80 - 100	1.3	Gross
					119	149	148	184	150 - 200	2.4	Gross
					454	567	116	145	120 - 150	1.9	Gross
an Perm					Plan Perm	Plan Perm	Plan Perm	Plan Perm	Plan Perm	Plan Perm	Plan Perm
					38	64	35	59	40 - 60	0.8	Gross
					83	104	308	386	300 - 400	5.0	Net
107	76	95					231	325	250 - 330	2.6	gross
146					68	90	234	312	250 - 300	4.0	Net
22	16	19					155	218	200 - 250	1.8	Net
13					5	8	135	203	130 - 200	2.6	Gross
247					92	153	91	152	90 - 150	2.0	Gross
110					41	68	89	148	90 - 150	1.9	Gross
195					91	121	52	69	50 - 70	1.6	Gross
808					215	502	79	184	80 - 190	2.4	Gross
709					220	440	141	282	140 - 280	3.6	Gross
116	77	103					286	429	280 - 430	3.4	Gross
106	81	94					809	1063	800 - 1000	8.5	Gross
4813	250	312	137	206	1523	2395					

Capacity for Residential Development Area

The master schedule acts as a storage and information management system, containing the site codes, capacity calculator and the final capacity figures presented within the document. The schedule is a 'live file', and as such can be added to and subtracted from with ease. Fundamentally, it allows us to breakdown the overall residential capacity of The City by neighbourhood and City Area.

The below diagram summarises the method through which the density range calculated for each site is then applied to the site to determine its residential capacity.



Density range multiplied by the site area in hectares

Number of units based on minimum and maximum density

Hectarage	Min. Framework Density (dph)	Max. Framework Density (dph)	No. Homes at Min. Framework Density	No. Homes at Max. Framework Density	Avg. No. Homes	Net/ Gross - Notes
3.59	40	60	144	215	180	GROSS
4.15						
1.7	40	60	68	102	85	GROSS
1.85						
5.66						
1.25	80	100	100	125	113	NET
0.81	150	200	122	162	142	
3.92	120	150	470	588	529	NET
0.13						
1.08	40	60	43	65	54	
0.27	300	400	81	108	95	
0.33	250	330	83	109	96	

Capacity for Residential Development

Key Variables

A number of key variables have been used to inform the capacity study. The key variables are summarised below.

Environment

Environmental factors have been assessed and are presented in a series of site constraints diagrams for each City Area. These inform the capacity study by presenting the key townscape and landscape characteristics that must be considered in the capacity testing process for each neighbourhood and City Area. The environmental factors considered are:

- » Topography and views
- » Landmarks and City Centre gateways
- » Movement and connections
- » Railway and transport
- » Heritage
- » Scale, massing and height
- » Density
- » River edge
- » Landscape and open space

Mixed Use

The capacity study assumes 10% of the sites total GEA to be non-residential. This provides flexibility, and allows for the inclusion of a mix of land uses at ground floor level where this approach may be deemed appropriate.

The percentage of non-residential uses can be altered in accordance with requirements to respond to the sites location within The City. Further consideration will need to be given to where mixed use or non-residential uses are appropriate, and to the type and amount of use. The 'City Areas' chapter of the CAS begins to explore the potential future locations of amenities and facilities at The City Area scale, however the type and amount would need to be defined in more detailed Strategic Frameworks undertaken after the issue of the CAS.

1. Example of active street with mixed-use ground floor, Copenhagen.

2. Multi-storey car park integrated into the street with roof play area to maximise amenity, Northern Harbour, Copenhagen.

3. Mews typologies with integrated car parking at Accordia, Cambridge.

4. Green walls wrap the exterior of the car park to increase planting within the urban environment.



1.

🚗 Car Parking

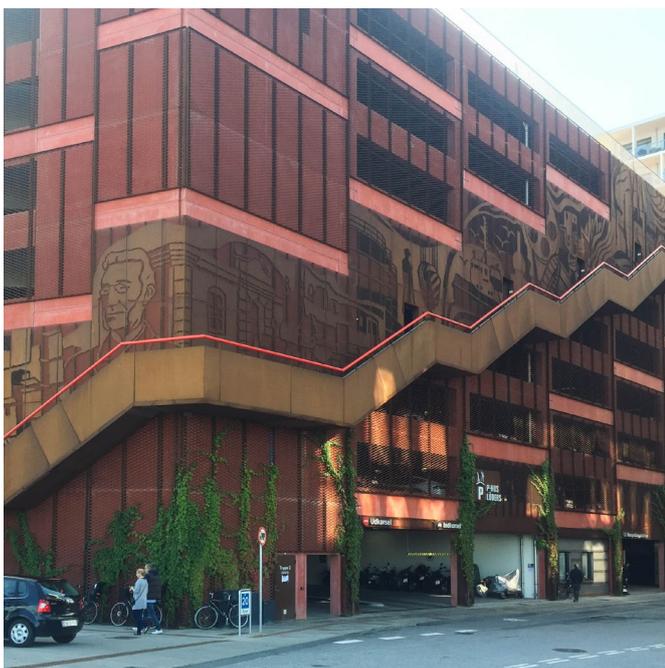
The capacity study approaches car parking in a pragmatic manner, appreciating private car ownership is still relied on by many as a primary means of transport. A cultural shift away from the use of private cars as a primary method of transport is ongoing, but slow.

That said, the study envisions a future where private cars are few and far between, especially within a City Centre context. The approach to car parking must respond to The City's climate change objectives, and as such must be designed to assume a major reduction in private car ownership over the course of the next 30 years.

Sheffield City Council's Transport Strategy seeks to ensure that parking is effectively and efficiently managed, in line with the Sheffield Parking Strategy. The Parking Strategy will be reviewed regularly to ensure it remains relevant, as development in the city, technology, and expectations of these, progress.

The capacity study will need to be flexible as the Parking Strategy is reviewed and the Sheffield Local Plan is progressed, but at this point in time it assumes the following:

- » Family housing will generally be located outside of the ring road, allowing for a potential future car free zone in the core of The City. This will incorporate car parking within the footprint of the unit. A separate allowance for parking is therefore not required.
- » A series of assumptions have been made when testing sites within the ring road. Higher density apartments within The City Core will deliver parking provision through any one of the following approaches:
 - A subterranean parking approach;
 - A wider strategy that delivers multi-storey car parking in strategic City locations. These would serve dwellings located in close proximity;
 - Where surface-level, private car parking is deemed a necessity, capacity testing allows for a percentage of each site to be used as either communal amenity space or parking (on larger sites measured using Gross); or
 - A 10% non-residential assumption within the GEA could allow for parking provision within the building footprint.



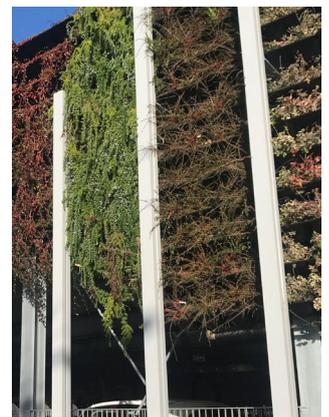
2.



3.



2.



4.

Capacity for Residential Development

Key Variables

Tall buildings

Potential for tall buildings has been considered as part of the analysis of each city area. Existing building heights within The City Centre have been assessed and areas that include existing tall buildings have been identified on the diagram on page 11. Sites with potential for tall buildings are highlighted in the schedules, generally building heights included within the capacity testing calculator do not exceed 15 storeys as there are few examples of sites above this height within The City. The suggested heights are in keeping within the surrounding context and are applied for the purposes of this study.

Future tall buildings need to be considered in further detail with consideration to skyline, topography, as well as deliver-ability, growth and viability. This report and the CAS is a basis to help assist further consideration of tall buildings with a cohesive and holistic approach.

Example of a variety of tall buildings in the following cities

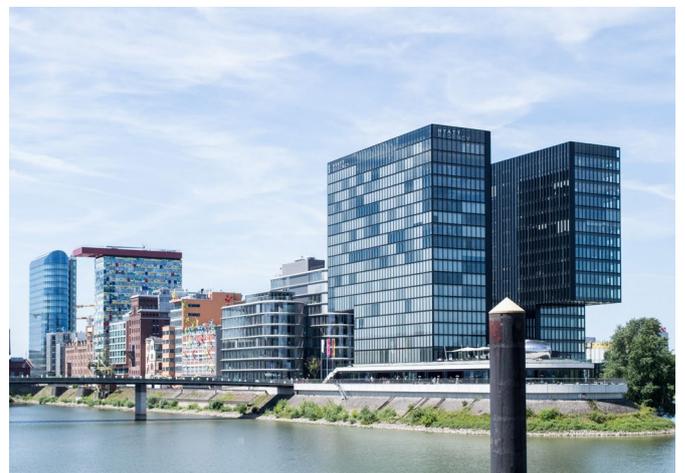
1. Liverpool, UK.
2. Northern Harbour, Copenhagen.
3. Dusseldorf, Germany.



1.



2.



3.

Private Amenity

The Capacity Study does not prescribe any one approach to the provision of private amenity space, allowing future development to address private amenity as a response to the individual considerations of the site. Private amenity could be delivered through any of the below approaches.

- » Building footprint (GEA) only covers part of each site, where a gross measurement has been used to calculate capacity on larger sites. The rest of the site is dedicated to uncovered private amenity or communal amenity space
- » Additionally, these blocks could also include protruding balconies or roof terraces, providing additional private amenity space for each apartment as well as any communal amenity space already considered at ground or podium level.
- » For any residential blocks that have been drawn using a net calculation on smaller infill sites, the Capacity Study assumes private amenity would be delivered through either balconies that protrude from the building footprint or elevated roof terraces



1.



2.

