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London Borough of Lambeth

Private Rented Sector: Housing Stock Condition and Stressors Report

April 2023

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META STREET

Executive Summary

Metastreet were commissioned by the London Borough of Lambeth to review housing stock in the borough and assess housing stressors related to key tenures, particularly the private rented sector.

The detailed housing stock information provided in this report will facilitate the development and delivery of Lambeth's housing strategy and enable a targeted approach to tackling poor housing.

The main aim of this review was to investigate and provide accurate estimates of:

- Current levels of private rental sector (PRS) properties and tenure change over time.
- Levels of serious hazards that might amount to a Category 1 and high scoring Category 2, HHSRS hazard (HHSRS).
- Other housing related stressors, including antisocial behaviour (ASB), service demand, population and deprivation linked to the PRS.
- Assist the council to make policy decisions, including the possible introduction of property licensing schemes under Part 2 and Part 3 of Housing Act 2004.

Metastreet has developed a stock-modelling approach based on metadata and machine learning to provide insights about the prevalence and distribution of a range of housing factors. This approach has been used by several councils to understand their housing stock and relationships with key social, environmental and economic stressors.

The models are developed using unique property reference numbers (UPRN), which provide detailed analysis at the property level.

Data records used to form the foundation of this report include:

Council tax	Electoral register	Other council interventions records	Tenancy deposit data
Housing benefit	Private housing complaints and interventions records	ASB complaints and interventions records	Energy Performance data

Key Findings

- Lambeth has a total of 144,985 residential dwellings as of October 2022, 48,695 of which are PRS

- Lambeth's PRS is now calculated to be 33.6% of housing stock, representing 48,695 dwellings

- The PRS in Lambeth is distributed across all 25 wards, the percentage of PRS properties in each ward ranges between 54.1% (Vauxhall) and 20.8% (Myatts Field)

- 25 out of 25 Lambeth wards have a higher percentage PRS than the national average in 2022 (19%)

- The council received 1,182 complaints from tenants over a 3-year period (2019-2022

- 9,446 PRS dwellings in Lambeth that are predicted to have a serious home hazard (Category 1, HHSRS), PRS properties with serious hazards are distributed across the borough

- Lambeth ranks as the 42nd most deprived borough in England out of 317, 20 of 25 Lambeth wards have aggregated IMD rankings below the national average

- Lambeth faces significant challenges relating to barriers to housing and services (IMD 2019), it is nationally ranked 26 of 317 councils, all wards are worse than the National average

- Homelessness returns to government in 2022 (July- September) for Lambeth has the highest numbers accepted as being homeless

- 44.9% of households in Lambeth who were owed a prevention duty cited the loss of a private housing tenancy as the cause of their homelessness

- 1.2% of PRS properties have an F and G rating, extrapolated to the entire PRS, 585 PRS properties are likely to fail the statutory requirement

- Over a 3-year period (2019-2022), 415 ASB incidents have been investigated, during the same period 6,721 noise incidents have been recorded

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Introduction & Study Objectives

Metastreet were commissioned by the London Borough of Lambeth to review its housing stock with a focus on the following key areas:

- Residential property tenure changes since 2011
- Housing profile
- Distribution of the PRS
- Condition of housing stock in the PRS
- Housing related stressors, including Anti-Social Behaviour (ASB), service demand, population change and deprivation

The report provides the council with the evidence base for developing housing policy and service interventions. The report also seeks to help satisfy the council's responsibility to review its housing stock as set out under Part 1, Section 3 of the Housing Act 2004.

The first section of the report details the findings of the stock and tenure modelling, including an introduction to the methodology. A combination of Lambeth's data warehouse, machine learning and modelling techniques have been used to pinpoint tenure and predict property conditions within its PRS housing stock. An advanced property level data warehouse has been used to facilitate the analysis.

For the purposes of this review, it was decided that a ward-level summary is the most appropriate basis to assess housing conditions across Lambeth, built up from property level data.

Three separate predictive tenure models (Ti) have been developed as part of this project which are unique to Lambeth, they include:

- Private rented sector (PRS)
- Owner occupiers
- PRS housing hazards (Category 1, HHSRS)

The appendices to the report contain a summary of the data and a more detailed report methodology.

1   London Borough of Lambeth Overview

Lambeth is a borough of Inner London. Lambeth is a long, thin borough, about 3 miles (4.8 km) wide and 7 miles (11 km) long, it covers an area of 26.82km². The London Borough of Southwark lies to the east of the Borough of Lambeth. To the west is the London Borough of Wandsworth; to the south-west is the London Borough of Merton; and to the south is the London Borough of Croydon.[1]

1.1   Population

The Office of National Statistics (ONS) household population estimate for Lambeth as of 2021 was 317,600. This makes Lambeth the 9th most populous London borough (Figure 1)[2].
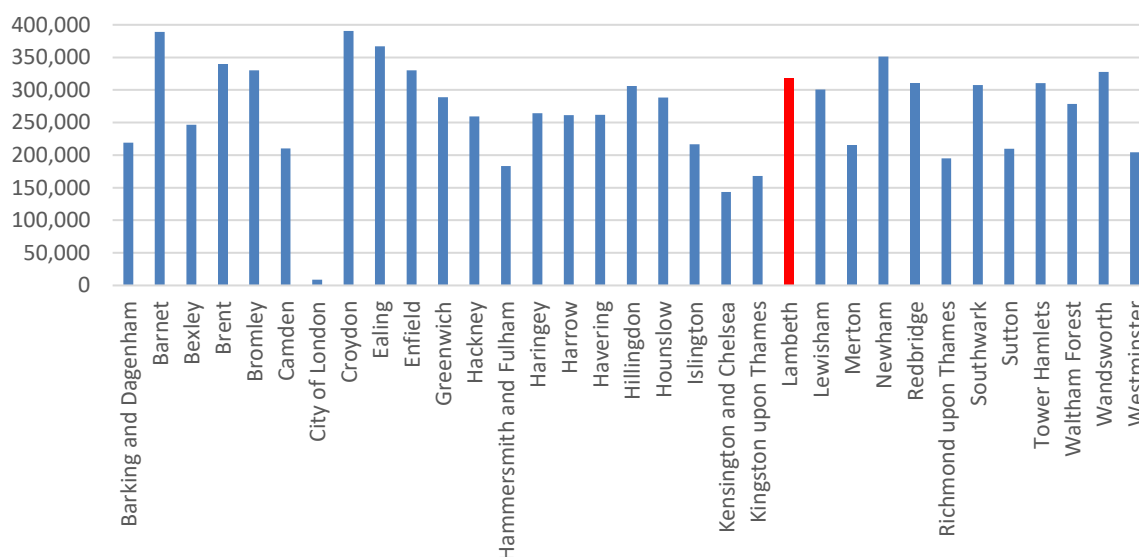
Figure 1. Population estimates by London boroughs (Source: Census 2021).

1.2   Deprivation

The Indices of Multiple Deprivation 2019 (IMD2019) provide a set of relative measures of deprivation for LSOAs (Lower-layer Super Output Areas) across England, based on seven domains of deprivation[3].

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[1] Wikipedia, October 2023, https://en.wikipedia.org/wiki/Lambeth_London_Borough_Council
[2] Office for National Statistics – Census 2021,
https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/populationandhouseholdestimatesenglandandwales/census2021
[3] ONS2019 https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019,

Of LSOAs in England
In 5% most deprived (8)
In 5-10% most deprived (99)
In 10-20% most deprived (688)
In 20-50% most deprived (2,031)
In 50% least deprived (2,009)

Figure 2. Distribution of deprivation across London (Source: London Datastore 2019).

The darker shades are the most deprived areas. Lambeth ranks as the 42nd most deprived borough in England out of 317.

To produce the ward level data, LSOA have been matched to new wards using an Open Geoportal Portal lookup table[4]. Average IMD 2019 decile aggregated at ward level reveals a clear picture (Figure 5). 1.0 on the graph represents the most deprived 10% areas and 5.0 represents 50% most deprived. 20 of 25 Lambeth wards have aggregated IMD rankings below the national average. Brixton North (2.4) has the poorest IMD 2019 ranking, and Streatham Hill West & Leonard's (6.3) has the highest (Figure 3 & Map 1).

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[4] ONS2019 http://geoportal.statistics.gov.uk/datasets/8c05b84af48f4d25a2be35f1d984b883_0/data
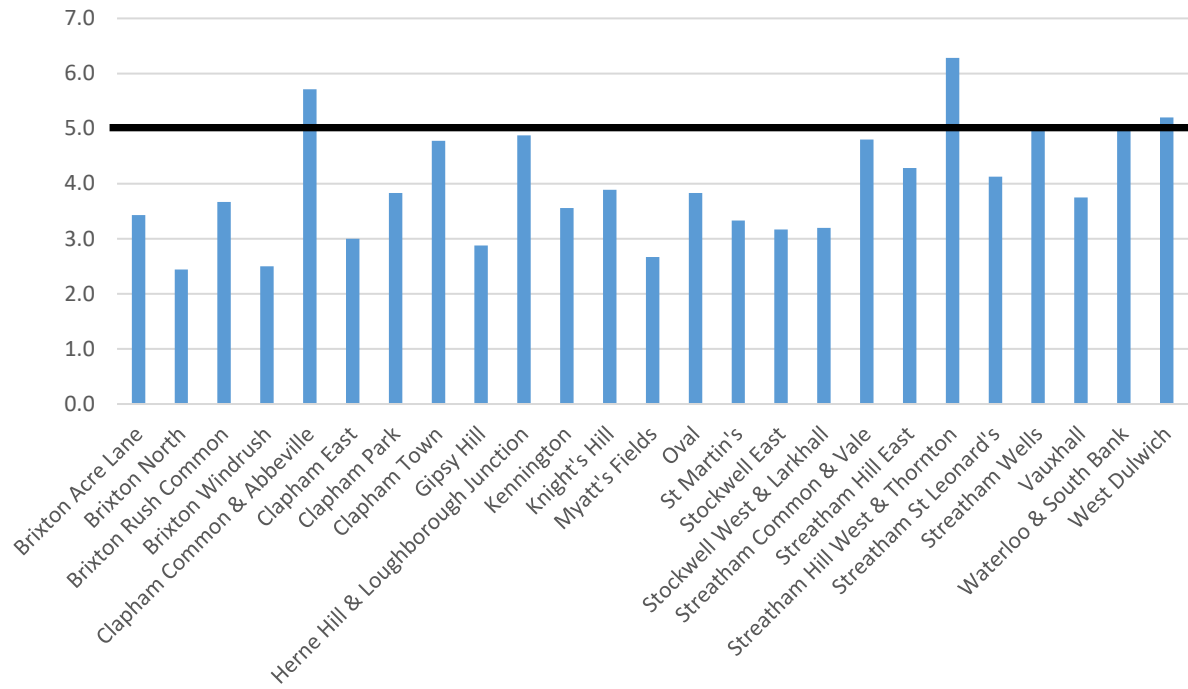
Figure 3. Average IMD (2019) decile by ward (Source: IMD 2019). *Horizontal line shows the national average (5)*

IMD Decile
(2019)
- 2 to 2.5
- 2.5 to 3
- 3 to 3.5
- 3.5 to 4
- 4 to 4.5
- 4.5 to 5
- 5 to 5.5
- 5.5 to 6
- 6 to 6.5
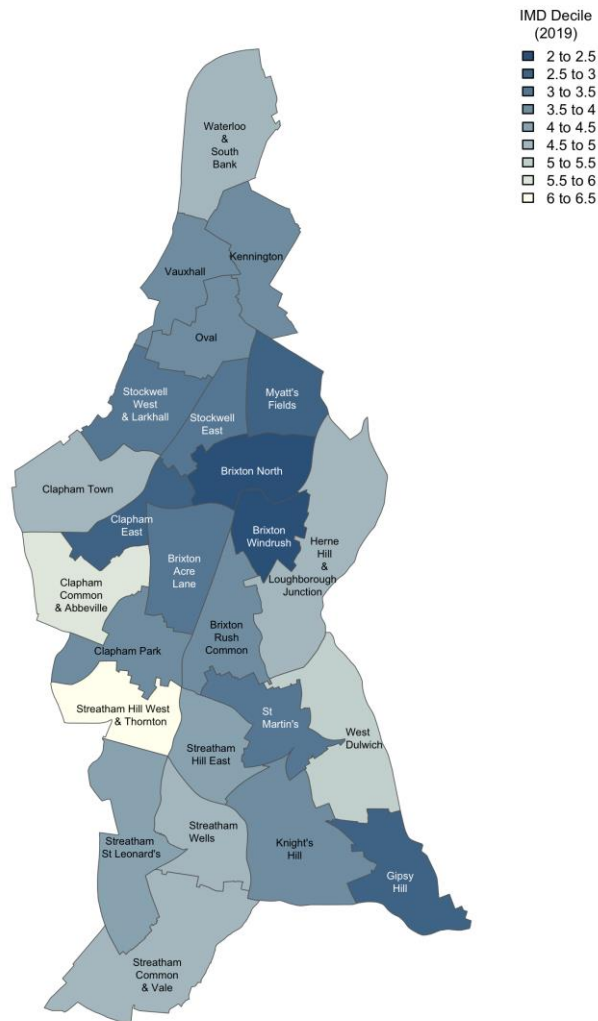
Map 1. Distribution of Average IMD (2019) decile by ward (Source: Ti 2023, Map by Metastreet).

