
London Borough of Southwark

Private Rented Sector: Housing Stock Condition and Stressors Report

December 2019



Executive Summary

Metastreet were commissioned by the London Borough of Southwark 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 Southwark'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.
- Information on the number of Houses in Multiple Occupation (HMOs) as a subset of the PRS.
- Levels of serious hazards that might amount to a Category 1 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

- There are a total of 146,112 residential properties in Southwark, 29.4% (42,964) of which are PRS, 34.8% (50,821) are owner occupied and 35.8% (52,327) socially rented
- Southwark's PRS has grown steadily in recent years, from 19.8% (2006) to 29.4% (2019)
- The PRS in Southwark is distributed across all 23 wards
- Poor housing conditions are prevalent in the PRS. 8,497 PRS properties are predicted to have at least 1 serious hazard (Category 1, HHSRS)
- 8,431 ASB incidents in the PRS have been recorded
- PRS properties are significantly more likely have an ASB incident compared to owner occupied properties
- Most PRS ASB incidents are domestic noise
- Council officers carried out 14,570 interventions in PRS properties over a 5-year period
- 609 housing and public health notices have been served
- 27% of PRS properties in Southwark have an E, F, and G rating. 5.5% of PRS properties have an F and G EPC rating
- Southwark faces challenges relating to Index of Multiple Deprivation (IMD), with 16 of 23 wards have aggregated IMD rankings below the national average
- 11% of PRS properties in Southwark have an E, F, and G rating. 2% of PRS properties have an F and G rating
- Southwark has 5,031 properties predicted to be HMOs
- HMOs are distributed across all wards
- HMOs as a subset of the PRS in Southwark have higher rates of ASB and Category 1 hazards.

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Introduction & Project Objectives

Metastreet were commissioned by the London Borough of Southwark 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 and HMO
- 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 satisfies 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 Southwark'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 Southwark, built up from property level data.

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

- Private rented sector (PRS)
- Houses in Multiple occupation (HMO)
- Owner occupiers
- PRS Housing hazards (Category 1)

The second section provides a short private housing policy overview for the region to determine if characteristics exist in the Borough to support any specific action.

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

1 London Borough of Southwark Overview

Southwark is a borough of Inner London. It covers an area of 28.85 km². The borough borders the City of London and the London Borough of Tower Hamlets to the north (the River Thames forming the boundary), the London Borough of Lambeth to the west and the London Borough of Lewisham to the east. To the south the borough tapers giving brief borders with the London Boroughs of Bromley and the Croydon¹.

1.1 Population

The Office of National Statistics (ONS) household population estimate for Southwark as at 2018 was 316,307. This makes Southwark the 10th most populous London borough (Figure 1)².

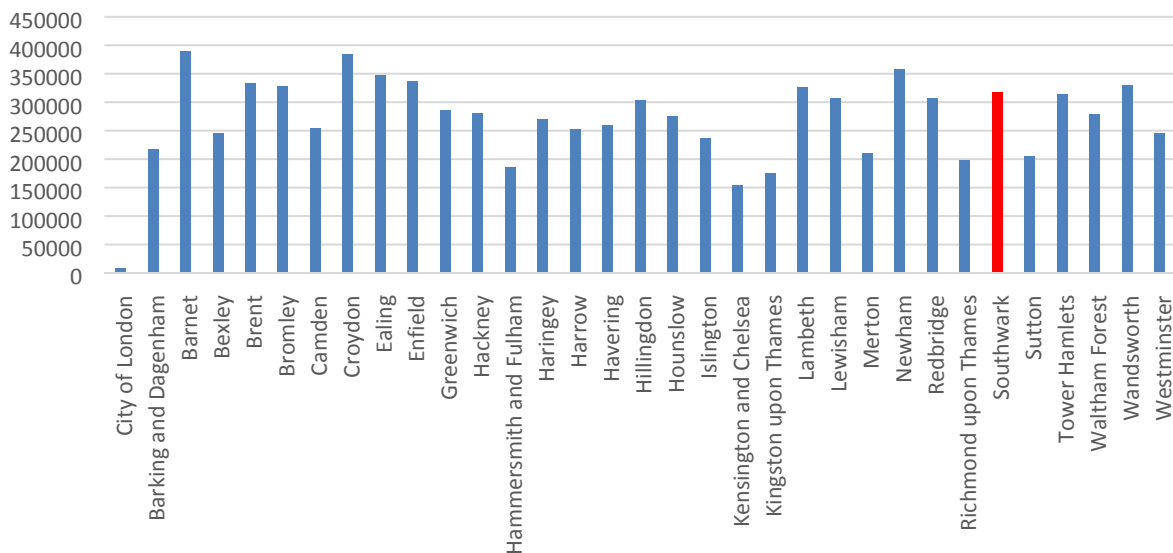
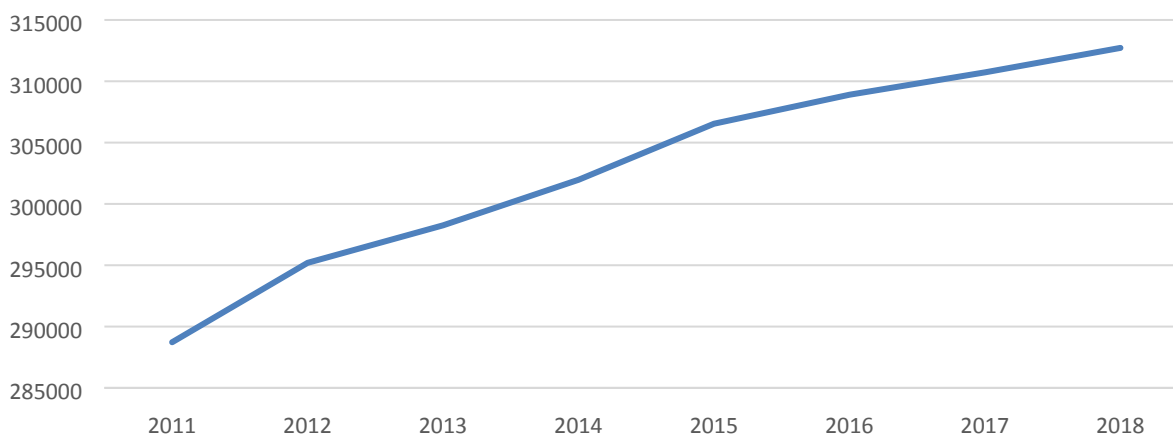


