

RPP11

Greater London Authority

**GLA Density Project 4: Exploring
Character and Development
Density**

Final Report

Draft 3 | 20 May 2016

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 247474-00

Ove Arup & Partners Ltd
13 Fitzroy Street
London
W1T 4BQ
United Kingdom
www.arup.com

ARUP

Document Verification

Job title		GLA Density Project 4: Exploring Character and Development Density		Job number 247474-00	
Document title		Final Report		File reference	
Document ref					
Revision	Date	Filename	GLA Density Project 4_Final_Draft_Report.docx		
Issue	8 Apr 2016	Description	Draft 1		
			Prepared by	Checked by	Approved by
		Name	Richard Katz	Peter Neckelmann	Nicola White
		Signature			
Issue	29 Apr 2016	Filename	290416_GLA Density Project 4_Final_Draft_Report.docx		
		Description	Final Report		
			Prepared by	Checked by	Approved by
		Name	Richard Katz	Peter Neckelmann	Nicola White
		Signature			
Issue	20 May 2016	Filename	GLA Density Project 4_ISSUE_20052016.docx		
		Description	Final Report		
			Prepared by	Checked by	Approved by
		Name	Richard Katz	Peter Neckelmann	Nicola White
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
Issue Document Verification with Document					
<input checked="" type="checkbox"/>					

Contents

	Page
1 Introduction	1
1.1 The SRQ Matrix	1
1.2 The SHLAA Character Map	2
1.3 Relationship between SRQ and SHLAA Character Map	3
1.4 Approach	4
1.5 Reporting	5
2 The SRQ Matrix	6
2.1 The Current SRQ Matrix	6
2.2 Evolution of the SRQ Matrix	7
2.3 Lessons for 2016?	11
2.4 Learning from others	12
2.5 Findings and Observations	16
3 The SHLAA Character Map	17
3.1 The Current SHLAA Character Map	17
3.2 Recreating the current Character Map	18
3.3 Character Map Update	18
3.4 Additional Mapping	19
4 Findings and Recommendations	24
4.1 Maintain the distinction between the SRQ Matrix and SHLAA	24
4.2 Updating the SHLAA Character Map	25
4.3 Updating the SRQ Matrix	25

Figures Appendices

Appendix A

Plans Reviewed

Appendix B

Literature Reviewed

1 Introduction

Understanding density and its application and implications is critical to establishing a policy framework that is flexible and able to manage the development demands on the city. London is under significant ongoing development pressure, particularly for new housing to accommodate the rapidly growing population of the city, which is expected to exceed 10 million by 2036¹. Between 2001 and 2014, the total number of dwellings in London grew by 10.9%. Moreover, the average density of new dwellings within London has more than doubled in recent years, from under 60 dwellings per hectare in 2000, to over 120 dwellings per hectare in 2008².

As well as increasing density, the form of development is also shifting, particularly with respect to the height of new buildings. As of March 2015, there are 263 tall buildings (20+ storeys) currently in the pipeline across London³, and approximately 80% of these will be for residential use⁴. The geographical spread of these new residential developments is widespread, with the largest number planned for Central and East London, but a significant minority are also planned for outer boroughs such as Barnet and Croydon. London's policy therefore must respond to these significant development trends. Within the context of the proposed full review of the London Plan, Arup has been commissioned by the GLA to examine the definitions of setting in the SRQ Matrix (Table 3.2) and how setting is taken into account in determining the appropriate level of density for development. The Arup commission is a contributing part of a wider research initiative by the GLA to inform the approach to density in the new London Plan that will be prepared once a new Mayor is elected in May 2016.

Two key policy tools in London's planning framework which incorporate elements of character and density are examined in this study. Firstly, the SRQ Matrix found in the current Further Alterations to the London Plan (2015) (hereafter referred to as the London Plan), and secondly, the Character Map within the London Strategic Housing Land Availability Assessment (SHLAA) (2013).

1.1 The SRQ Matrix

The SRQ Matrix provides indicative development density ranges based upon access to transport (represented by PTAL), and setting, which is designed to represent the local character of an area. Three settings (central, urban and suburban) are included, and the defining characteristics of each are given in notes accompanying the matrix. The matrix is referenced within London Plan Policy 3.4 (Optimising Housing Potential) which states that development should optimise housing potential within the relevant density range given by the matrix.

¹ FALP (2015).

² DCLG Land Use Change Statistics (England) (2009)

³ New London Architecture and GL Hearn (2015). London Tall Buildings Survey 2015.

⁴ *Ibid*

Setting	Public Transport Accessibility Level (PTAL)		
	0 to 1	2 to 3	4 to 6
Suburban	150–200 hr/ha	150–250 hr/ha	200–350 hr/ha
3.8–4.6 hr/unit	35–55 u/ha	35–65 u/ha	45–90 u/ha
3.1–3.7 hr/unit	40–65 u/ha	40–80 u/ha	55–115 u/ha
2.7–3.0 hr/unit	50–75 u/ha	50–95 u/ha	70–130 u/ha
Urban	150–250 hr/ha	200–450 hr/ha	200–700 hr/ha
3.8–4.6 hr/unit	35–65 u/ha	45–120 u/ha	45–185 u/ha
3.1–3.7 hr/unit	40–80 u/ha	55–145 u/ha	55–225 u/ha
2.7–3.0 hr/unit	50–95 u/ha	70–170 u/ha	70–260 u/ha
Central	150–300 hr/ha	300–650 hr/ha	650–1100 hr/ha
3.8–4.6 hr/unit	35–80 u/ha	65–170 u/ha	140–290 u/ha
3.1–3.7 hr/unit	40–100 u/ha	80–210 u/ha	175–355 u/ha
2.7–3.0 hr/unit	50–110 u/hr	100–240 u/ha	215–405 u/ha

Notes to Table 3.2

Appropriate density ranges are related to setting in terms of location, existing building form and massing, and the index of public transport accessibility (PTAL). The setting can be defined as:

- central – areas with very dense development, a mix of different uses, large building footprints and typically buildings of four to six storeys, located within 800 metres walking distance of an International, Metropolitan or Major town centre.
- urban – areas with predominantly dense development such as, for example, terraced houses, mansion blocks, a mix of different uses, medium building footprints and typically buildings of two to four storeys, located within 800 metres walking distance of a District centre or, along main arterial routes
- suburban – areas with predominantly lower density development such as, for example, detached and semi-detached houses, predominantly residential, small building footprints and typically buildings of two to three storeys.

Figure 1: The SRQ Matrix (FALP, 2015)

The SRQ Matrix has undergone some transformation since its creation in the late 1990s. As outlined in the previous section, London has experienced considerable development pressure in recent years, which has significantly changed the form and character of some parts of the city. The demand for new homes and ancillary development is likely to continue to alter and re-shape the character of different areas in London in the future. There is also an additional trend that many new developments coming forward exceed the current indicative density ranges, indicating that at present the SRQ Matrix does not fully capture the nature of new development in the city.

The key question which arises in the face of these issues is therefore whether the current SRQ Matrix, through its settings, is sufficiently able to reflect the complex character and density of London both now and in the future, and if not, how can it evolve in order to do so more effectively? This is the key issue that the first strand of work seeks to explore.

1.2 The SHLAA Character Map

The London SHLAA (2013) includes two maps which together give a spatial indication of notional housing capacity across London. The first map shows PTAL; and the second, the Character Map (Figure 2), provides a spatial approximation of London's character, by defining three settings. These are the same three settings which feature in the SRQ Matrix (central, urban and

suburban). When combined, these maps inform the level of notional housing capacity across the city.

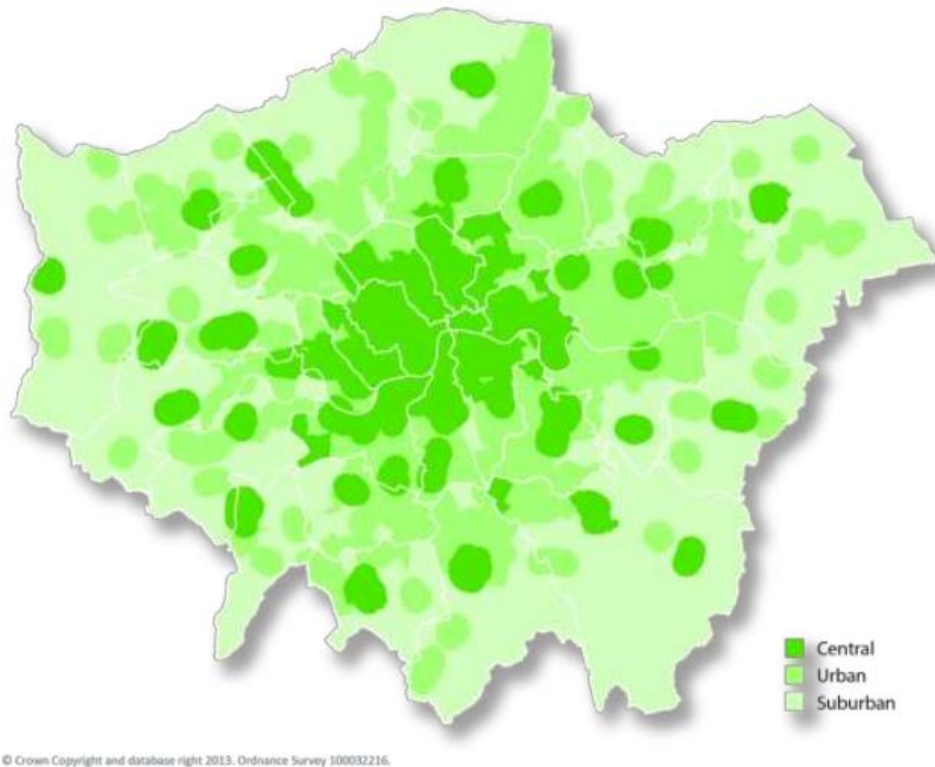


Figure 2: SHLAA Character Map (London SHLAA, 2013)

While both the PTAL Map and Character Map are of equal importance within the SHLAA, the second strand of work focusses upon the Character Map, as this is the aspect of the SHLAA which considers setting, and which most closely relates to the built form.

The current SHLAA map is now somewhat out of date, being based on Census data from 2001. There may therefore be a number of ways in which the Character Map can be updated to provide a more appropriate approximation of notional housing capacity for use in local policy. This is the key issue that the second strand of work seeks to explore.

1.3 Relationship between SRQ and SHLAA Character Map

The SRQ Matrix and the SHLAA Character Map perform different functions in line with their respective purposes within London's policy framework. They are linked in that they both apply the character of place as part of their methodology; however the way in which they operationalise this character differs significantly.

The primary purpose of the SRQ Matrix is to act as a development management tool to provide clear indicative density guidelines based upon setting and accessibility. The matrix defines settings based upon predominantly built form characteristics, which, along with PTAL, inform development density ranges to be applied on a site specific basis.

The primary purpose of the SHLAA, on the other hand, is to highlight notional housing capacity across London at a strategic level. This is linked with the SRQ Matrix, as stated within the SHLAA: “*the key assumption in calculating the ‘notional’ capacity is the density for each site, which is derived from the London Plan SRQ Matrix*”⁵. The SHLAA Character Map is therefore designed to approximate the spatial distribution of setting, and it employs proxies for the experience-based characteristics to do so. It is not prescriptive, nor does it aim to set the specific locations where development should take place.

Therefore, whilst built form characteristics play a major role in the structure of both of these tools, their purposes, deployment and outputs are focussed on different aspects of the planning process.

1.4 Approach

This work has comprised three principal components:

- Producing an updated SHLAA character map of London using the existing proxies for character areas from the SRQ Matrix and more up-to-date Census data;
- An evaluation of the current settings in the SRQ Matrix and their definitions in order to establish whether they should be redefined to better reflect the character of areas within London;
- An assessment of the implications of the first two steps on both the SRQ Matrix and the SHLAA Character Map, and an exploration of the relationship between the two.

Our methodology for undertaking this work, and which has shaped our findings and recommendations, is as follows:

- The relationship between the SRQ Matrix and the SHLAA Character Map was examined.
- A review of the history of the SRQ Matrix was undertaken in order to track its evolution over time and to develop an understanding of how the configuration of the current SRQ Matrix was reached.
- In order to contextualise and test the factors defining setting within the current SRQ Matrix, a series of case study cities were examined, and a review of academic literature was undertaken.
- The SHLAA Character Map has been updated with more recent data, and a number of different mapping exercises were undertaken in order to explore how the map changes in response to changing inputs and more up-to-date mapping techniques.

⁵ London SHLAA (2013). Page 21.

1.5 Reporting

This report presents the findings from the study and is structured as follows:

Section 2 - the first strand of work on the SRQ Matrix;

Section 3 - the second strand of work on the SHLAA Character Map;

Section 4 - presents the findings and recommendations from the work.

2 The SRQ Matrix

The SRQ Matrix has been a feature of the London Plan since it was first published in 2004 and built on guidance produced by LPAC to support development management and plan making functions of local planning authorities. This section sets out how the SRQ Matrix has changed in format and content over time, with particular reference to the use of setting to distinguish different density capacity.

The approach adopted by other comparable cities to guide density is also reviewed to establish possible learning that may influence how the SRQ Matrix could evolve. This is supplemented by a review of literature to establish how the concepts of character and setting, in reference to density, are used in other world cities in setting policy, and how the concepts are discussed within academia.

2.1 The Current SRQ Matrix

The Further Alterations to the London Plan (FALP), published in March 2015, provides the current spatial development strategy for London. Within the FALP, Policy 3.4 confirms housing outputs should be optimised in accordance with the SRQ Matrix taking into account local context and character, design principles (Chapter 7) and public transport capacity, and that development proposals which compromise this policy should be resisted.

The SRQ Matrix (Figure 1) incorporates three ‘settings’: Central, Urban and Suburban. The accompanying notes conform the characteristics of each setting, as tabulated in Table 1.

An examination of the key terminology within the notes to the SRQ Matrix reveals that London’s three settings are currently defined using (typically) six key characteristics: density, land-use, typology, building footprints, heights and proximity to town centres and arterial routes. No housing typology is provided for central settings, nor is proximity to town centre identified for suburban settings.

Characteristics	Setting		
	Central	Urban	Suburban
Density	Very dense	Predominantly dense	Lower density
Land-use	Mixed	Mixed	Predominantly residential
Typology		Terraced houses and mansion blocks	Detached and semi-detached
Footprints	Large	Medium	Small
Height	4-6 storeys	2-4 storeys	2-3 storeys
Proximity to town centre	800m of International, Metropolitan or Major Centre	800m of District Centre or along arterial routes	

Table 1: Summary matrix of SRQ settings and defining characteristics

With the exception of the more technical depiction of a specific 800 metre walking distance from town centres (and arterial routes), the descriptions of the different characteristics rely on a shared experiential understanding to convey a general sense of the composition of a setting, e.g. predominantly 2-4 storeys with medium building footprints, etc. The nature of the language used in the notes is

one of the key strengths of the SRQ Matrix, allowing a wide audience to understand the meaning being conveyed. As a non-prescriptive tool, best utilised early in the planning process, it is able to set a negotiable foundation for the appropriate density of development for a specific site.

2.2 Evolution of the SRQ Matrix

The SRQ Matrix has its origins in the late 1990s, where it emerged as part of the London Planning Advisory Committee's (LPAC) Sustainable Residential Quality Project which provided guidance to boroughs on delivering sustainable development with enhanced residential quality and amenity, while using land more efficiently in light of increased housing need.

SRQ: Supplementary Advice (20/98)⁶ published by LPAC considered potential housing capacity on small housing sites (less than one hectare) and potential residential conversions within ten minutes' walk (800m) of town centres and how this could be optimised. Promoting higher density development in locations close to public transport facilities and town centre services was a key concept, as reducing the proportion of car parking would release land for development thus delivering sustainable outcomes.

CAR PARKING	2 SPACES PER UNIT (Option 1)		1 SPACE PER UNIT (Option 2)		NO CAR PARKING (Option 3)	
DWELLING MIX	Mostly Houses	Mix	Mix	Mostly Flats	Mix	Mostly Flats
LOCATION						
Sites within Town Centre Catchment Areas	150-250	200-300	250 - 500		500 - 700	
Sites along Transport Corridors and Sites Close to a Town Centre Catchment Area	150-250	200-300	200 - 400		300 - 500	
Currently Remote Sites	150-250	200-300	200 - 300		250 - 450	

NB

- 1) Density ranges are based on the net developable area, i.e. they do not include any area beyond the site such as half the width of adjoining roads.
- 2) Densities are expressed as habitable rooms per hectare.
- 3) Shaded areas within the matrix are locations where, in general, it will not be appropriate to build at such densities with such parking standards.

Figure 3: SRQ Locational/Density/Parking Matrix (1998). Source: LPAC Sustainable Residential Quality Supplementary Advice Report 3 - 20/98.

The guidance integrated parking, density and mix of development in different types of locations, recognising that this approach “*potentially has more universal application than established policy ... However, it is still not intended for universal or 'blanket' application.*” Importantly, the guidance notes that, subject to justification, the density ranges can be varied to protect special character or to

⁶ LPAC Sustainable Residential Quality Supplementary Advice Report - 86/99 (1998).

optimise site potential. Further, the car parking figures were a benchmark, where sites with good public transport accessibility would be suitable for higher density mixed use development with reduced car parking requirements. However, the matrix did not include ‘setting’; instead ‘location’ was used.

Subsequently LPAC published guidance for large sites⁷. The updated guidance reflected on some “*misconceptions*” to confirm that the SRQ guidance was not just about density, nor an attempt to impose a blanket density across London. Instead it was part of a design-led approach that promoted sustainable outcomes. The large site guidance introduced the new ‘setting’ categories of central, urban and suburban, so the matrix could be “*targeted more effectively on specific locations*”. The definitions for each setting were:

- Central: very dense development, large building footprints and buildings of 4 – 6 storeys and above - e.g. larger town centres and much of central London.
- Urban: dense development with a mix of different uses and buildings of 3 – 4 storeys e.g. town centres, adjoining main arterial routes and substantial parts of Inner London.
- Suburban: lower density development, predominantly residential of 2 – 3 storeys – e.g. some parts of Inner and most of Outer London.

These settings were created based upon an analysis of urban grain, land use, the form of existing housing and local facilities, and were not mapped. Within the SRQ Matrix, each setting was incorporated alongside the location category (see

Table 2 below); however, location did not determine setting; for example, an area could be within a town centre ped-shed, but its setting still either central, urban or suburban. The result was a matrix which therefore acknowledged the link between location and setting, but which retained a clear distinction between them. This is supported by the acknowledgement that setting is not tied to specific geographical locations⁸.

Location	Accessibility index	Setting
Sites within town centres ‘ped-shed’	4-6	Central
		Urban
		Suburban
Sites along transport corridors and sites close to a town centre ‘ped-shed’	2-3	Urban
		Suburban
Currently remote sites	1-2	Suburban

Table 2: Extract from SRQ Locational/Density/Parking Matrix (2000). Source: LPAC Sustainable Residential Quality Supplementary Advice Report (Large Sites) - 86/99.

⁷ LPAC Sustainable Residential Quality Supplementary Advice Report (Large Sites) - 86/99 (2000).

⁸ Llewellyn-Davies *et al* (2000).

The 2000 matrix also introduced the accessibility index, a forerunner for what would become Public Transport Accessibility Level (PTAL). Importantly the guidance states “*it is essential that SRQ policy is read in conjunction with LPAC’s wider strategy to reduced road traffic congestion, minimise the need to travel and encourage better public transport use*”, thus acknowledging that the approach must be considered in a wider policy framework.

In preparing the first London Plan, in 2002 the SRQ Matrix was revisited⁹. Suggested changes to the matrix included the addition of intensity of use along the top of the matrix, and the substitution of building typology with indicative building height. In terms of setting, a proposed revision to the SRQ Matrix suggested the introduction of town centre designations and level of accessibility to define ‘settings’, replacing the central, urban and suburban introduced in 2000, as illustrated in Table 3.

Location	Accessibility index	Setting
Sites within town centres ‘ped-shed’	4-6	International/ metropolitan
		Major
		District
Sites along transport corridors and sites close to a ‘ped-shed’	2-3	High accessibility (frequent public transport and local facilities)
		Moderate access
Currently remote sites	1-2	Remote

Table 3: Suggested alteration to the SRQ Matrix. Source: Llewellyn-Davies (2002).

The suggested changes were not incorporated into the first version of the London Plan in 2004 (see Figure 4). Instead, an SRQ Matrix with similar features to that shown in

Table 2 was used.