Lambeth faces significant challenges relating to barriers to housing and services (IMD 2019), it is nationally ranked 26 of 317 councils. All wards are worse than the National average (6) for Barriers to Housing and Services measure (Figure 4). The barriers to housing domain include indicators such as overcrowding, homelessness and housing affordability.
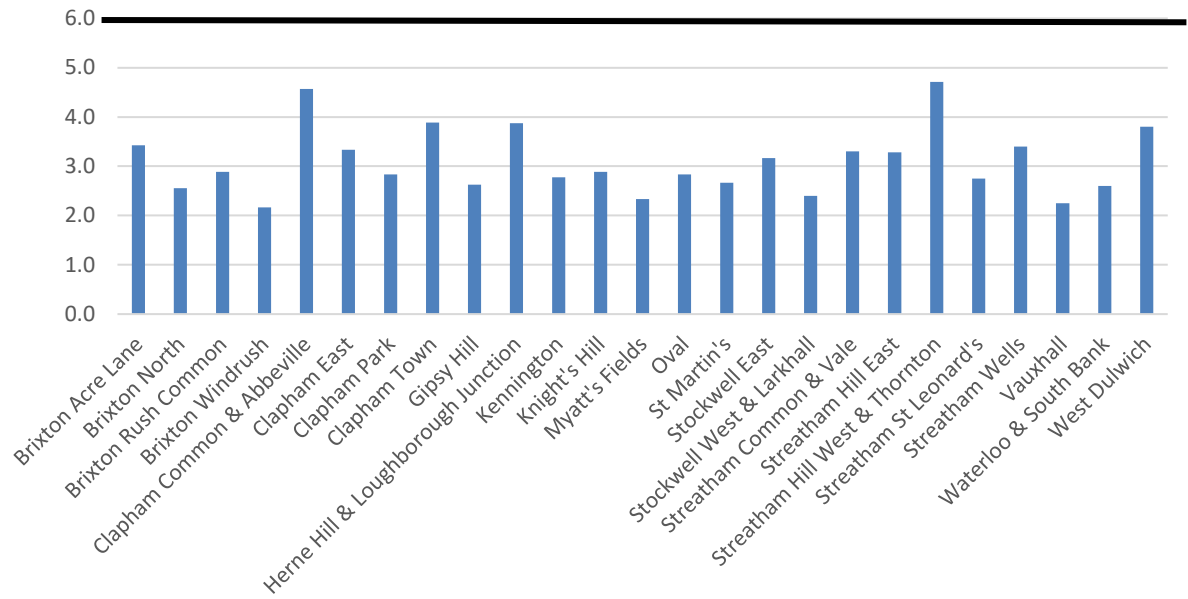
Figure 4. Average barriers to housing and services decile by ward (IMD 2019). *Horizontal line shows the national average (6).*

Barriers to Housing & Services
Decile (2019)
- 2 to 2.5
- 2.5 to 3
- 3 to 3.5
- 3.5 to 4
- 4 to 4.5
- 4.5 to 5
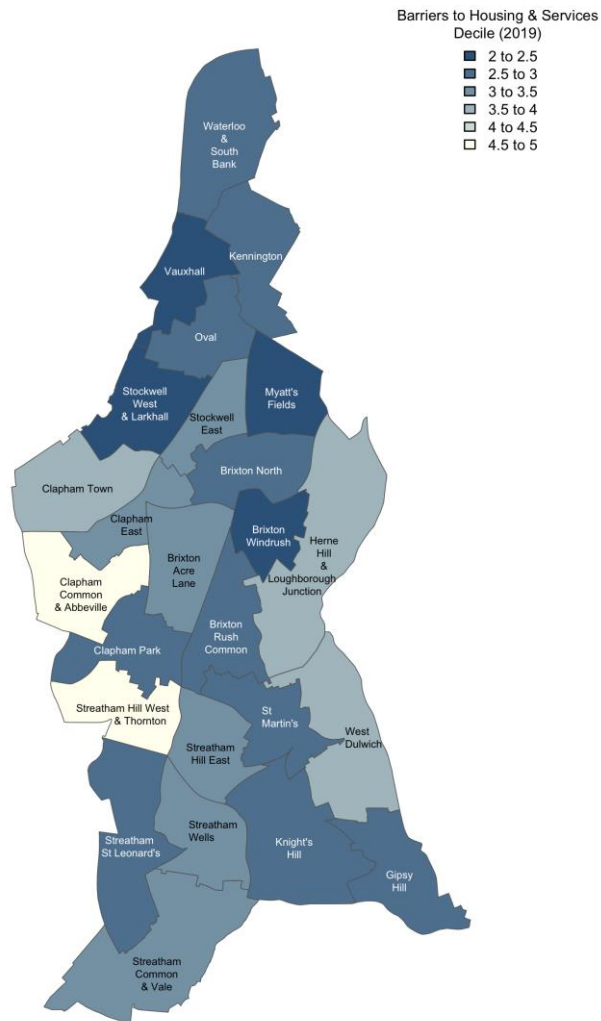
Map 2. Distribution of Average Barriers to Housing & Services decile (IMD 2019) by ward (Source: ONS 2019, Map by Metastreet).

1.3   Fuel Poverty

Fuel poverty is defined by the Warm Homes and Energy Conservation Act. A household is considered to be fuel poor if they have required fuel costs that are above average (the national median level); and were they to spend that amount, they would be left with a residual income below the official poverty line.

The fuel poverty score was produced by the Department for Business, Energy & Industrial Strategy using 2019 data and published in 2021. Over the next 12 months these figures are likely to change significantly as a result of acute fuel price increases during much of 2022/23. Notwithstanding this,

Lambeth has a higher proportion in fuel poverty (15.8%) than the national average (13.8%) (Figure 5) [5].
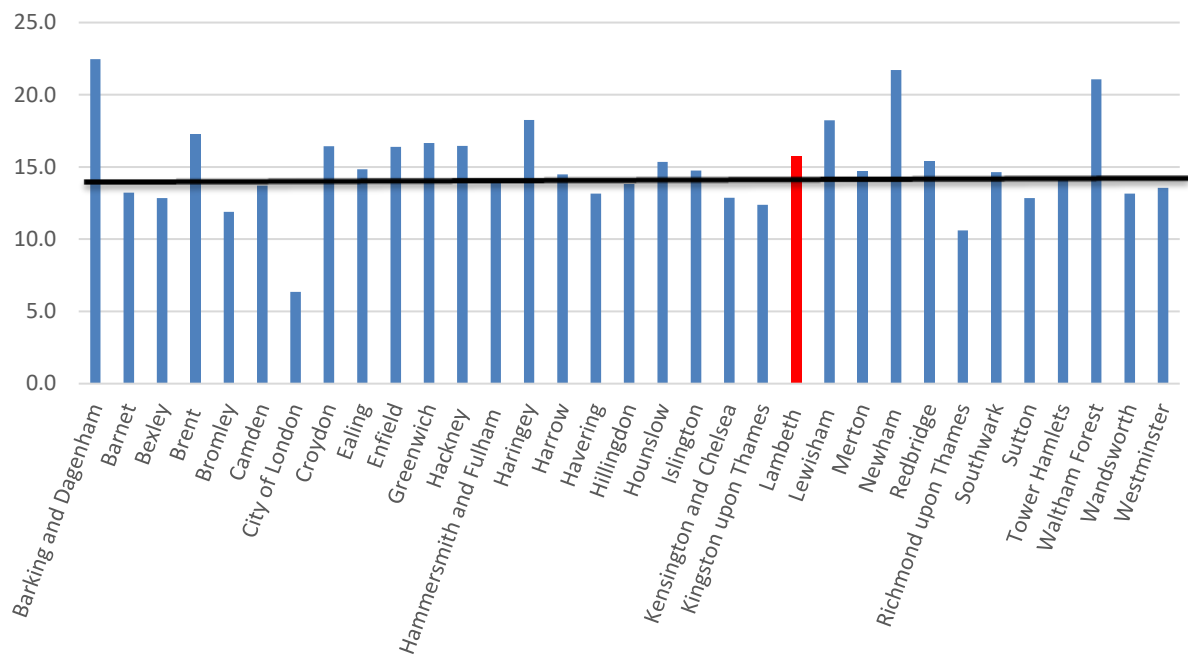
Figure 5. Proportion of households in fuel poverty (%) by London boroughs (BEIS 2021). *Horizontal line shows England average (13.8%).*

[5] Department for Business, Energy & Industrial Strategy 2021 https://www.gov.uk/government/statistics/sub-regional-fuel-poverty-data-2021

1.4   Possession Order Rates

Lambeth has the 17th highest number of private landlord possession claims in London, with 1,046 in 2019 (Figure 6). The average number of claims for London boroughs during this period was 1,224. [6]
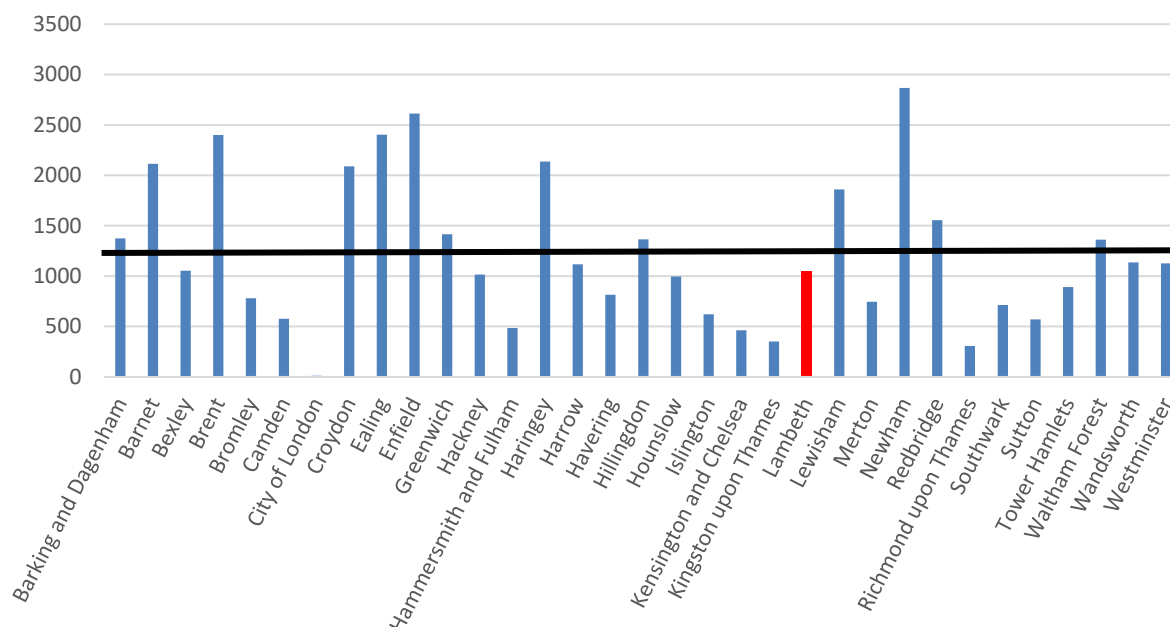
Figure 6. Possession order claims by private landlords by London boroughs (MOJ 2019) *Horizontal black line shows London average.*

1.5   Homelessness

Statutory homelessness acceptance includes those who the local authority has determined are legally entitled to housing assistance. To be accepted as statutorily homeless by the local authority you must be found legally and unintentionally homeless, be eligible for assistance and in priority need.

The extent and nature of homelessness duties owed by different boroughs varies significantly. Homelessness returns to government in 2022 for Lambeth has the highest numbers accepted as being homeless (787), significantly above the London average (410) (Figure 7)[7].

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[6] MOJ Possession claims by local authority (2019) https://www.gov.uk/government/statistics/mortgage-and-landlord-possession-statistics-january-to-march-2020

[7] DLUHC & MHCL, Homelessness (2023), https://www.gov.uk/government/statistical-data-sets/live-tables-on-homelessness
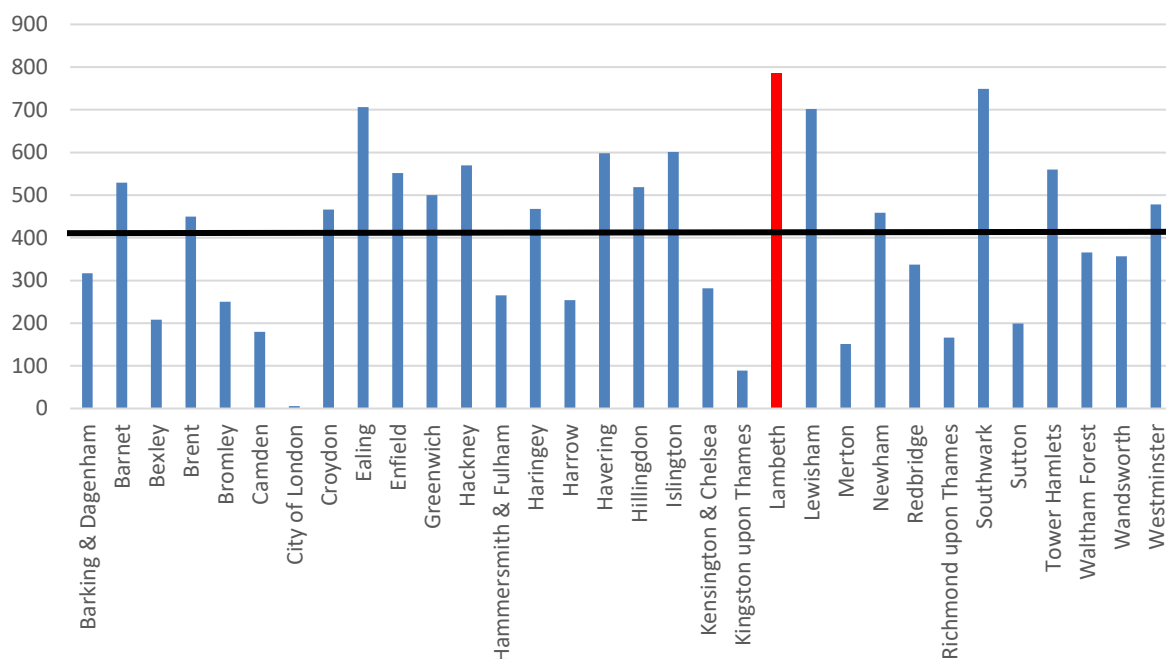
Figure 7. Households owed a prevention or relief duty by London boroughs (July – September 2022) Horizontal black line shows London average (410).