Figure 1. Population estimates by London boroughs (Source: ONS 2017).

Southwark's population has grown considerably since the early 2000's (



¹ Wikipedia, December 2019, https://en.wikipedia.org/wiki/London_Borough_of_Southwark

² London Datastore 2016, <https://data.london.gov.uk/dataset/projections>

Figure 2).

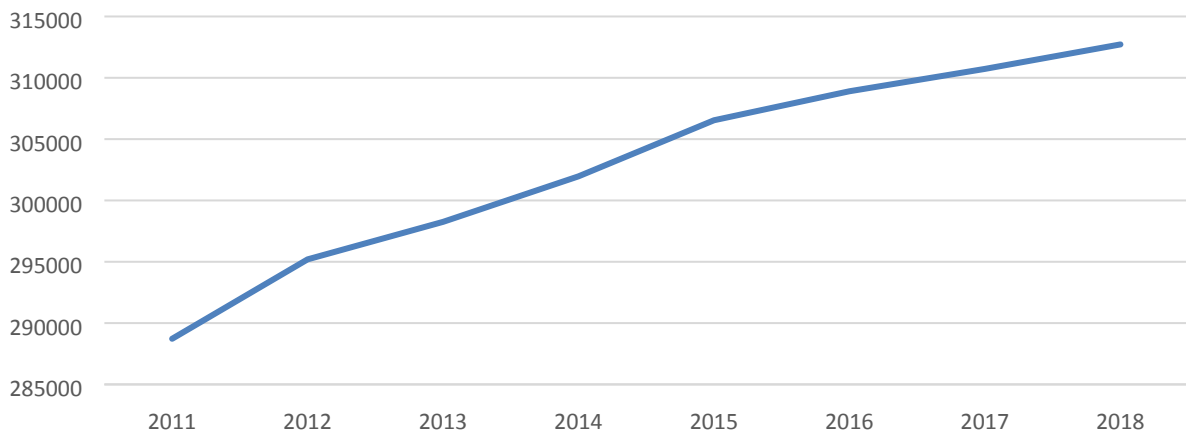


Figure 2. Population growth 2001-2017 (Source: ONS 2017).

Southwark's population is expected to grow significantly over the next three decades (

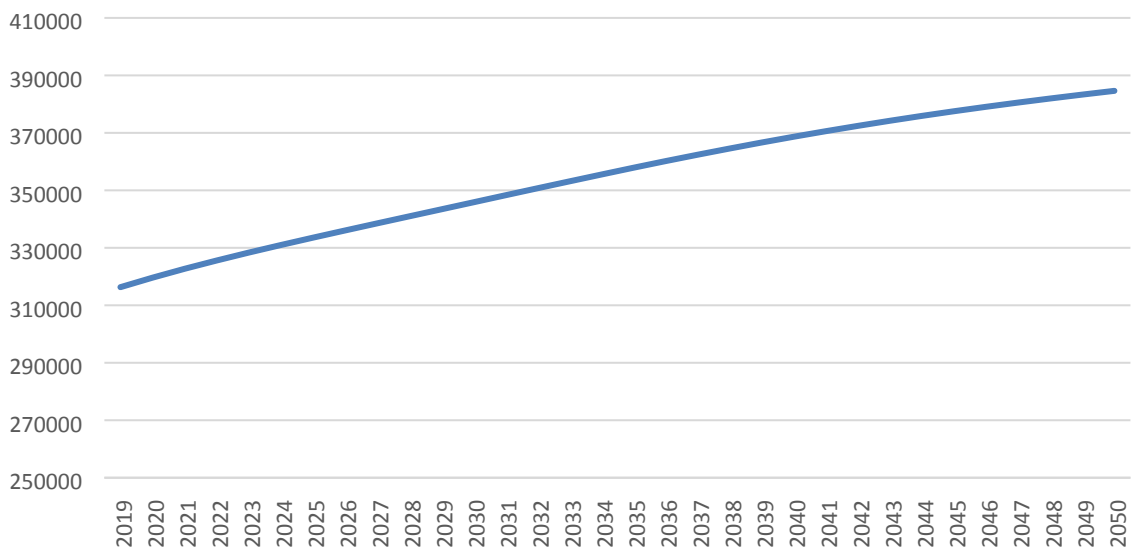


Figure 3)³.