The SRQ Matrix was then subsequently updated in the 2008 version of the London Plan (Figure 5). The changes came about in response to a detailed review of the density matrix which was undertaken in 2006¹⁰. The key changes to the SRQ Matrix were:

- The removal of the car parking category;
- The incorporation of housing typology into the definitions of each setting;
- PTAL was given equal weighting to setting and placed on the top of the matrix;
- The previous distinction between location and setting was discontinued, with the proximity to various types of town centres and transport corridors incorporated into the definitions of each setting, as detailed in the accompanying notes.

⁹ Llewellyn-Davies (2002). Density and the London Plan: Draft Scoping Study – Findings for Discussion.

¹⁰ URS and Patel Taylor (2006). London Plan Density Matrix Review, Greater London Authority.

		Car parking provision	High 2 – 1.5 spaces per unit	Moderate 1.5 – 1 space per unit	Low Less than 1 space per unit
		Predominant housing type	Detached and linked houses	Terraced houses & flats	Mostly flats
Location	Accessibility Index	Setting			
Sites within 10 mins walking distance of a town centre	6 to 4	Central	650 – 1100 hr/ha 240 – 435 u/ha Ave. 2.7hr/u		
		Urban	200 – 450 hr/ha 55 – 175 u/ha Ave. 3.1hr/u	450 – 700 hr/h 165 – 275 u/ha Ave. 3.0hr/u	
		Suburban	200 – 300 hr/ha 50 – 110 u/ha Ave. 3.7hr/u	250 – 350 hr/ha 80 – 120 u/ha Ave. 3.0hr/u	
Sites along transport corridors & sites close to a town centre	3 to 2	Urban	200 – 300 hr/ha 50 – 110 u/ha Ave. 3.7hr/u	300 – 450 hr/ha 100 – 150 u/ha Ave. 3.0hr/u	
		Suburban	150 – 200 hr/ha 30 – 65 u/ha Ave. 4.4hr/u	200 – 250hr/ha 50 – 80 u/ha Ave. 3.8hr/u	
Currently remote sites	2 to 1	Suburban	150 – 200 hr/ha 30 – 50 u/ha Ave. 4.6hr/u		

Figure 4: SRQ Matrix, London Plan (2004)

	Setting	Public Transport Accessibility Level (PTAL)		
		0 to 1	2 to 3	4 to 6
Indicative Average Dwellings Size	Suburban	150 – 200 hr/ha	150 – 250 hr/ha	200 – 350 hr/ha
	3.8 – 4.6 hr/unit	35 – 55 u/ha	35 – 65 u/ha	45 – 90 u/ha
	3.1 – 3.7 hr/unit	40 – 65 u/ha	40 – 80 u/ha	55 – 115 u/ha
	2.7 – 3.0 hr/unit	50 – 75 u/ha	50 – 95 u/ha	70 – 130 u/ha
	Urban	150 – 250 hr/ha	200 – 450 hr/ha	200 – 700 hr/ha
	3.8 – 4.6 hr/unit	35 – 65 u/ha	45 – 120 u/ha	45 – 185 u/ha
	3.1 – 3.7 hr/unit	40 – 80 u/ha	55 – 145 u/ha	55 – 225 u/ha
	2.7 – 3.0 hr/unit	50 – 95 u/ha	70 – 170 u/ha	70 – 260 u/ha
	Central	150 – 300 hr/ha	300 – 650 hr/ha	650 – 1100 hr/ha
	3.8 – 4.6 hr/unit	35 – 80 u/ha	65 – 170 u/ha	140 – 290 u/ha
	3.1 – 3.7 hr/unit	40 – 100 u/ha	80 – 210 u/ha	175 – 355 u/ha
	2.7 – 3.0 hr/unit	50 – 110 u/ha	100 – 240 u/ha	215 – 405 u/ha

Figure 5: SRQ Matrix, London Plan (2008)

The rationale behind the merger of setting and location was an overall simplification of the SRQ Matrix. While the changes proposed succeed in making the overall format of the matrix simpler, the complexity of the content of the new matrix remains largely unchanged, as the only variable that was removed was parking provision.

2.3 Lessons for 2016?

The evolution of London's SRQ Matrix between 2004 and 2008 is therefore one of increasing detail and complexity in setting definition, largely the result of an overall simplification of the format of the matrix itself and the combination of location and typology within setting. Since 2008, the SRQ Matrix and accompanying notes have remained unchanged.

As outlined in section 2.2, the evolution of the matrix and accompanying notes has seen the overall format of the matrix simplified over time, with the removal of the car parking parameter and the incorporation of locational factors within the definition of settings. Yet while the format of the matrix has been simplified, the overall complexity of the characteristics included has remained largely unchanged, and the merging of location and setting in particular has been problematic for three primary reasons:

- Firstly, by introducing the locational characteristic of proximity to town centres, and ascribing a numerical threshold (800m), the perceptual and more subjective built form characteristics and their use in describing and contextualising the local character of an area take on lesser importance, as they are in effect superseded by proximity to centres;
- Secondly, there is a strong correlation between the current town centres and PTAL, such that PTAL, which features along the top of the matrix, largely expresses how close a site is to a town centre is already. This questions the need for two such similar parameters on either side of the matrix;
- Thirdly, applying a definitive numerical characteristic within the definition of setting, which lessens the contribution of the perceptual built form characteristics, contradicts the general purpose of the matrix, which is designed to be a contextual tool for discussion, rather than a prescriptive tool.

In recommending the merger of setting and location in 2006, it was argued that their respective definitions largely overlap, as the settings definitions in the 2004 London Plan “*make reference to the position of a site in relation to town centres and transport access*”¹¹. While the 2004 SRQ Matrix setting definitions did mention proximity to town centres, they were referenced as examples of the types of areas to which the settings apply, rather than defining features themselves. In addition, when settings were first introduced into the SRQ Matrix, it was made clear that they were designed to reflect urban grain and character of place, rather than being tied to geographical locations¹².

Therefore, converting proximity to town centres from type-site examples of setting into integral components of the definition of setting has served to erode the matrix's ability to allow for individual site context to be taken into account, and has resulted in certain settings being automatically tied to geographical locations based on proximity to centres.

The examination of the evolution of the SRQ Matrix has revealed that the core issues that it seeks to address have remained largely unchanged over time. The primary goal of the SRQ Matrix is still to provide sustainable development with

¹¹ URS and Patel Taylor (2006). London Plan Density Matrix Review, Greater London Authority.

¹² Llewellyn-Davies *et al* (2000).

good public transport accessibility, which fit appropriately within their local contexts. Whilst these core issues remain, what has changed significantly since the introduction of the London Plan is the magnitude of development pressure. As demonstrated by this review, the SRQ Matrix has shown adaptability over time; however it must continue to evolve in order to ensure that it can respond to the development pressures that London faces now and in the future.

2.4 Learning from others

In order to determine whether (and in what way) changing London's current definitions of setting would be beneficial for policy makers, developers, and local planning authorities, five case studies have been examined in order to provide a comparative analysis which explores the way in which other metropolitan areas define and apply an area's setting and its characteristics in relation to density. Additionally a literature review has been completed to explore the themes that are being researched by academia and which may inform the further evolution of the SRQ.

2.4.1 Approach

The final five cities chosen for analysis were: Amsterdam, Barcelona, Copenhagen, Melbourne and Montréal. The case study cities were chosen for three primary reasons:

- Firstly, they are all representative of cities which have been heavily shaped by planning. Whilst the systems of planning which operate in each respective city differ, they all share in being subject to detailed and robust planning policy and legislation. All five cities also acknowledge density to some degree, either in the form of definitive density policy, or a more general appreciation of density and its importance in planning and development.
- Secondly, the case studies represent five cities where there is a general perception that not only is planning a major factor in shaping the urban environment, but also where planning has been forward-thinking and effective in delivering positive outcomes.
- Thirdly, these cities also demonstrate a high degree of 'liveability'¹³, that is to say, cities which are deemed to be safe, attractive, culturally enriching and supported by strong infrastructure, all of which are attributes which London seeks to emulate.

As well as clear and progressive planning policy, these five cities also rate highly in terms of liveability. In 2015, Melbourne was ranked as the most liveable city in the world out of 140 world cities, whilst Montréal placed 14th, Copenhagen 22nd, Amsterdam 26th and Barcelona 31st.

A literature review has also been undertaken to establish current trends in the academic approach to defining settings and density which may be applicable to the SRQ Matrix. Searches were undertaken in three key areas. A general search for 'urban character' and 'settings' and searches tailored to reflect the specific language of London's current settings. This allowed for a focus upon how 'urban'

¹³ Economist Intelligence Unit (2015). Global Liveability Ranking.

and ‘suburban’ are theorised, discussed and defined within the literature. The literature reviewed is listed at Appendix B.

2.4.2 Overarching city observations

A review of the relevant planning policy and guidance within each city reveals that across the case studies, a range of different approaches and terminologies are used to describe and designate different areas within each city. None of the cities define distinct ‘settings’ in exactly the same way that the SRQ Matrix does, nor do any use density matrices or a measure such as PTAL in setting density. Despite this, designations that are similar in nature and thus useful for comparison are available¹⁴. There is a wide range of characteristics used to define these settings, some very similar or the same as those used in the SRQ Matrix, and others which are not used in London. In addition, these characteristics also have a range of different criteria attached to them when defining the settings.

Amsterdam

Of all of the case study cities analysed, Amsterdam looks at setting in the greatest level of detail. Fourteen ‘woonmilieus’ or ‘living environments’ are described in Amsterdam, and are defined by a range of characteristics. Some of these characteristics are the same as those used in London, for example land use, typology and building heights. Where Amsterdam differs however is in its use of socio-economic characteristics such as wealth, demography and tenure for example. Whilst these characteristics are easily measurable and criteria are easily applied to them, it should be considered that Amsterdam’s approach to settings is more a general description of different parts of the city, rather than a designations which feed directly into policy as is the case in London. As a result, many of the socio-economic characteristics used in Amsterdam would not be appropriate to use in the London context.

Barcelona

Barcelona’s Metropolitan plan divides the city into seven settings, based primarily on land-use, and a brief acknowledgement of low-density residential areas. One element that is apparent within the Barcelona’s Metropolitan Plan that does not feature in the FALP is the use of the term ‘historic’ to designate central or ‘core’ areas. This terminology suggests that some form of built environment heritage, primarily focused upon the age of buildings, is a key characteristic in assessing character within Barcelona.

Copenhagen

The Finger Plan’s division of the Copenhagen Capital Region into settings is somewhat unique in that it focuses on the geographical form and spatial configuration of the city, rather than built environment factors. For example, there is no mention of characteristics such as density, typology, or building heights, although the Municipal Plan does look at land-use in great detail. Instead, broader

¹⁴ NB – For simplicity, the FALP term ‘settings’ will be used when referring to similar designations within the case study cities, even though exact terminology may differ by city.

terminologies such as ‘urban’ are used but not clearly defined other than their proximity to rail lines. Indeed, transport is a central theme of the Finger Plan, with the entire shape of the city linked to rail corridors. This link to public transport infrastructure is something which London could build upon.

Melbourne

Melbourne’s current approach to setting and characteristics is most similar to London’s. Within *Plan Melbourne*, the city is described as a “city of suburbs”, whilst emphasis is also placed on the “central city”, which is not clearly defined. Overall, there is an appreciation of density and variety in categorising “inner-urban” areas, whilst low-density “family-friendly” suburbs are also described. Melbourne also sets out three residential zones which are defined based upon characteristics such as diversity and typology. Particular emphasis is also placed on access to services.

Montréal

In Montréal, there is an emphasis on built environment characteristics playing a critical role in determining the character of an area. In particular, Montréal retains a focus on land-use characteristics, defining nine land-use descriptions. Four of these correspond to “distinct urban environments” and are thus most representative of settings. Despite the focus on land-uses with respect to Montréal’s designated urban environments, there is also evidence that density, typology and building heights and footprints also play a major role in defining the character of different areas. In particular, the existing or the desired general character of an area is based upon factors such as floor area ratio, building site coverage ratio and number of storeys.

2.4.3 Overarching literature observations

As is perhaps to be expected, the way in which the academic literature discusses character, ‘urban’ and ‘suburban’ is very broad in both scope and definition. A wide range of themes are discussed in some form or other. Just over half of the key themes apparent within the literature are also discussed in at least one of the case study examples. These are primarily focused on built environment factors such as land-use, density and typology. This is no surprise, as these factors tend to be easier to measure using real data.

The literature reveals six key themes which are not touched upon in any of the case studies. These themes are in most cases highly theoretical in nature, for example, the ‘perception’ theme posits that suburbs can be defined based upon whether they are subjectively viewed as problematic, or lacking in diversity for example; whilst the ‘modernity’ theme posits that with respect to rural areas, urban areas represent places of modernity and progress.

Also of interest within the literature is the ‘socio-cultural’ characteristic. This is a general term for a range of issues discussed within the literature, which suggest that different areas can be categorised based upon a number of social and cultural factors such as sense of community, trust, human experience and shared values.

2.4.4 Lessons for the SRQ Matrix

The case studies and literature review have served to validate most of the current characteristics that the SRQ Matrix uses to define settings in London as indicated in Table 4 below. Of the characteristics currently used in the notes to the SRQ Matrix, all but one are also used in at least one other city. Land-use is the most common characteristic, used both in London and all five case study cities. Density and typology are also common, whilst heights and footprints are less so, but still used.

Characteristics used to describe settings in London	Amsterdam	Barcelona	Copenhagen	Melbourne	Montreal
Land-use	✓	✓	✓	✓	✓
Density		✓		✓	✓
Typology	✓			✓	✓
Heights	✓				✓
Building footprint					✓
Proximity to station/transport			✓	✓	
Proximity to town centre					

Table 4: Characteristics used to describe setting in case study cities

A key pattern which emerges is the efficacy of built form characteristics, a mix of which in various combinations, describe setting in all of the cities examined. The only characteristic unique to London is the proximity to town centres. This is perhaps to be expected given that these specific designations are unique to London.

In addition, the case study review also revealed a range of other characteristics used in other cities; these are outlined in Appendix A1. These characteristics are largely unique to a particular city, and there is no obvious pattern amongst them. Moreover, most are not related to the built form, meaning that they are not aligned with the GLA's current position on the defining features of character and setting.

The academic literature review has presented a number of avenues that London could explore in defining its character areas. The literature supports London's current characteristics in respect of built environment factors such as density, building height and typology. It also supports the use of the age of the built environment, a characteristic that emerged from the case study examples from Amsterdam and Barcelona.

What the literature has revealed is that at present, the SRQ Matrix lacks characteristics related to the social dimension. London could adopt more of a social theory approach to urban character, and incorporate more socio-cultural characteristics into the London Plan's definitions of setting. It could seek to gauge perceptions of place or try to identify functional communities for example. The primary barrier in considering such characteristics lies in their highly theoretical nature, which leaves them open to a range of different interpretations. Thus, whilst the social characteristics discussed in the literature are important to consider, their real world applicability is limited.

2.5 Findings and Observations

When reviewing the SRQ Matrix, attention should be paid to the purpose of the matrix and how it is designed to be used. As outlined in section 1.3, the overarching purpose of the matrix is to provide a development management tool for ascertaining the indicative density of development at a particular site, taking into account local context and accessibility.

Any analysis of local context is inherently influenced by subjectivity, perception and interpretation, and these factors play an important role in creating vibrant, diverse and desirable places. It is therefore important for the matrix to promote appropriate development that is right for the site in which it sits, and an overly technocratic matrix based upon defined and quantified thresholds or parameters is likely to over generalise and miss some local nuances, which may result in inappropriate development for particular sites.

Yet in its current definitions of setting, the matrix incorporates parameters which are both definitive and quantifiable, with others which are subjective and open to interpretation.

Definable, quantifiable and map-able locational characteristics such as proximity to centres and arterial routes are perhaps better suited to the purposes of the SHLAA map, which is designed to give an overall strategic level indication of setting in order to estimate the notional capacity for housing across London. The matrix on the other hand is crucial in applying actual densities to specific sites, and should therefore seek to avoid such strategic characteristics. In practice, the outcome of the inclusion of such factors within the definitions of setting may result in inappropriate development in certain places.

3 The SHLAA Character Map

The SHLAA Character Map is of significant strategic importance within London's planning policy, as it is one of the tools which helps local planning authorities to establish their notional housing capacity. It is therefore important that the Character Map reflects the spatial character of London, to retain its usefulness as a strategic tool.

This section firstly outlines the current features of the SHLAA Character Map, before presenting an updated version using more recent Census data from 2011. Following this, key findings are presented from a range of further mapping exercise which explored how changes to the criteria could change the map.

3.1 The Current SHLAA Character Map

The 2013 SHLAA includes a Character Map of London (Figure 000), showing the spatial distribution of central, urban and suburban areas. The current Character Map is based upon the characteristics set out in Table 5 below.

Setting	Characteristics	
	Typology	Proximity to town centre
Central	>75% flats	800m of International, Metropolitan or Major Centre
Urban	>75% flats and terraced housing	800m of District Centre
Suburban	All other areas	All other areas

Table 5: Characteristics used to generate the SHLAA Character Map

The SHLAA states that the data used for the proportion of flats and terraced houses is derived from the 2001 Census; however the origin of the town centre network data is less clear. It is apparent that the urban settings on the map do not align with the town centre network shown in the FALP (2015), nor the London Plan (2011). Instead the Character Map appears to align with the London Plan (2008) town centre network. Additionally, the shape of the central and urban areas around the town centre network indicates that these settings are based on a basic 'crow-flies' buffer of 800m, and that this buffer is drawn around a singular point, rather than the boundary of the town centre.

A visual analysis of the map indicates that the suburban setting has the largest area, encompassing large parts of outer London. The urban setting is the next largest, encompassing much of inner London, as well as a number of town centre areas in outer London. The central setting accounts for the smallest area, comprising almost all of the geographical centre of London and a network of larger town centres across the city. As this map is only available as a printed document it is not possible to measure the proportion of areas covered by each setting.

3.2 Recreating the current Character Map

The current SHLAA Character Map is based upon Census data from 2001 in respect to typology, and from the defined town centre network set out in the London Plan. The map only exists in printed form, and as such it is not possible to directly update the current map as it appears within the SHLAA.

Therefore, the SHLAA Character Map has been recreated using 2001 Census data and town centre boundaries as mapped by local authorities (this data set is from 2014 as no earlier data set is available).

The recreated Character Map is generally a good fit with the original. A visual analysis reveals some minor differences when compared to the printed Character Map. These variations are shown on Figure 000a (in Figures). In particular, the area covering the Edgware Major Centre appears smaller in the recreated map, whilst other district centres such as New Addington, Selsdon and Highams Park do not feature on the printed Character Map from the SHLAA, but are included in the recreated Character Map. This is likely to be as a result of changes to the town centre data, which is from 2014 and thus supersedes that used in the SHLAA. However, in the absence of GIS data for the printed Character Map, it is not possible to establish with complete certainty why these discrepancies exist.

Overall, the recreation results in 20% of the total area of London falling into the central setting, 36% falling into the urban setting, and 44% falling into the suburban setting.

3.3 Character Map Update

An update to the Character Map update has been completed, which uses data from the 2011 Census and the 2014 town centre boundaries, so as to provide an updated map for use in the SHLAA.

When the updated Character Map is compared to the Character Maps based on 2001 Census data differences are noted, arising from the updated Census data from 2011. Perhaps somewhat surprisingly, a larger proportion of previously urban areas in 2001 have reverted to suburban areas when mapped using 2011 data. As shown on Map 02, when using 2011 data, suburban areas make up 47% of the total London area (up from 44% with 2001 data). This comes at the expense of urban areas, which make up 33% (down from 36% with 2001 data); whilst the proportion of central areas does not change over time, remaining at 20% in both cases.

The shift from urban to suburban is most evident in the Borough of Barking and Dagenham, which was predominantly urban in 2001, but becomes far more suburban in 2011. Reasons which may explain these changes cannot be determined with complete certainty; however, the ONS state that data on housing typology from the 2001 Census is directly comparable to that from 2011¹⁵, meaning that the changes observed are most likely the result of differences in the way that the maps were produced. The methodology used to create the original character map in the SHLAA is unknown, so the nature of these differences cannot be ascertained. In a few areas, such as in the north of the Borough of

¹⁵ ONS (2012). 2011-2001 Census in England and Wales Questionnaire Comparability.

Camden, there has been a step up from urban in 2001 to central in 2011, although shifts upwards in setting are on a smaller scale.

3.4 Additional Mapping

The initial mapping exercise showed a more up-to-date picture of London's Character Map, and, coupled with the previous analysis of alternative criteria, has provided a firm foundation to explore any appropriate modifications and improvements which could produce more appropriate mappings.