It is notable that 44.9% of households in Lambeth who were owed a prevention duty cited the loss of a private housing tenancy as the cause of their most recent home, in contrast to the national average of 12.4% [1] .

1.6   Rents and Affordability

Private rents vary by borough. As this report is concerned with housing conditions and other housing stressors, we have looked at the average (median) earnings for one-bedroom dwellings as a proportion of median rents. Lambeth has above average rents for London, with 54.2% of median earnings used to pay rent (Figure 8). The London average is 47.9%. [8].

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[8] DLUHC & MHCL, Homelessness (2023), https://www.gov.uk/government/statistical-data-sets/live-tables-on-homelessness
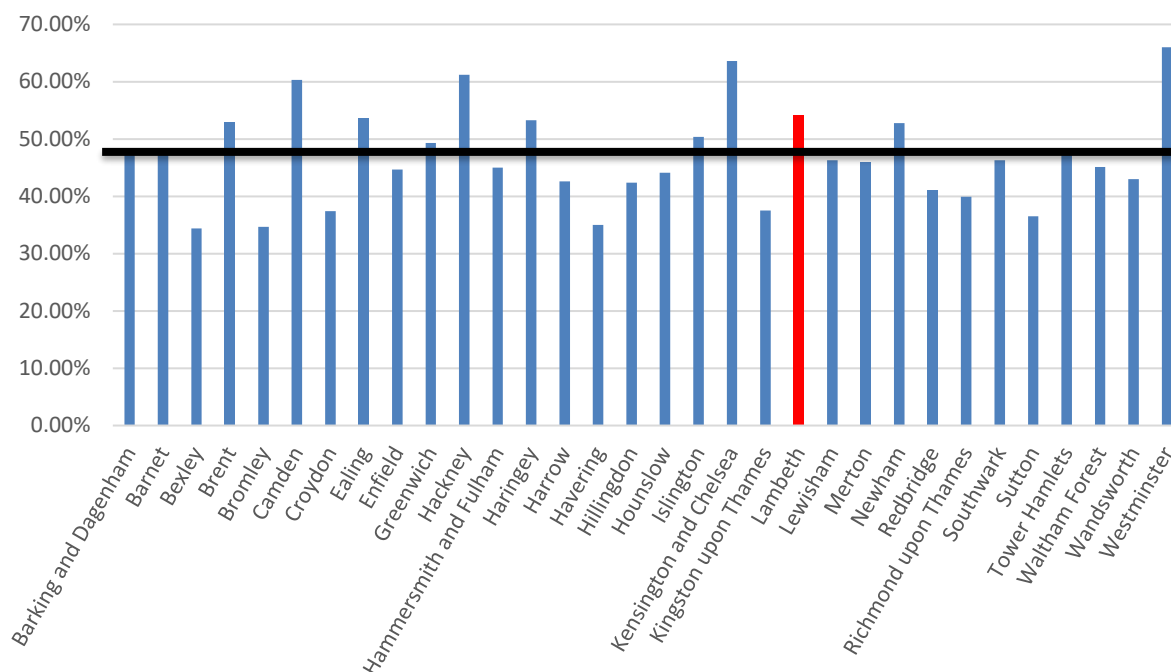
Figure 8. Median rent for a one-bedroom dwelling as a percentage of gross pay by London borough (2019/20) (Source: TFL 2020). *Horizontal black line shows London average (47.9%).*

1.7   Residential Property Crime (Burglary)

Between April 2021 and March 2022, 1,534 burglaries were reported to the Metropolitan Police across London, averaging (mean) 47.9 per London borough. 60 burglaries were reported in Lambeth for the same period[9].

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[9] MPS crime data 2022 https://data.london.gov.uk/dataset/mps-crime-data-dashboard--previous-crime-catogories-data
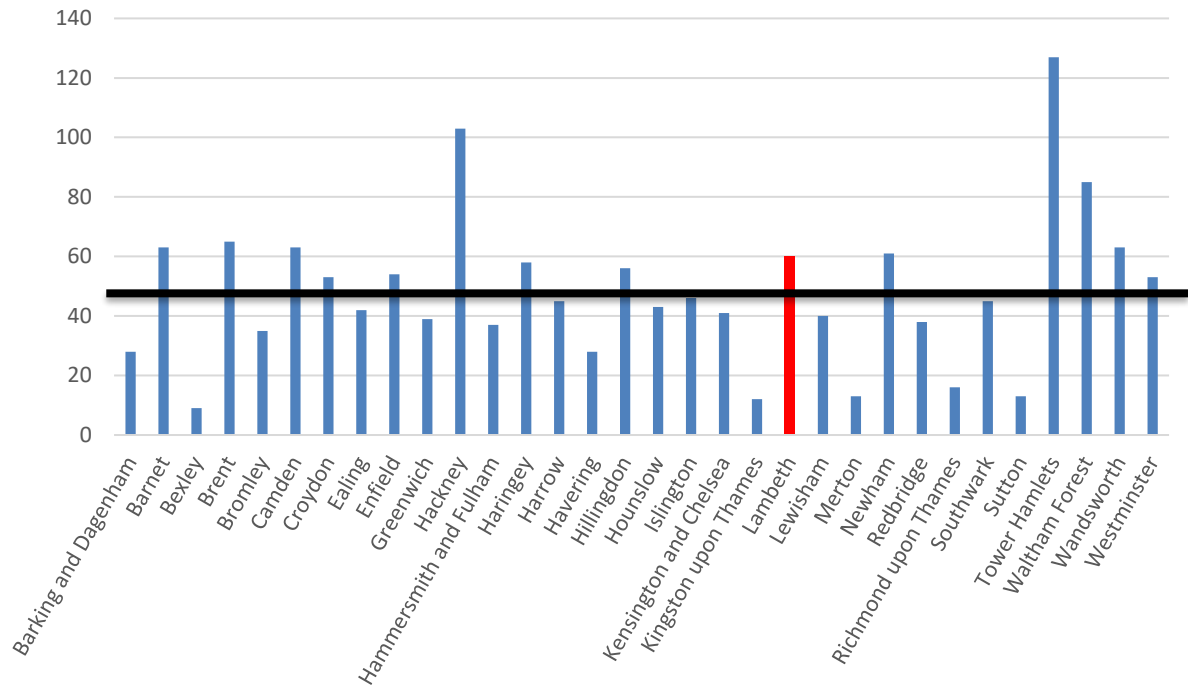
Figure 9. Distribution of reported residential burglary in London boroughs - Metropolitan Police (April 2021-March 2022) *Horizontal black line shows London average (47.9).*

2   Results of housing stock and stressor modelling

2.1   Methodology

Tenure Intelligence (Ti) uses council held data and publicly available data to identify tenure and analyse property stressors, including property conditions and ASB.

Data trends at the property level are analysed using mathematical algorithms to help predict the tenure of individual properties using factors such as occupant transience and housing benefit data. Metastreet have worked with the council to create a residential property data warehouse. This has included linking millions of cells of council and externally held data to 144,985 unique property references (UPRN).

Machine learning is used to make predictions for each tenure and property condition based on a sample of known tenures and outcomes. Results are analysed to produce a summary of housing stock, predictions of Category 1, HHSRS hazards and other stressors. To achieve the maximum accuracy, unique models are built for each local housing authority area, incorporating individual borough data and using known outcomes to train predictive models.

Once the data warehouse was created, statistical modelling was used to determine tenure using the methodology outlined below.

Different combinations of risk factors were systematically analysed for their predictive power in terms of key outcomes. Risk factors that duplicate other risk factors but were weaker in their predictive effect were systematically eliminated. Risk factors that were not statistically significant were also excluded through the same process of elimination.

For each UPRN a risk score was calculated using logistic regression. The selected risk factors have a better or worse than evens chance of being predictive.

Several unique predictive models have been created for Lambeth as part of this project. These models are utilised in conjunction with known data to execute a decision tree analysis that allocates properties to their known or most probable tenure.

Upon allocation, a testing and calibration process is conducted to ensure consistency and accuracy. This involves comparing the allocations to the latest Census tenure outcomes at a ward level. The calibration process gives priority to owner-occupied housing, followed by social housing, and is instrumental in maintaining the correct allocations into the PRS group.

It should be acknowledged that the described approach can never achieve 100% accuracy, as all statistical models have inherent limitations. Appendix 2 contains a more detailed explanation of the methodology employed, including the selection of specific factors for the creation of customized predictive models for this project.

Metastreet was instructed to remove HMOs licensed under Part 2 of the Housing Act 2004 from the results of PRS stressors, including housing conditions, ASB, service requests, and council interventions. As a result, a total of 3,242 identified HMO properties were excluded from the master PRS dataset. However, all PRS residences were included in the population and distribution section to allow the council to compare data with other authorities and government statistics.

2.2   Results - Private Rented Sector

2.2.1   Population and Distribution

Lambeth has a total of 144,985 residential dwellings as of April 2022. 48,695 of which are PRS, 49,024 are owner occupied and 47,266 are socially rented (Figure 10).

Based on tenure modelling (2023), Lambeth's PRS is now calculated to be 33.6% of all housing stock (Figure 10). The 2021 Census reports the PRS in Lambeth to be 31.4%. The difference between Ti and Census is likely to be a result of absent student households (national & international) and migrant worker households as a result of the March 2021 government-imposed coronavirus lockdown measures [10]. Further details of the differences between the Census 2021 and Ti 2023 results can be found in Appendix 2.

The private rented sector (PRS) in Lambeth has grown steadily since 2011. Based on tenure modelling, Lambeth's PRS is now calculated to be 33.6% of housing stock (Figure 10), representing 48,695 dwellings. This compares to 30% of households in 2011 (39,526). This represents a 10.5% increase over the last 12 years (Figure 10).

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[10]Timeline of UK government coronavirus lockdowns and restrictions, https://www.instituteforgovernment.org.uk/data-visualisation/timeline-coronavirus-lockdowns
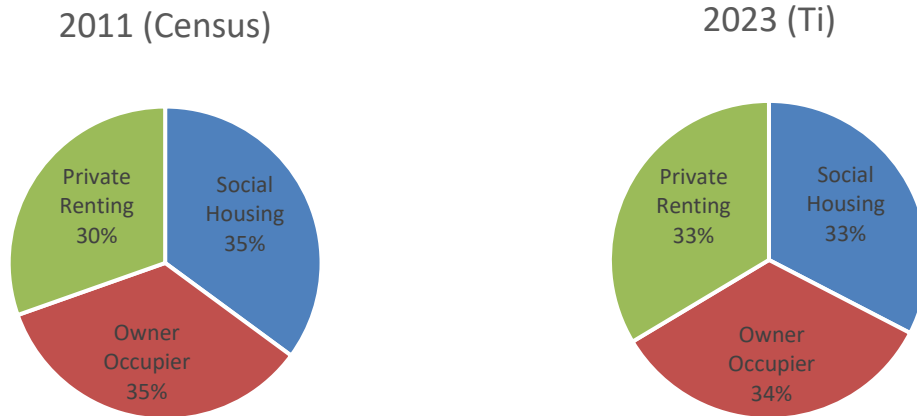
2011 (Census)

2023 (Ti)

Figure 10. Tenure profile 2011 & 2023 (Source: ONS & Metastreet Ti model).
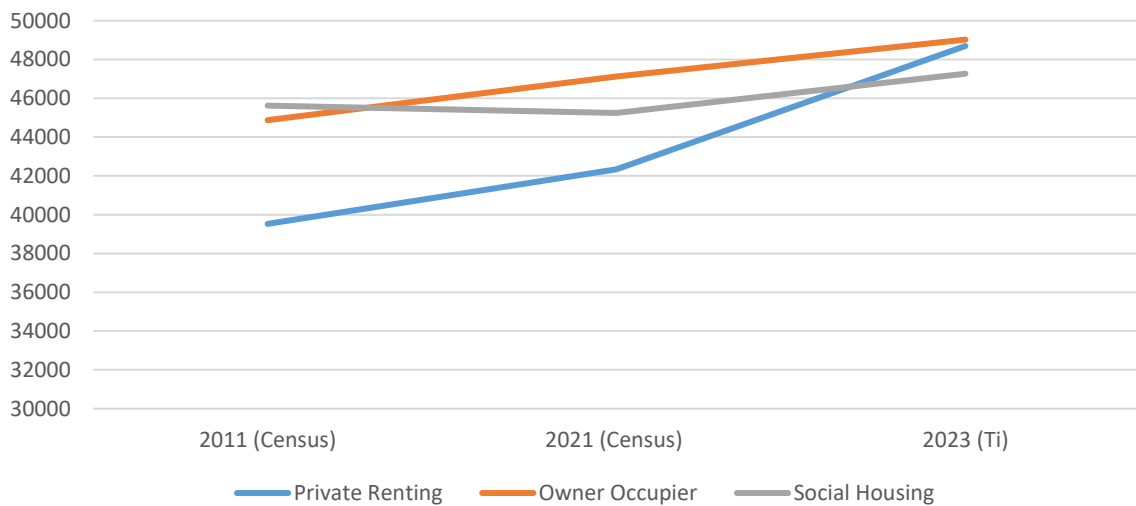
Figure 11. Housing tenure change, total stock, 2011 & 2021 & 2023 (Source: ONS & Metastreet).