³ London Datastore 2016, <https://data.london.gov.uk/dataset/projections>

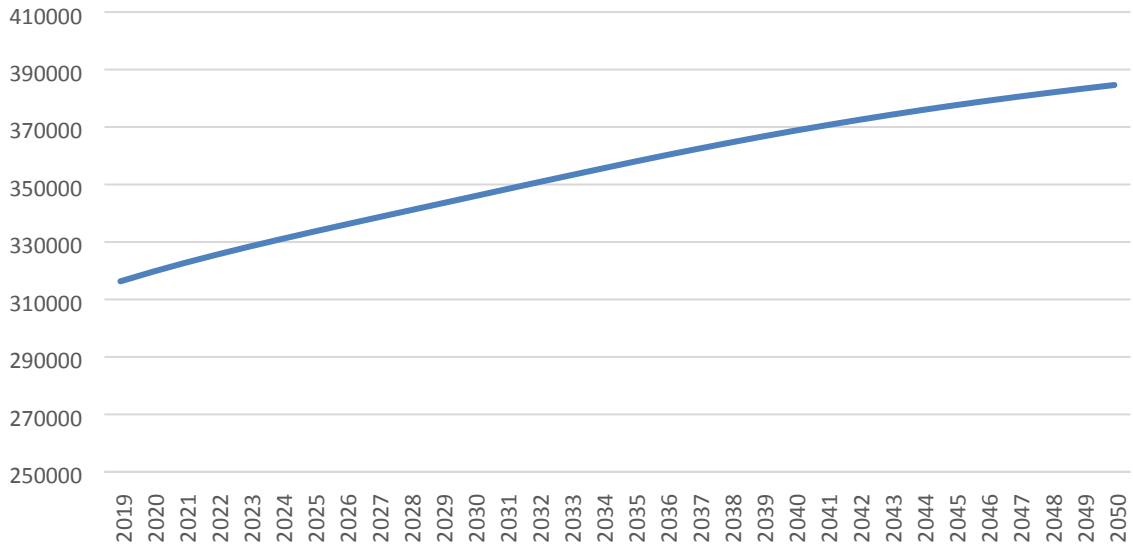


Figure 3. Population projections 2019-2025.

1.2 Migration

Net international migration into Southwark in 2015 was 5,497 (Figure 4)⁴.

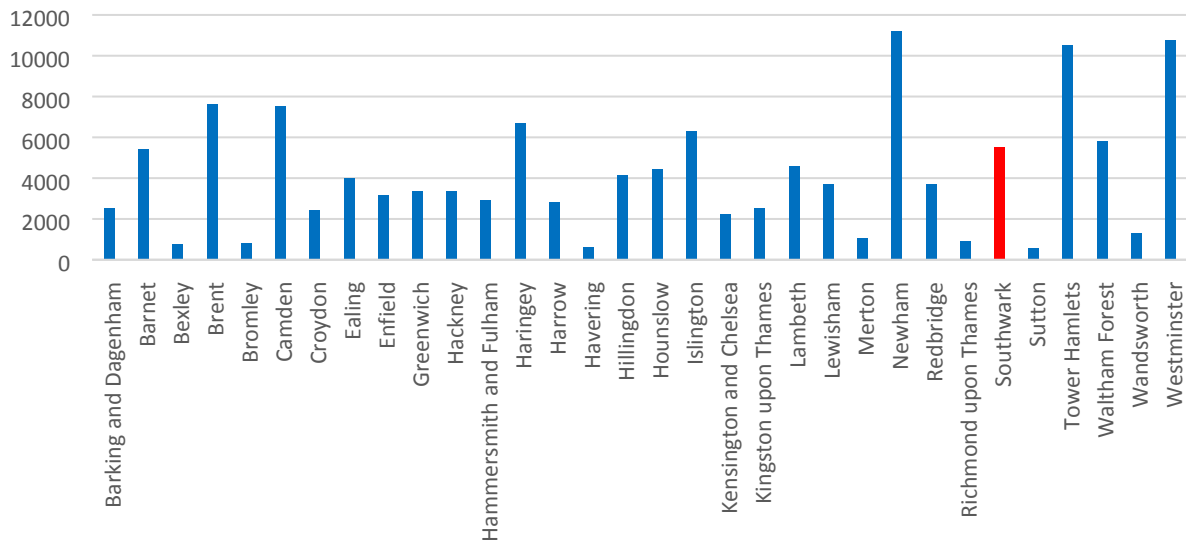


Figure 4. Net international migration by London boroughs (2015).

⁴ Croydon Observatory 2019, <https://www.croydonobservatory.org/population/>

1.3 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 deprivation⁵.