To provide a measure of control, and to measure the overall changes that any modified criteria produce, the alternative mappings maintain the number of current settings found in the FALP unchanged at three; central, urban and suburban. All alternative mappings use the initial Character Map update (Map 02) as a base. The characteristics used to create the current Character Map, namely, proximity to town centres and predominance of typologies (via the established proxies) have been retained in our alternative mappings, all of which can be found in the appended Figures.

While the same characteristics have been used in the alternative mappings, modifications to their values have been tested. The characteristics and associated values in question are:

- **Proximity to Town Centres** – The 800m walking radius has been challenged and a 1km radius has been implemented as an alternative. According to the summary report 'Measuring Public Transport Accessibility Levels' (TfL, 2010), a walking distance of 960m (or 12 minutes) is used to calculate walking distances to stations and PTAL values¹⁶. In a modern day London where cycling and walking are on the rise and there is an increased focus on health and wellbeing, an increased radius around town centres may be more suitable. Additionally, an 800m walking radius is historically synonymous with a ten minute walk based on an average walking speed of 1.3m/s. However, an average walking speed of 1.6m/s is within speeds observed in London¹⁷. Additionally, in some maps, a cycling radius has been applied reflecting the increase in cycle use; this has been set at 2.5km, which reflects a 10 minute cycle at a speed of 15km/h.
- **Methodology for mapping distance to Town Centres** – In the current Character Map, walking radii are mapped "as the crow flies". An alternative methodology has been tested which measures distances along existing movement networks around town centres. This not only gives a more accurate representation of actual walking distance to town centres, and subsequently more appropriate for higher densities of development. As stated previously, this also more closely reflects the desired methodology associated with 'ped-sheds'. A second step to this network methodology has also been tested, which measures a networked radius around the actual boundary of the town centre, rather than from a geographical or population weighted centre point.

¹⁶ TfL (2010). Measuring Public Transport Accessibility Levels. Available at: <http://data.london.gov.uk/dataset/public-transport-accessibility-levels/resource/86bbfe1-8af1-49ba-ac9b-b3eacaf68137#>

¹⁷ Walmsley & Lewis (1989). The Pace of Pedestrian Flows in Cities. Available at: <http://eab.sagepub.com/content/21/2/123.abstract>

In order to map the network buffer around the boundary of a town centre, the methodology requires that a sample of points around the shape of the boundary are selected, with a smaller sampling interval (and thus a greater number of sample points) equating to a closer fit with the actual shape of the town centre boundary. In order to ensure a good level of accuracy in our mapping, we tested two sampling intervals, 50m and 100m, to test whether the effects produced significantly different results. The maps with the 50m and 100m sampling intervals are shown in Maps 16 and 17 respectively (appended Figures). The difference between the buffers produced is negligible, with a total difference in area of 0.6% of the total area of London. As a result, we took forward the 100m sampling interval in our final mappings in order to reduce computational time, which would have been higher with the more detailed 50m sampling interval.

- **Predominance of typology** – The current methodology used in the SHLAA sets a threshold of 75% flats and 75% flats and terraced houses to help describe central and urban settings respectively. In the absence of any established rationale for applying this 75% threshold, there exists the possibility to apply other thresholds. In order to test this factor and to understand its impact, maps have been produced which set predominance at 60% and 90% respectively.

In total, 17 additional maps have been produced which demonstrate how the Character Map changes as a result of different combinations of modified criteria. The full series of maps produced are provided in the appended Figures.

3.4.1 Networked buffers

The current Character Map settings are in part defined by distance from town centres, using a basic buffer zone of 800m from a single point, rather than actual/network walk distances from the town centre boundary. The difference between a basic single point buffer and a networked boundary buffer are shown in Figure 6. The buffers used are both 800m, and the predominance of typology is retained at 75%.



Figure 6: Basic buffer (left) and Network buffer (right) mapping. Both maps use 800m buffers and a 75% predominance of typology. Full map information available in appended Figures

The result using the networked buffer is an increase in the proportion of suburban areas, from 47% of the total area to 55%. This increase comes at the expense of

both urban and central areas, which both fall in area. Urban areas fall slightly more, from 33% to 28%, whilst central areas decrease from 20% to 17%.

The adoption of the more realistic networked buffer zones has both pros and cons. As shown in Figure 6, one drawback is that in comparison to the network buffers, the use of a basic ‘crow flies’ buffer zone creates a larger area around each town centre where greater housing capacity can be delivered. This would be amplified further if the basic buffer were to be applied around the boundary of the town centre as opposed to the geographical centre point.

However, the benefits of the network buffer are also clear, in that they more accurately represent areas which fall within actual walkable catchments. This is more closely aligned with the original intentions of the 1998 and 2000 matrices and their use of the concept of ‘ped-sheds’¹⁸.

3.4.2 Distances from town centres

The current Character Map uses an 800m buffer around town centres, representative of a 10 minute walk. As outlined in section 3.4, there is evidence to suggest that walking speeds in London mean that a 10 minute walk is nearer to 1km in distance. Figure 7 provides an indication of how setting would change if the town centre buffer were increased. For ease of comparison, Figure 7 uses basic buffers for both maps shown, and predominance of typology is retained at 75%.



Figure 7: 800m buffer (left) and 1km buffer (right) mapping. Both maps use basic buffers and a 75% predominance of typology. Full map information available in the appended Figures

The impact of increasing the size of the buffer increases the proportion of central areas from 20% of the total area to 24% of the total area with the introduction of the 1km buffer; whilst urban areas increase from 33% to 36%. These increases come at the expense of suburban areas, where the proportion decreases from 47% with the 800m buffer to 40% with the 1km buffer.

In addition to Figure 7, further mapping was undertaken with a 2.5km buffer to represent a 10 minute cycle, and the networked buffers were also applied to the different buffer distances. The full series of maps produced are available in the appended Figures.

¹⁸ Llewellyn Davies (1997)

3.4.3 Predominance of typologies

The current SHLAA Character Map uses a threshold of 75% to determine the predominance of typology in central (75% flats) and urban (75% flats and terraced houses) areas. In the absence of any definitive rationale for this threshold, it may be the case that a different threshold may alter the SHLAA Character Map to more accurately reflect actual setting across London. The implications of altering the thresholds has been explored, Figure 8 below shows the results of lowering the threshold from 75% to 60%. In Figure 8, a basic buffer of 800m is retained for both maps.

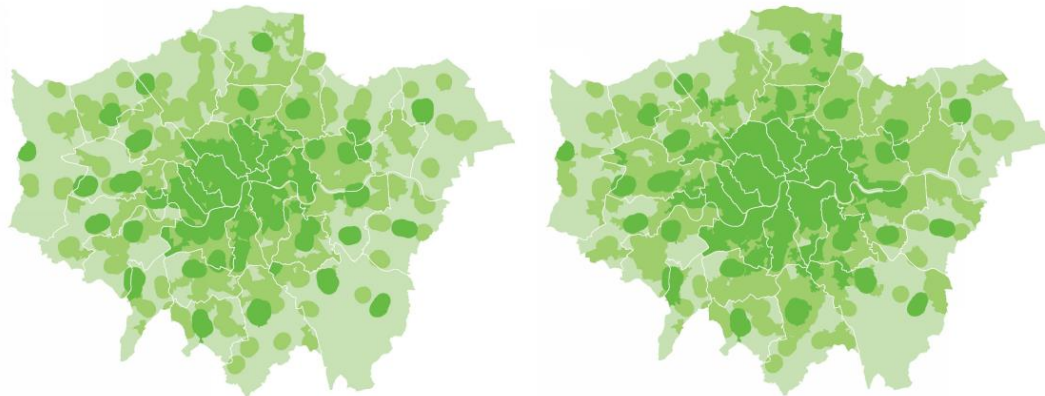


Figure 8: Figure 7: 75% predominance threshold (left) and 60% predominance threshold (right) mapping. Both maps use a basic buffer of 800m. Full map information available in the appended Figures

Lowering the predominance threshold to 60% is found to have the biggest impact upon suburban areas, which fall from 47% of the total area to 34% of the total area as a result. This area is taken up approximately equally by the other two settings, with urban areas increasing from 33% of the total area to 40% of the total area, and central areas increasing from 20% to 26% with the introduction of the revised threshold.

3.4.4 Why the SRQ should not be mapped and the SHLAA map should be kept simple

The characteristics used to create the Character Map in the SHLAA differ significantly from the notes to the SRQ Matrix. Common elements are limited to the following characteristics:

- Proximity: an 800m walking distance to the town centre network as shown on Map 2.6 of the FALP.
- Housing Typology: an allusion to housing typology is made through the way in which a percentage of flats and terrace houses are used as a metric to describe the three settings.

The remaining SRQ characteristics, i.e. land-use, building footprint, height, as well as (an undefined) proximity to main arterial routes do not contribute to the creation of the SHLAA Character Map. The methodology required to employ these other characteristics has the potential to increase the complexity of the mapping dramatically, and arguably, for consistency in messaging, and

application of policy. It could be argued that the SHLAA Character Map might benefit from incorporating all of the characteristics which describe the settings of the SRQ Matrix.

However, as outlined in section 1.3, although linked, the SRQ density matrix and the SHLAA Character Map perform different functions within the London Plan, with the SRQ Matrix acting as a development management tool to guide proposals for specific sites, and the SHLAA providing strategic potential housing capacity across London. When first implemented in response to the Urban Task Force in the late 1990s, the overarching aim of the SRQ Matrix was to help facilitate the renewal of town centre areas and deliver development. Therefore, when expressing setting at a strategic level, as is the purpose of SHLAA Character Map, the inclusion of proximity to town centres and predominance of typologies are adequate and appropriate criteria. Moreover, both are easily mapable, and clear and established thresholds currently exist which define each setting.

Attempting to add the remaining characteristics which define setting in the SRQ Matrix to the SHLAA Character Map is problematic for two reasons. Firstly, mapping requires clear, quantifiable and justifiable thresholds for each characteristic which can divide different areas into each setting, and at present no clear and established thresholds for these additional characteristics exist (for example, how can “high mixed use” or “very dense” be quantified?). Secondly, even if adequate thresholds were established, mapping these additional characteristics would serve to add a great deal of complexity to the Character Map, which compromises its purpose as a strategic policy tool.

Therefore, for the purposes of the SHLAA, the current use of the PTAL map in conjunction with a relatively simple Character Map (based upon proximity to town centres and predominant typology) is adequate in providing the strategic overview of notional housing capacity in London. That is not to say however, that the current Character Map should necessarily remain completely unchanged. There are a wide range of additional modifications to the existing mapping criteria which may be used as proxies for what constitutes sustainable development, and thus reflect a truer strategic picture of London’s character. These are explored in the following section.

4 Findings and Recommendations

Our research and mapping exercises have uncovered a wealth of information about the current SRQ Matrix and the SHLAA Character Map. Both the matrix and the Character Map contain elements which seemingly allow them to function positively. Clarifying the definition of setting and how this is applied may further assist in shaping London's planning and development context. Our recommendations for the SRQ Matrix and SHLAA Character Map are set out below.

4.1 Maintain the distinction between the SRQ Matrix and SHLAA

As outlined in section 1.3, although linked, the SRQ density matrix and the SHLAA Character Map perform different functions within the London Plan.

We therefore feel that it is not necessary to attempt to map all of the built environment characteristics which define setting within the notes to the SRQ Matrix, as this neither serves the purpose of the SRQ Matrix, nor the SHLAA.

Any quantification of what are largely subjective built form characteristics, such as “large building footprint” or “mixed uses” would be based on assumptions and would not be robust. Moreover, a spatial unit of analysis would need to be established in order for the relevant data to be mapped. The level of detail required for the most accurate mapping (e.g. plot level) is not likely to be viable, and the output would be an extremely complex map of London which is not a user-friendly tool, nor aligned with the strategic nature of the SHLAA. The data would therefore need to be aggregated at a particular spatial scale, for example at the ward level, LSOA level or even smaller grid squares. However, any spatial aggregation of built-form characteristics will always represent a ‘pseudo-scientific’ abstract of character, rather than the real character of an area.

In addition, even if built-form characteristics could be mapped at the most accurate level of detail, any map produced would only reflect the spatial character of London at a single point in time, meaning that it lacks the ability to express the potential of an area for new densities of development.

Attempting to map all of the built-form characteristics is therefore largely incongruous with the general purpose of both the SRQ Matrix and the SHLAA. In terms of the SRQ Matrix, any mapping of characteristics which clearly defines the spatial extent of each setting may become too prescriptive and inflexible to allow for the local context to be subjectively interpreted. This may result in inappropriate development if densities are applied based on potentially spurious mapping with no subjective consideration of setting.

We therefore recommend that mapping should not seek to incorporate all of the characteristics which define setting in the notes to the SRQ Matrix. Instead, the mapping of setting should remain exclusively reserved for the SHLAA, and should continue to only incorporate proximity to centres and the proportion of flats/terraced houses, as along with PTAL, these parameters support the SHLAA in presenting a strategic notional housing capacity for the capital.

We also recommend the continued use of the Census as the source of data for the proportion of flats/terraced houses. Whilst the Census has the limitation of only being updated every ten years, the strategic nature of the SHLAA does not require the data to pick up changes to typology on very short timescales. In the absence of a suitable alternative, the Census also represents a high quality, reliable dataset.

4.2 Updating the SHLAA Character Map

The array of mapping undertaken demonstrates the range of effects when altering the three key features of networked buffers, buffer size and predominance thresholds. It is believed that an evolution of the existing Character Map is more desirable than a revolution. An additional challenge is also to ensure that the strategic usefulness of the Character Map does not become limited due to an over-specified and complex methodology. Map 19 (overleaf), presents our recommended Character Map, which incorporates:

- The improved methodology of networked buffers taken from the boundary of town centres, as this better reflects actual walking distance to town centres.
- A 1km buffer, which brings the map closer in line with the methodology used to calculate PTAL, and which reflects faster observed walking speeds in London (see section 3.4).

The recommended Character Map retains the 75% typology threshold. This parameter has been retained as it is not possible to determine with certainty whether the alternative values (60% or 90%) provide more accurate results.

4.3 Updating the SRQ Matrix

As revealed by the evolution of the SRQ Matrix, there has been an overall attempt to simplify the matrix over time. Whilst the desire for simplification is one that should be encouraged given the function of the SRQ Matrix as a development management tool, it is also important to consider that good places are inherently complex and dynamic. The London Plan Character and Context SPG (2014) outlines the principles of character, its defining features and guiding principles for considering the character of an area. It outlines that everywhere has a distinctive character, that as well as physical features, character is also about people and communities, and that places are connected and overlap. In terms of the geographical scale of character areas, the SPG acknowledges that “*character exists at all scales from the site and neighbourhood level to city-wide*”¹⁹. Given these principles, it is difficult to apply a definitive spatial metric around a development site when determining the area’s character. Instead, the size of the area examined should vary on a case by case basis. Therefore, changes to simplify the matrix and better allow it to fulfil its purpose are beneficial; however any attempt to apply specific metrics which over-simplify the complex nature of ‘place’ within the matrix should be discouraged. Our overall recommendation with regards to the SRQ Matrix is therefore – simplify the process, not the place.

¹⁹ London Plan Character and Context SPG (2014). Page 16.



Legend

-  Suburban - 51%
-  Urban - 29%
-  Central - 20%

Data Sources

ONS Census 2011

GLA Town Centres 2014

Characteristics

- 1km network buffer from Town Centre boundary
- 100m sampling interval around Town Centre boundary
- 75% housing typology threshold

© Copyright Information

P1	27/04/16	CG	RK	NW
----	----------	----	----	----

Issue	Date	By	Chkd	Apprd
-------	------	----	------	-------



ARUP

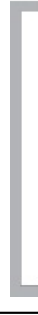
13 Embury Street
 London W1T 4BQ
 Tel +44 20 7638 1531 Fax +44 20 7630 3024
 www.arup.com

Client

Greater London Authority

Job Title

GLA Density Project 4 - Exploring Character and Development Density



Recommended SHLAA Character Map



Scale at A3

1:190,000

Job No

247474-00

Drawing Status

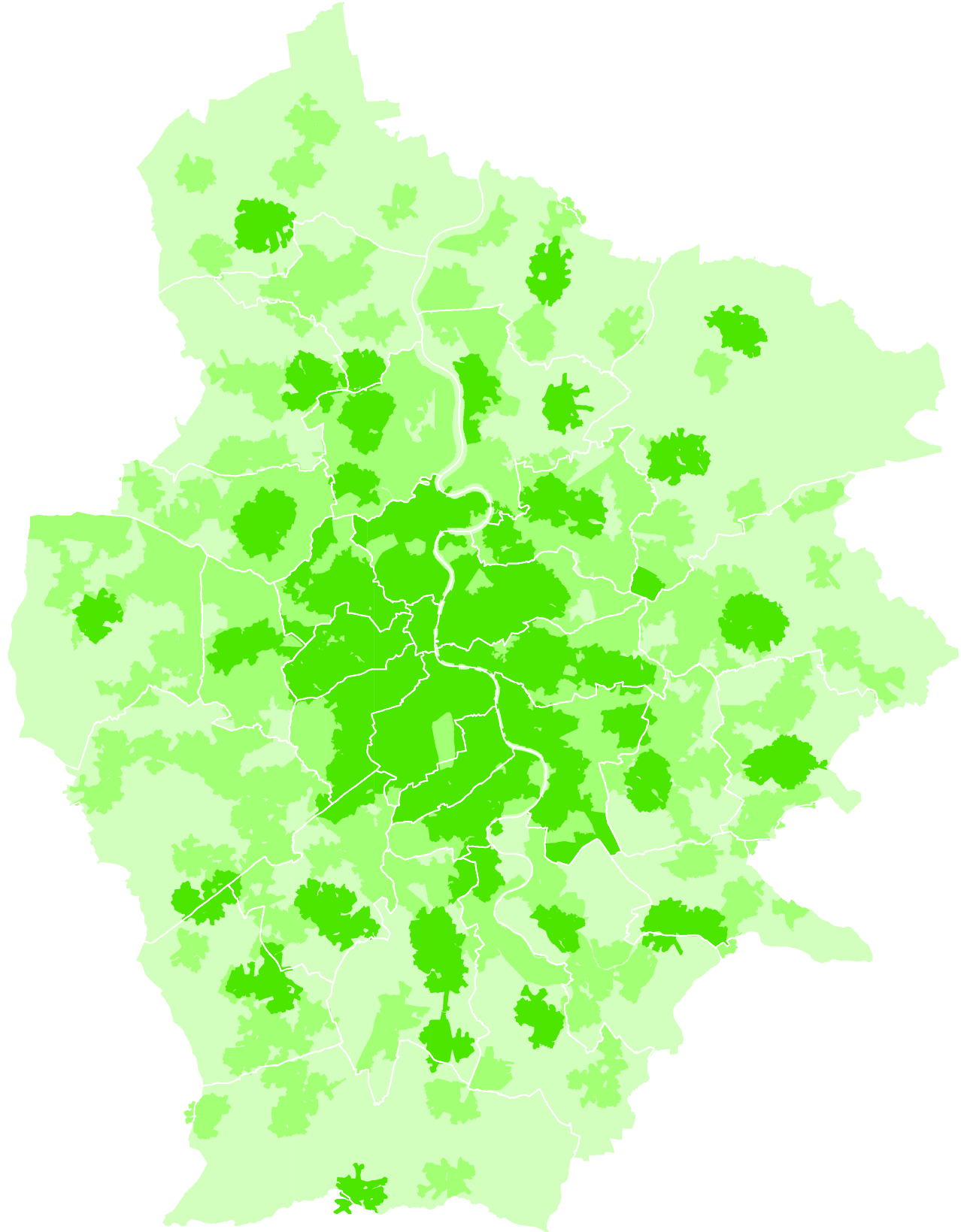
ISSUE

Drawing No

Map 19

Issue

P1



In order to achieve this, we outline two primary recommendations for the SRQ Matrix below, and following this, we present an updated matrix and further options for exploration.

4.3.1 Remove town centres and arterial routes

Location, defined by a quantifiable proximity to town centres and arterial routes, and setting, defined by subjective interpretations of a range of built environment characteristics, represent two distinct features which should retain independence. Given the purpose of the SRQ Matrix, we recommend that the setting characteristic of proximity to town centres and arterial routes are removed from the SRQ Matrix and accompanying notes. These characteristics are already adequately expressed by PTAL, as good public transport is often located in town centres or along arterial routes. PTAL is also a well understood and robust measure which is regularly updated and thus able to reflect changes to accessibility over time.