Tenure	2011 (Census)	2021 (Census)	2023 (Ti)
Social Housing	45619	45243	47266
Owner Occupier	44872	47116	49024
Private Renting	39526	42329	48695
Total	130017	134682	144985

Table 1. Number of dwellings by tenure 2001, 2011 & 2023 dwellings by ward (Source: ONS & Ti 2023).

This increase is part of a nationwide and regional trend. The PRS in the UK has grown from 9.4% of housing stock in 2000 [11]. It is now the second largest housing tenure in England, with a growing number of households renting from a population of around 1.5 million private landlords[12].

The PRS in Lambeth is distributed across all 25 wards (Figure 12 & Map 3). The number of PRS per ward ranges from 3,506 (Vauxhall) to 1,021 (Myatts Field).
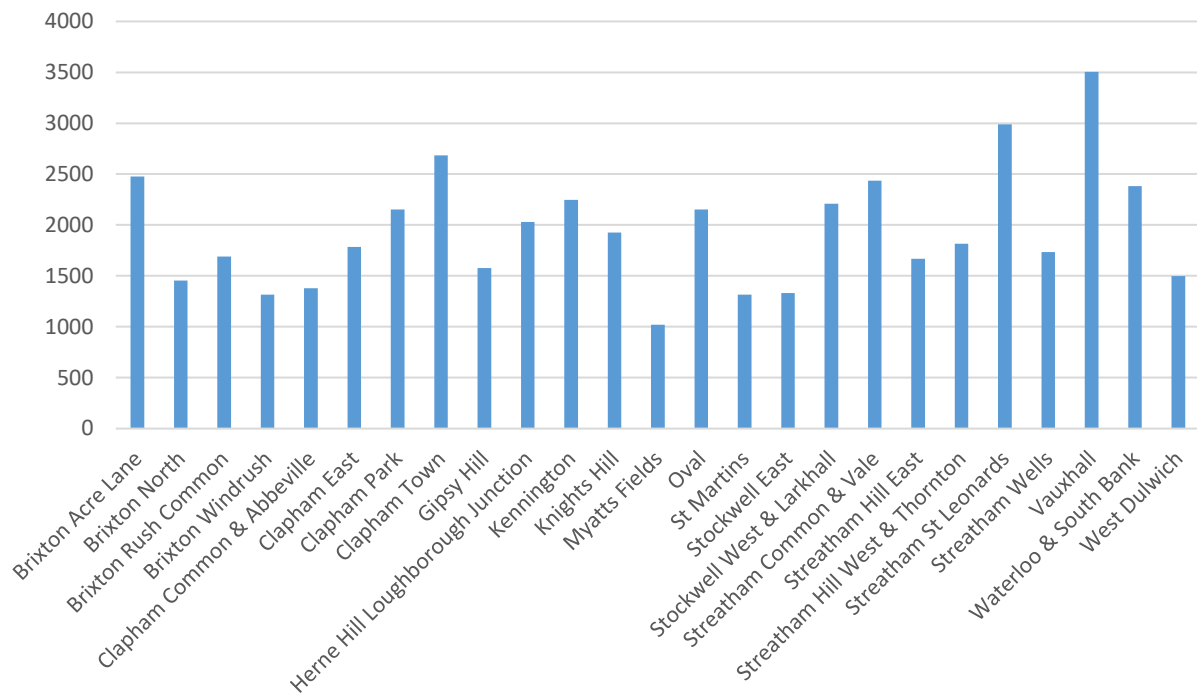
Figure 12. Number of PRS dwellings by ward (Source: Ti 2023).

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[11] The profile of UK private landlords Scanlon K & Woodhead C CML research. LSE London. December 2017 www.cml.org.uk

[12] Landlord Licensing. Interim report-overview of the incidence and cost of HMO & discretionary schemes in England. February 2015. www.landlords.org.uk
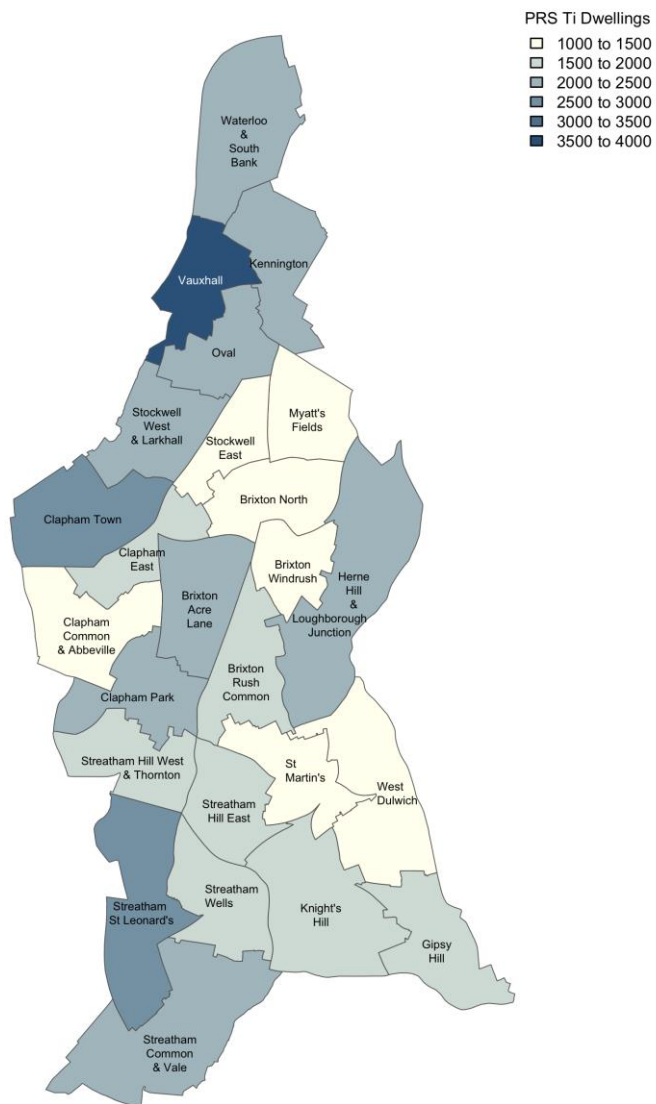
Map 3*. Distribution of PRS dwellings by ward (Source: Ti 2023).*

The percentage of PRS properties in each ward ranges between 54.1% (Vauxhall) and 20.8% (Myatts Field) (Figure 13 & Map 4). Therefore, 25 out of 25 Lambeth wards have a higher percentage PRS than the national average in 2022 (19%) [13].

[13] EHS Headline 2021-2022, https://www.gov.uk/government/statistics/english-housing-survey-2021-to-2022-headline-report/english-housing-survey-2021-to-2022-headline-report#section-2-housing-stock

Figure 13. Percentage of PRS dwellings by ward (Source Ti 2023). *Horizontal black line shows national average 2022 (19 %)*

Table 1 shows the total PRS in each ward and the percentage PRS compared to the total housing stock.

Ward	PRS Ti dwellings	% PRS
Brixton Acre Lane	2,477	35.3
Brixton North	1,455	21.2
Brixton Rush Common	1,690	25.8
Brixton Windrush	1,317	29.9
Clapham Common & Abbeville	1,378	30.9
Clapham East	1,785	38.4
Clapham Park	2,154	35.0
Clapham Town	2,684	36.3
Gipsy Hill	1,577	31.6
Herne Hill Loughborough Junction	2,029	29.3
Kennington	2,246	30.7
Knights Hill	1,927	26.6
Myatts Fields	1,021	20.8
Oval	2,151	37.7
St Martins	1,316	29.0
Stockwell East	1,331	28.7
Stockwell West & Larkhall	2,209	30.3
Streatham Common & Vale	2,435	35.6

Streatham Hill East	1,669	38.6
Streatham Hill West & Thornton	1,817	37.8
Streatham St Leonards	2,988	43.8
Streatham Wells	1,735	39.6
Vauxhall	3,506	54.1
Waterloo & South Bank	2,382	45.7
West Dulwich	1,499	29.7

Table 2. Number and percentage of PRS properties by ward (Source Ti 2023).

PRS properties are distributed across the borough (Map 4).
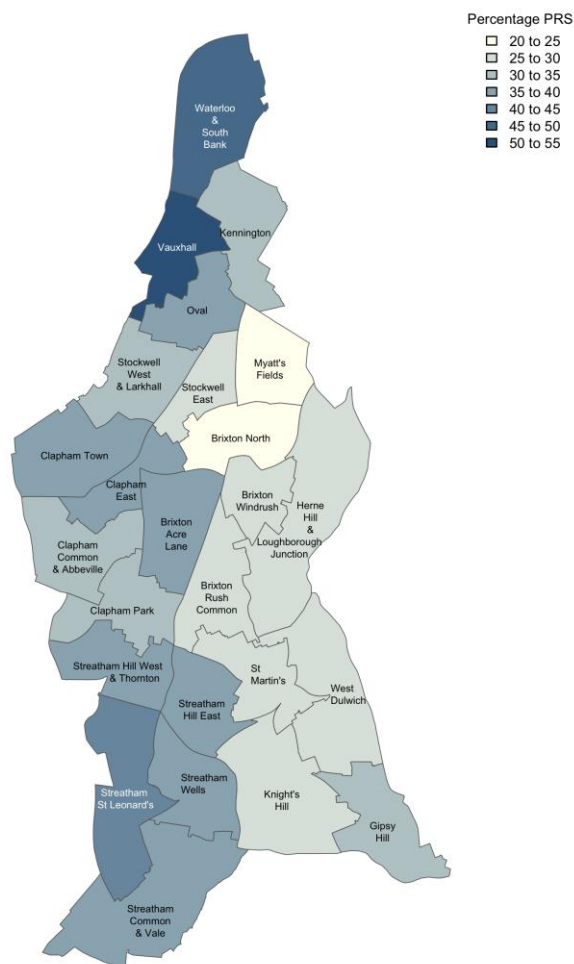
Map 4. PRS properties as percentage of dwellings in Lambeth (Source: Ti 2023, map by Metastreet).

Housing conditions are affected by the level of maintenance and quality of repair, the age of the property, thermal efficiency, and type of construction. Category 1 HHSRS hazards have a physiological or psychological impact on the occupant and may result in medical treatment. [14]

In 2022, 14% of private rented dwellings in England had at least one Category 1, HHSRS hazard; this was a higher proportion than the average for the total housing stock (11%) [15]. It is notable that there is a gradient of risk with age of the property, the risk being greatest in dwellings built before 1900, and lowest in the more energy efficient dwellings built after 1980[16]. Therefore, a council's property age profile can have an impact on housing conditions. Lambeth has a high proportion of residential properties built pre 1900 (Figure 14) [17].
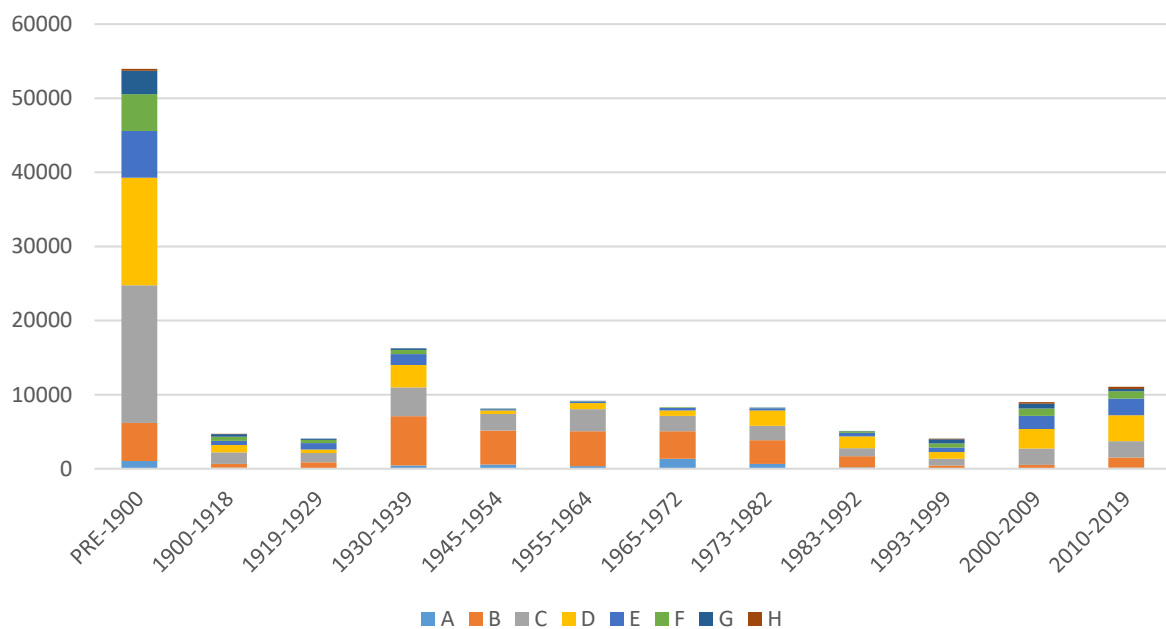
Figure 14. Age profile of housing stock (number of dwellings) for all tenures (Source: VOA 2019).

A borough's property type profile offers an indication of housing density, construction type and other social economic indicators. The most common property type flats/maisonette (75%), while bungalows are the least common property type (0.4%) (Figure 15).