Examples of types of private amenity space as follows:

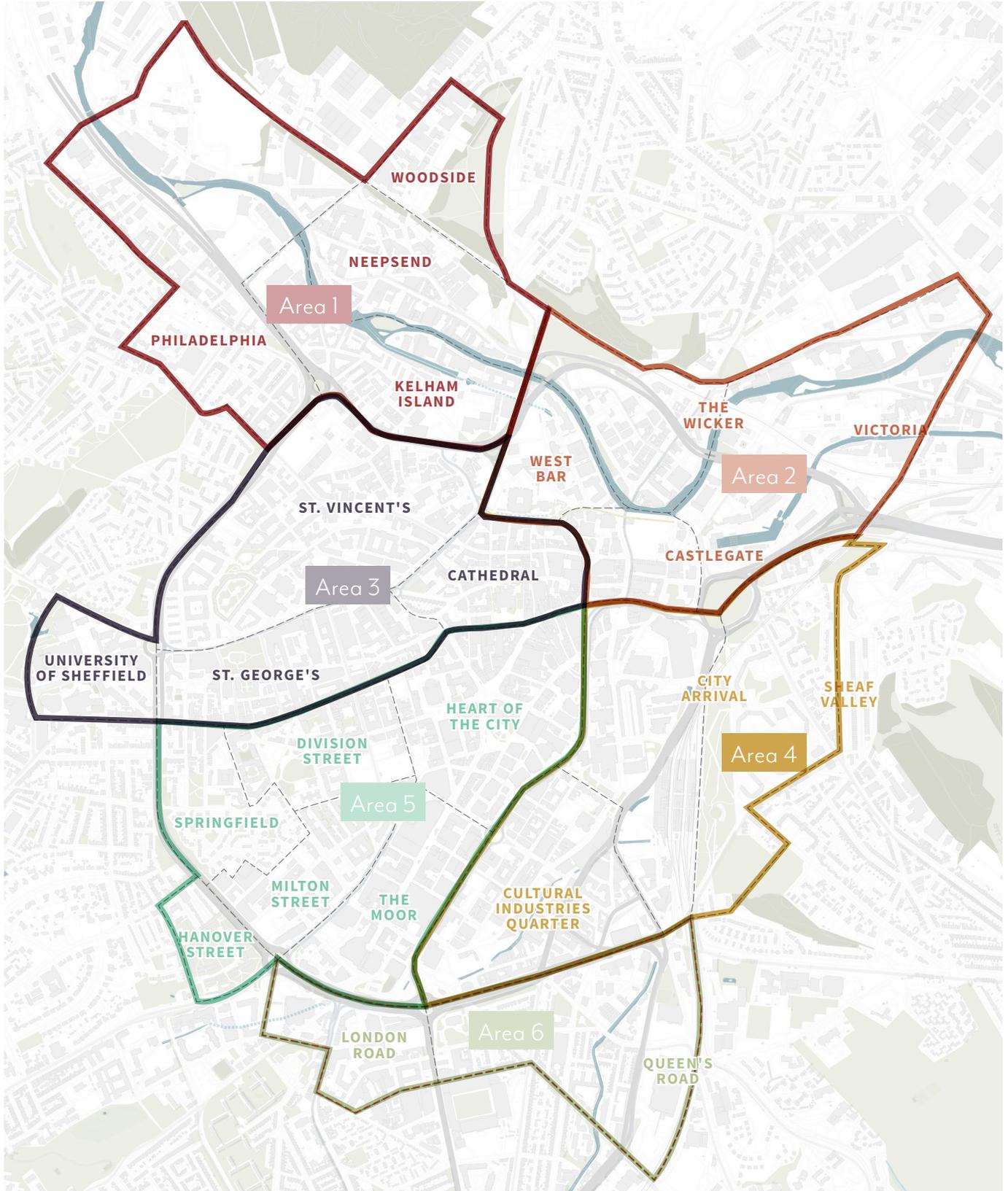
- 1. Roof terrace, Nordhavnen, Copenhagen.*
- 2. Internal terrace within curtilage of dwelling, Accordia, Cambridge.*
- 3. Variety of balconies and communal amenity, 8 House, Ørestad.*



3.



Central Area Capacity



City Area One

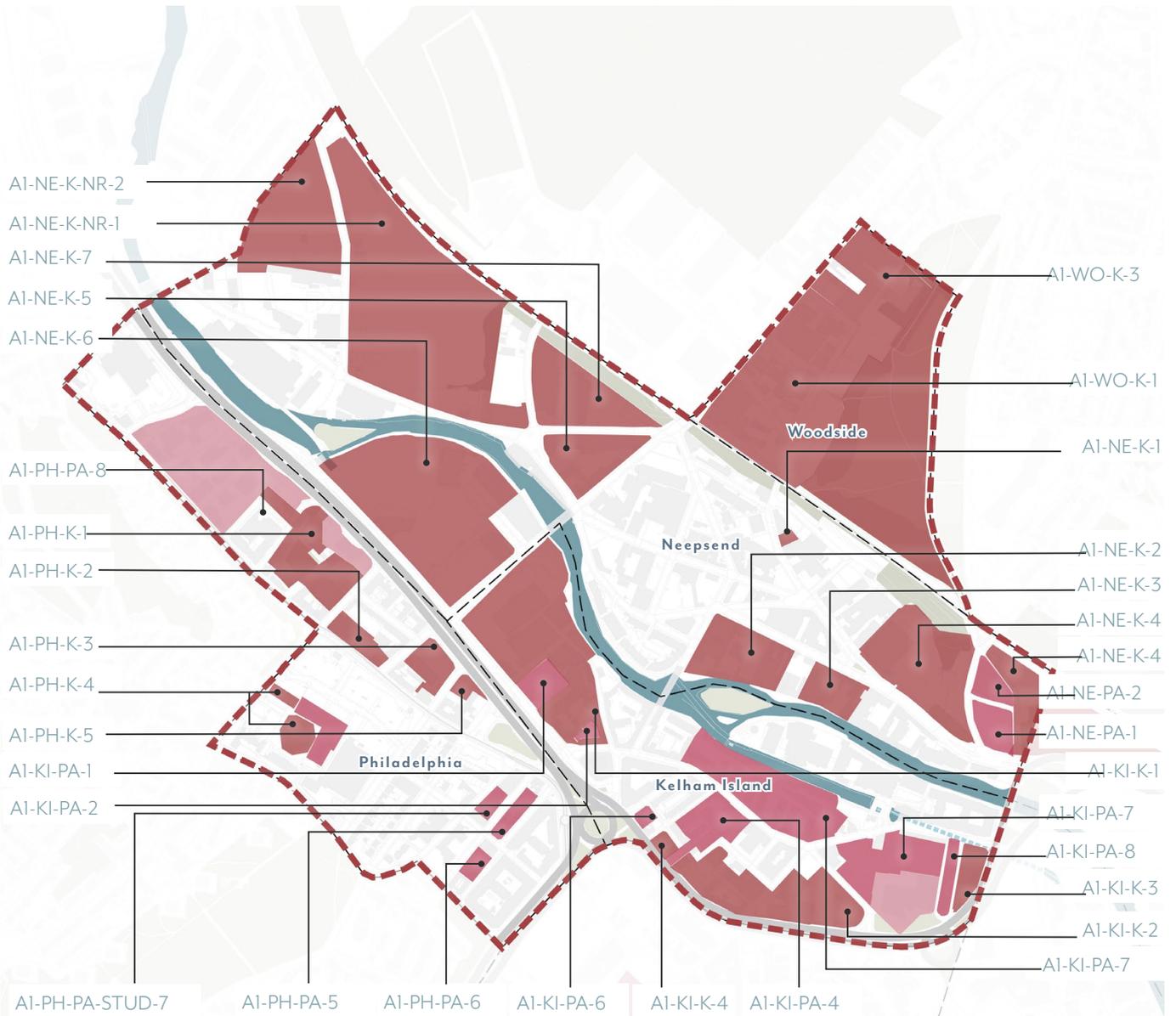
Kelham Island, Neepsend, Philadelphia, Woodside

Site code				Planning Application Status	No. Homes Proposed (Remaining Capacity)	Site Hectarage	Min. Framework Density (dph)	Max. Framework Density (dph)	No. Homes at Min. Framework Density	No. Homes at Max. Framework Density	Avg. No. Homes
AI	KI	FP	1			0.62					
AI	KI	GA	1			0.45					
AI	KI	GA	2			0.07					
AI	KI	K	1			2.73	80	190	218	519	369
AI	KI	K	2			1.56	140	280	218	437	328
AI	KI	K	3			0.27	280	430	76	116	96
AI	KI	K	4			0.1	800	1000	80	100	90
AI	KI	PA	1	NS	222	0.28					
AI	KI	PA	2	PAP	3	0.06					
AI	KI	PA	3	UC	73	1.55					
AI	KI	PA	4	UC	?	0.4					
AI	KI	PA	5	UC	34	0.1					
AI	KI	PA	6	UC	49	0.06					
AI	KI	PA	7	CS	98	0.83					
AI	KI	PA	8	PAP	86	0.19					
AI	KI	PA	9	UC	21	0.06					
AI	NE	FP	1			0.11					
AI	NE	K-NR	1			5.66					
AI	NE	K-NR	2			1.85					
AI	NE	K	1			0.04	130	200	5	8	7
AI	NE	K	2			1.01	90	150	91	152	121
AI	NE	K	3			0.46	90	150	41	69	55
AI	NE	K	4			1.75	50	70	88	123	105
AI	NE	K	5			0.81	150	200	122	162	142
AI	NE	K	6			3.92	120	150	470	588	529
AI	NE	K	7			1.25	80	100	100	125	113
AI	NE	PA	1	UC	131	0.31					
AI	NE	PA	2	UC	84	0.2					
AI	PH	FP	1			2.08					
AI	PH	FP	2			0.24					
AI	PH	GA	1			1.04					
AI	PH	GA	2			0.17					
AI	PH	K	1			1.08	40	60	43	65	54
AI	PH	K	2			0.27	300	400	81	108	95
AI	PH	K	3			0.33	250	330	83	109	96
AI	PH	K	4			0.29	250	300	73	87	80
AI	PH	K	5			0.1	200		20	25	23
AI	PH	PA-STUD	1	UC	9	0.04					
AI	PH	PA-STUD	7	PAP	36	0.11					
AI	PH	PA	2	NS	6	0.02					
AI	PH	PA	3	UC	55	0.31					
AI	PH	PA	4	UC	54	0.08					
AI	PH	PA	5	UC	46	0.09					
AI	PH	PA	6	PAP	62	0.11					
AI	PH	PA	8	NS	61	0.13					
AI	WO	K-NR	2			4.15					
AI	WO	K	1			3.59	40	60	144	215	180
AI	WO	K	3			1.7	40	60	68	102	85
					1130				2020	3109	2564



KEY

- Known Site
- Planning Permission
- Future Potential Site



Area One - Sites Plan

City Area One

Capacity Summary



Area 1	Site Status	No. Homes at Min. Density	No. Homes at Max. Density	Avg. No. Homes
Woodside	Planning Permissions	0		
	Known	212	317	265
Philadelphia	Planning Permissions	329		
	Known	299	394	346
Neepsend	Planning Permissions	215		
	Known	917	1226	1071
Kelham	Planning Permissions	586		
	Known	592	1172	882

Total Planning Permissions	1130		
Total Known Sites	2020	3109	2564
Total Gap Sites			
Total Future Potential			
Overall Total Units	2020	3109	2564

Total Capacity (avg. + planning permissions)	3694		
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*Capacity for Change refers to a City Area's ability to incorporate future residential development.