The key challenge that is likely to arise as a consequence of this change is that defining the most appropriate setting for a particular site will become more subjective and open to discussion. There is also an additional consideration that in removing these locational factors, the SRQ Matrix will diverge further from the SHLAA Character Map, where proximity to centres is one of the two key mapped characteristics. However, we do not feel that this is problematic, given the differences in the purposes of the SRQ Matrix and the SHLAA Character Map discussed throughout this report.

Removing the proximity characteristic has the desirable outcome of simplifying the inputs into the matrix, whilst not over-simplifying the complex nature of 'place'. It serves to ensure that there is a greater focus on the built environment characteristics which define the local character and context of an area, and that these perceptive characteristics are given an equal weighting against PTAL, which is retained on the upper axis.

This suggested change is also in line with the attitudes of local planning authorities towards the SRQ Matrix, as demonstrated by recent local authority responses to the Outer London Commission's (OLC) investigation to help inform the full review of the London Plan²⁰. Authorities were asked whether the SRQ Matrix should be reviewed, and of the four authorities who responded directly to the question²¹, a key theme emerging was the need to take into account local context and character, and an emphasis that the matrix can only act as a starting point for what is appropriate at an individual site.

4.3.2 Remove density as a defining characteristic of setting, but retain the remaining built form characteristics

Removing proximity to centres and arterial routes gives a greater focus to the built form characteristics which define local character, and with this increased focus

²⁰ Outer London Commission (2016) - OLC and the full review of the London Plan.
<https://www.london.gov.uk/about-us/organisations-we-work/outer-london-commission-olc/olc-and-full-review-london-plan>

²¹ The London Boroughs of Barnet, Bromley, Croydon and Ealing.

comes the need to ensure that the most appropriate setting characteristics are incorporated.

The current built form setting characteristics of land-use, typology, building footprint, height and density provide a clear understanding of place with which to come to a conclusion about the character of a site and its local context. However, it is also apparent that density as a defining setting characteristic is somewhat removed from the remaining four built form characteristics. This is because density as a concept is highly variable depending upon the definition used²²; in addition, interpretations of what constitutes high, medium and low density are also likely to vary greatly, as is understanding of what different densities will deliver. Density is also affected by other built form characteristics such as building height and footprint, and therefore it is somewhat counterintuitive to include density alongside these characteristics in the matrix, given that the former directly influence the latter. As a result, we recommend removing it as a defining characteristic of setting.

We recommend retaining the built form setting characteristics of land-use, typology, building footprint, and height are used to define setting, as they are clear, well understood, and less susceptible to varying individual interpretations. They can therefore generate an accurate and clear understanding of an area to inform discussions on site development proposals. Moreover, as revealed by the review of case study cities, they all represent characteristics which are commonly used elsewhere in cities that are broadly comparable to London, demonstrating their useful real world application. In addition, in retaining a focus on the built form, the current characteristics are also of direct relevance to the output to which they relate – i.e. the density ranges within the matrix.

While retaining these characteristics, we also propose some minor revisions to the format of the matrix, and way in which some of the characteristics are applied. These are outlined in the following section, which presents an updated SRQ Matrix.

4.3.3 An updated SRQ Matrix

Taking all of our research and analysis into account, and the recommendations above, we present a suggested update to the SRQ Matrix in Table 5.

The broad format of the matrix is retained, with PTAL along the top, and setting on the left hand side. This continuity is important as it gives a sense of familiarity with the existing layout.

²² GLA Density Project 1: Measuring and Defining Density – addresses this issue in detail.

			Public Transport Accessibility Level		
			PTAL 0-1	PTAL 2-3	PTAL 4-6
Built Form Characteristics	Setting A	Mixed use Predominantly apartment buildings and terraced houses Small to large footprints Predominantly 4+ storeys	150-300 hr/ha	300-650 hr/ha	650-1100 hr/ha
	Setting B	Mixed use Predominantly apartment buildings and terraced houses Small to medium footprints Predominantly 2-4 storeys	150-250 hr/ha	200-450 hr/ha	200-700 hr/ha
	Setting C	Predominantly residential uses Predominantly detached and semi-detached houses Small footprints Predominantly 2-3 storeys	150-200 hr/ha	150-250 hr/ha	200-350 hr/ha

Table 5: Suggested updated SRQ Matrix

Of the four characteristics which feature in the revised matrix, the only characteristic which remains unchanged in all three settings is land use, as shown in Table 5. The key changes and revisions to this new matrix are as follows:

Matrix format

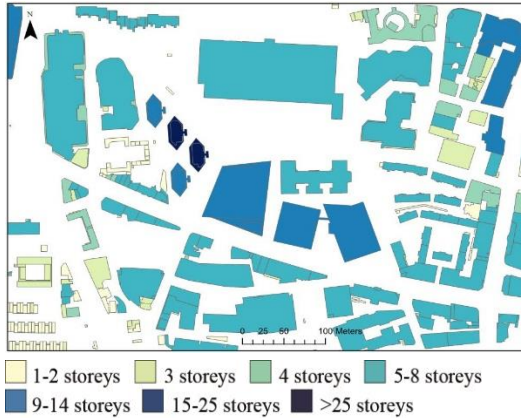
- **The removal of named ‘settings’:** The new matrix removes the current setting names, and replaces them with the neutral names ‘A, B and C’. At present, the terms used to name the three settings may be confused with specific geographical locations (e.g. central may be equated with Central London), or may in themselves conjure strong perceptions about the character of an area (e.g. suburban). This is problematic, as only the four built-form characteristics should determine the setting of an area. Therefore, the incorporation of neutral settings not only mitigates against the terminological issues associated with the current setting names, but also allows for a stronger focus on the built-form characteristics in defining an area’s setting.
- **Concise notes within the matrix:** In order to simplify the format of the SRQ Matrix, the accompanying notes have been removed, and the defining characteristics of each setting have been incorporated within the matrix itself. To add further simplicity, the four characteristics are laid out on four separate lines, rather than as part of continuous prose.

Defining Characteristics

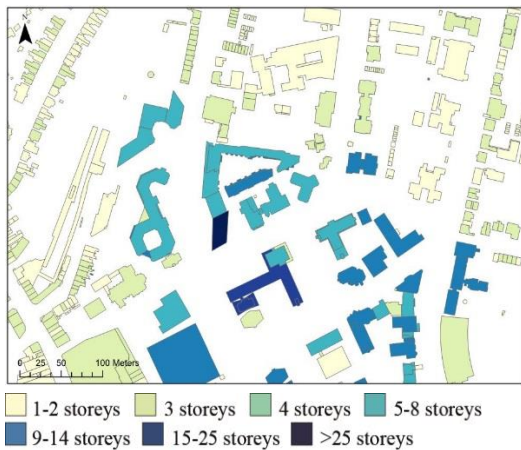
- **Revised heights:** The building heights characteristic has been altered in Setting A (formerly central), with the upper limit of storeys removed, such that the setting is now characterised by heights of predominantly 4+ storeys. This makes Setting A more inclusive of a growing number of areas across London which contain a mix of footprints, and typologies, but where heights are generally six storeys and above. An alternative solution which proposes

four settings to capture the growing number of areas within London which contain larger buildings is outlined in section 0. Some examples of areas which the new Setting A better represents are given below^{23, 24}.

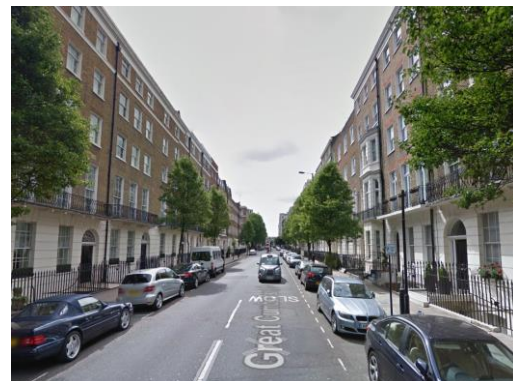
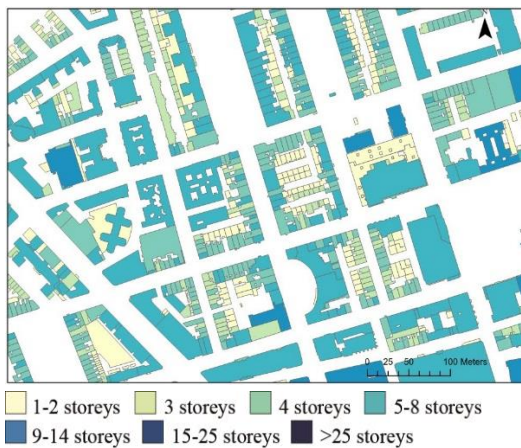
Bankside:



Croydon:



Marylebone:



²³ Original building heights data was in metres. This data was converted into storeys by assuming 3.5m per storey.

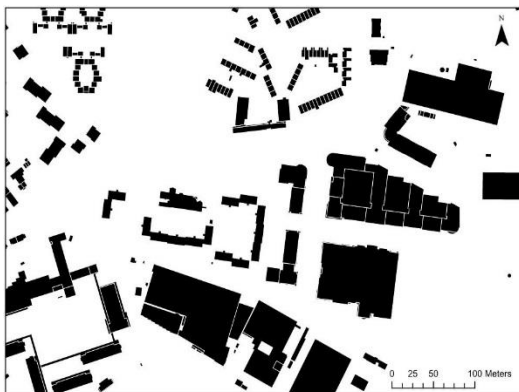
²⁴ Data for maps - Crown copyright & database right (2016) OS 100032216 GLA. Images - Google Maps (2016).

- **Revised footprints:** The building footprints characteristic has been expanded in settings A and B to better reflect the diverse mix of footprints found in many areas across London, where small building footprints (such as those of detached, semi-detached or terraced houses) are closely juxtaposed with medium and large footprints (such as those of housing estates or large apartment buildings). Below are examples of areas which are well represented by the revised footprints parameters²⁵.

Central St Giles:



Colindale:



- **Revised typologies:** The typologies in Setting C remain unchanged from the previous suburban setting.

Within Setting B, the new matrix removes ‘mansion blocks’ and instead replaces it with ‘apartment buildings’. The rationale behind this change is that the term ‘mansion blocks’ carries with it connotations of particular types of buildings of a certain age and architectural style; examples of these types of buildings are shown in Figure 9 below. The term ‘apartment buildings’ on the other hand is a more inclusive way of describing the wide range of shared dwellings found in London, some examples of which are shown in Figure 10. The inclusion of terraced houses remains unchanged in this setting.

The apartment building and terraced house typologies are also introduced into Setting A in order to capture the wide variety of dwellings in these areas, and to apply greater consistency in the characteristics used to define each setting.

²⁵ Data for maps - Crown copyright & database right (2016) OS 100032216 GLA. Images - Google Maps (2016).



Figure 9: Examples of 'mansion blocks' across London



Figure 10: Examples of 'apartment buildings' across London

Additional Options

The suggested updated SRQ Matrix in Table 5 can be thought of as a baseline scenario, and there are further revisions that might be discussed and explored in more detail in order to maximise its effectiveness. Four of these possible options are outlined below.

Named settings, or neutral settings?

The suggested updated SRQ Matrix has removed the three named settings of central, urban and suburban. Whilst we feel that the removal of these named settings is beneficial as it removes potentially confusing location-based connotations or 'loaded' terminology, we appreciate that these names have been a well-established part of the matrix for many years, and as such there may be a case for their continued inclusion. There is also the possible option of a numerical (1, 2, 3 etc.) rather than a letter based naming convention. The relative merits of each of these options could therefore be explored further.

Inclusion of hr/unit and u/ha

In line with the recommendation of simplification, the updated SRQ Matrix gives only one set of density ranges per setting and PTAL level. Density is expressed in hr/ha, as this is the measure of density for initial consideration when bringing forward a site for development. An option exists to re-incorporate the greater level of detail from the current SRQ matrix, which adds additional ranges of hr/unit and associated values for u/ha. These should be incorporated in accompanying notes, which would retain the visual simplicity of the updated matrix.

A new category of built form characteristics

In the suggested updated SRQ Matrix, three settings are retained; however, as outlined in section 4.3.3 above, some of the parameters for building heights and footprints have been revised in order to better take account of areas which may lie above the current central setting in terms of building height, footprint and typology mix. An alternative to this may instead be the addition of a fourth setting, which would sit above the remaining settings within the matrix, becoming Setting A+, or A to D.

The exact parameters for each of the characteristics within this new setting would need to be established, but it would likely include a predominant height of 6+ storeys, and in response Setting A would revert to a predominant height of 4-6 storeys. Setting A+ would also include mixed uses, a predominance of apartment blocks, and medium to large footprints. Settings B and C would likely remain unchanged.

This option would also require alterations to the density ranges to incorporate the Setting A+. This could be in the form of reconfiguring the existing ranges, or, the current ranges could remain and instead new higher ranges could be included for the new setting. What these higher density ranges would be is in need of further work.

The benefit of this alternative option is that it provides areas which could support the highest densities with their own category on the matrix. Furthermore, trends in London indicate that many new developments currently exceed the existing density ranges; therefore, the option of adding higher density ranges within the additional setting may serve to better reflect the density of development taking place, and may provide a better indication the potential density that different areas can support.

Removing maximum density?

Although outside the scope of this commission, the final option that could be explored relates to the density ranges themselves. As outlined above, many developments in London currently exceed the density ranges of the current SRQ Matrix.

There may therefore be the option to increase the current density ranges in a number of ways. This could involve changing the maximum density values only, giving larger ranges, or could involve a change to both the minimum and maximum values, increasing the overall average densities within the matrix. Some possible ways in which the ranges could change are outlined below.

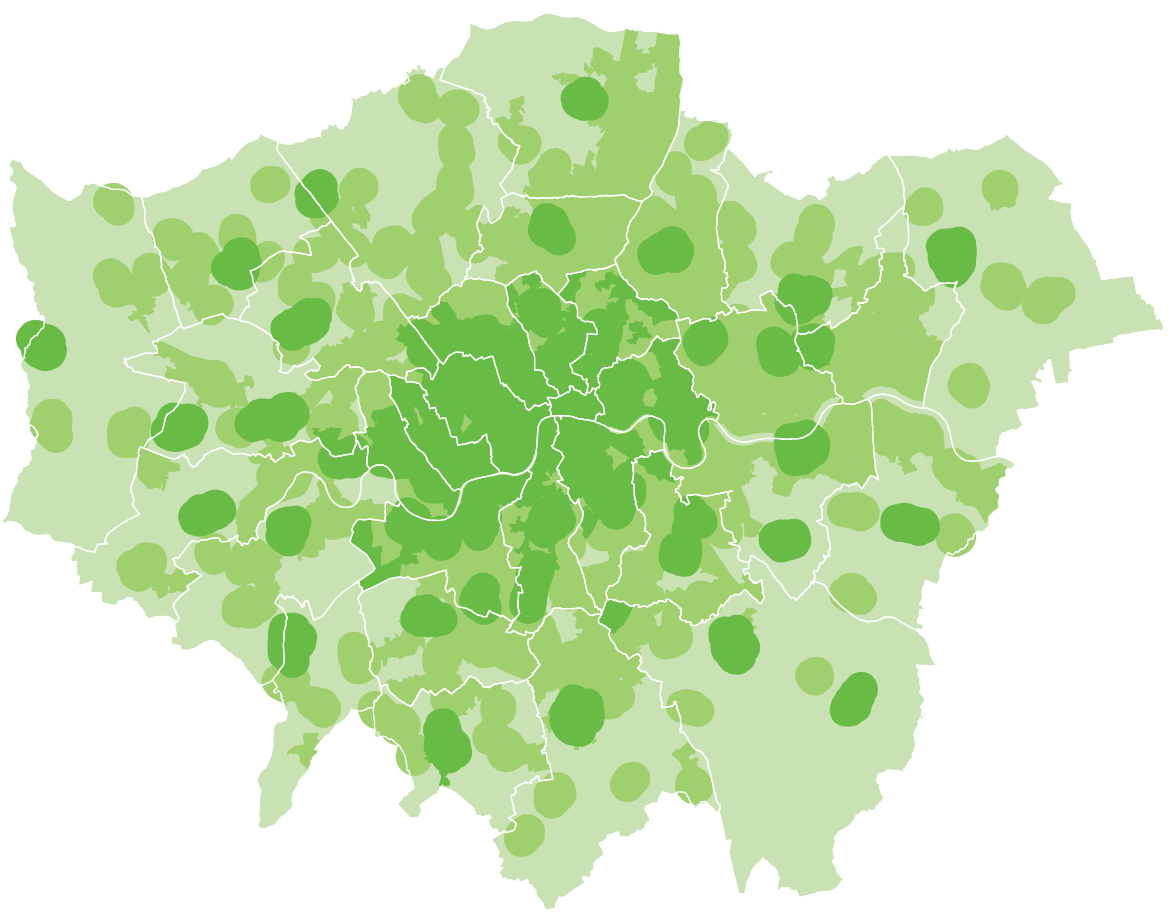
- A more tailored approach could be adopted. Research could be undertaken to determine the magnitude of the discrepancy between the current ranges and the actual density of new developments; new density ranges could be based upon the findings of this research.
- A further option for consideration might be to remove the maximum values from each of the density ranges altogether, leaving only a minimum density which should be reached. This may allow the matrix to better reflect the areas of highest density within London without the need for an additional setting in the matrix.

The likely outcomes of the above approaches are complex, and are examined in more detail in GLA Density Project 1²⁶.

²⁶ GLA Density Project 1: Measuring and Defining Density

Figures

Census Data	Predominance of Typology	Drawing Number	Characteristics		Suburban	Urban	Central	Caveats
2001	75%	Map 01	800m walk	Basic Buffer	44%	36%	20%	
2011		Map 02		Basic Buffer	47%	33%	20%	
		Map 03		Network Buffer	62%	28%	11%	
		Map 04	1km walk	Basic Buffer	40%	36%	24%	Uses faster average walking speed assumption to extend buffers to 1km
		Map 05		Network Buffer	59%	29%	12%	
Map 06		2.5km cycle	Basic Buffer	10%	34%	57%	Assumes a cycle speed of 15km/hr, which gives a 2.5km cycle in 10 minutes	
Map 07			Network Buffer	33%	37%	30%		
60%	Map 08	800m walk	Basic Buffer	34%	40%	26%	The designation of 60% flats is at this stage preliminary and has been used to identify a range of change.	
	Map 09		Network Buffer	43%	38%	19%		
	Map 10	1km walk	Basic Buffer	29%	41%	30%		
	Map 11		Network Buffer	41%	39%	20%		
90%	Map 12	800m walk	Basic Buffer	56%	27%	17%	The designation of 90% flats is at this stage preliminary and has been used to identify a range of change.	
	Map 13		Network Buffer	80%	15%	5%		
	Map 14	1km walk	Basic Buffer	47%	32%	21%		
	Map 15		Network Buffer	74%	18%	7%		
N/A	Map 16	800m walk	Network Buffer around Town Centre boundary	N/A	N/A	N/A		
	Map 17			N/A	N/A	N/A		
75%	Map 18			55%	28%	17%		
75%	Map 19	1km walk		51%	29%	20%		



Legend

- Suburban - 44%
- Urban - 36%
- Central - 20%

Data Sources
 ONS Census 2001
 GLA Town Centres 2014

Characteristics
 Basic 800m buffer from Town Centres
 75% housing typology threshold