[14] Housing Health and Rating System, Operation Guidance, 2006, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/15810/142631.pdf
[15] EHS Headline 2021-2022, https://www.gov.uk/government/statistics/english-housing-survey-2021-to-2022-headline-report/english-housing-survey-2021-to-2022-headline-report#section-2-housing-stock
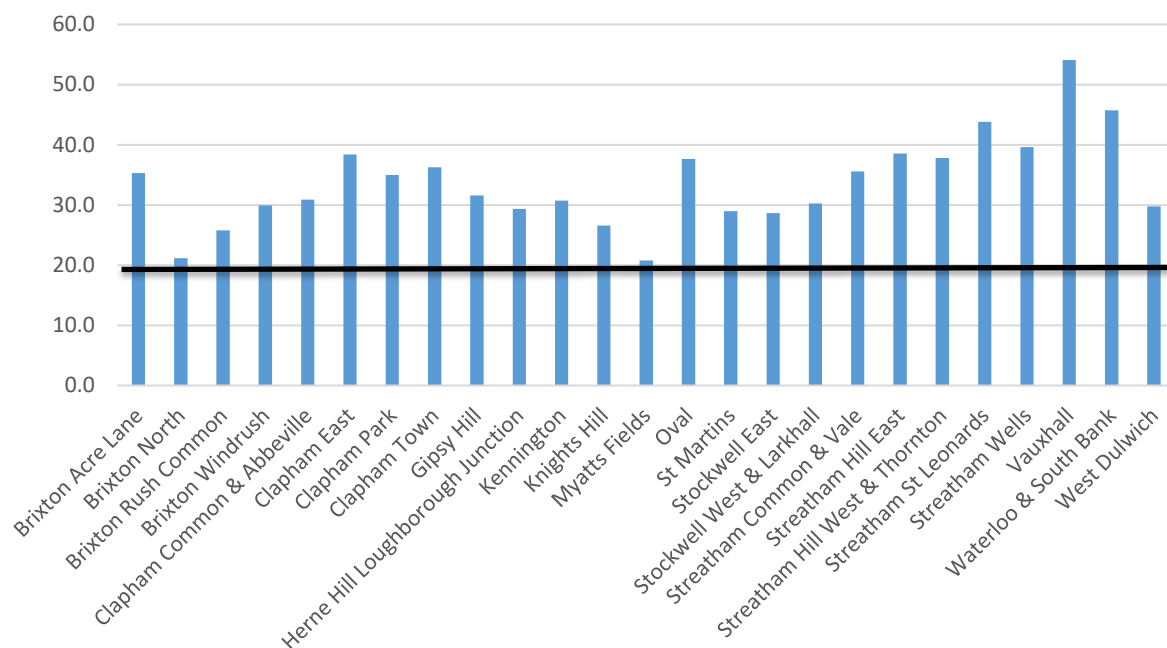[16] Housing Health and Rating System, Operation Guidance, 2006, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/15810/142631.pdf
[17] London data store, VOA https://data.london.gov.uk/dataset/property-build-period-lsoa
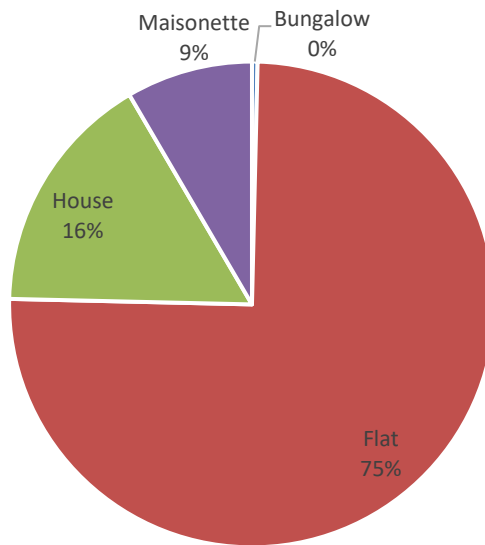
Figure 15. PRS property type as a percent of total housing stock (Source: Ti 2023).

Using a sample of properties that are known to have at least one serious housing hazard (Category 1), it is possible to predict the number of PRS dwellings which are likely to have at least one serious hazard across the borough (Figure 16). As home hazards are dynamic and the HHSRS scoring system is complex, it is likely that the model will also detect a minority of high-scoring Category 2 hazards.

There are **9,446** PRS dwellings in Lambeth that are predicted to have a serious home hazard (Category 1, HHSRS). PRS properties with serious hazards are distributed across the borough (Figure 16 & Map 5). Streatham St Leonards (829) has the highest number and Waterloo & South Bank (237) has the lowest number of dwellings with at least one Category 1, HHSRS hazards.
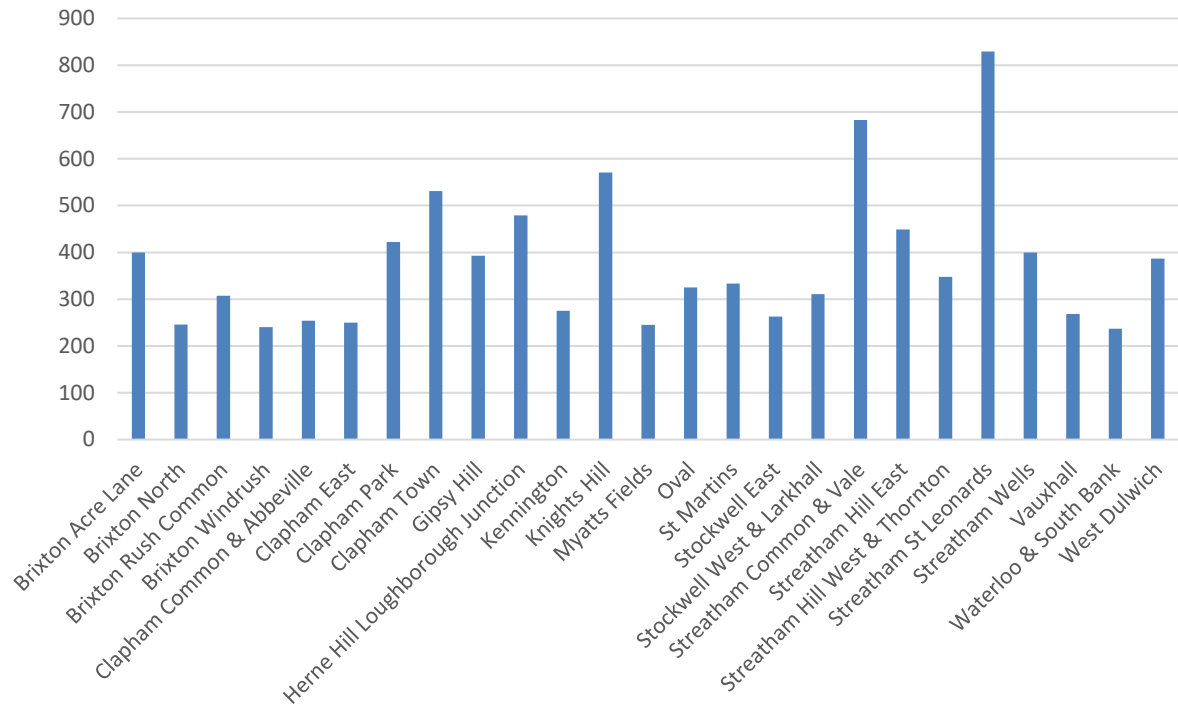
Figure 16. Predicted number of Category 1, HHSRS hazards by ward (Source: Ti 2023).

Category 1, HHSRS hazards in the PRS are distributed across the whole borough. Concentrations of properties with serious hazards can be found in the central and southern wards (Map 5).
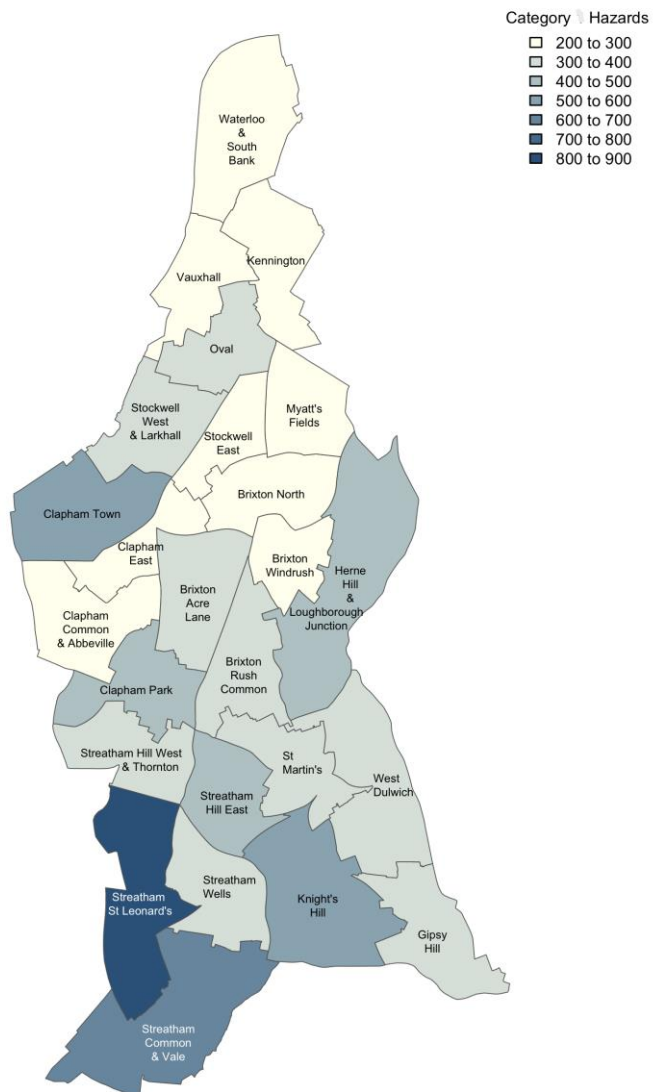
Map 5. Distribution of PRS properties with Category 1, HHSRS hazards (Source: Ti 2023, map by Metastreet).

The rates of Category 1, HHSRS hazards per 100 PRS properties reveals a wide distribution across Lambeth (Figure 17). Knights Hill (29.6 per 100), Streatham Common & Vale (28 per 100) has the highest rates of predicted PRS properties with Category 1, HHSRS hazards.
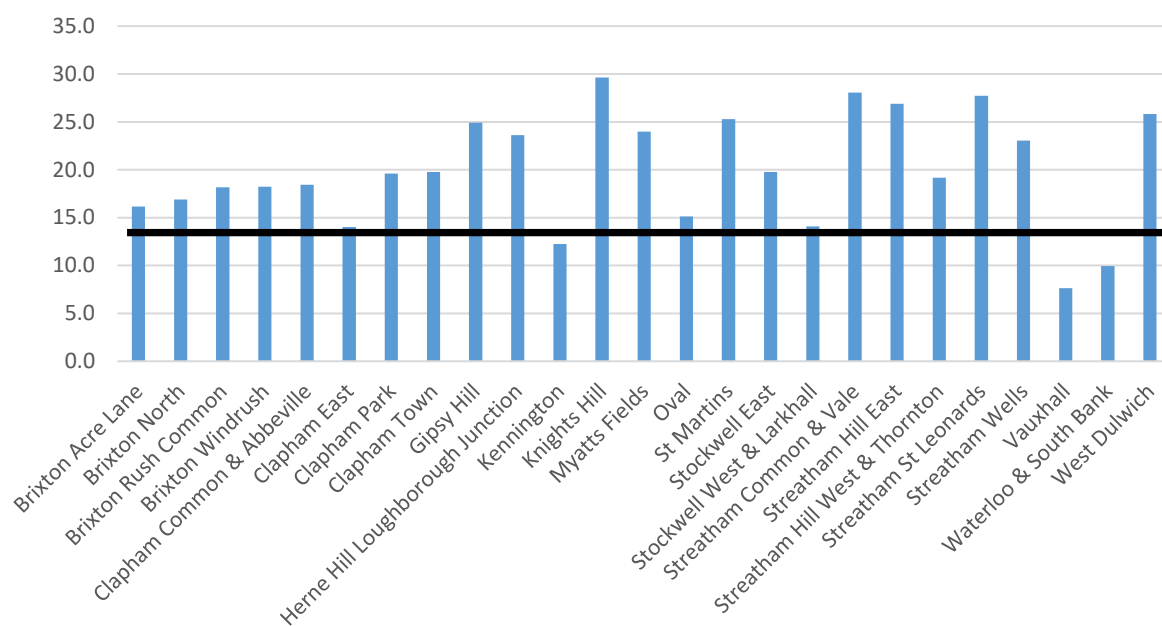
Figure 17. Rates per 100 PRS properties of predicted Category 1, HHSRS hazards by ward (Source: Ti 2023). Horizontal black line shows national average 2022 (14 per 100) [18]

Complaints made by PRS tenants to the council about poor property conditions and inadequate property management are a direct indicator of low quality PRS. Lambeth received **1,182** complaints from tenants over a 3-year period (2019-2022) (Figure 18).