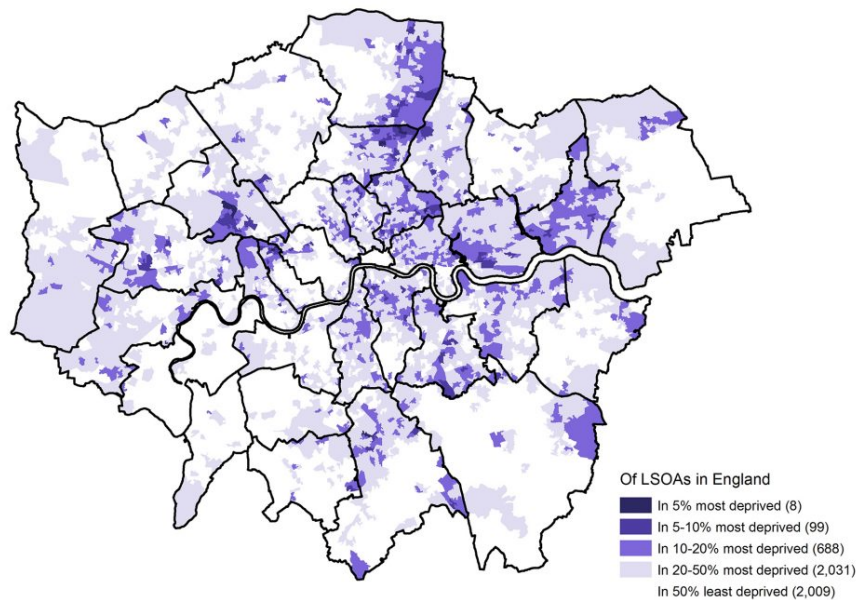


Figure 5. Distribution of deprivation across London (Source: London Datastore 2019).

The darker shades are the most deprived areas. Southwark ranks as the 43rd most deprived borough in England out of 317.

⁵ ONS2019 <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>,

To produce the ward level data, LSOA have been matched to new wards using an Open Geoportal Portal lookup table⁶. Average IMD2019 decile aggregated at ward level reveals a clear picture (

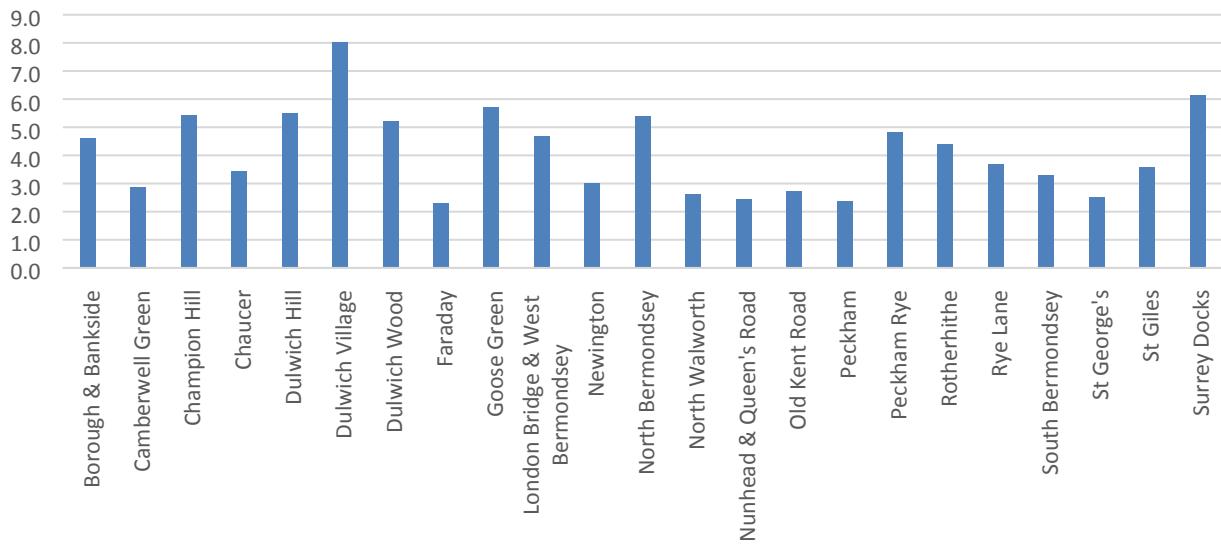


Figure 6). 1.0 on the graph represents the most deprived 10% areas and 5.0 represents 50% most deprived.

Southwark has a mixture of high and low deprivation wards. 16 of 23 wards have aggregated IMD rankings below the national average.