PI	03-02-16	CG	RK	NW
Issue	Date	By	CHKD	Appd

0 2,500 5,000 10,000
Meters

ARUP

13 Fitzroy Street
 London W1T 4RF
 Tel +44 20 7638 1531 Fax +44 20 7580 3924
 www.arup.com

Client
Greater London Authority

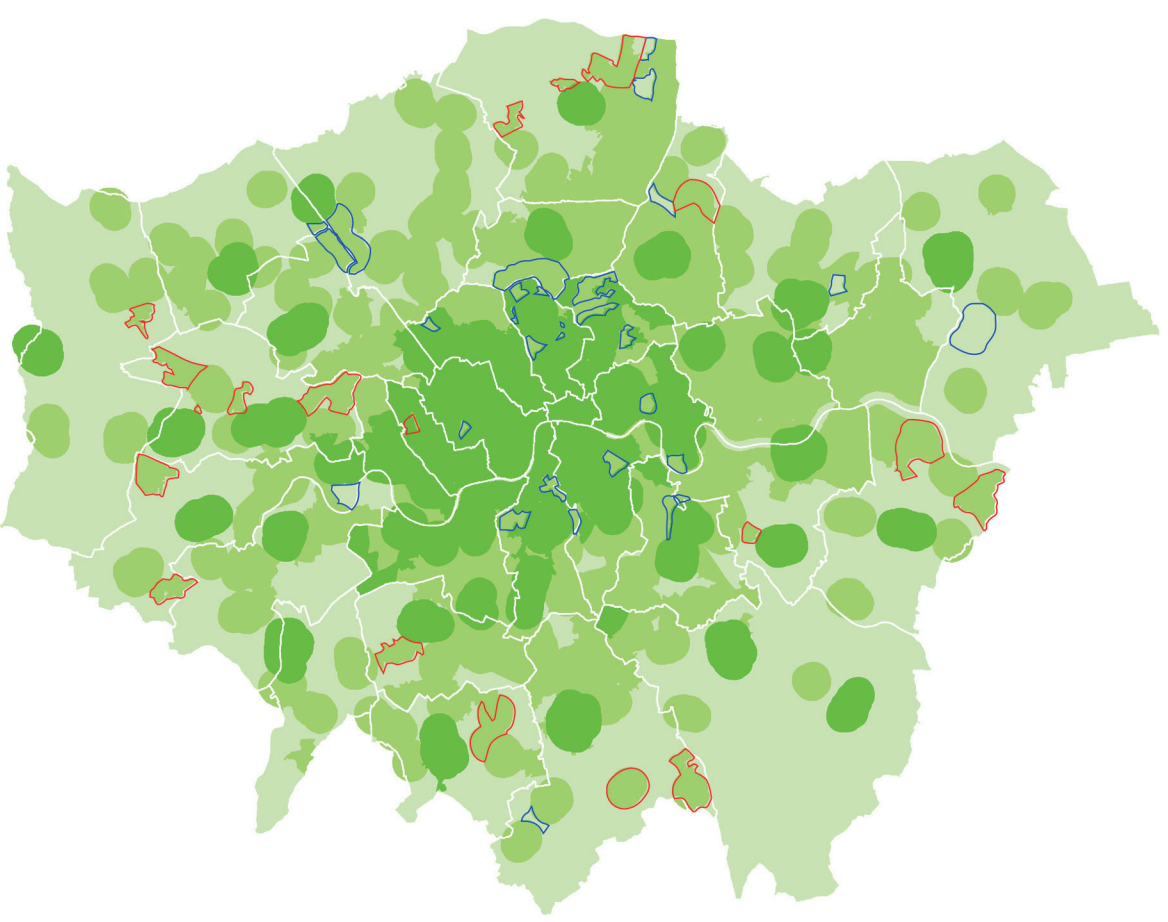
Job Title
**GLA Density Project 4 - Exploring
 Character and Development Density**

Recreated Character Map

Scale at A3
1:190,000

<small>Job No</small> 247474-00	<small>Drawing Status</small> ISSUE
<small>Drawing No</small> Map 01	<small>Issue</small> P1

© Arup



Legend

- Suburban - 44%
- Urban - 36%
- Central - 20%
- Downward change in setting
- Upward change in setting

Data Sources
 ONS Census 2001
 GLA Town Centres 2014

Characteristics
 Basic 800m buffer from Town Centres
 75% housing typology threshold

© Copyright Information

PI	03-02-16	CG	RK	NW
Issue	Date	By	CHKD	Appd

0 2,500 5,000 10,000
Meters

ARUP

13 Fitzroy Street
 London W1T 4RF
 Tel +44 20 7638 1531 Fax +44 20 7580 3924
 www.arup.com

Client
Greater London Authority

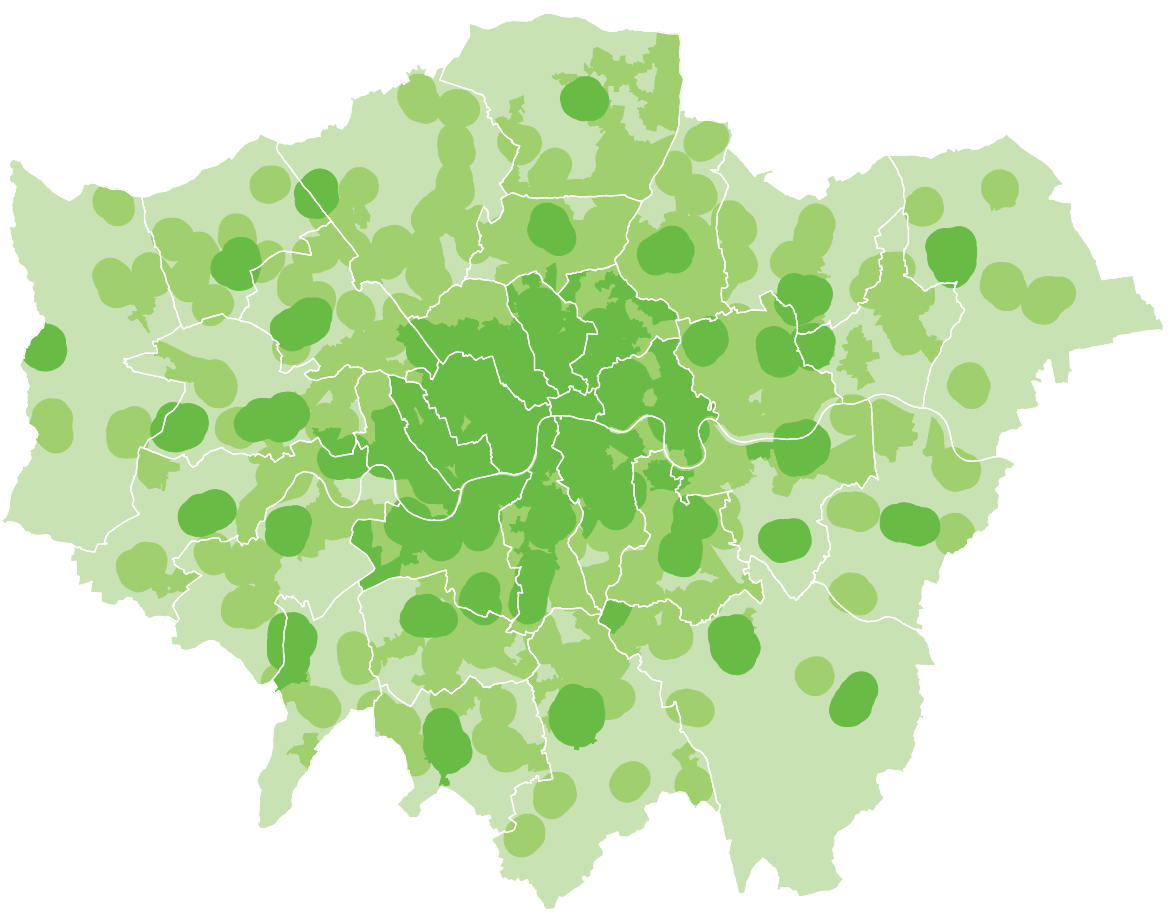
Job Title
**GLA Density Project 4 - Exploring
 Character and Development Density**

**Differences between current and
 recreated SHLAA Character Maps**

Scale at A3
1:190,000

<small>Job No</small> 247474-00	<small>Drawing Status</small> ISSUE
<small>Drawing No</small> Map 01a	<small>Issue</small> P1

© Arup



Legend

- Suburban - 47%
- Urban - 33%
- Central - 20%

Data Sources
 ONS Census 2011
 GLA Town Centres 2014

Characteristics
 Basic 800m buffer from Town Centres
 75% housing typology threshold

© Copyright Information

PI	20-01-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

Meters
 0 2,500 5,000 10,000

ARUP

13 Fitzroy Street
 London W1T 4RD
 Tel +44 20 7638 1531 Fax +44 20 7680 3924
 www.arup.com

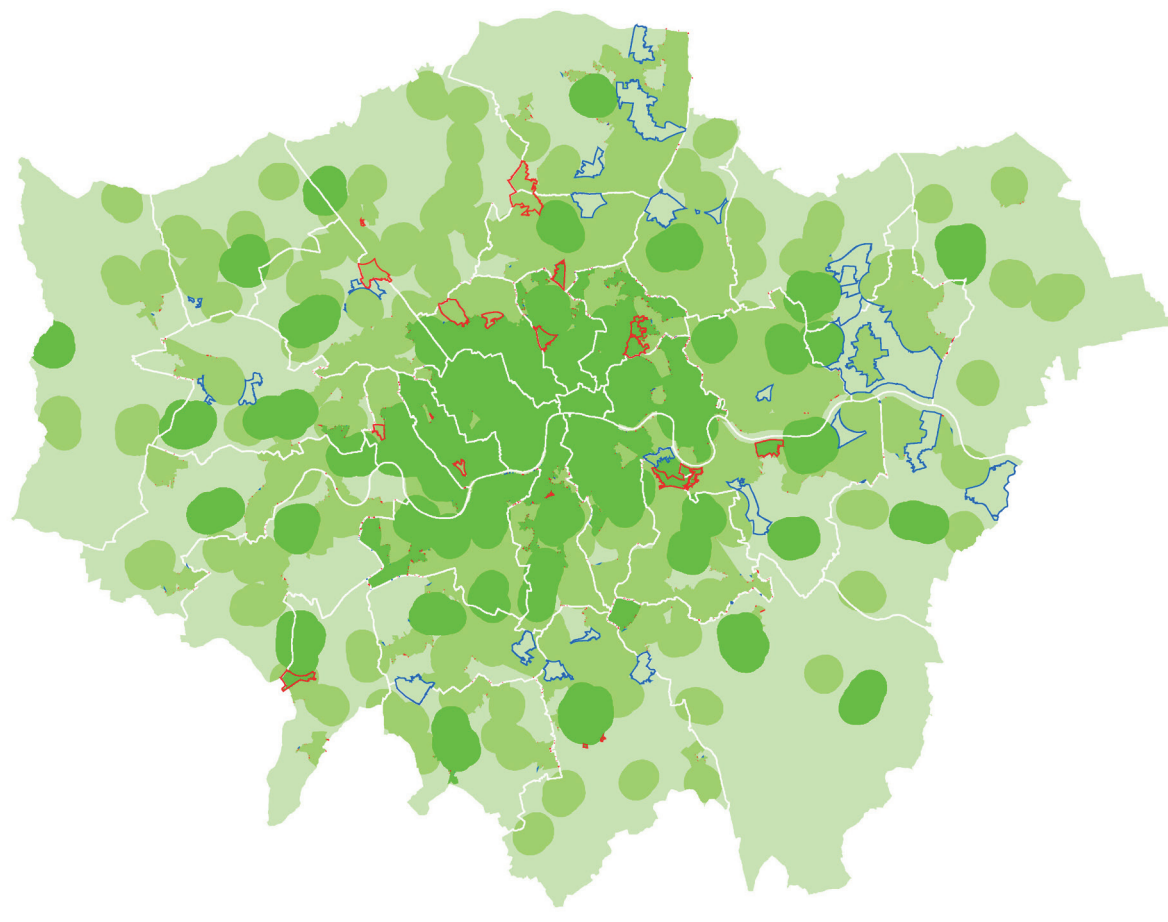
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map

Scale at A3
1:190,000

<small>Job No</small> 247474-00	<small>Drawing Status</small> ISSUE
<small>Drawing No</small> Map 02	<small>Issue</small> P1



Legend

- Suburban - 47%
- Urban - 33%
- Central - 20%
- Downward change in setting
- Upward change in setting

Data Sources
 ONS Census 2011
 GLA Town Centres 2014

Characteristics
 Basic 800m buffer from Town Centres
 75% housing typology threshold

© Copyright Information

PI	03-02-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

Meters
 0 2,500 5,000 10,000

ARUP

13 Fitzroy Street
 London W1T 4RD
 Tel +44 20 7638 1531 Fax +44 20 7680 3924
 www.arup.com

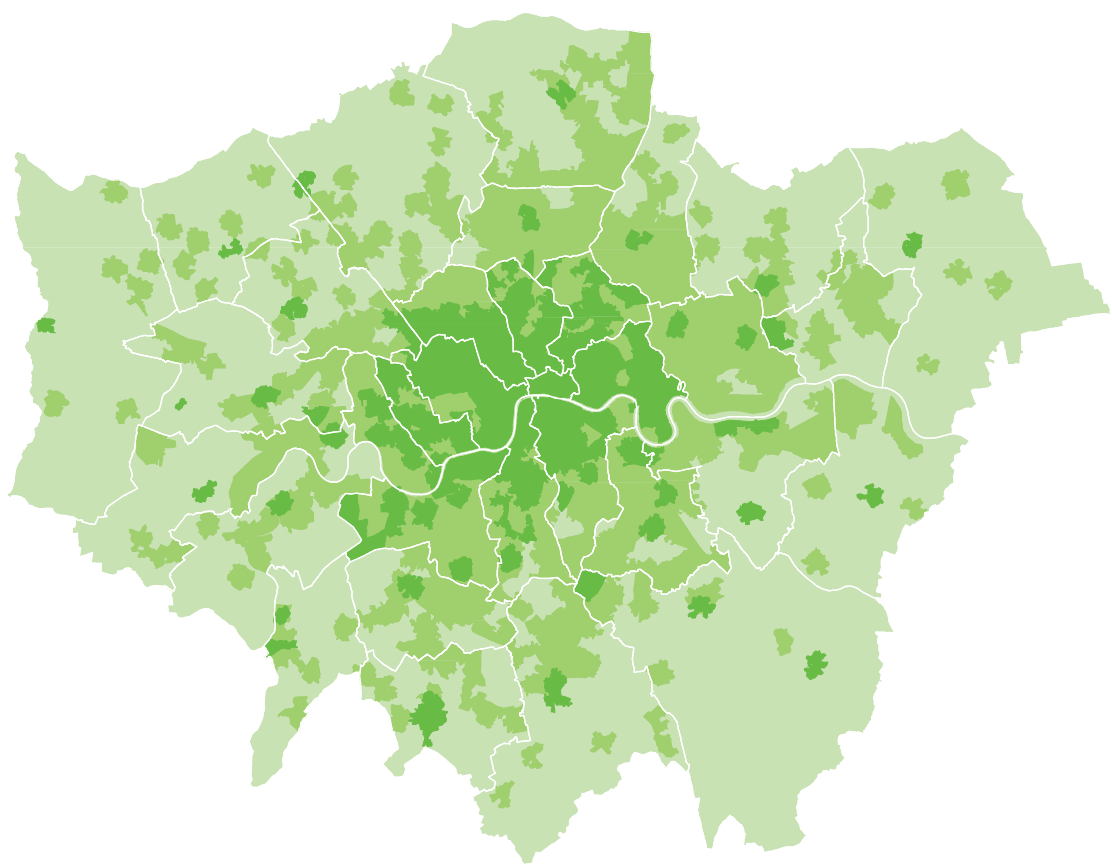
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Differences between recreated and updated SHLAA Character Maps

Scale at A3
1:190,000

<small>Job No</small> 247474-00	<small>Drawing Status</small> ISSUE
<small>Drawing No</small> Map 02a	<small>Issue</small> P1



Legend

- Suburban - 62%
- Urban - 28%
- Central - 11%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
800m network buffer from geographical centre point of Town Centres
75% housing typology threshold

© Copyright Information

PI	29-01-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

0 2,500 5,000 10,000
Metres

ARUP
13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

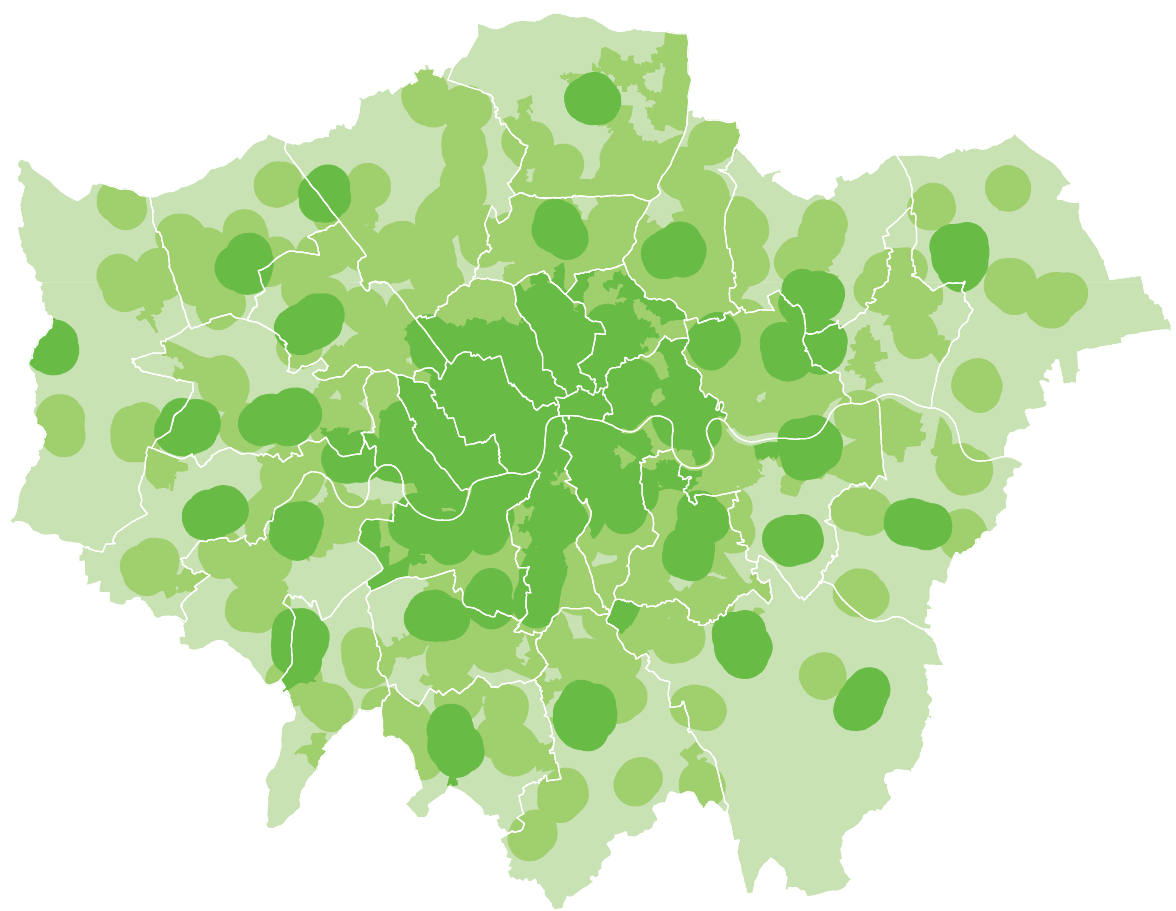
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 800m network buffers

Scale at A3
1:200,000

Job No 247474-00	Drawing Status ISSUE
Drawing No Map 03	Issue P1



Legend

- Suburban - 40%
- Urban - 36%
- Central - 24%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
Basic 1km buffer from Town Centres
75% housing typology threshold