The percentage figure represents the amount of land identified within the study as having future development potential (known sites and planning permissions) as a percentage of the overall hectareage of The City Area.

Capacity for Change*

40.4%

Area One Capacity Summary

39.4 Ha

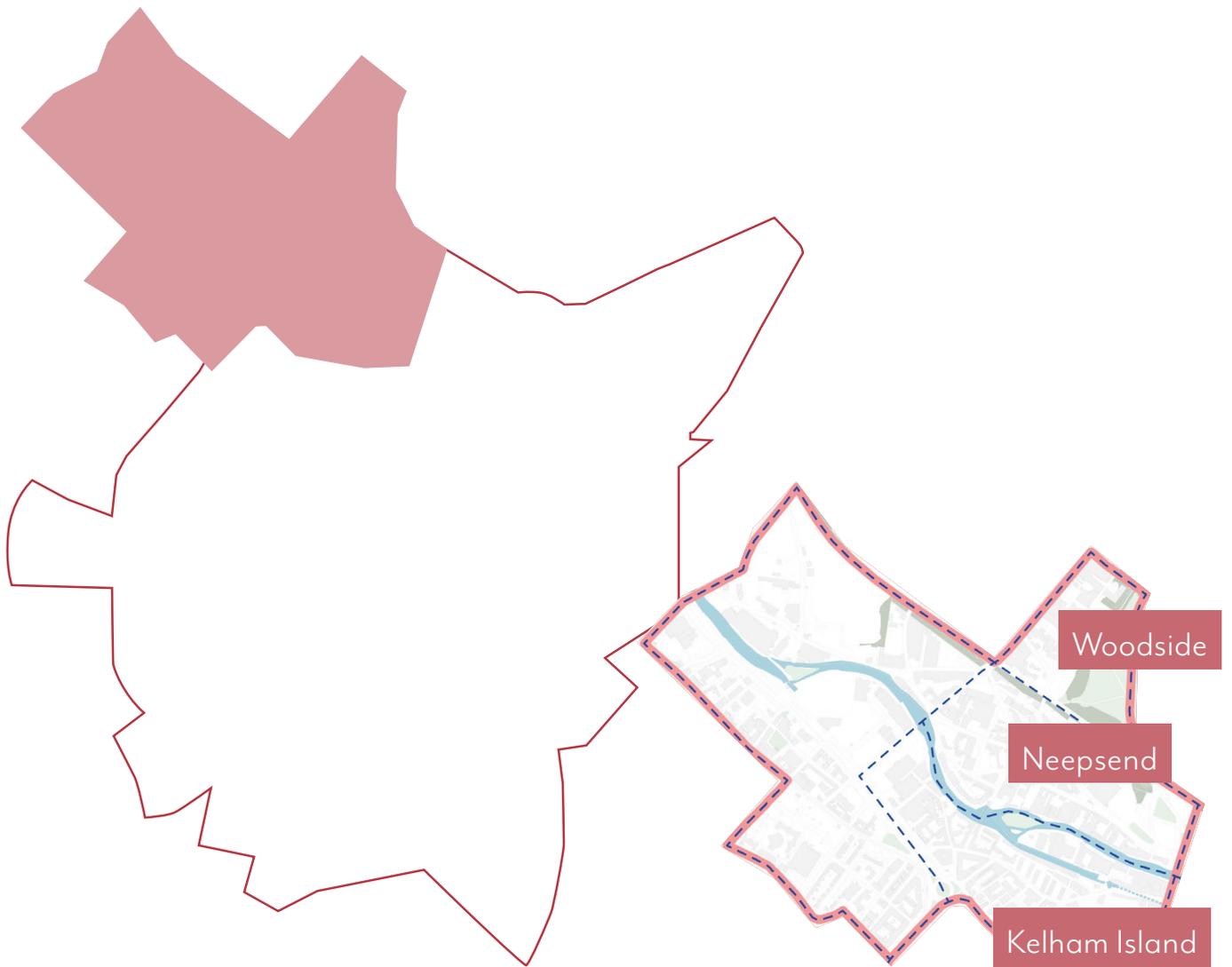
Total Area of Known Sites and Planning Permissions

2564 Total units

Known Sites (based on average density)

1130 Total units

Planning Permissions contributing towards the local plan



Maximum Homes	4239
Average Homes	3694
Minimum Homes	3150

the above totals include planning permissions

City Area Two

West Bar, The Wicker, Victoria, Castlegate

Site Area				Planning Application Status (if relevant)	No. Homes Proposed (Remaining Capacity)	Hectarage	Min. Framework Density	Max. Framework Density	No. Homes at Min. Framework Density	No. Homes at Max. Framework Density	Avg. No. Homes
A2	WI	K	1			0.6	90	150	54	90	72
A2	WI	K	2			0.38	120	160	46	61	53
A2	WI	K	3			0.14	130	180	18	25	22
A2	WI	K	4			0.13	130	180	17	23	20
A2	WI	K	5			0.06	130	180	8	11	9
A2	WI	K	6			0.29	130	180	38	52	45
A2	WI	K	7			0.24	130	180	31	43	37
A2	WI	K	8			1.07	130	180	139	193	166
A2	WI	K	9			0.22	130	180	29	40	34
A2	WI	K	10			1.92	140	210	269	403	336
A2	WI	PA	1	NS	24	0.07					
A2	WI	PA	2	NS	4	0.03					
A2	WI	PA	3	NS	5	0.04					
A2	WI	PA	4	NS	2	0.02					
A2	WI	PA	5	NS	268	0.33					
A2	WI	GA	1			0.1					
A2	WB	PA	1	OUT	346	2.6					
A2	V	PA	1	PAP	16	0.45					
A2	V	GA	1			0.26					
A2	V	GA	2			0.52					
A2	V	GA	3			0.21					
A2	V	GA	4			0.95					
A2	V	GA	5			0.27					
A2	V	GA	6			0.33					
A2	V	GA	7			0.34					
A2	V	GA	8			0.28					
A2	V	GA	9			0.45					
A2	V	GA	10			0.68					
A2	V	GA	11			0.68					
A2	CAS	K	1			0.18	400	700	72	126	99
A2	CAS	K	2			1.43	140	250	200	358	279
A2	CAS	K-NR	1			0.52					
A2	CAS	PA	1	NS	11	0.05					
A2	CAS	PA	2	NS	2	0.01					
A2	CAS	PA	3	PAP	28	0.04					
A2	CAS	PA	4	NS	12	0.02					
A2	CAS	GA	1			0.08					
A2	CAS	FP	1			0.33					
A2	CAS	FP	2			0.48					
					718				920	1425	1172



KEY

- Known Site
- Planning Permission
- Future Potential Site



Area Two - Sites Plan

City Area Two

Capacity Summary



Area 2	Site Status	No. Homes at Min. Density	No. Homes at Max. Density	Avg. No. Homes
West Bar	Planning Permissions	346		
	Known	0	0	0
The Wicker	Planning Permissions	303		
	Known	991	941	794
Victoria	Planning Permissions	16		
	Known	0	0	0
Castlegate	Planning Permissions	53		
	Known	272	484	378

Total Planning Permissions	718		
Total Known Sites	1263	1425	1172
Overall Total Units	1263	1425	1172

Total Capacity (avg. + planning permissions)	1890		
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*Capacity for Change refers to a City Area's ability to incorporate future residential development.

The percentage figure represents the amount of land identified within the study as having future development potential (known sites and planning permissions) as a percentage of the overall hectareage of The City Area.