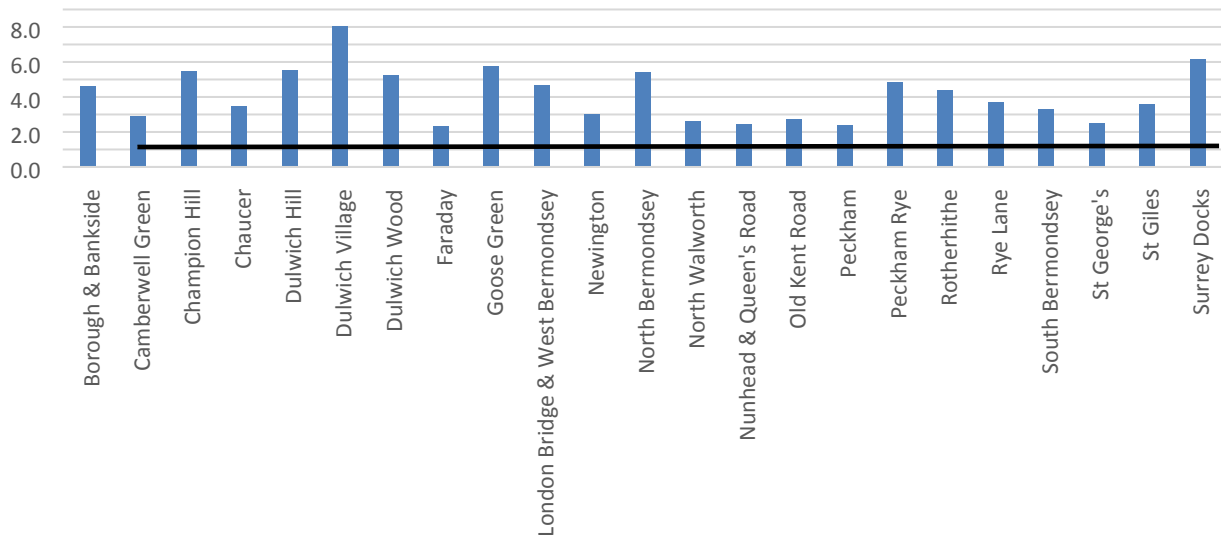
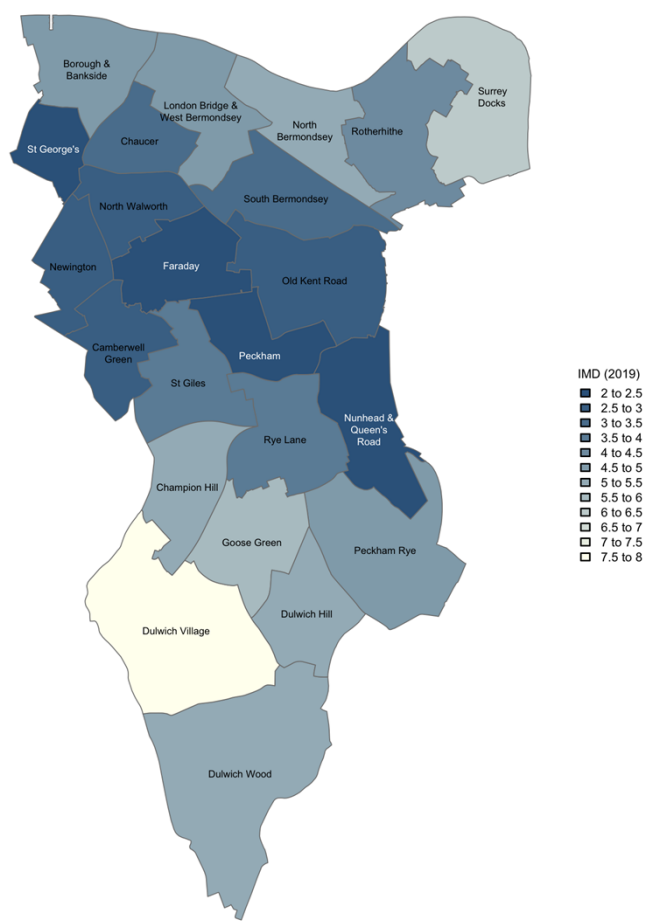


Figure 6. Average IMD (2019) decile by ward (Source: IMD 2019). Horizontal line shows the national average (5)

⁶ ONS2019 http://geoportal.statistics.gov.uk/datasets/8c05b84af48f4d25a2be35f1d984b883_0/data



Map 1. Distribution of Average IMD (2019) decile by ward (Source: Ti 2019, Map by Metastreet).

Southwark faces significant challenges relating to barriers to housing. All wards except Dulwich Village are worse than the National average (21.6) for Barriers to Housing and Services measure (

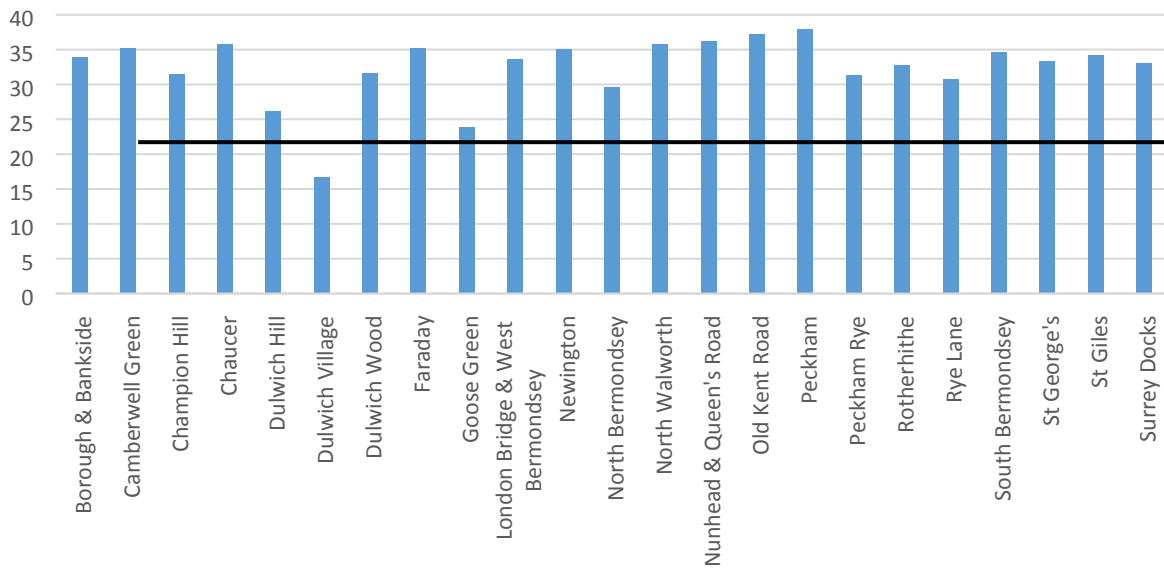


Figure 7). The barriers to housing domain include indicators such as; overcrowding, homelessness and housing affordability.