[18] EHS Headline 2021-2022, https://www.gov.uk/government/statistics/english-housing-survey-2021-to-2022-headline-report/english-housing-survey-2021-to-2022-headline-report#section-2-housing-stock
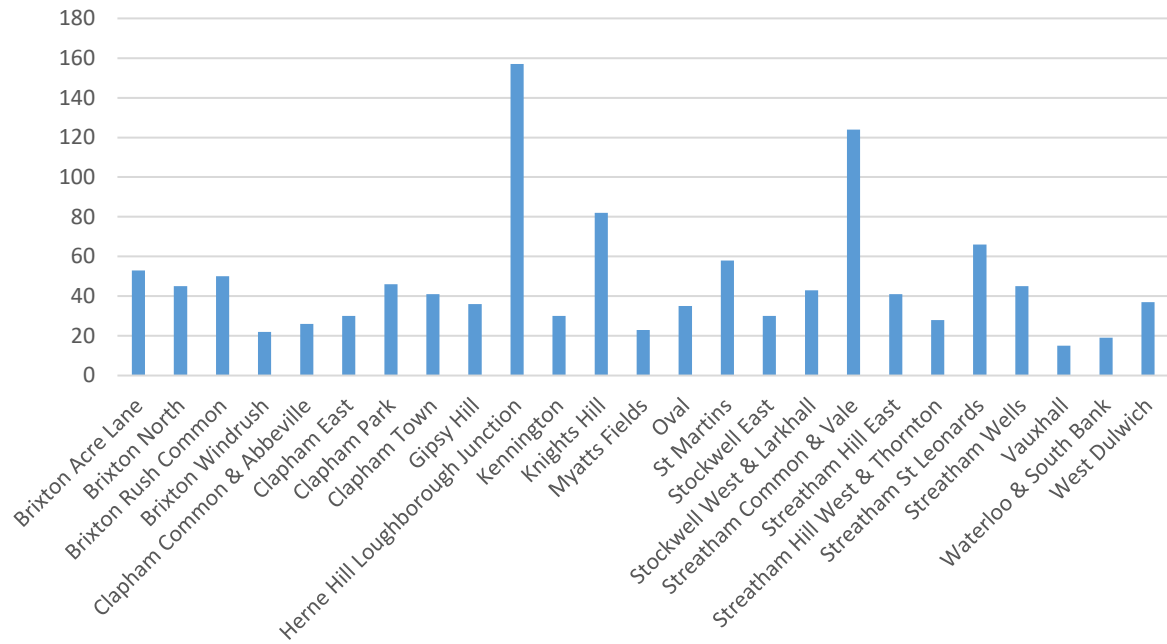
Figure **18***. PRS complaints made by private tenants to the Council (2019-2022) (Source Ti 2023)*

An EPC rating is an assessment of a property's energy efficiency. It's primarily used by buyers or renters of residential properties to assess the energy costs associated with heating a house or flat. The rating is from A to G. A indicates a highly efficient property, G indicates low efficiency.

The energy efficiency of a dwelling depends on the thermal insulation of the structure, on the fuel type, and the size and design of the means of heating and ventilation. Any disrepair or dampness to the dwelling and any disrepair to the heating system may affect their efficiency. The exposure and orientation of the dwelling are also relevant.

As part of this project 35,292 EPC ratings were matched to PRS properties (Figure 19). All figures have been modelled from this group.
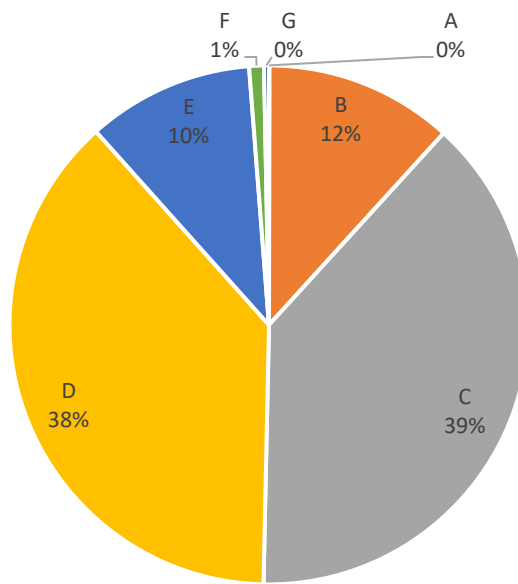
Figure 19. Distribution of Energy Performance Certificate ratings in PRS (Rating A-G) (Source: Ti 2023).

The Minimum Energy Efficiency Standard (MEES) came into force in England and Wales on 1 April 2018. The regulation applies to PRS properties and mandates that all dwellings must have an EPC rating of E and above to be compliant. It has been calculated using the matched addresses that 11.6% of PRS properties in Lambeth have an E, F, and G EPC rating. 1.2% of PRS properties have an F and G rating (Figure 19 and 20). Extrapolated to the entire PRS, 585 PRS properties are likely to fail the MEES statutory requirement.

The statistical evidence shows that there is a continuous relationship between indoor temperature and vulnerability to cold-related death. The colder the dwelling, the greater the risk. The percentage rise in deaths in winter is greater in dwellings with low energy efficiency ratings. There is a gradient of risk with age of the property, the risk being greatest in dwellings built before 1850, and lowest in the more energy efficient dwellings built after 1980. Therefore, F and G rated properties present a serious risk to the occupants' health, particularly if over the age of 65.
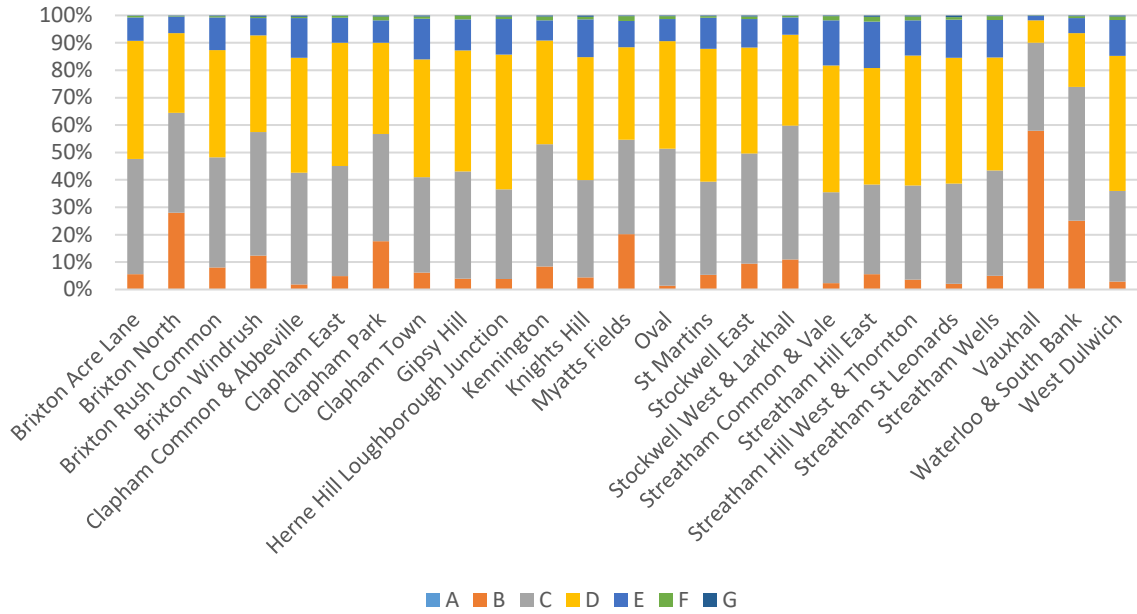
Figure 20. Distribution of Energy Performance Certificate ratings in PRS (Rating A-G) by ward (Source: Ti 2023).

2.2.2   Anti-Social Behaviour (PRS)

The number of ASB investigations and domestic noise reports recorded by the council are shown below. ASB investigations relate to a wide range of ASB types. Noise records relate to domestic noise reports that have been recorded against residential premises. For example, ASB incidents investigated on a street corner that cannot be linked to a residential property have been excluded from the study.

PRS properties are significantly more likely to have an ASB incident compared to owner occupied properties (Figure 21) and comparable with social housing. The social housing group included properties that are owned and managed by housing associations and the council.
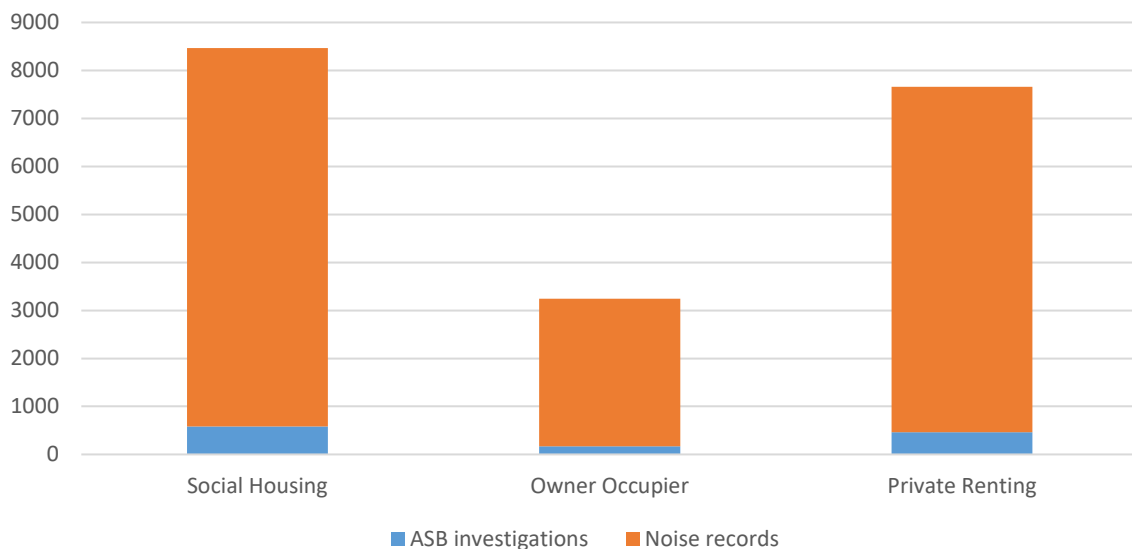
Figure 21. Combined ASB (ASB incidents & domestic noise records) by tenure (Source: Ti 2023).

Recorded ASB investigations in the PRS have been managed in two types, domestic noise (89%) and other ASB (11%) (Figure 22). Other ASB category includes, verbal abuse, harassment, intimidation, nuisance animals, nuisance vehicles, drugs cultivation and substance misuse, rubbish and fly tipping. All incidents are directly linked to a PRS property.
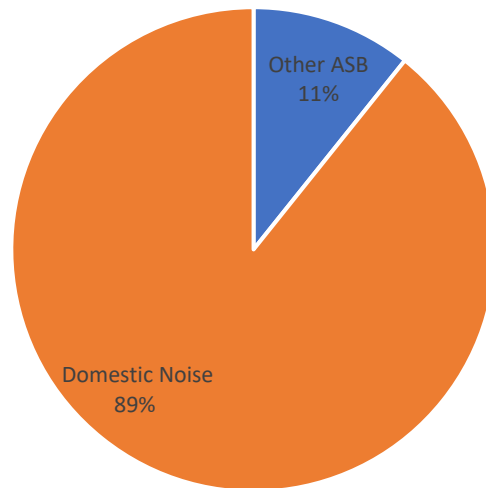
Figure 22. Types of ASB linked to PRS properties (Source: Ti 2023).

There is significant level of ASB linked to private rented properties across wards in Lambeth (Figure 23 & Map 6). Over a 3-year period (2019-2022), **415** ASB incidents have been investigated. Brixton Rush Common (64) has the highest levels of general ASB.
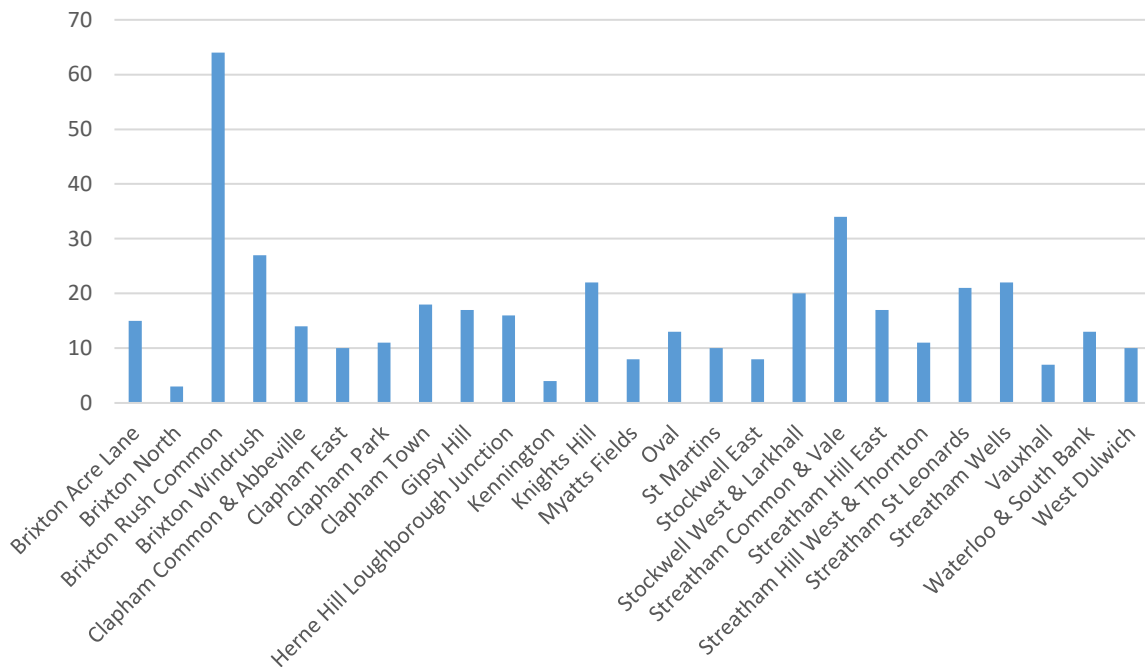
Figure 23. Number of ASB incidents linked to PRS by ward (Source Ti 2023).
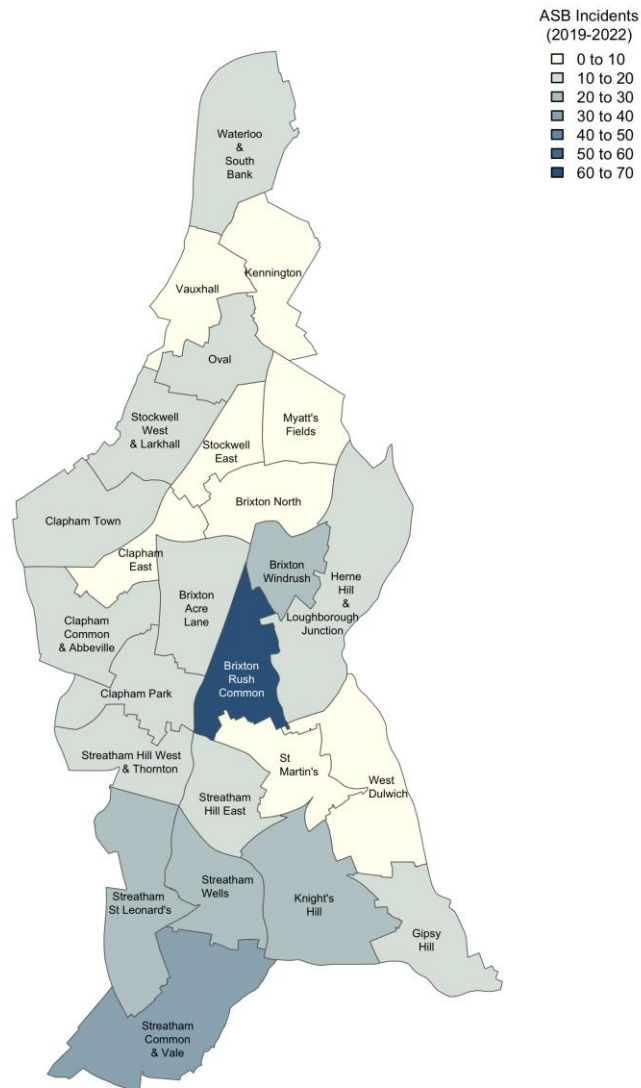
Map 6. Distribution of ASB incidents linked to PRS properties (Source: Ti 2023, Map by Metastreet).