© Copyright Information

PI	29-01-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

0 2,500 5,000 10,000
Metres

ARUP
13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

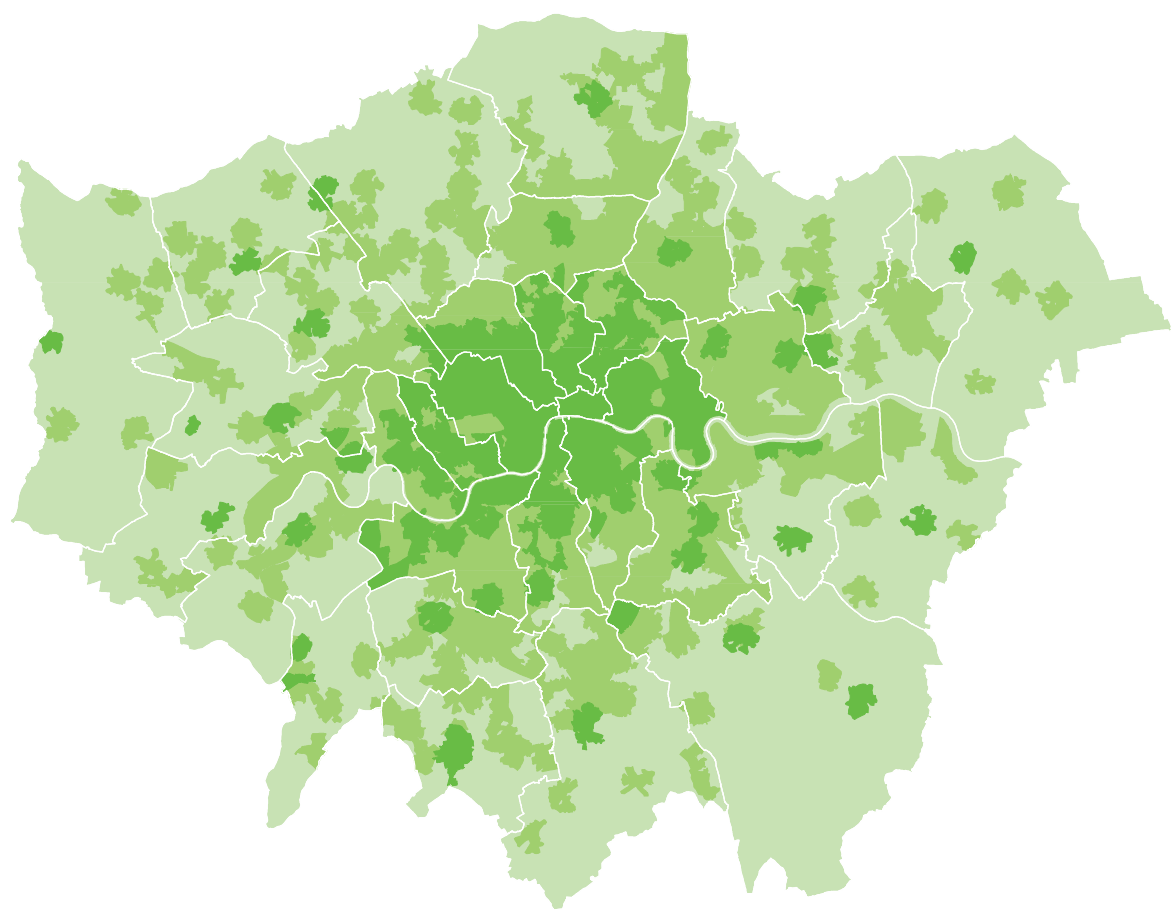
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 1km basic buffers

Scale at A3
1:190,000

Job No 247474-00	Drawing Status ISSUE
Drawing No Map 04	Issue P1



Legend

- Suburban - 59%
- Urban - 29%
- Central - 12%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
1km network buffer from geographical centre point of Town Centres
75% housing typology threshold

© Copyright Information

PI	01-02-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

0 2,500 5,000 10,000
Metres

ARUP
13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7638 1531 Fax +44 20 7680 3924
www.arup.com

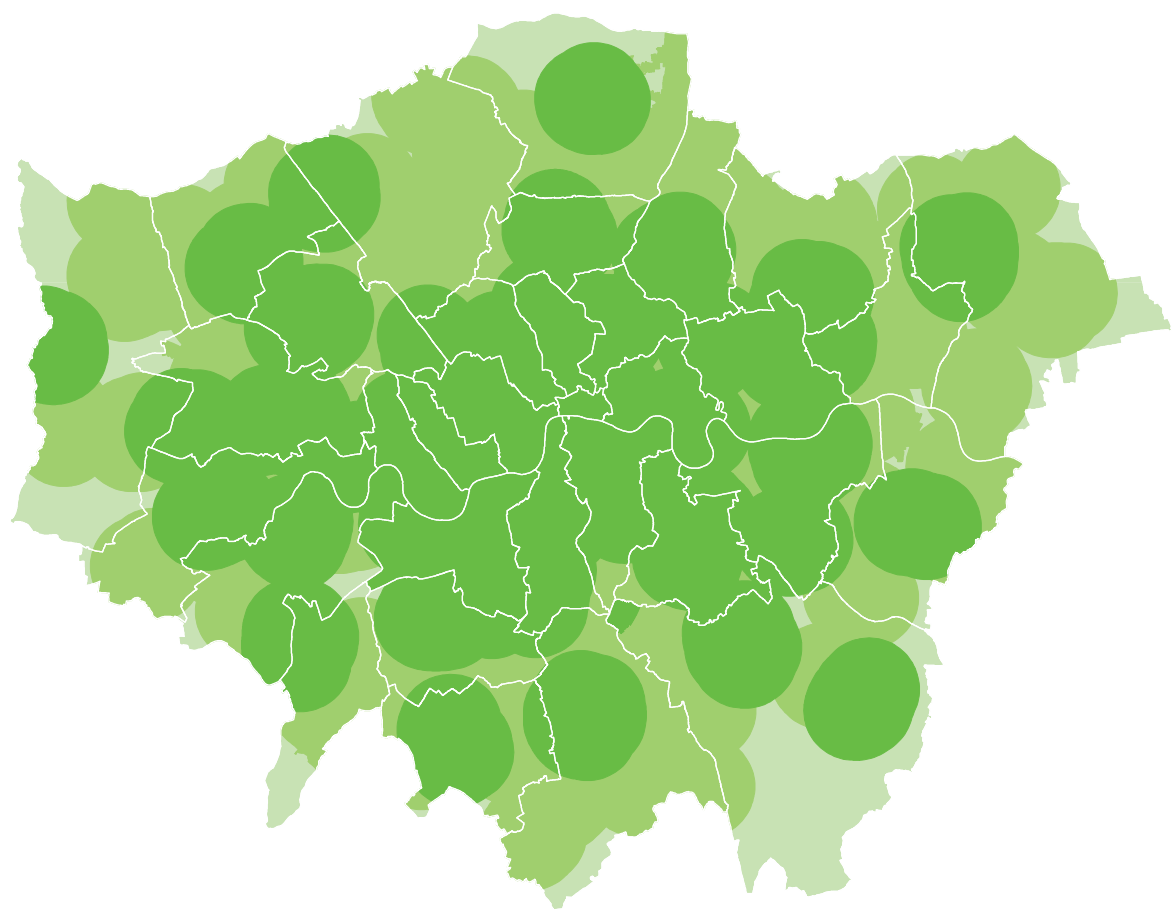
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 1km network buffers

Scale at A3
1:190,000

Job No 247474-00	Drawing Status ISSUE
Drawing No Map 05	Issue P1



Legend

- Suburban - 10%
- Urban - 34%
- Central - 57%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
Basic 2.5km buffer from Town Centres
75% housing typology threshold

© Copyright Information

PI	01-02-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

0 2,500 5,000 10,000
Metres

ARUP
13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7638 1531 Fax +44 20 7680 3924
www.arup.com

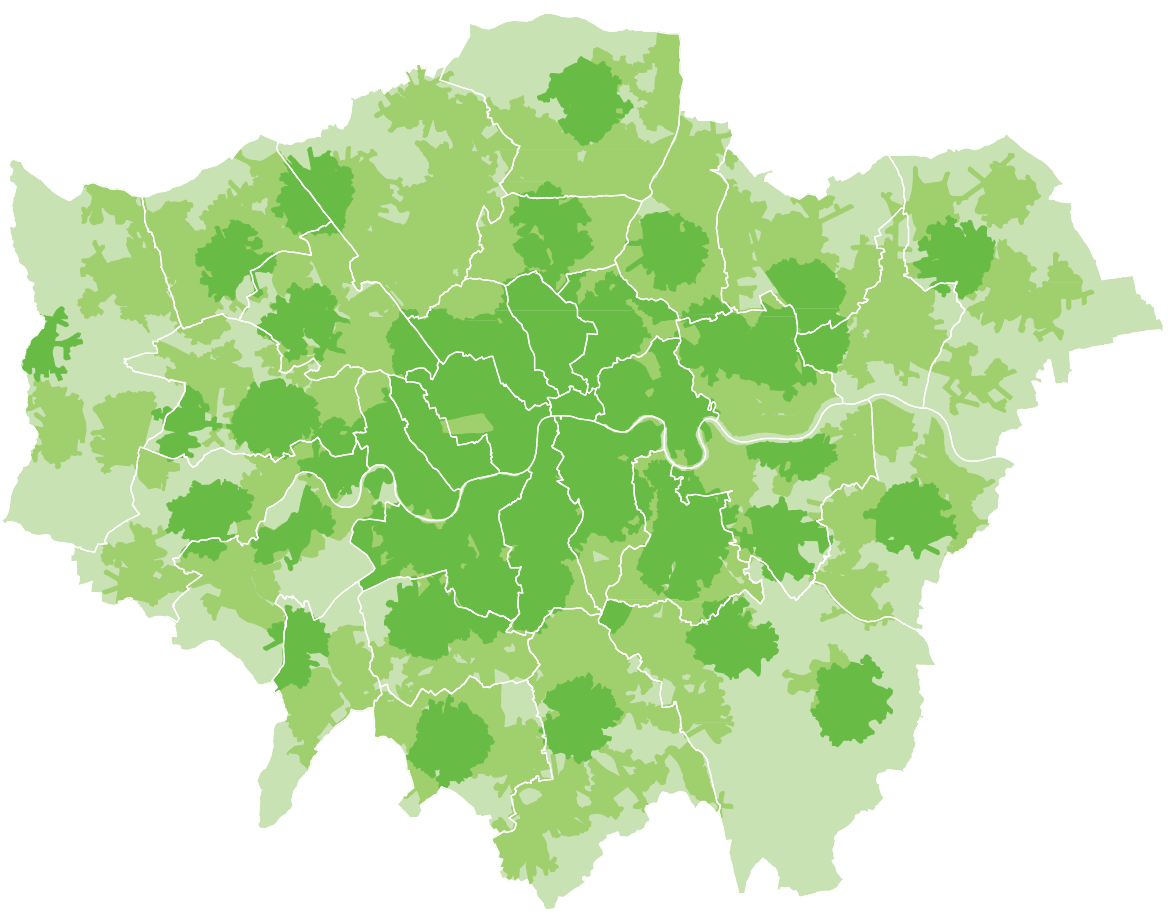
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 2.5km basic buffers

Scale at A3
1:190,000

Job No 247474-00	Drawing Status ISSUE
Drawing No Map 06	Issue P1



Legend

- Suburban - 33%
- Urban - 37%
- Central - 30%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
2.5km network buffer from geographical centre point of Town Centres
75% housing typology threshold

© Copyright Information

PI	01-02-16	CG	RK	NW
Issue	Date	By	CHKD	Appd

0 2,500 5,000 10,000
Metres

ARUP
13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

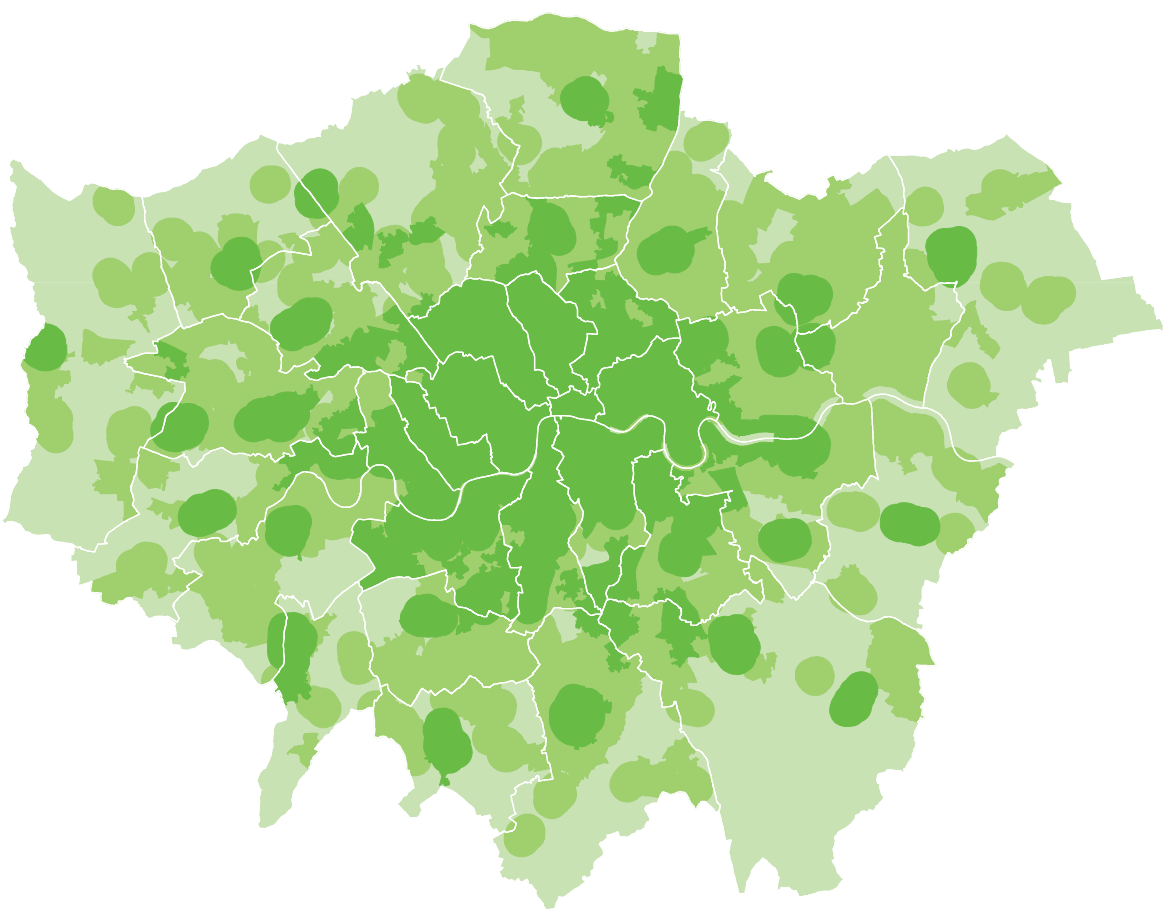
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 2.5km network buffers

Scale at A3
1:190,000

Job No	Drawing Status
247474-00	ISSUE
Drawing No	Issue
Map 07	P1



Legend

- Suburban - 34%
- Urban - 40%
- Central - 26%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
Basic 800m buffer from Town Centres
60% housing typology threshold

© Copyright Information

PI	01-02-16	CG	RK	NW
Issue	Date	By	CHKD	Appd

0 2,500 5,000 10,000
Metres

ARUP
13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

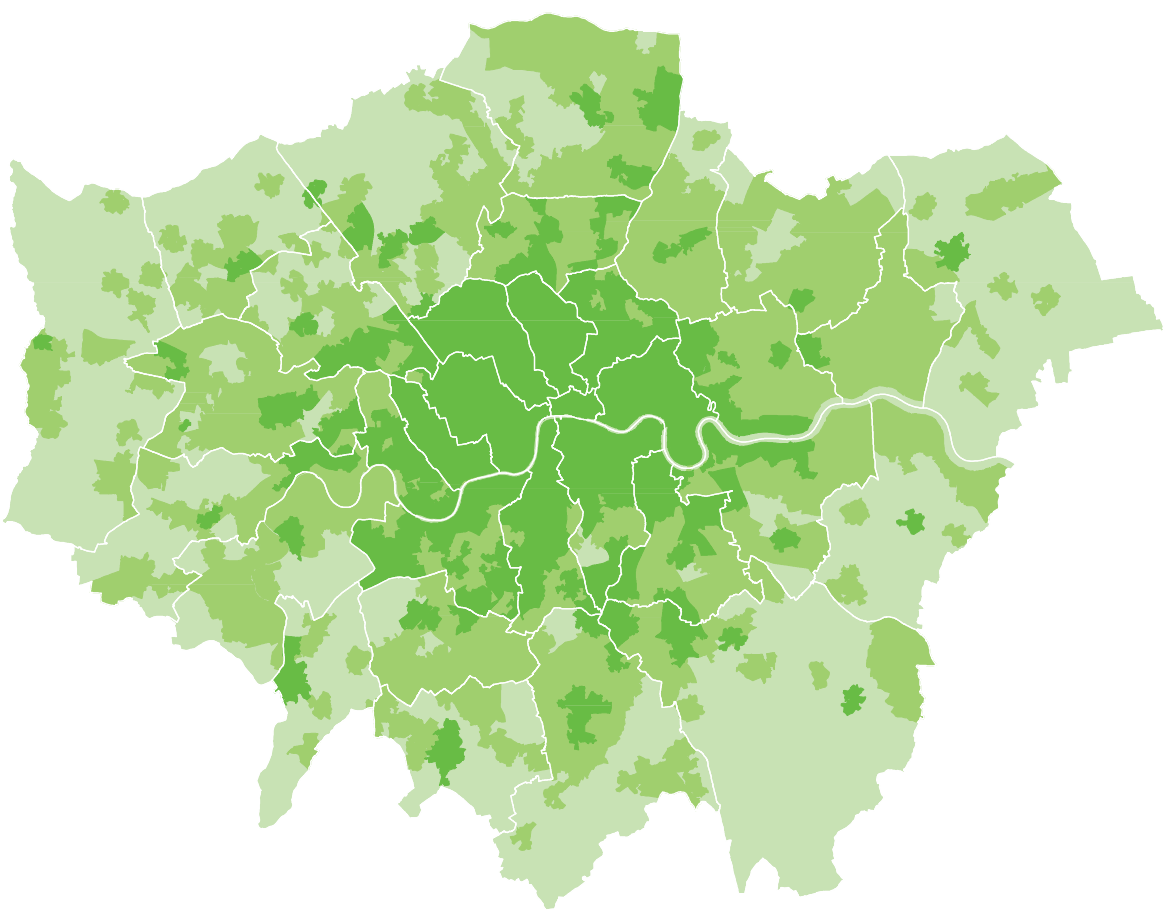
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 800m basic buffer and 60% typology threshold

Scale at A3
1:190,000

Job No	Drawing Status
247474-00	ISSUE
Drawing No	Issue
Map 08	P1



Legend

- Suburban - 43%
- Urban - 38%
- Central - 19%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
800m network buffer from geographical centre point of Town Centres
60% housing typology threshold

© Copyright Information

PI	03-02-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

0 2,500 5,000 10,000
Metres

ARUP

13 Fitzroy Street
London W1T 4EQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

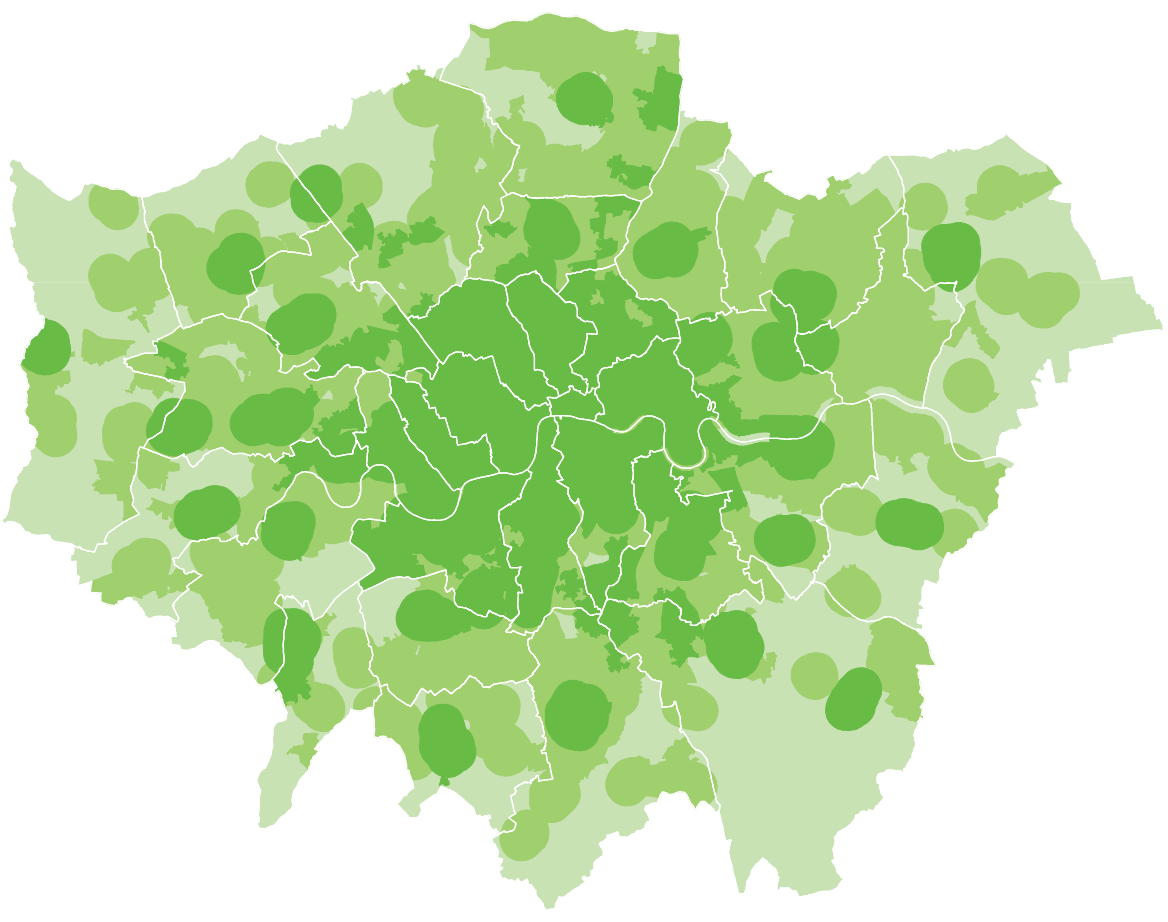
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 800m network buffer and 60% typology threshold