Capacity for Change*

15%

Area Two Capacity Summary

10.9 Ha

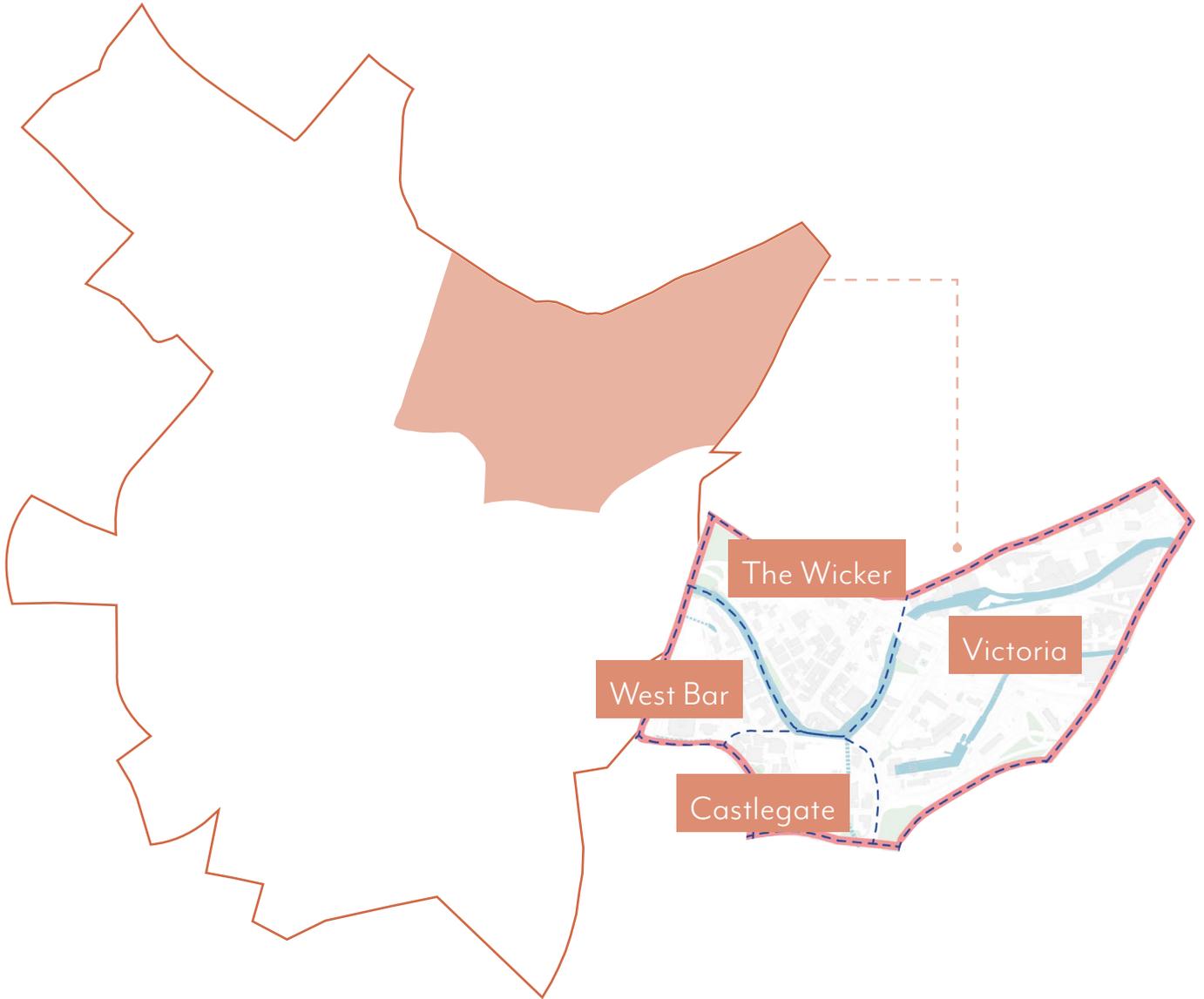
Total Area Known Sites and Planning Permissions

1172 Total units

Known sites (based on average density)

718 Total units

Planning Permissions contributing towards the local plan



	↑
	2143
Average Homes	1890
Minimum Homes	1638
	↓

The above totals include planning permissions.

City Area Three

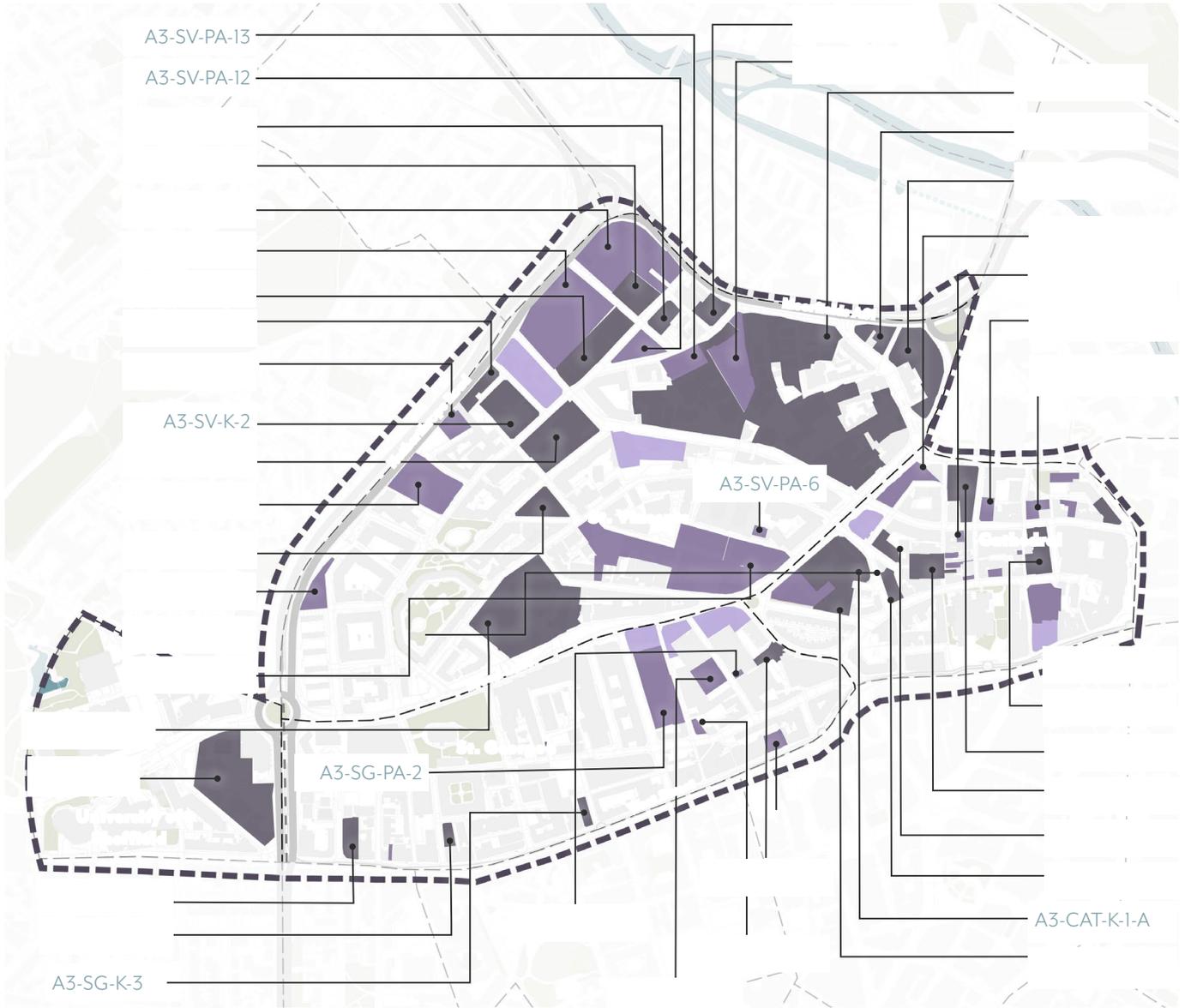
St. Vincent, Cathedral, St. George's, University of Sheffield

Site Code				Planning Application Status	No. Homes Proposed (Remaining Capacity)		Min. Framework Density	Max. Framework Density	No. Homes at Min. Framework Density	No. Homes at Max. Framework Density	Avg. No. Homes
A3	CAT	K	1-A			0.47	400	700	0	329	259
A3	CAT	K	1-B			0.19	60	90	11	17	14
A3	CAT	K	2			0.09	200	240	18	22	20
A3	CAT	K	3			0.08	550	750	44	60	52
A3	CAT	K	4			0.19	Public Space	Public Space	Public Space	Public Space	Public Space
A3	CAT	K	5-A			0.14	350	530	49	74	62
A3	CAT	K	5-B			0.13	160	260	21	34	27
A3	CAT	K	6			0.2	320	460	64	92	78
A3	CAT	K	7			0.07	650	1000	46	70	58
A3	CAT	PA	1	PAP	174	0.25					
A3	CAT	PA	2	NS	18	0.19					
A3	CAT	PA	3	PAP	3	0.02					
A3	CAT	PA	4	NS	3	0.01					
A3	CAT	PA	5	PAP	6	0.06					
A3	CAT	PA	6	PAP	4	0.02					
A3	CAT	PA	7	PAP	3	0.01					
A3	CAT	PA	8	PAP	28	0.02					
A3	CAT	PA-	9	UC	86	0.23					
A3	CAT	PA	10	PAP	3	0.004					
A3	CAT	PA	11	PAP	4	0.03					
A3	CAT	PA	12	UC	54	0.05					
A3	CAT	PA	13	UC	21	0.07					
A3	CAT	FP	1			0.13					
A3	CAT	FP	2			0.13					
A3	SV	K	1			0.12	190	300	23	36	29
A3	SV	K	2			0.37	200	360	74	133	104
A3	SV	K	3			0.58	250	430	145	249	197
A3	SV	K	4			0.19	250	430	48	82	65
A3	SV	K	5			1.37	200	300	274	411	343
A3	SV	K	6			0.35	200	330	70	116	93
A3	SV	K	7			0.46	200	330	92	152	122
A3	SV	K	8			0.12	600	1000	72	120	96
A3	SV	K	9			0.14	420	740	59	104	81
A3	SV	K	10-A			3.33	125	300	416	999	708
A3	SV	K	10-B			0.76	500	800	380	608	494
A3	SV	K	11			0.14	400	680	56	95	76
A3	SV	K	12			0.51	400	800	204	408	306
A3	SV	K	13			0.23	220	300	51	69	60
A3	SV	PA-	1	UC	106	0.15					
A3	SV	PA-	2	UC	68	0.08					
A3	SV	PA-	3	UC	124	0.25					
A3	SV	PA-	4	UC	457	0.87					
A3	SV	PA-	5	PAP	444	0.42					
A3	SV	PA-	6	UC	5	0.03					
A3	SV	PA-	7	NS	284	0.48					
A3	SV	PA	8	PAP	11	0.11					
A3	SV	PA	9	PAP	17	0.06					
A3	SV	PA	10	PAP	18	0.11					
A3	SV	PA	11	CS	36	0.43					
A3	SV	PA	12	OUT	41	0.18					
A3	SV	PA-	13	UC	288	0.17					
A3	SV	PA-	14	CS	414	1.01					
A3	SV	PA	15	NS	48	0.1					
A3	SV	PA	16	NS	43	0.06					
A3	SV	PA	17	PAP	500	0.8					
A3	SV	GA	1			0.06					
A3	SV	FP	1			0.4					
A3	SG	K	1			0.13	200	360	26	47	36
A3	SG	K	2			0.05	200	360	10	18	14
A3	SG	K	3			0.05	250	430	13	22	17
A3	SG	K	4			0.02	550	750	11	15	13
A3	SG	K	5			0.07	330	630	23	44	34
A3	SG	PA	1	UC	5	0.01					
A3	SG	PA-	2	NS	232	0.48					
A3	SG	PA-	3	UC	92	0.15					
A3	SG	PA	4	NS	13	0.03					
A3	SG	PA-	5	UC	214	0.07					
A3	SG	PA	6	NS	10	0.01					
A3	SG	FP	1			0.21					
A3	SG	FP	2			0.11					
A3	SG	FP	3			0.15					
A3	US	K	1-A			0.64	170	270	109	173	141
A3	US	K	1-B			0.52	100	150	52	78	65



KEY

- Known Site
- Planning Permission
- Future Potential Site



Cathedral Additional Planning Permissions

City Area Three

Capacity Summary



Area 3	Site Status	No. Homes at Min. Density	No. Homes at Max. Density	Avg. No. Homes
St Vincents	Planning Permissions	2904		
	Known	1963	3581	2772
Cathedral	Planning Permissions	407		
	Known	441	698	569
St Georges	Planning Permissions	566		
	Known	83	145	114
University of Sheffield	Planning Permissions	0		
	Known	161	251	206

Total Planning Permissions	3877		
Total Known Sites	2647	4675	3661
Overall Total Units	2647	4675	3661
Total Capacity	7538		

*Capacity for Change refers to a City Area's ability to incorporate future residential development.