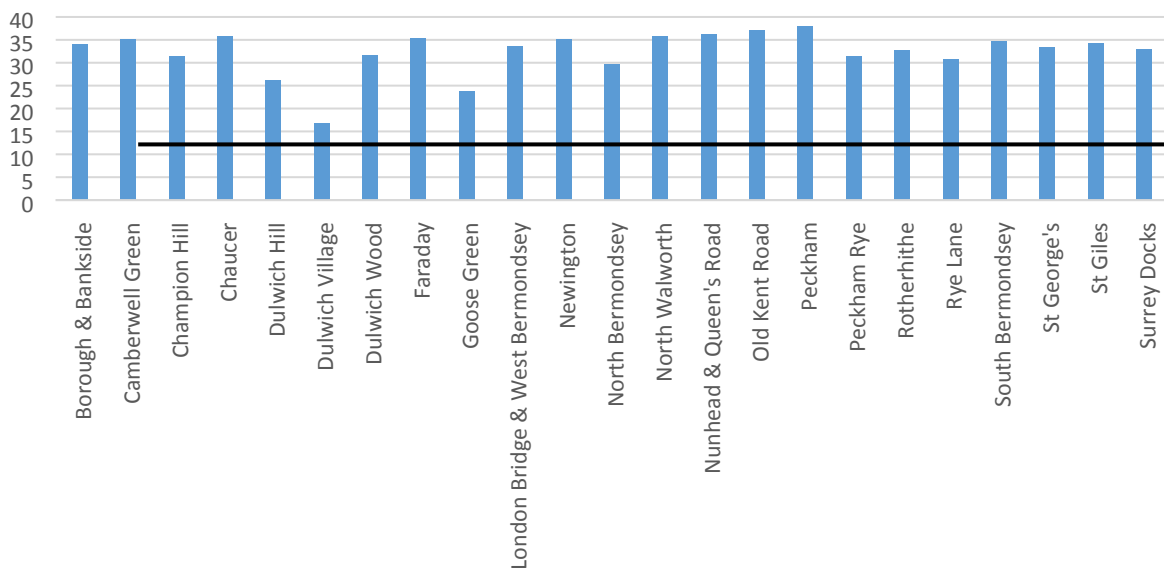


Figure 7. Average barriers to housing and services decile by ward (IMD 2019). Horizontal line shows the London average (21.6).

1.4 Fuel Poverty

Fuel poverty is defined by the Warm Homes and Energy Conservation Act as if he/she is a member of a household living on a lower income in a home which cannot be kept warm at reasonable cost. The

fuel poverty score produced by Department for Business, Innovation & Skills (BEIS) in 2016 measure risk of fuel poverty based on 12 indicators.

The score represents a percentage of households that are of risk from fuel poverty. Southwark has a marginally lower proportion in fuel poverty than the London average (Figure 8).

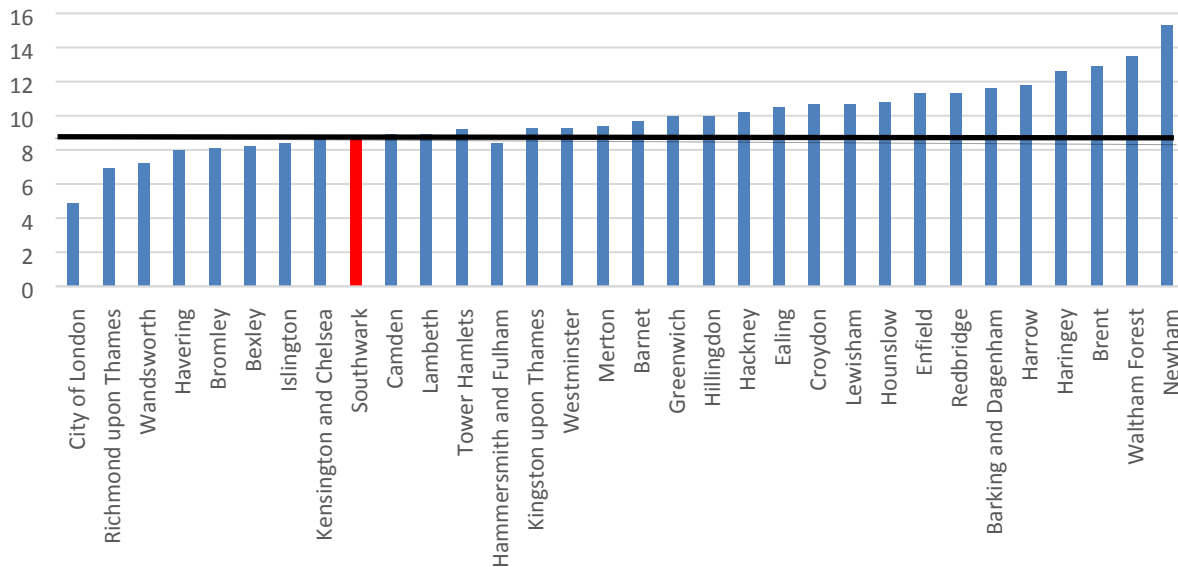


Figure 8. Proportion of households in fuel poverty (%) by London boroughs (BEIS 2016). Horizontal line shows London average (10%).

1.5 Child Poverty

PRS rents have been identified as a key driver of poverty. With greater numbers of children living in the PRS, understanding child poverty levels help us to understand the wider impacts of the PRS⁷. The graph below gives estimates of the percentage of children living under the poverty line in each London borough between October and December 2015⁸. Southwark has the 6th highest score in London and is considerably above the national average (31.7%).