Scale at A3
1:190,000

Job No	247474-00	Drawing Status	ISSUE
Drawing No	Map 09	Issue	P1



Legend

- Suburban - 29%
- Urban - 41%
- Central - 30%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
Basic 1km buffer from Town Centres
60% housing typology threshold

© Copyright Information

PI	03-02-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

0 2,500 5,000 10,000
Metres

ARUP

13 Fitzroy Street
London W1T 4EQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

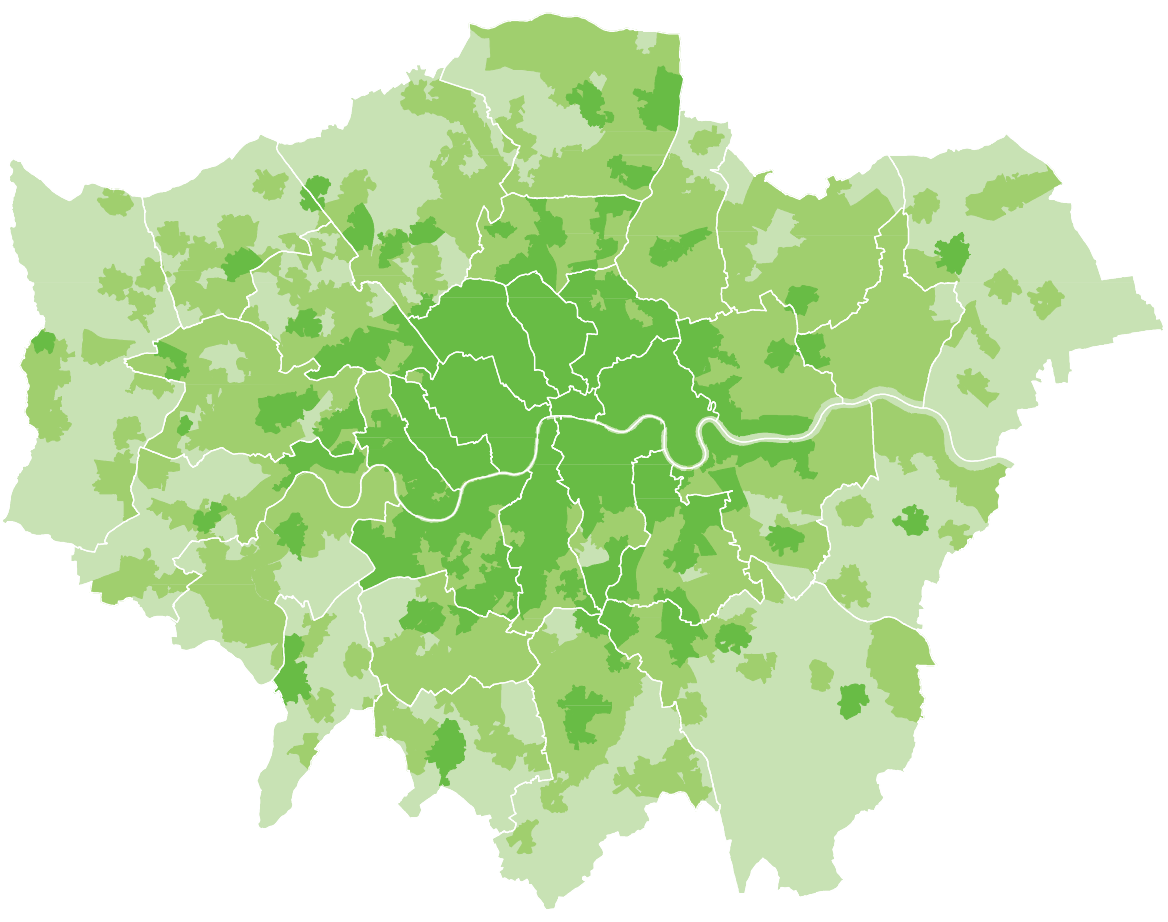
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 1km basic buffer and 60% typology threshold

Scale at A3
1:190,000

Job No	247474-00	Drawing Status	ISSUE
Drawing No	Map 10	Issue	P1



Legend

- Suburban - 41%
- Urban - 39%
- Central - 20%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
1km network buffer from geographical centre point of Town Centres
60% housing typology threshold

© Copyright Information

PI	03-02-16	CG	RK	NW
Issue	Date	By	CHKD	Appd

0 2,500 5,000 10,000
Metres

ARUP
13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

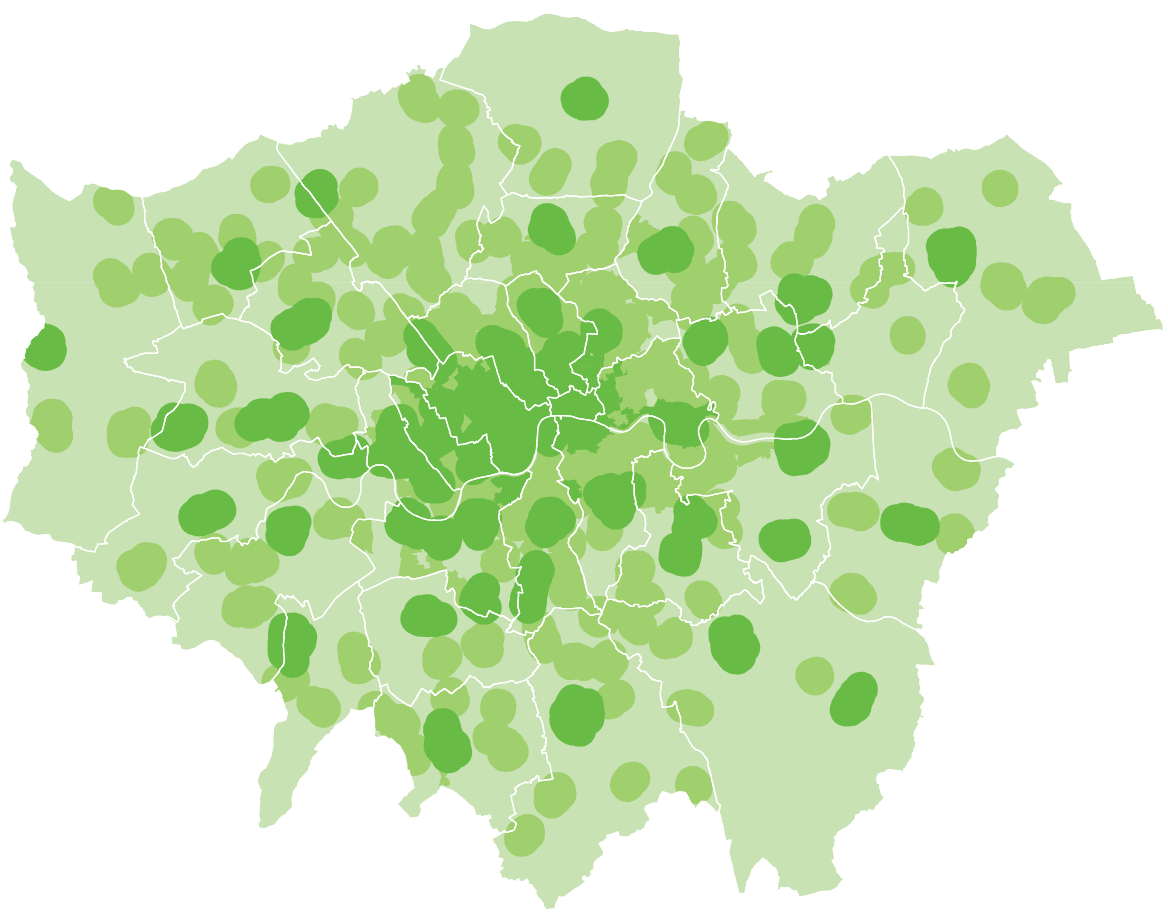
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 1km network buffer and 60% typology threshold

Scale at A3
1:190,000

Job No	Drawing Status
247474-00	ISSUE
Drawing No	Issue
Map 11	P1



Legend

- Suburban - 56%
- Urban - 27%
- Central - 17%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
Basic 800m buffer from Town Centres
90% housing typology threshold

© Copyright Information

PI	01-02-16	CG	RK	NW
Issue	Date	By	CHKD	Appd

0 2,500 5,000 10,000
Metres

ARUP
13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

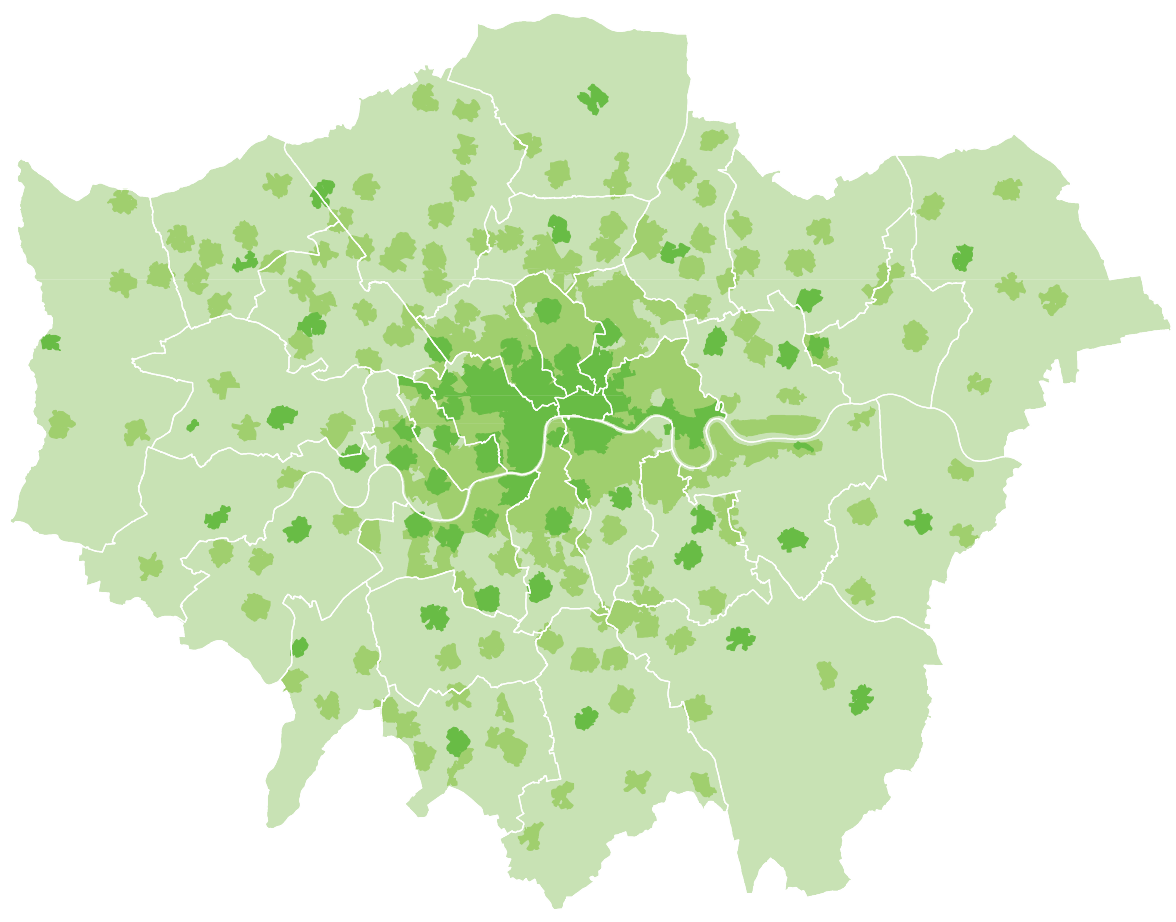
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 800m basic buffer and 90% typology threshold

Scale at A3
1:190,000

Job No	Drawing Status
247474-00	ISSUE
Drawing No	Issue
Map 12	P1



Legend

- Suburban - 80%
- Urban - 15%
- Central - 5%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
800m network buffer from geographical centre point of Town Centres
90% housing typology threshold

© Copyright Information

PI	03-02-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

0 2,500 5,000 10,000
Meters

ARUP
13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

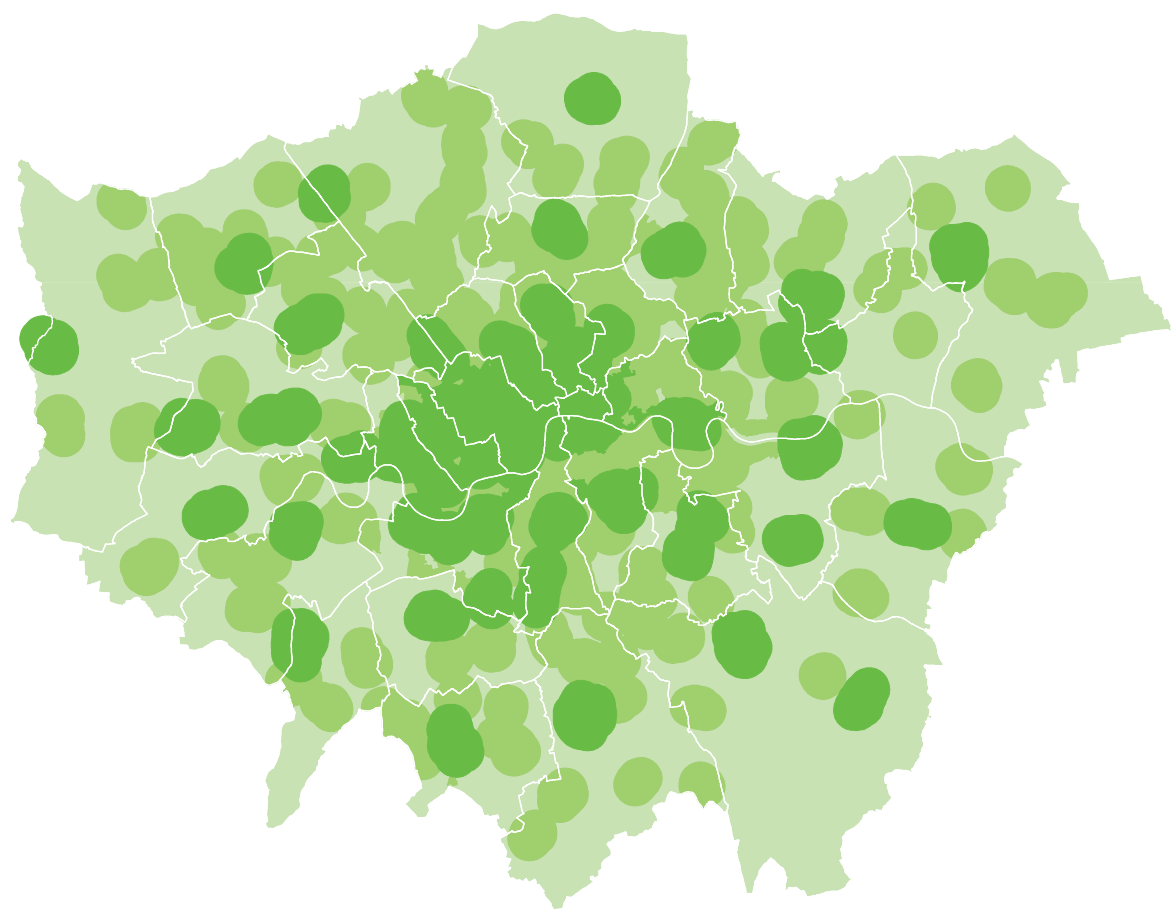
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 800m basic buffer and 90% typology threshold

Scale at A3
1:190,000

Job No	247474-00	Drawing Status	ISSUE
Drawing No	Map 13	Issue	P1



Legend

- Suburban - 47%
- Urban - 32%
- Central - 21%

Data Sources
ONS Census 2011
GLA Town Centres 2014

Characteristics
Basic 1km buffer from Town Centres
90% housing typology threshold

© Copyright Information

PI	03-02-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

0 2,500 5,000 10,000
Meters

ARUP
13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

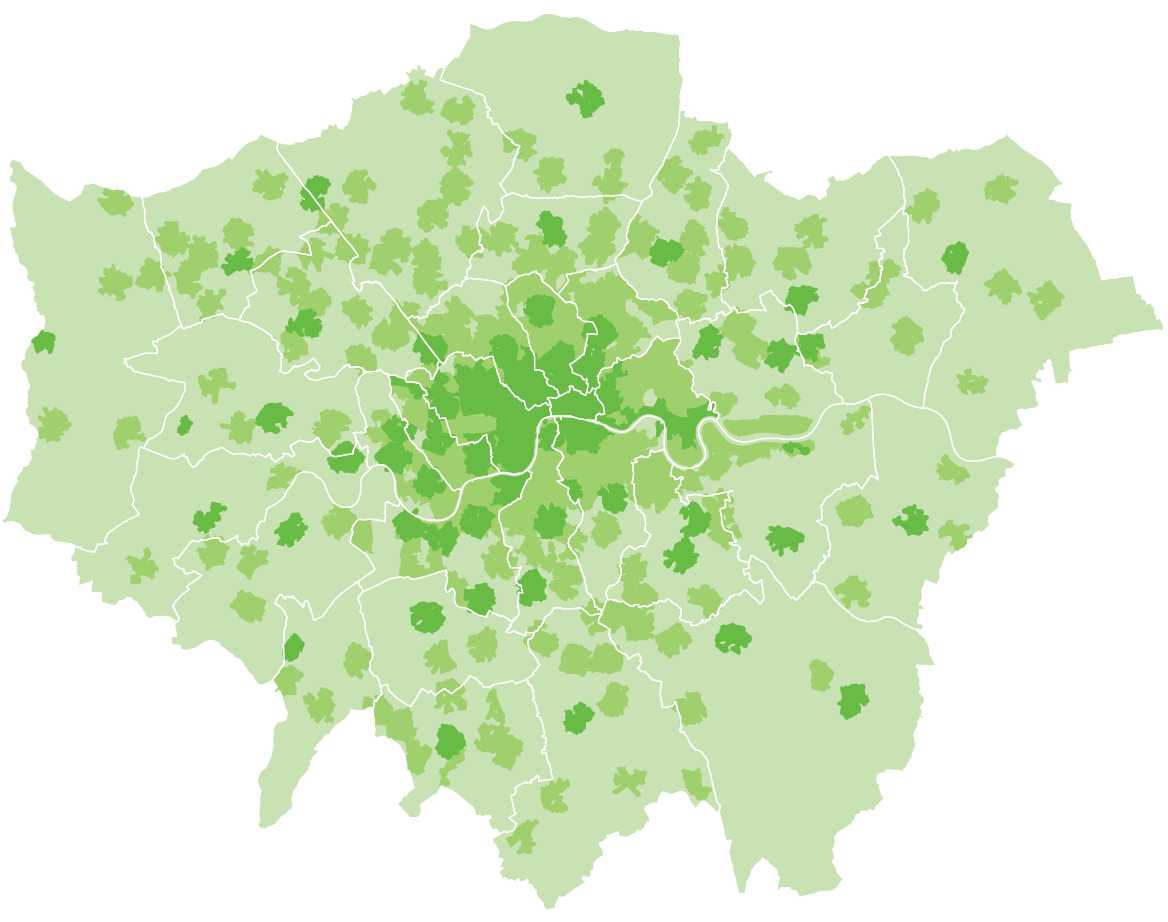
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