There are high domestic noise incidents linked to private rented properties across wards in Lambeth (Figure 24 & Map 7). Over a 3-year period (2019-2022), **6,721** noise incidents have been recorded. Brixton Rush Common (670) has the highest levels and West Dulwich (110) has the lowest levels of noise incidents.
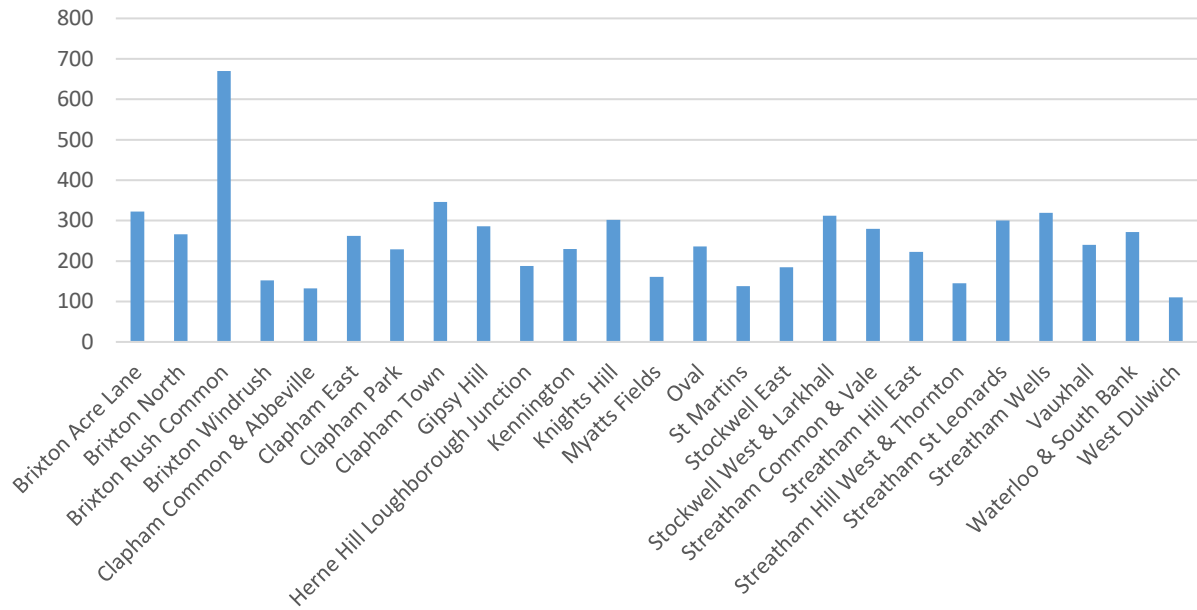
Figure 24. Number of domestic noise incidents linked to PRS by ward (Source Ti 2023).
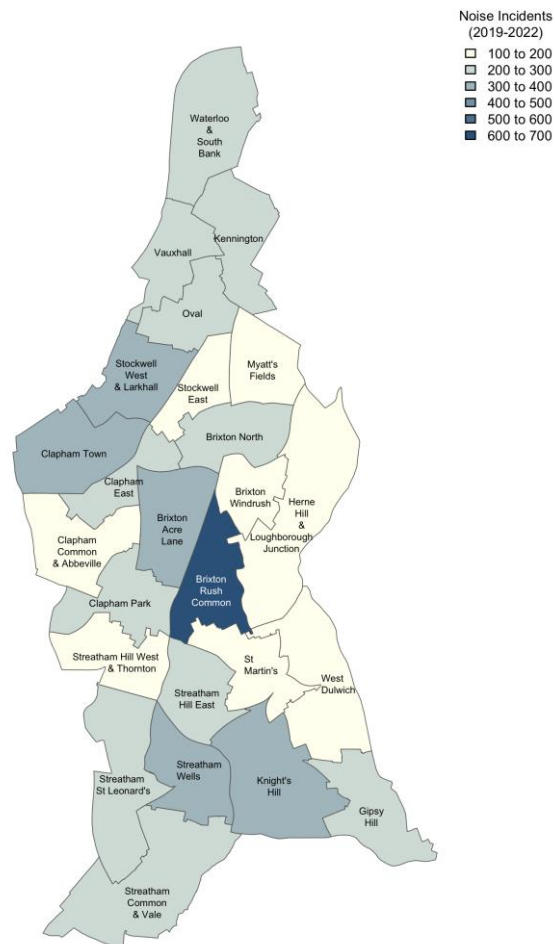
Map 7. Distribution of other ASB linked to PRS properties (Source: Ti 2023, Map by Metastreet).

Understanding the prevalence and distribution of dwellings that have been subject to repeat noise or ASB incidents can reveal a picture of persistent ASB issues. Lambeth has numerous PRS properties in all wards that have had two or more ASB and/or noise incidents over a three-year period (2019-2022). Streatham Common & Vale has the highest number of repeats ASB incidents (74) (Figure 25 & Map 8).
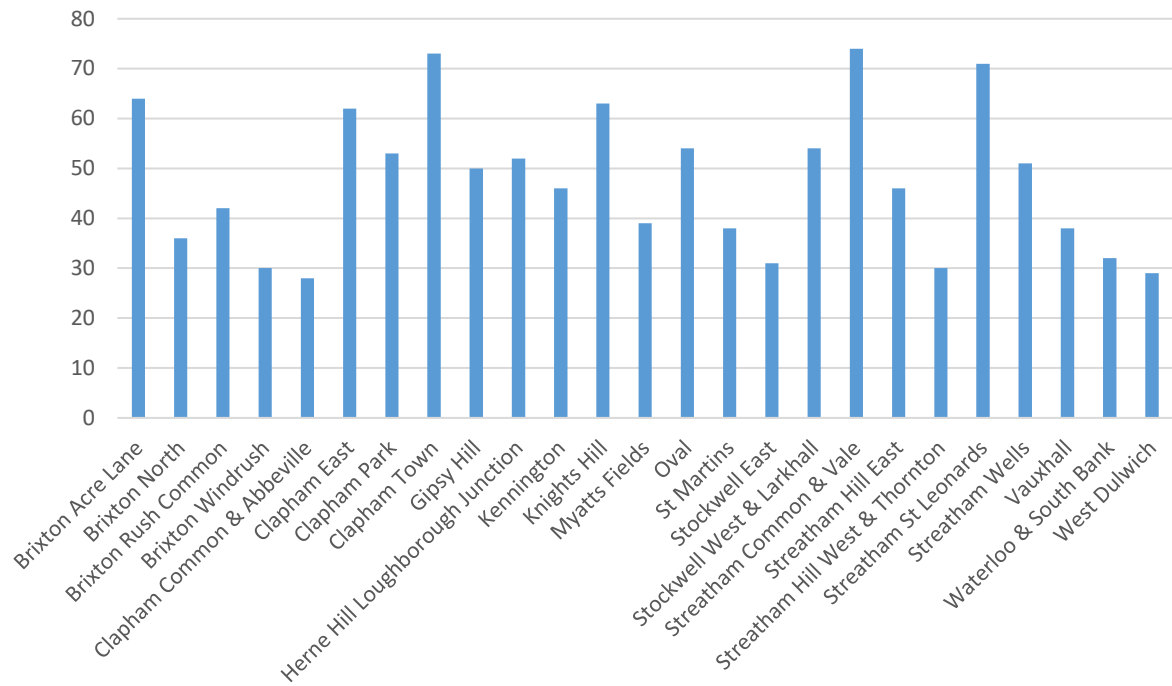
Figure 25. Number of dwellings with repeat (2 or more) noise & ASB incidents linked to PRS properties (Source Ti 2023).
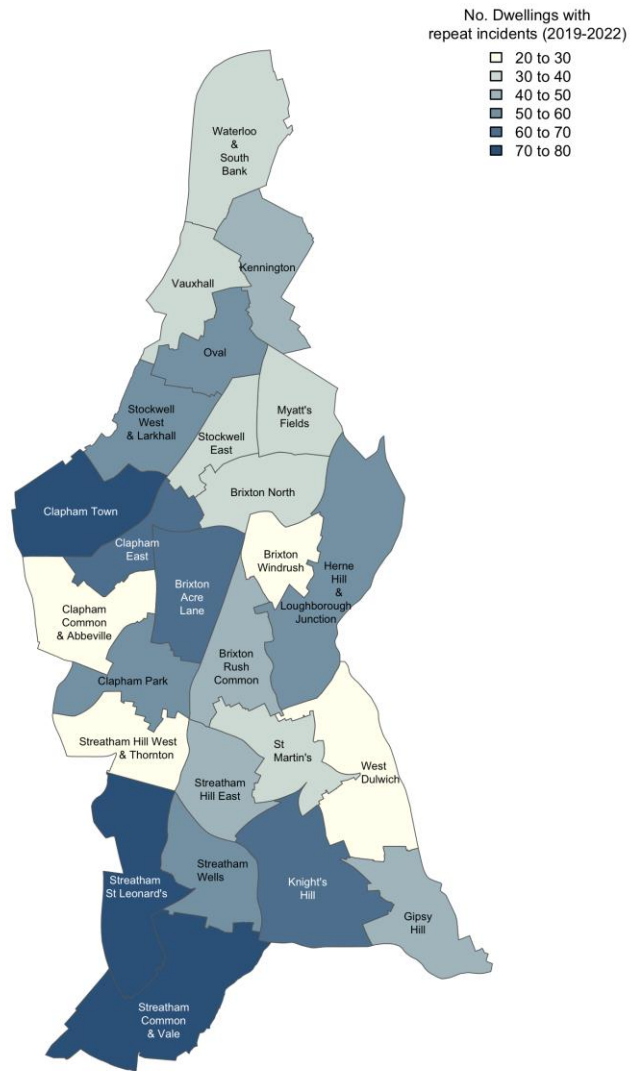
Map 8. Distribution of dwellings with repeat (2 or more) noise & ASB linked to PRS properties (Source: Ti 2023, Map by Metastreet).

3   Conclusions

Lambeth has a total of 144,985 residential dwellings as of October 2022. 48,695 of which are PRS, 49,024 are owner occupied and 47,266 are socially rented (Figure 12).

The private rented sector (PRS) in Lambeth has grown steadily since 2011. Based on tenure modelling, Lambeth's PRS is now calculated to be 33.6% of housing stock (Figure 12), representing 48,695 dwellings. This compares to 30% of households in 2011 (39,526). This represents a 10.5% increase over the last 12 years (Figure 10).

The PRS in Lambeth is distributed across all 25 wards (Figure 12 & Map 3). The number of PRS per ward ranges from 3,506 (Vauxhall) to 1,021 (Myatts Field). The percentage of PRS properties in each ward ranges between 54.1% (Vauxhall) and 20.8% (Myatts Field) (Figure 13 & Map 4). Therefore, 25 out of 25 Lambeth wards have a higher percentage PRS than the national average in 2022 (19%). The council received 1,182 complaints from tenants over a 3-year period (2019-2022) (Figure 18).

There are 9,446 PRS dwellings in Lambeth that are predicted to have a serious home hazard (Category 1, HHSRS). PRS properties with serious hazards are distributed across the borough (Figure 16 & Map 5). Streatham St Leonards (829) has the highest number and Waterloo & South Bank (237) has the lowest number of dwellings with at least one Category 1, HHSRS hazard.

The Office of National Statistics (ONS) household population estimate for Lambeth as of 2021 was 317,600. This makes Lambeth the 9th most populous London borough (Figure 1).