⁷ JRT, Housing costs and poverty: private rents compared to local earnings 2018

⁸ Trust for London 2017, <https://www.trustforlondon.org.uk/data/child-poverty-and-housing-tenure/>

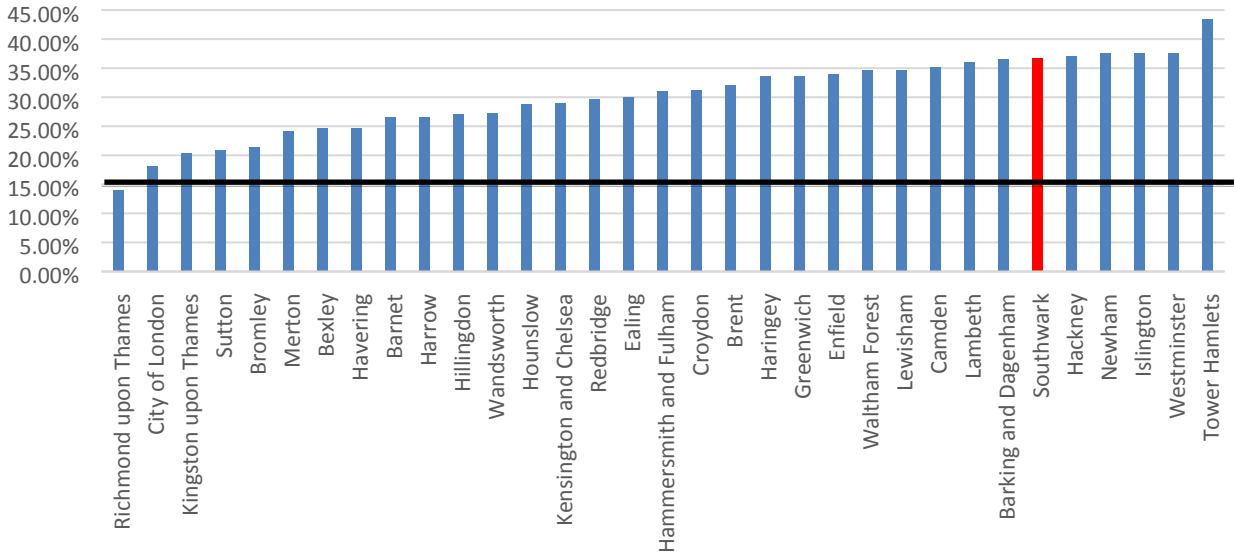


Figure 9. Child poverty score by borough (Source: Trust for London 2016). Horizontal line shows England average (17%)

1.6 Possession order rates

Southwark has one of the lowest possession order rates in London, with 6.5 orders per every 1,000 renting households⁹ (Figure 10). The average possession order rate for London is 11.5 per every 1,000 households (2017/18).

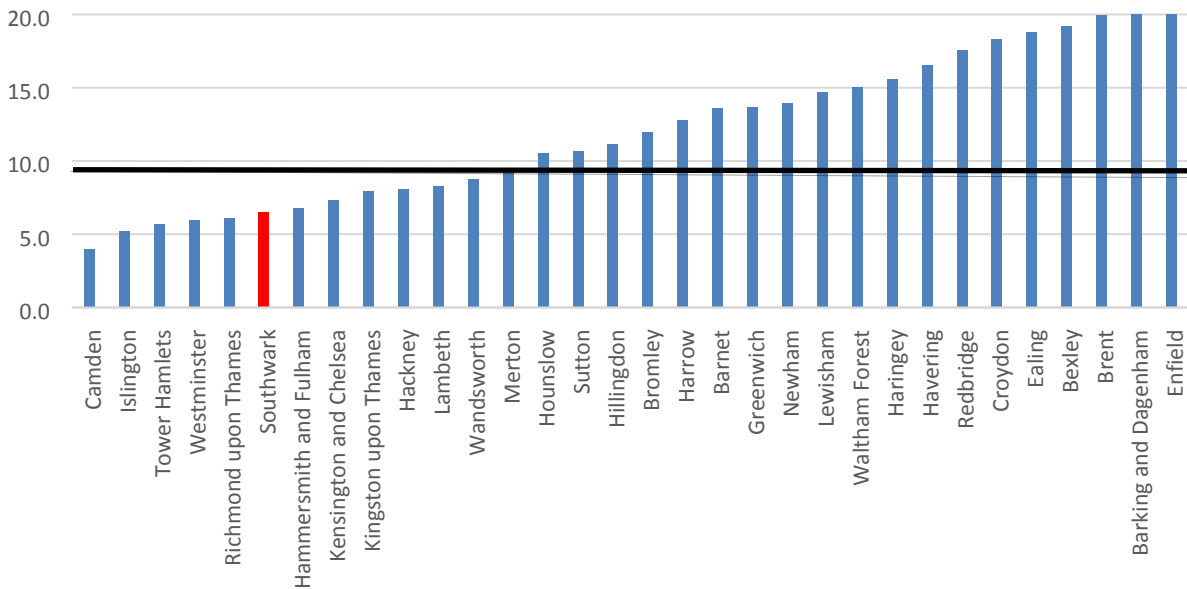


Figure 10. Possession order rates for renters by London boroughs (2017/18). Horizontal line shows London average (11.5%)

⁹ MOJ Possession order rates across London (2017/18)

1.7 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.