The percentage figure represents the amount of land identified within the study as having future development potential (known sites and planning permissions) as a percentage of the overall hectareage of The City Area.

Capacity for Change

23%

Area Three Capacity Summary

18.5 Ha

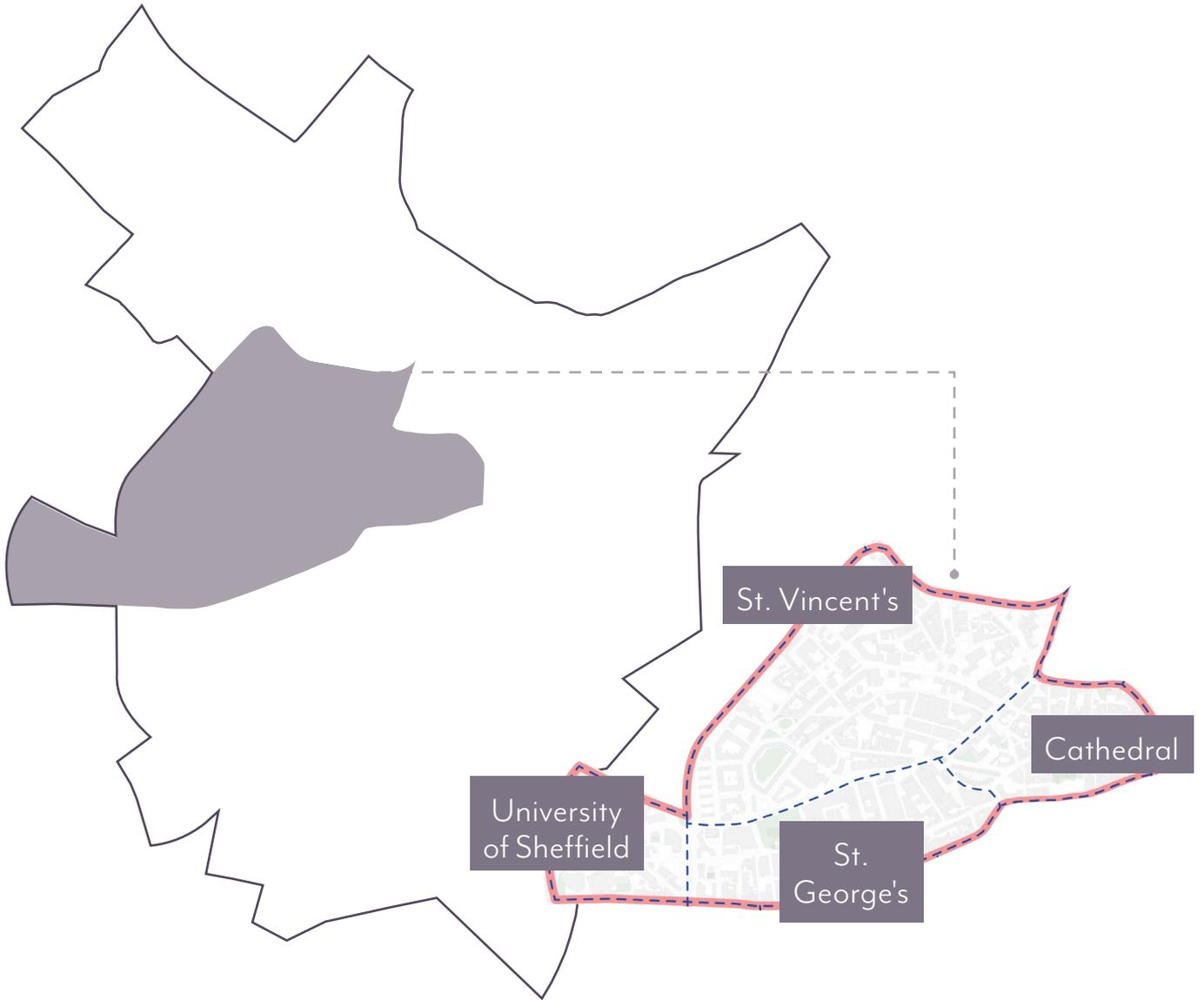
Total Area of Known Site and Planning Permissions

3661 Total units

Known Sites (based on average density)

3877 Total units

Planning Permissions contributing towards the local plan



Maximum Homes	8552
Average Homes	7538
Minimum Homes	6524

The above totals include planning permissions.

City Area Four

Sheaf Valley, City Arrival, Cultural Industries Quarter

Site Code				Planning Application Status	No. Homes Proposed (Remaining Capacity)	Hectarage	Min. Framework Density	Max. Framework Density	No. Homes at Min. Framework Density	No. Homes at Max. Framework Density	Avg. No. Homes
A4	CA	K	1			0.23	400	650	92	150	121
A4	CA	K	2			0.76	350	570	266	433	350
A4	CA	K	3			0.35	200	390	70	137	103
A4	CA	K-NR	1			0.49					
A4	CA	K-NR	2			0.15					
A4	CA	K-NR	3			0.27					
A4	CA	K-NR	4			0.54					
A4	CA	PA	1	CS	3	0.03					
A4	CA	PA-STUD	2	CS	42	0.44					
A4	CA	PA-STUD	3	PAP	15	0.04					
A4	CA	PA	4	NS	22	0.09					
A4	CA	GA	1			0.17					
A4	CA	FP	1			1.48					
A4	CA	FP	2			0.95					
A4	CA	FP	3			1.22					
A4	SH	K	1			1.67	100	150	167	251	209
A4	SH	K	2	Open Space		0.48	Open Space	Open Space	Open Space	Open Space	Open Space
A4	SH	PA	1	NS	199	1.62					
A4	SH	PA-STUD	2	NS	74	1.08					
A4	SH	PA	3	PAP	95	2.22					
A4	SH	PA	4	NS	16	0.07					
A4	SH	PA	5	NS	62	0.12					
A4	SH	GA	1			0.22					
A4	CI	K	1			0.1	450	700	45	70	58
A4	CI	K	2			0.21	300	550	63	116	89
A4	CI	K	3			0.1	250	450	25	45	35
A4	CI	K	4				Open Space	Open Space	Open Space	Open Space	Open Space
A4	CI	K	5			0.08	800	1400	64	112	88
A4	CI	K	6			0.29	250	450	73	131	102
A4	CI	K	7			0.54	200	350	108	189	149
A4	CI	K	8			0.11	200	350	22	39	30
A4	CI	K	9			0.19	400	700	76	133	105
A4	CI	K	10			0.01	400	600	4	6	5
A4	CI	K-NR	1			0.86					
A4	CI	PA	1	UC	335	0.59					
A4	CI	PA	2	UC	96	0.26					
A4	CI	PA	3	UC	10	0.04					
A4	CI	PA	4	UC	162	0.15					
A4	CI	PA-STUD	5	UC	139	0.11					
A4	CI	GA	1			0.08					
A4	CI	GA	2			0.16					
A4	CI	GA	3			0.27					
A4	CI	GA	4			0.03					
A4	CI	GA	5			0.07					
A4	CI	GA	6			0.17					
A4	CI	GA	7			0.31					
A4	CI	FP	1			0.85					
A4	CI	FP	2			0.22					
A4	CI	FP	3			0.25					
					1270			1075	1809	1442	



KEY

- Known Site
- Planning Permission
- Future Potential Site



Sites Plan

City Area Four

Capacity Summary



Area 4	Site Status	No. Homes at Min. Density	No. Homes at Max. Density	Avg. No. Homes
Sheaf Valley	Planning Permissions	446		
	Known	167	251	209
City Arrival	Planning Permissions	82		
	Known	428	719	574
Cultural Industries Qtr	Planning Permissions	742		
	Known	480	840	660
Total Planning Permissions		1270		
Total Known Sites		1075	1809	1442
Overall Total Units		1075	1809	1442
TOTAL CAPACITY (avg. + planning permissions)		2712		

*Capacity for Change refers to a City Area's ability to incorporate future residential development.

The percentage figure represents the amount of land identified within the study as having future development potential (known sites and planning permissions) as a percentage of the overall hectareage of The City Area.