Updated Character Map with 1km basic buffer and 90% typology threshold

Scale at A3
1:190,000

Job No	247474-00	Drawing Status	ISSUE
Drawing No	Map 14	Issue	P1



Legend

- Suburban - 74%
- Urban - 18%
- Central - 7%

Data Sources

ONS Census 2011
GLA Town Centres 2014

Characteristics

1km network buffer from geographical centre point of Town Centres

90% housing typology threshold

© Copyright Information

PI	03-02-16	CG	RK	NW
Issue	Date	By	CHKD	Appd

0 2,500 5,000 10,000

ARUP

13 Fitzroy Street
London W1T 4EQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

Client

Greater London Authority

Job Title

GLA Density Project 4 - Exploring Character and Development Density

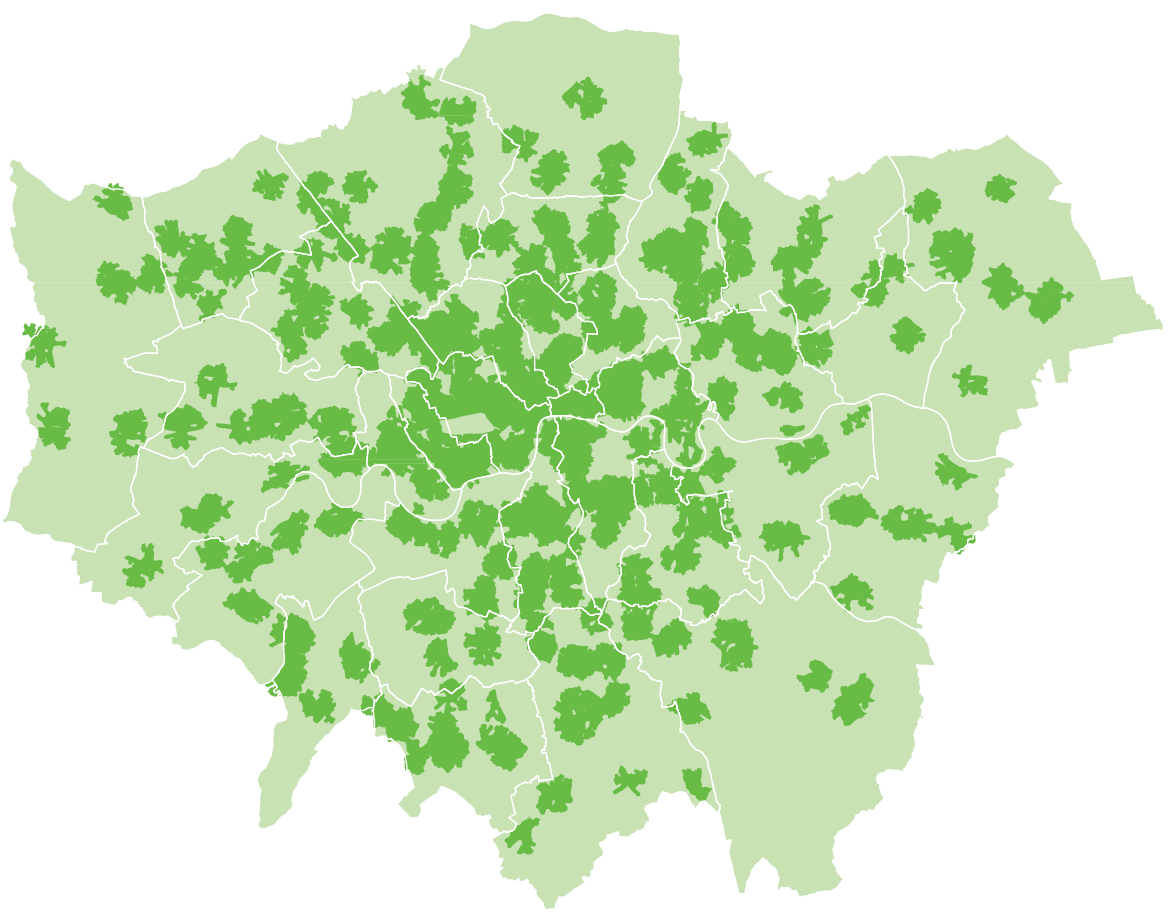
Updated Character Map with 1km network buffer and 90% typology threshold

Scale at A3

1:190,000

Job No	Drawing Status
247474-00	ISSUE
Drawing No	Issue
Map 15	P1

© Arup



Legend

- Town Centre Boundary 800m Network Buffer
- London

Data Sources

GLA Town Centres 2014

Characteristics

800m network buffer from Town Centre boundary

50m sampling interval around Town Centre boundary

© Copyright Information

PI	08-03-16	CG	RK	NW
Issue	Date	By	CHKD	Appd

0 2,500 5,000 10,000

ARUP

13 Fitzroy Street
London W1T 4EQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

Client

Greater London Authority

Job Title

GLA Density Project 4 - Exploring Character and Development Density

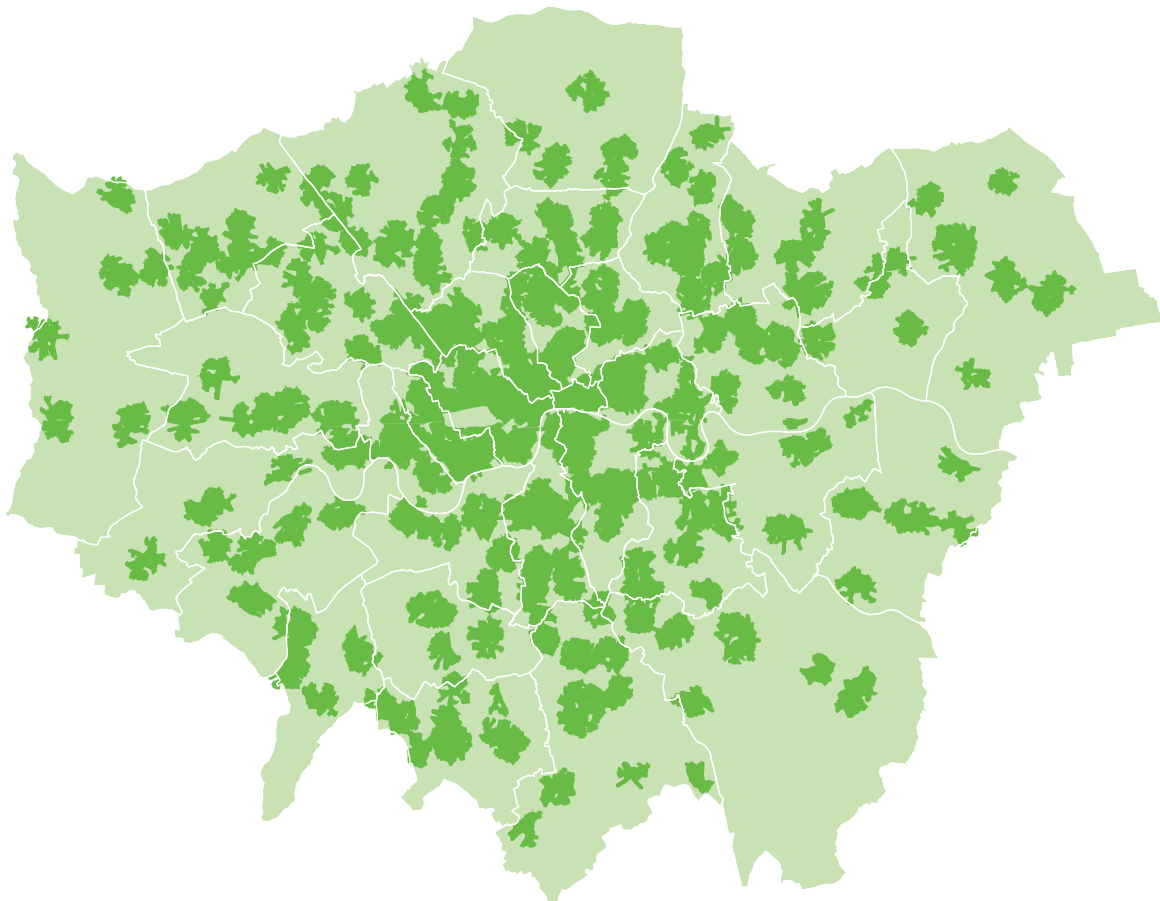
800m network buffers around Town Centres boundaries - 50m sample interval

Scale at A3

1:190,000

Job No	Drawing Status
247474-00	ISSUE
Drawing No	Issue
Map 16	P1

© Arup



Legend

- Town Centre Boundary 800m Network Buffer
- London

Data Sources

GLA Town Centres 2014

Characteristics

- 800m network buffer from Town Centre boundary
- 100m sampling interval around Town Centre boundary

© Copyright Information

PI	08-03-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

0 2,500 5,000 10,000

ARUP

13 Fitzroy Street
London W1T 4EQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

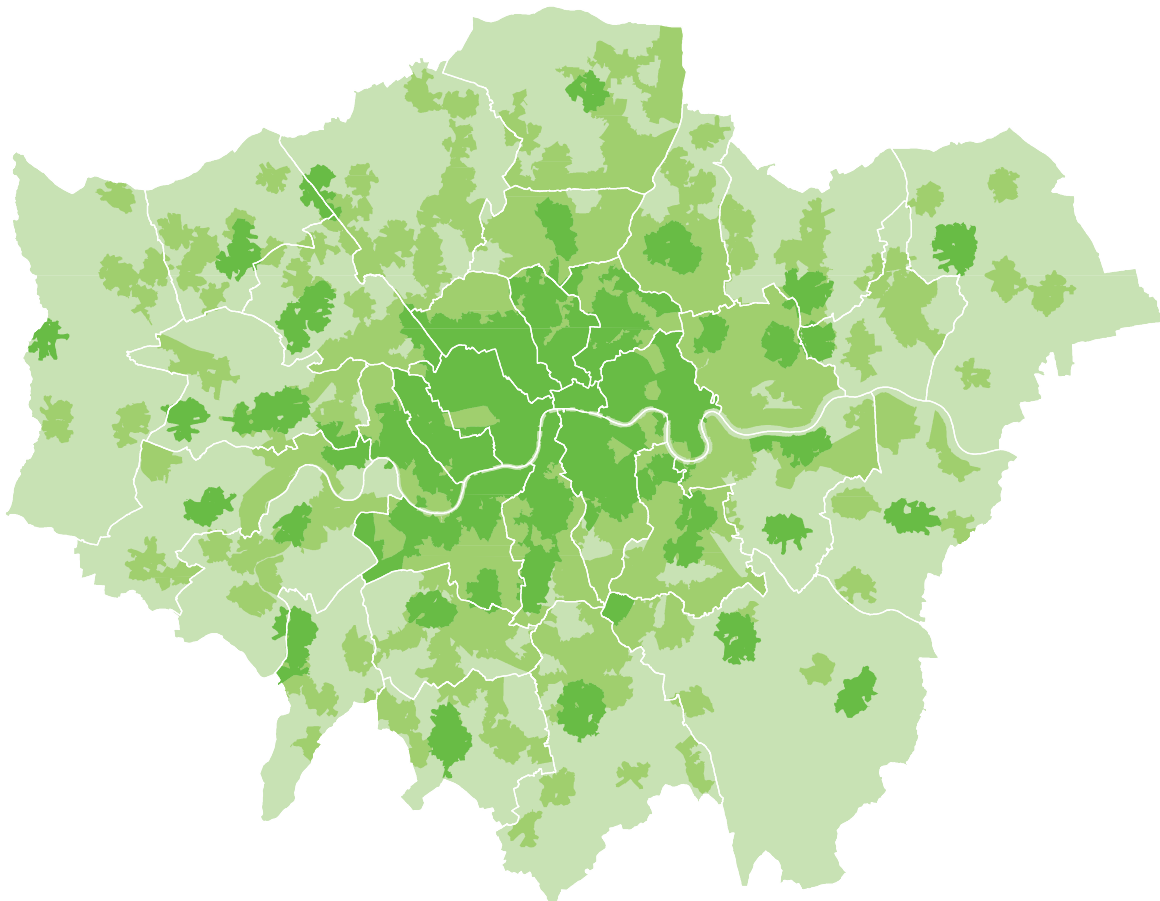
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

800m network buffers around Town Centres boundaries - 100m sample interval

Scale at A3
1:190,000

Job No	Drawing Status
247474-00	ISSUE
Drawing No	Issue
Map 17	P1



Legend

- Suburban - 55%
- Urban - 28%
- Central - 17%

Data Sources

ONS Census 2011

GLA Town Centres 2014

Characteristics

- 800m network buffer from Town Centre boundary
- 100m sampling interval around Town Centre boundary
- 75% housing typology threshold

© Copyright Information

PI	09-03-16	CG	RK	NW
Issue	Date	By	Chkd	Appd

0 2,500 5,000 10,000

ARUP

13 Fitzroy Street
London W1T 4EQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

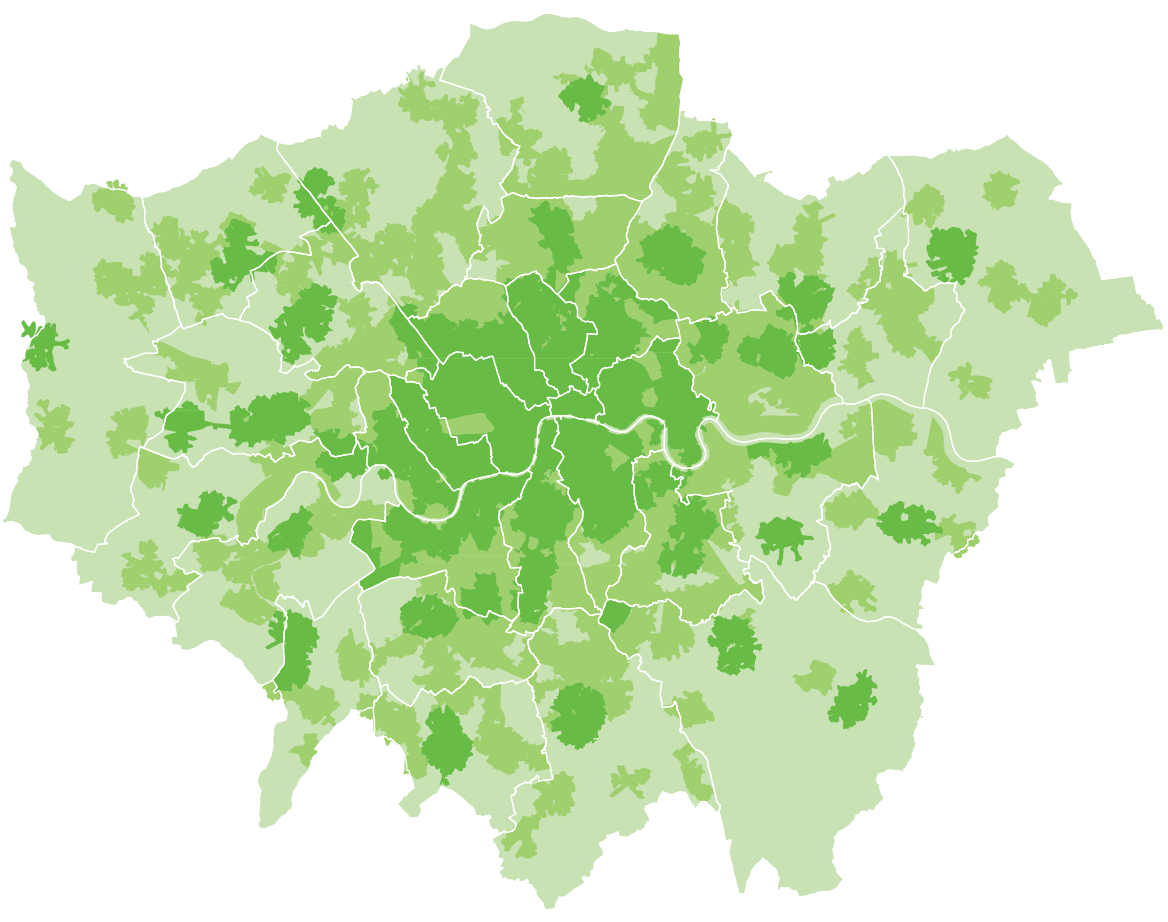
Client
Greater London Authority

Job Title
GLA Density Project 4 - Exploring Character and Development Density

800m network buffer from Town Centres boundaries and 75% typology threshold

Scale at A3
1:190,000

Job No	Drawing Status
247474-00	ISSUE
Drawing No	Issue
Map 18	P1



Legend

- Suburban - 51%
- Urban - 29%
- Central - 20%

Data Sources

ONS Census 2011

GLA Town Centres 2014

Characteristics

1km network buffer from Town Centre boundary

100m sampling interval around Town Centre boundary

75% housing typology threshold

© Copyright Information

PI	27-04-16	CG	RK	NW
----	----------	----	----	----

Issue	Date	By	Chkd	Appd
-------	------	----	------	------

0 2,500 5,000 10,000

ARUP

13 Fitzroy Street
London W1T 4BQ
Tel +44 20 7638 1531 Fax +44 20 7580 3924
www.arup.com

Client

Greater London Authority

Job Title

GLA Density Project 4 - Exploring Character and Development Density

Recommended SHLAA Character Map

Scale at A3

1:190,000

Job No	Drawing Status
247474-00	ISSUE

Drawing No	Issue
Map 19	P1

Appendix A

Plans Reviewed

A1 Case Study City Plans

Amsterdam:

- Plan Amsterdam 2040 (2011)
- Nota Mensen, Wensen, Wonen (Dutch Memorandum on Housing, 2000)
- De Staat van de Stad Amsterdam (The State of the City of Amsterdam, 2003, 2013, 2015 editions)

Barcelona:

- Plá Territorial Metropolitá de Barcelona (Barcelona Metropolitan Plan, 2010)

Copenhagen:

- The Finger Plan (2007)
- Kobenhavns Kommuneplan (Copenhagen Municipal Plan, 2015)

Melbourne:

- Plan Melbourne (2012)

Montréal:

- Montréal Master Plan (2004)

A2 Additional Characteristics Describing Setting

Characteristics used to describe settings	Amsterdam	Barcelona	Copenhagen	Melbourne	Montreal
Age (heritage / historic areas)	✓	✓			
Diversity/ Complexity	✓			✓	
Proportion of public green space	✓		✓		
Proportion of garden space	✓				
Supporting infrastructure				✓	
Housing ownership	✓				
Size of housing	✓				
Size of household	✓				
House prices	✓				
Household turnover	✓				
Housing tenure	✓				
Administrative boundaries			✓		
Demography (age/ethnicity)	✓				
Socio-economic	✓				

Appendix B

Literature Reviewed

B1 Academic Literature

- Davison, G (2011). An Unlikely Urban Symbiosis: urban Intensification and Neighbourhood Character in Collingwood, Vancouver. *Urban Policy and Research*. 29(2); 105-124.
- Dovey, K; Woodcock, I and Wood, S (2009). A Test of Character: Regulating Place-identity in Inner-city Melbourne. *Urban Studies*. 46(12); 2595-2615.
- Dovey, K; Woodcock, I and Wood, S (2009). What is Urban Character? The Case of Camberwell. *City Structures 09(1)*.
- Dovey, K and Woodcock, I (2011). The Character of Urban Intensification: A Report on Research Projects Funded by the Australian Research Council 2002-2010.
- Flint, A (2006). This Land: The Battle over Sprawl and the Future of America. Baltimore, MD: The Johns Hopkins University Press.
- Forsyth, A (2012). Defining Suburbs. *Journal of Planning Literature*. 27(3); 270-281.
- Gober, P and Behr, M (1982). Central Cities and Suburbs as Distinct Place Types: Myth or Fact? *Economic Geography*. 58(4); 371-85.
- Harris, R, and Larkham, PJ (1999). Suburban Foundation, Form and Function. In *Changing Suburbs. Foundation, Form and Function*. Harris, R and Larkham, PJ (eds). New York.
- Harris, R. 2010. Meaningful Types in a World of Suburbs. In *Suburbanization in Global Society*. Clapson, M and Hutchinson, R (eds). 15-50. Bingley, England: Emerald.
- Johnson, LC (2006). Style Wars: Revolution in the Suburbs? *Australian Geographer*. 37; 259-76.
- Kickert, CC; Pont, MB and Nefs, M (2014). Surveying Density, Urban Characteristics, and Development Capacity of Station Areas in the Delta Metropolis. *Environment and Planning B: Planning and Design*. 41; 69-92.
- Kusenbach, M (2008). A Hierarchy of Urban Communities: Observations on the Nested Character of Place. *City & Community*. 7(3).
- Landau, N (2000). LA's the Place: The Urban Character and Significance of Los Angeles. *Capitalism Nature Socialism*. 11(2) 137-147.
- Ogdul, HG (2010). Urban and Rural Definitions in Regional Context: A Case Study on Turkey. *European Planning Studies*. 18(9).

Pont, MB and Haupt, P (2009). Space, Density and Urban Form.

Taylor RB (2012). Defining Neighbourhoods in Space and Time. *Cityscape: A Journal of Policy Development and Research*. 14(2).

Weeks, JR (2010). Defining Urban Areas. In *Remote Sensing of Urban and Suburban Areas*. Rashed, T and Jurgens, C (Eds). Chapter 3; 33-45.

Whitehead, C (2012). The Density Debate: A Personal View.