Lambeth ranks as the 42nd most deprived borough in England out of 317. 20 of 25 Lambeth wards have aggregated IMD rankings below the national average. Brixton North (2.4) has the poorest IMD 2019 ranking, and Streatham Hill West & Leonard's (6.3) has the highest (Figure 3 & Map 1).

Lambeth faces significant challenges relating to barriers to housing and services (IMD 2019), it is nationally ranked 26 of 317 councils. All wards are worse than the National average (6) for Barriers to Housing and Services measure (Figure 4).

Homelessness returns to government in 2022 (July- September) for Lambeth has the highest numbers accepted as being homeless (787), significantly above the London average (410) (Figure 7). It is notable that 44.9% of households in Lambeth who were owed a prevention duty cited the loss of a private housing tenancy as the cause of their most recent home, in contrast to the national average of 12.4%

Lambeth has the 17th highest number of private landlord possession claims in London, with 1,046 in 2019 (Figure 6). It also has above average rents for London, with 54.2% of median earnings used to pay rent (Figure 8). The London average is 47.9%. Lambeth also has a higher proportion of households in fuel poverty (15.8%) than the national average (13.8%) (Figure 5).

It has been calculated using the matched addresses that 11.6% of PRS properties in Lambeth have an E, F, and G EPC rating. 1.2% of PRS properties have an F and G rating (Figure 19 and 20). Extrapolated to the entire PRS, 585 PRS properties are likely to fail the MEES statutory requirement.

PRS properties are significantly more likely to have an ASB incident compared to owner occupied properties (Figure 21) and comparable with social housing.

There is significant level of ASB linked to private rented properties across wards in Lambeth (Figure 23 & Map 6). Over a 3-year period (2019-2022), 415 ASB incidents have been investigated. Brixton Rush Common (64) has the highest levels of general ASB.

There are high domestic noise incidents linked to private rented properties across wards in Lambeth (Figure 24 & Map 7). Over a 3-year period (2019-2022), 6,721 noise incidents have been recorded. Brixton Rush Common (670) has the highest levels of noise incidents.

Lambeth has numerous PRS properties in all wards that have had two or more ASB and/or noise incidents over a three-year period (2019-2022). Streatham Common & Vale has the highest number of repeats ASB incidents (74) (Figure 25 & Map 8).

Appendix 1 – Ward summaries

Table 3. Ward summary overview (Source Ti 2023).

Ward	PRS dwellings	% PRS	Category 1 hazards (HHSRS)	ASB incidents (2019-22)	Noise incidents (2019-22)
Brixton Acre Lane	2477	35.3	400	15	322
Brixton North	1455	21.2	246	3	266
Brixton Rush Common	1690	25.8	307	64	670
Brixton Windrush	1317	29.9	240	27	152
Clapham Common & Abbeville	1378	30.9	254	14	132
Clapham East	1785	38.4	250	10	262
Clapham Park	2154	35.0	422	11	229
Clapham Town	2684	36.3	531	18	346
Gipsy Hill	1577	31.6	393	17	286
Herne Hill Loughborough Junction	2029	29.3	479	16	188
Kennington	2246	30.7	275	4	230
Knights Hill	1927	26.6	571	22	302
Myatts Fields	1021	20.8	245	8	161
Oval	2151	37.7	325	13	236
St Martins	1316	29.0	333	10	138
Stockwell East	1331	28.7	263	8	185
Stockwell West & Larkhall	2209	30.3	311	20	312
Streatham Common & Vale	2435	35.6	683	34	280
Streatham Hill East	1669	38.6	449	17	223
Streatham Hill West & Thornton	1817	37.8	348	11	145
Streatham St Leonards	2988	43.8	829	21	300
Streatham Wells	1735	39.6	400	22	319
Vauxhall	3506	54.1	268	7	240
Waterloo & South Bank	2382	45.7	237	13	272
West Dulwich	1499	29.7	387	10	110
Grand Total	48778	33.6	9446	415	6306

Appendix 2 - Tenure Intelligence (Ti) – stock modelling methodology

This Appendix explains at a summary level Metastreet's Tenure Intelligence (Ti) methodology (Figure 26).

Ti uses a wide range of data to spot trends at the property level. Machine learning is used in combination with expert housing knowledge to accurately predict a defined outcome at the property level.

Council and external data have been assembled as set out in Metastreet's data specification to create a property data warehouse.

Machine learning is used to make predictions of defined outcomes for each residential property, using known data provided by Lambeth Council.

Results are analysed by skilled practitioners to produce a summary of housing stock, predictions of levels of property hazards and other property stressors. The results of the analysis can be found in the report findings chapter.
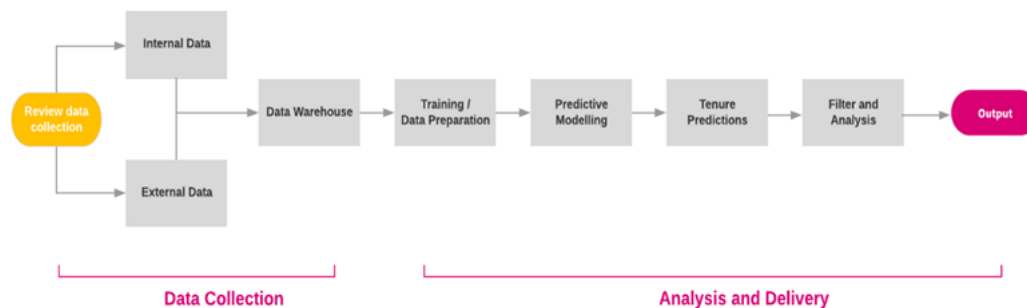
Figure 26. Summary of Metastreet Tenure Intelligence methodology.

Methodology

Metastreet has worked with Lambeth Council to create a residential property data warehouse based on a detailed specification. This has included linking approximately 8 million cells of data to 144,985 unique property references, including council and externally sourced data. All longitudinal council held data is 3 consecutive years, from April 2019 – March 2022. More contemporary stressor data has been used for ASB and service data.

Once the property data warehouse was created, the Ti model was used to predict tenure and stock condition using the methodology outlined below.

Machine learning was utilised to develop predictive models using training data provided by the council. Predictive models were tested against all residential properties to calculate risk scores for each outcome. Scores were integrated back into the property data warehouse for analysis.

Many combinations of risk factors were systematically analysed for their predictive power using logistic regression. Risk factors that duplicated other risk factors but were weaker in their predictive effect were eliminated. Risk factors with low data volume or higher error are also eliminated. Risk factors that were not statistically significant are excluded through the same processes of elimination. The top 5 risk factors for each model have the strongest predictive combination.

Four predictive models have been developed as part of this project. Each model is unique to Lambeth, they include:

- Owner occupiers

- Private rented sector (PRS)

- PRS housing hazards

Using a D^2 constant calculation it is possible to measure the theoretical quality of the model fit to the training data sample. This calculation has been completed for each model. The D^2 is a measure of "predictive capacity", with higher values indicating a better model.

Based on the modelling each residential property is allocated a probability score between 0-1. A probability score of 0 indicates a strong likelihood that the property tenure type is *not* present, whilst a score of 1 indicates a strong likelihood the tenure type *is* present.

Predictive scores are used in combination to sort, organise and allocate each property to one of the categories described above. Practitioner skill and experience with the data and subject matter is used to achieve the most accurate tenure split.

Upon allocation of tenures, a testing and calibration process is conducted to ensure consistency and accuracy. This involves comparing the allocations to the latest Government Census tenure outcomes at a ward level. The calibration process gives priority to owner-occupied housing, followed by social housing, and is instrumental in maintaining the plausibility of allocations of records to the PRS.

It should be acknowledged that the described approach can never achieve 100% accuracy, as all statistical models have inherent limitations. Predictive analytics has become a powerful tool for council services to gain insights from their data and make informed decisions about their intervention. However, it also has some limitations that should be considered, including:

- Data quality: Predictive analytics relies heavily on the quality of data. If the data used for analysis is incomplete or inaccurate, the predictions made may not be as accurate as possible.
- Overfitting: Predictive models can be overfitted to the data, which means that they perform well on the data they were trained on, but do not translate well to new test data
- Limited to historical data: our predictive models are based on historical data (typically last 5 years), which means they are limited to predicting future events based on what has happened in the past. If there are significant changes in the future, the predictions made may not be as accurate.

Despite the aforementioned limitations, the most effective approach to attain accurate tenure predictions is a continuous process of model development and field testing. The occurrence of errors is mitigated by employing comprehensive post-analysis filtering and field validation methods. The model's "effectiveness" can be measured by the D^2 value. Ultimately, field trials conducted by the private housing service are the true evaluation of the predictive model's performance.

The following tables include detail of each selected risk factors for each model. Results of the null hypothesis test are also presented as shown by the Pr(>Chi) results. Values of <0.05 are generally considered to be statistically significant. All the models show values much smaller, indicating much stronger significance.

<u>Owner occupier model</u>

The owner occupier model shows each of the 5 model terms to be statistically significant, with the overall model showing a "predictive capacity" of around 81% (Table 4).

Table 4. Owner occupier predictive factors.

Risk factors selected	Pr(>Chi)*
Mosaic Public Sector Data	0.0004034

Ctax Number of Accounts	3.400e-05
Total Electors Change	7.024e-09
Ctax Property Band	4.679e-11
Number of Complaints (All)	2.808e-15
Training data, n= 950	
D^2 test = 0.81**	

* Pr(>Chi) = Probability value/null hypothesis test, ** D^2 test = Measure of model fit

PRS predictive model

The PRS model shows that each of the 5 model terms is statistically significant, with the overall model having a "predictive capacity" of around 86% (Table 5).

Table 5. PRS predictive factors.

Risk factors selected	Pr(>Chi)
Mosaic Public Sector 6 Type	0.0004034
No. of accounts in 5 years	3.111e-11
Number of Benefit Claims	5.208e-07
EPC Tenure	2.2e-16
Number of Complaints (All)	2.808e-15
Training data, n= 950	
D^2 test = 0.86	

HMO (House in Multiple Occupation) model

This model predicts the likelihood that a UPRN will be a HMO (Table 6). Each of the 5 model terms is statistically significant and the overall model has a "predictive capacity" of around 83%.

Table 6. HMO predictive factors.

Risk factors selected	Pr(>Chi)
Total Electors Changes	2.717e-08
EPC Number Habitable Rooms	2.2e-16
Ctax Property Band	5.208e-07
Total Council Interventions	1.043e-08
Number of Complaints (All)	1.386e-11
Training data, n= 716	
D^2 test = 0.83	

Category 1 and high scoring Category 2, HHSRS (HHSRS) hazards model

For the training data, a variety of properties were sampled, all of which were subject to action by the local housing authority in response to serious hazards, including poor housing conditions. Specifically, this included properties that had received Housing Act 2004 Notices to address Category 1 hazards identified by the HHSRS. As home hazards and the HHSRS scoring system are complex, it is likely that the model will also detect a minority of high-scoring Category 2 hazards. The results of the model indicate that each of the model's terms is statistically significant, and the overall model has a "predictive capacity" of approximately 71%, (

Table 7).

Table 7. Category 1 and high scoring Category 2, HHSRS (HHSRS) hazard predictive factors.

Risk factors selected	Pr (>Chi)
EPC Energy Rating (current)	1.143e-05
Number of Complaints (All)	3.221e-10
Ctax Number of Accounts	5.125e-06
Combined Arrears Balance	4.086e-09

Number of Benefit Claims	7.691e-09
Training data, n= 1,197	
D^2 test = 0.71	

Census 2021 data comparison

Table 8. Ti dwelling data compared to Census 2021 household data.

Wards	Known dwellings (Ctax records)	Social Ti (dwellings)	Social Census 21 (households)	Owner Occ Ti (dwellings)	Owner Occ Census (households)	PRS Ti (dwellings)	PRS Census (households)
Brixton Acre Lane	7012	2165	2003	2370	2190	2477	2422
Brixton North	6872	3760	3646	1601	1541	1511	1525
Brixton Rush Common	6550	2505	2298	2355	2184	1690	1827
Brixton Windrush	4402	1879	1921	1206	1029	1317	1138
Clapham Common & Abbeville	4462	985	708	2099	1914	1378	1598
Clapham East	4648	1656	1562	1207	1084	1785	1604
Clapham Park	6155	2142	2078	1859	1784	2154	1572
Clapham Town	7398	2103	1908	2611	2584	2684	2611
Gipsy Hill	4991	1673	1714	1741	1625	1577	1035
Herne Hill Loughborough Junction	6916	2187	2062	2700	2600	2029	1902
Kennington	7311	3217	3120	1848	1861	2246	1518
Knights Hill	7250	2332	2194	2991	3026	1927	1693
Myatts Fields	4917	2413	2429	1483	1256	1021	942
Oval	5713	2033	1961	1529	1458	2151	2110
St Martins	4540	1899	1759	1325	1438	1316	1354
Stockwell East	4641	1776	1715	1534	1395	1331	1604
Stockwell West & Larkhall	7301	3249	3293	1843	1506	2209	2063
Streatham Common & Vale	6841	1147	1161	3259	3346	2435	2126
Streatham Hill East	4329	1077	1152	1583	1645	1669	1224
Streatham Hill West & Thornton	4808	849	828	2142	2232	1817	1570
Streatham St Leonards	6822	1197	918	2637	2815	2988	2800
Streatham Wells	4380	756	682	1889	1953	1735	1452
Vauxhall	6480	1655	1575	1319	1303	3506	1970
Waterloo & South Bank	5207	1419	1397	1406	865	2382	1601
West Dulwich	5039	1192	1155	2348	2280	1499	1268
Grand Total	144985	47266	45239	49024	46914	48695	42529

Version, Final 2023

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