Capacity for Change*

18.4%

Area Four Capacity Summary

14.9 Ha

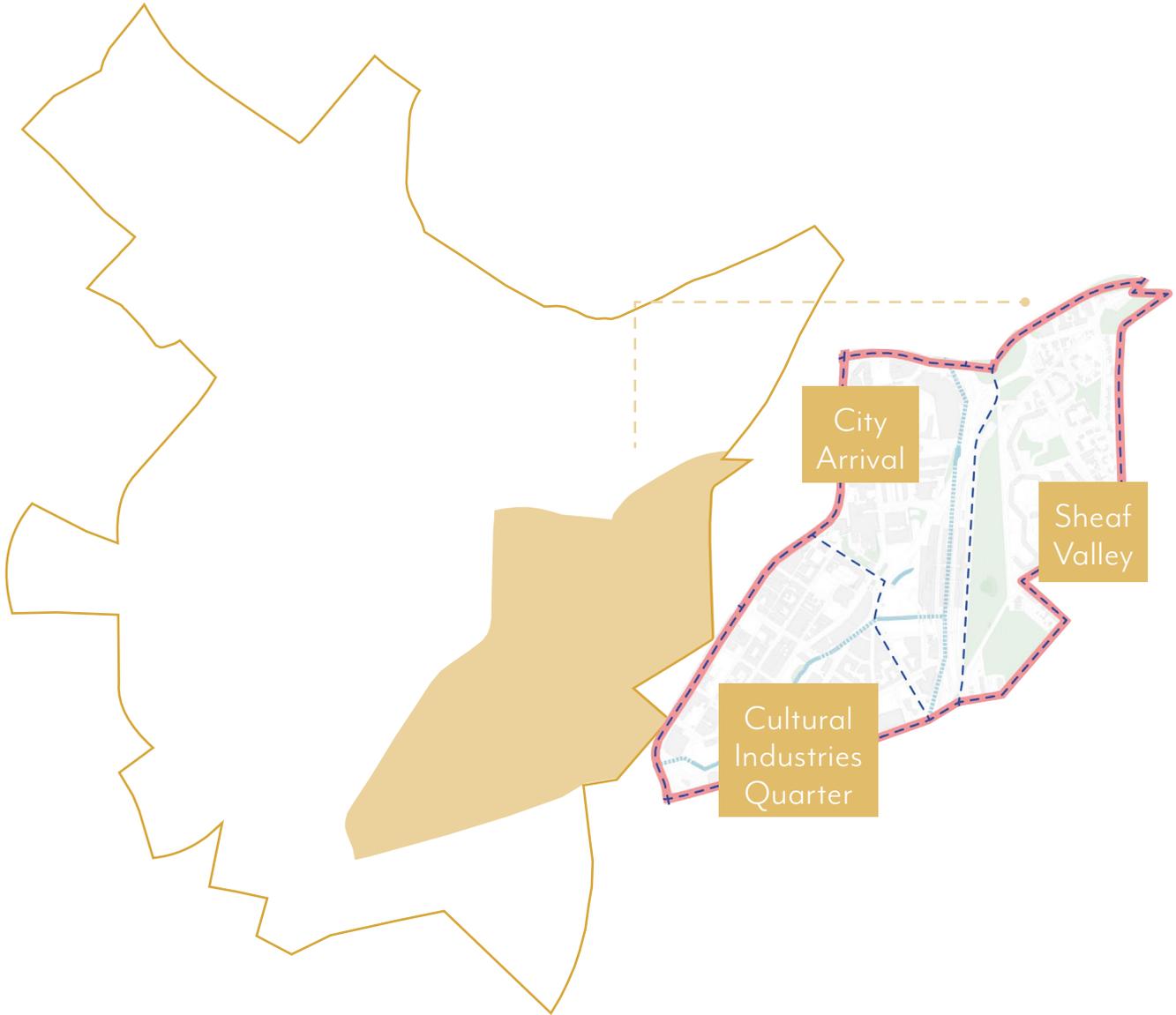
Total Area of Known Sites and Planning Permissions

1442 Total units

Known Sites (based on average density)

1270 Total units

Planning Permissions contributing towards the local plan



Maximum Homes	3079
Average Homes	2712
Minimum Homes	2345

The above totals include planning permissions.

City Area Five

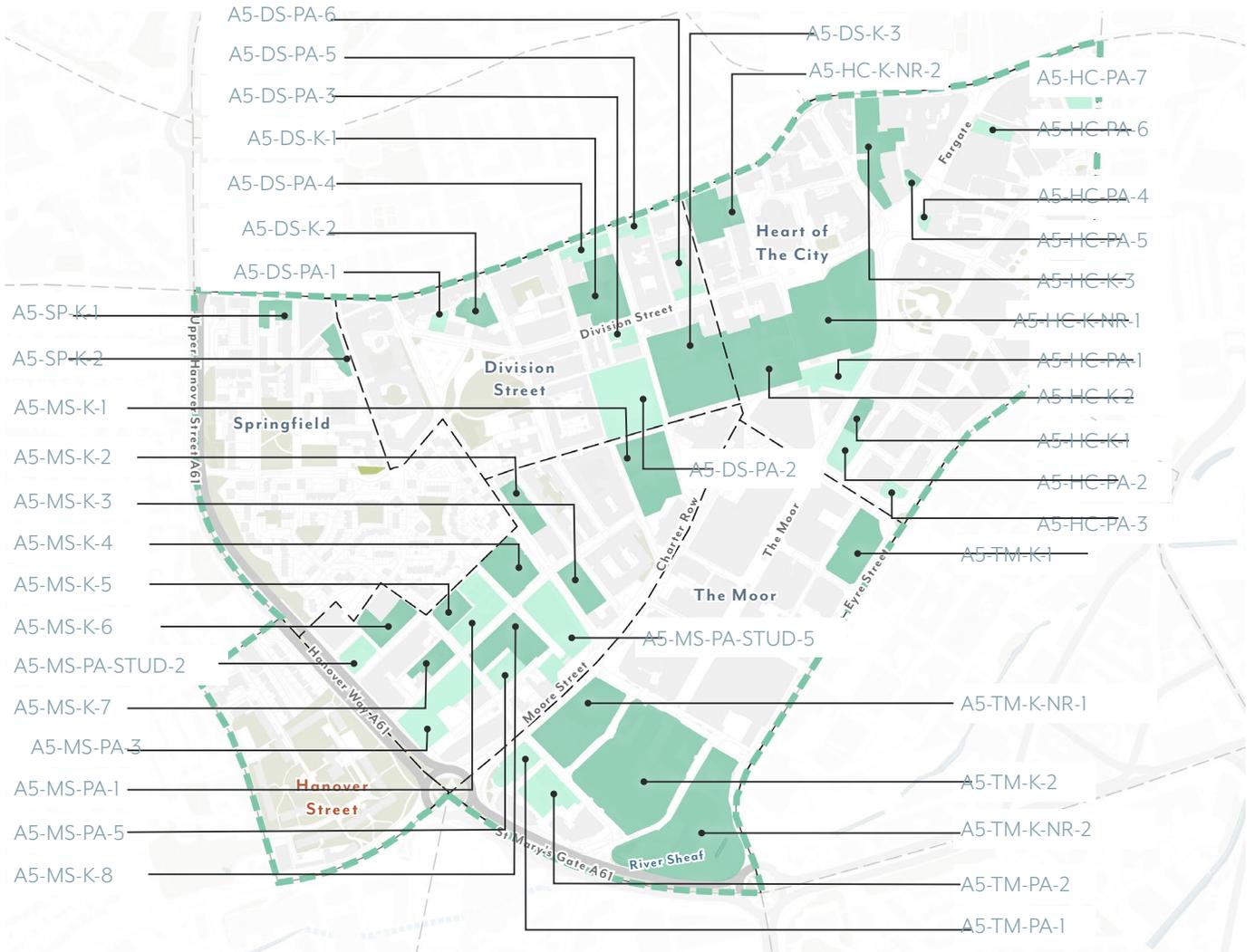
Heart of The City, Division Street, Springfield, Milton Street, The Moor, Hanover Street

Site Code				Planning Application Status	No. Homes Proposed (Remaining Capacity)	Hectarage	Min. Framework Density (dph)	Max. Framework Density (dph)	No. Homes at Min. Framework Density	No. Homes at Max. Framework Density	Avg. No. Homes
A5	TM	K	1			0.42	550	850	231	357	294
A5	TM	K	2			1.79	300	450	537	806	671
A5	TM	K-NR	1			0.75					
A5	TM	K-NR	2			1.61					
A5	TM	PA	1	NS	44	0.19					
A5	TM	PA	2	PAP	83	0.16					
A5	HC	K	1			0.1	500	800	50	80	65
A5	HC	K	2			0.8	100	200	80	160	120
A5	HC	K	3			0.49	100	200	49	98	74
A5	HC	K	4			0.03	250	500	8	15	11
A5	HC	K-NR	1			1.29					
A5	HC	K-NR	2			0.36					
A5	HC	PA	1	UC	52	0.3					
A5	HC	PA	2	OUT	250	0.16					
A5	HC	PA	3	UC	69	0.06					
A5	HC	PA	4	NS	12	0.03					
A5	HC	PA	5	NS	2	0.02					
A5	HC	PA	6	UC	46	0.09					
A5	HC	PA-STUD	7	NS	101	0.27					
A5	DS	K	1			0.49	200	350	98	172	135
A5	DS	K	2			0.16	150	300	24	48	36
A5	DS	K	3			1.01	400	600	404	606	505
A5	DS	PA	1	CS	12	0.05					
A5	DS	PA	2	PAP	364	0.74					
A5	DS	PA	3	UC	39	0.09					
A5	DS	PA	4	PAP	96	0.14					
A5	DS	PA-STUD	5	UC	13	0.09					
A5	DS	PA	5	NS	23	0.14					
A5	DS	GA	1			0.26					
A5	DS	GA	2			0.03					
A5	SP	K	1			0.11	300	600	33	66	50
A5	SP	K	2			0.12	200	300	24	36	30
A5	SP	GA	1			0.07					
A5	SP	GA	2			0.04					
A5	SP	GA	3			0.03					
A5	SP	GA	4			0.04					
A5	SP	GA	5			0.06					
A5	MS	K	1			0.59	300	500	177	295	236
A5	MS	K	2			0.18	300	550	54	99	77
A5	MS	K	3			0.21	300	500	63	105	84
A5	MS	K	4			0.34	300	500	102	170	136
A5	MS	K	5			0.15	250	350	38	53	45
A5	MS	K	6			0.23	300	500	69	115	92
A5	MS	K	7			0.14	250	400	35	56	46
A5	MS	K	8			0.39	250	450	98	176	137
A5	MS	PA	1	UC	97	0.34					
A5	MS	PA-STUD	2	CS	39	0.14					
A5	MS	PA	3	PAP	372	0.51					
A5	MS	PA	4	PAP	145	0.13					
A5	MS	PA-STUD	5	UC	355	0.47					
A5	MS	PA	6	PAP	93	0.07					
A5	MS	FP	1								
					2307				2173	3511	2842



KEY

- Known Site
- Planning Permission



Sites Plan

City Area Five

Capacity Summary

Area 5	Site Status	No. Homes at Min. Density	No. Homes at Max. Density	Avg. No. Homes
Heart of the City	Planning Permissions	532		
	Known	187	353	270
Division Street	Planning Permissions	547		
	Known	526	826	676
Springfield	Planning Permissions	0		
	Known	57	102	80
Milton Street	Planning Permissions	1101		
	Known	635	1068	852
Hanover Street	Planning Permissions	0		
	Known	0	0	0
The Moor	Planning Permissions	127		
	Known	768	1163	965

Total Planning Permissions	2307		
Total Known Sites	1405	3511	2842
Overall Total Units	1405	3511	2842

TOTAL CAPACITY (avg. + planning permissions)	5149		
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Capacity for Change*

18.4%

Area Five Capacity Summary

14.9 Ha

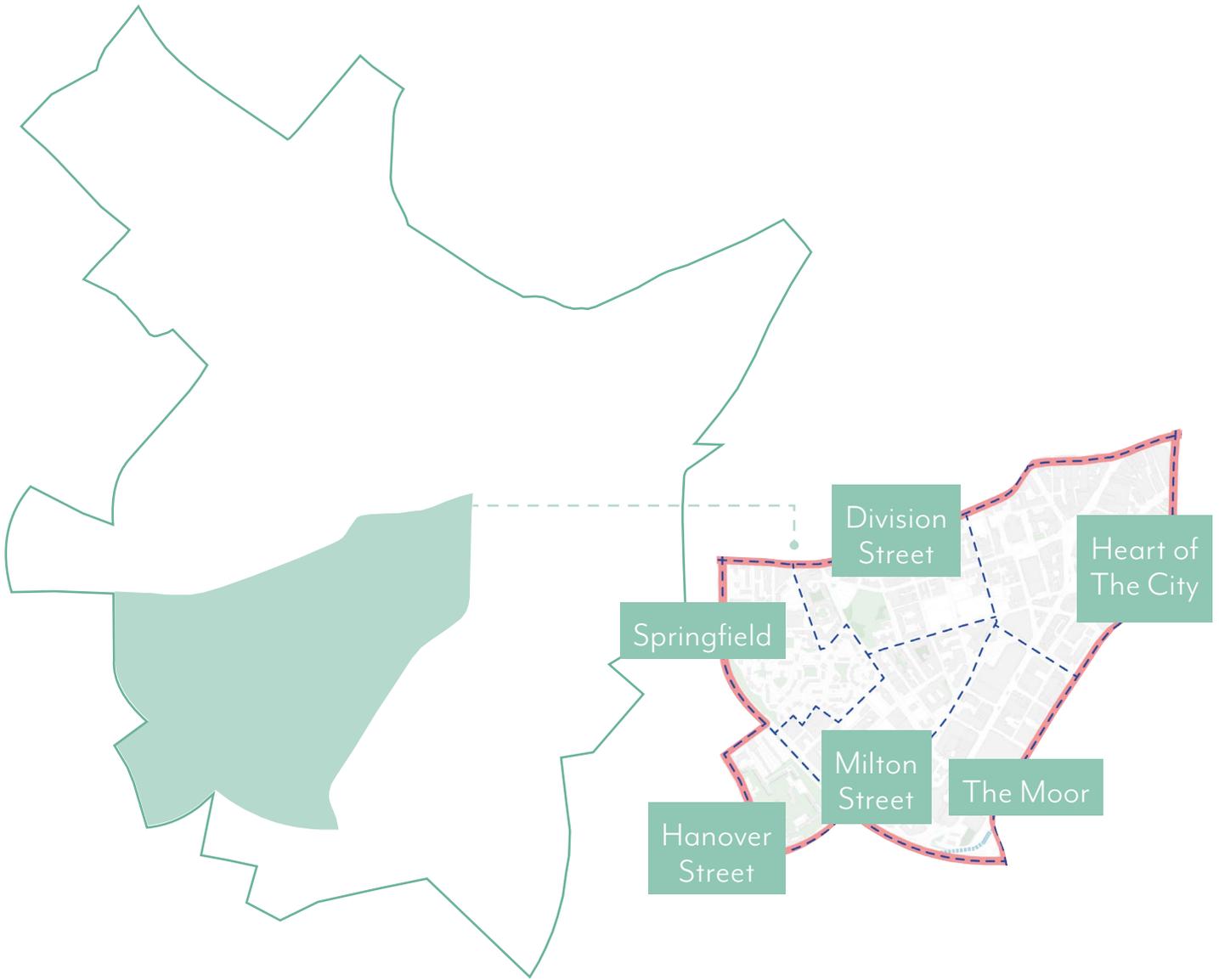
Total Area of Known Sites and Planning Permissions

2842 Total units

Known Sites (based on average density)

2307 Total units

Planning Permissions contributing towards the local plan



Maximum Homes	5818
Average Homes	5149
Minimum Homes	3712

The above totals include planning permissions.

City Area Six

London Road, Queen's Road

Site Code				Planning Application Status	No. Homes Proposed (Remaining Capacity)	Hectarage	Min. Framework Density	Max. Framework Density	No. Homes at Min. Framework Density	No. Homes at Max. Framework Density	Avg. No. Homes
A6	LR	PA-STUD	1	UC	173	0.89					
A6	LR	PA-STUD	2	UC	136	0.54					
A6	LR	GA	1			0.34					
A6	LR	GA	2			1.08					
A6	LR	FP	1			0.92					
A6	LR	FP	2			0.13					
A6	QR	K	1			0.45	450	700	203	315	259
A6	QR	PA	1	PAP	1	0.01					
A6	QR	PA	2	UC	2	0.02					
A6	QR	FP	1			2.89					
A6	QR	FP	2			0.88					
A6	QR	FP	3			3.69					
A6	QR	FP	4			0.59					
A6	QR	FP	5			0.12					
					312				203	315	259



KEY

- Known Site
- Planning Permission
- Future Potential Site



Sites Plan

City Area Six

Capacity Summary



Area 6	Site Status	No. Homes at Min. Density	No. Homes at Max. Density	Avg. No. Homes
London Road	Planning Permissions	309		
	Known	0	0	0
Queens Road	Planning Permissions	3		
	Known	203	315	259

Total Planning Permissions	312		
Total Known Sites	203	315	259
Overall Total Units	203	315	259

TOTAL CAPACITY (avg. + planning permissions)	571		
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*Capacity for Change refers to a City Area's ability to incorporate future residential development.

The percentage figure represents the amount of land identified within the study as having future development potential (known sites and planning permissions) as a percentage of the overall hectareage of The City Area.

Capacity for Change*

6.1%

Area Six Capacity Summary

2.5 Ha

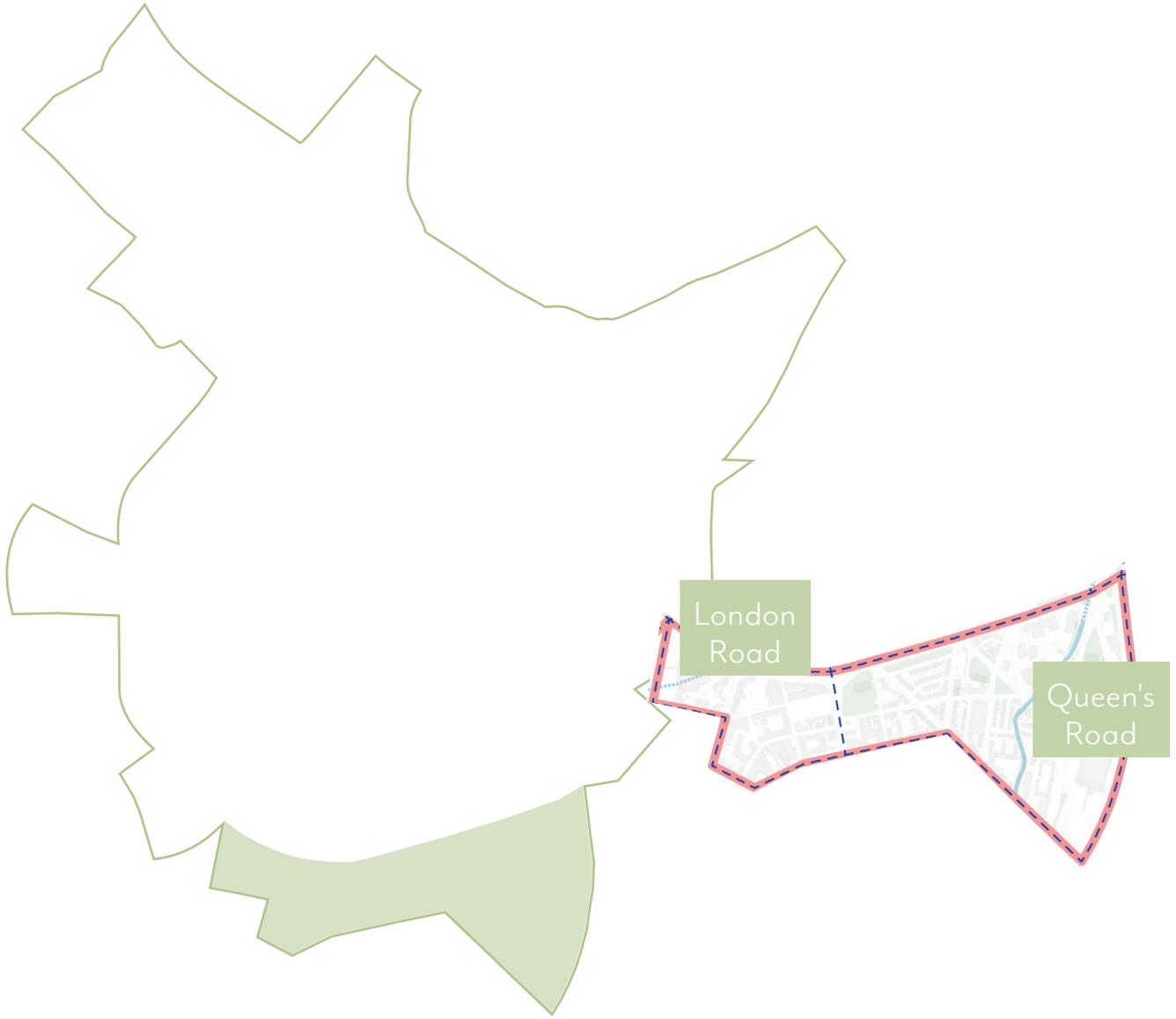
Total Area of Known Sites and Planning Permissions

259 Total units

Known Sites (based on average density)

312 Total units

Planning Permissions contributing towards the local plan



	↑ 627
Average Homes	571
Minimum Homes	515 ↓

The above totals include planning permissions.

City Capacity Summary

Area	Known Sites No. Homes at Min. Density	Known Sites No. Homes at Max. Density
Area 1	2020	3109
Area 2	1263	1425
Area 3	2647	4675
Area 4	1075	1809
Area 5	1405	3511
Area 6	203	315

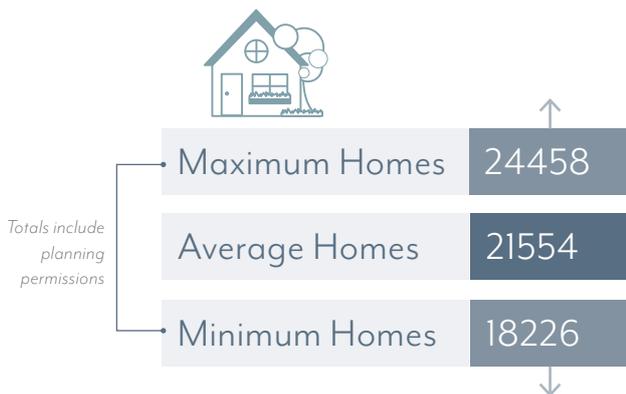
Known Sites (avg. no. units)	Planning Permissions (proposed no. units)	Total Central Area Capacity (avg. no. of homes + planning permissions)
2564	1130	3694
1172	718	1890
3661	3877	7538
1442	1270	2712
2842	2307	5149
259	312	571

Known Sites (average no. homes)	11940

*Capacity for Change refers to a City Area's ability to incorporate future residential development.

The percentage figure represents the amount of land identified within the study as having future development potential (known sites and planning permissions) as a percentage of the overall hectareage of The City Area.

Capacity for Change* **22%**



Area One Capacity Summary

100.5 Ha

Total Area of Known Sites and Planning Permissions

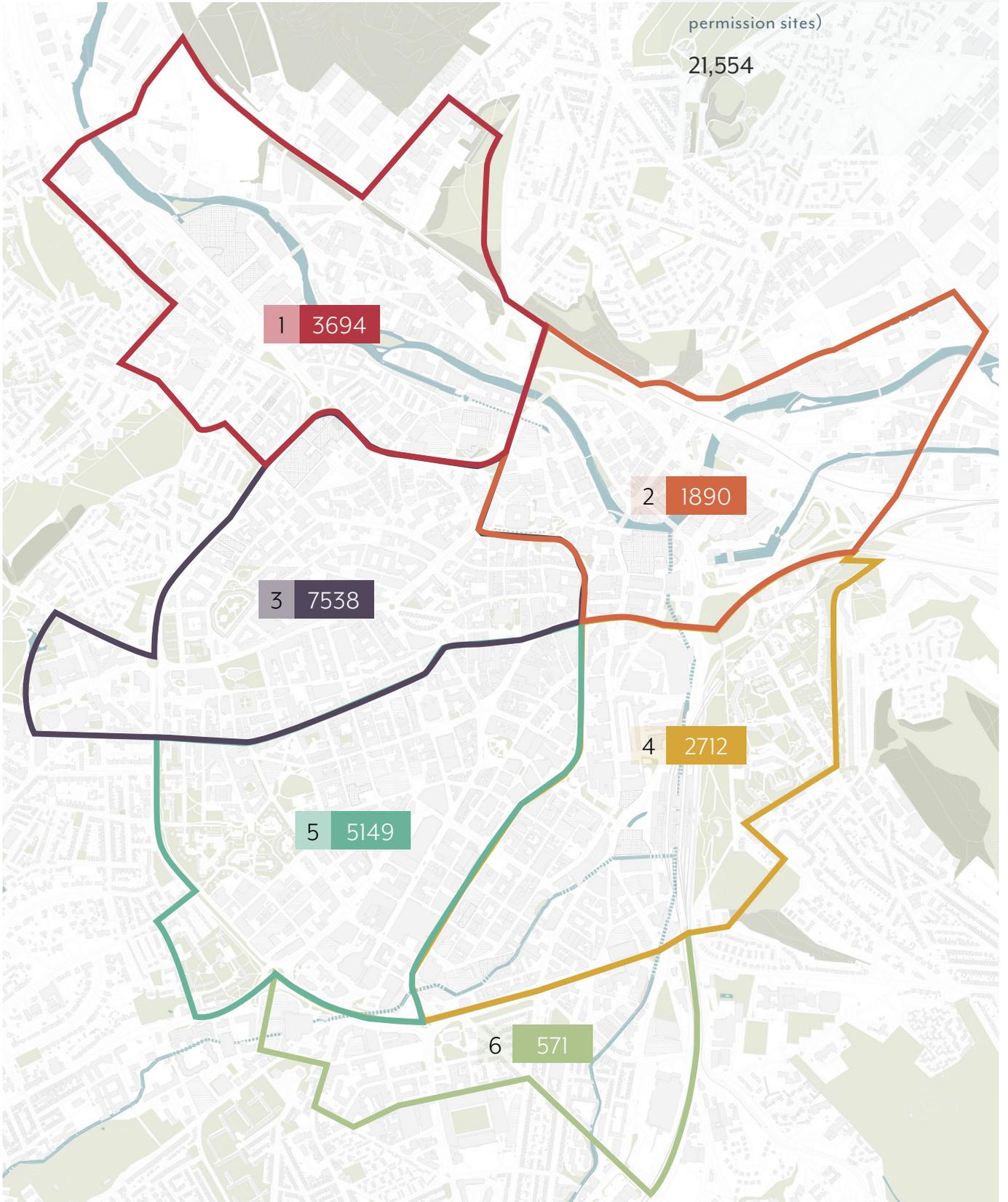
455 Ha

CAS Strategy Boundary

Total Capacity

(Based on average number of known sites and planning permission sites)

21,554



Limitations and Assumptions of the Capacity Study

The study provides capacity for Known Sites only, whilst also taking into account the proposed capacity of all planning permissions in the system at the time of writing. Gap Sites and Future Potential Sites have not been assessed and the capacity for these sites will need further consideration.

The location and height of tall buildings, as proposed in the Central Area Strategy (CAS), is driven by the variables listed on page 16. The scope of this report prevents the production of a detailed tall buildings strategy for The City. A cohesive tall buildings strategy for The City Centre should be produced, driven by in-depth analysis and underpinned by the initial findings contained in the CAS, which provides a sound basis to assess the location for future City Centre tall building proposals.

The capacity calculator assumes a 10% deduction of the total GEA for non-residential uses. Further consideration of the location and amount of mixed use development should be captured by more detailed, area-based frameworks moving forward. Where it is deemed that a larger proportion of a site (above the already assumed 10%) is required for non-residential land use, the residential capacity of the site will naturally decrease. The impact of this on the residential capacity of The City Centre is dependant on the degree of variance between the assumed 10% non-residential land use used within this methodology and future proposals for each site.

The Capacity Study considers strategic open space in two ways. Where a site is considered to be unsuitable for development, or it is deemed that open space would be the most suitable use of the site in placemaking terms, it has been given a capacity of zero and listed as 'Open Space' within the schedule. More incidental open space proposals have been captured where a gross density calculation has been used to test larger Known Sites.

Strategic open space considerations will be provided within the final CAS document on an area-by-area basis, and have been informed by the townscape analysis undertaken as part of the study. Suggestions regarding the amount, type and location of open space are driven by a multitude of variables including, site constraints considerations, land use analysis, existing and future residential unit numbers and walking distances.

What Next

An internal review of the capacity work undertaken to date, considering the method through which the master schedule will be managed in the future. Further analysis of the Future Potential Sites and Gap Sites is recommended. An approach will need to be agreed, helping to rationalise the selection of these sites. It is recommended that any future study should focus on sites that could shape larger areas of potential growth in The City, or sites that could help to complete or unlock larger strategic areas. These sites should be tested for capacity, informed by the findings of the CAS.

Appendix

Site Coding Tables

AREA CODE	NEIGHBOURHOOD CODE	
A1	KI	Kelham Island
	NE	Neepsend
	PH	Philadelphia
	WO	Woodside
A2	WI	The Wicker
	CAS	Castlegate
	V	Victoria
	WB	West Bar
A3	SV	St Vincents
	SG	St Georges
	CAT	Cathedral
	CA	City Arrival
	US	University of Sheffield

SITE STATUS		
KNOWN SITES		
K	Known Site (SHLAA/ Brownfield/ Call for Sites)	
K-NR	Known Site (non-residential allocation)	
OPPORTUNITY SITES		
Future Site Code	Type of Future Site	
GS	Gap Site (vacant land/ surface car park)	
FP	Future Potential Site (sites identified in existing strategic documents not included in schedules/ sites with incompatible future City Centre land uses/ potential strategic sites without current allocation)	
PLANNING PERMISSION SITES		
Planning Permission	Planning Permission Status Code	
PA	UC	Under Construction
PA	CS	Construction Suspended
PA	NS	Full planning permission (not started at 01.04.2019)
PA	OUT	Outline Planning (at 01.04.2019)
PA	PAP	Full planning permission (granted permission after 01.04.2019)

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