Homelessness returns to government in the 2016/17 financial year show Southwark has the 6th highest homelessness acceptance rates in London (Figure 11)¹⁰.

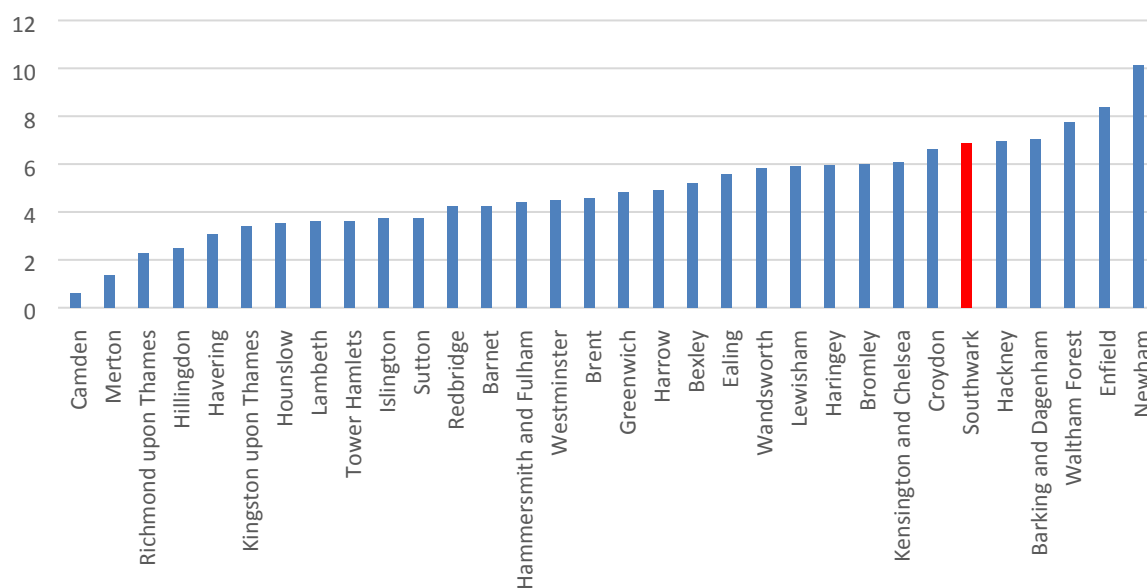


Figure 11. Homelessness acceptances per 1,000 households by London borough (Source: MHCLG 2016/17)

1.8 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 lower quartile (bottom 25%) of earnings as a percentage of rents. 67% of earnings for the lowest quartile of workers is used to pay rent in Southwark (Figure 12)¹¹.

¹⁰ London data store, original source MHCLG 2016/17

¹¹ Valuation Office Agency (VOA), Private rental market summary statistics: 2018

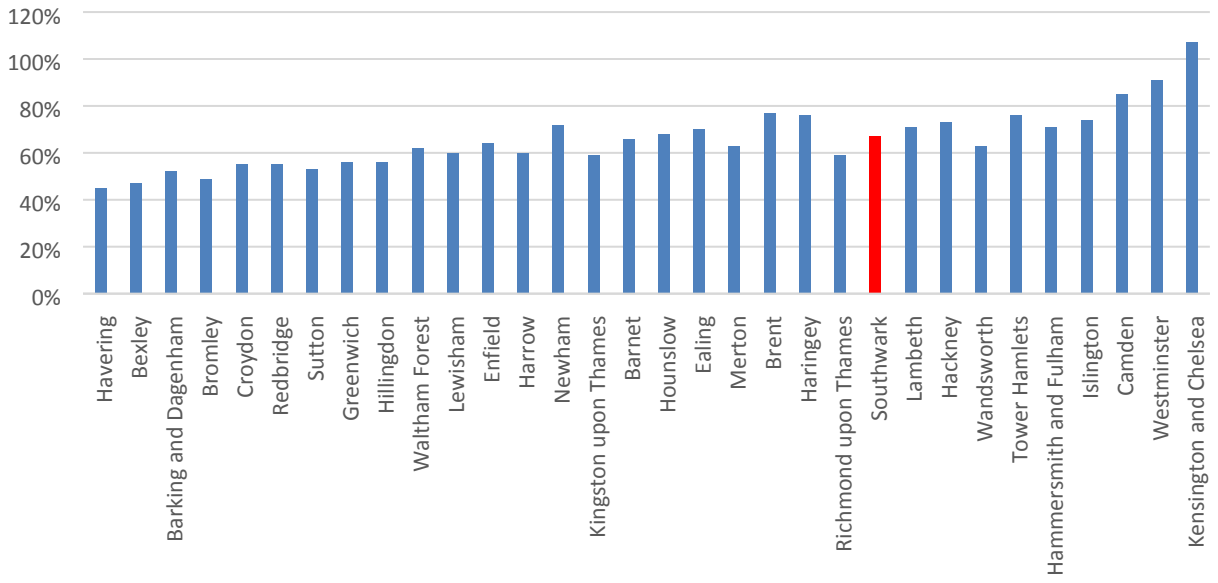


Figure 12. Rent as a proportion of lower quartile monthly gross earnings (Source: VOA 2016).

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 146,112 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 hazards (HHSRS) and other stressors. To achieve the maximum accuracy, unique models are built for each council, 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. All council held longitudinal data is for 5 consecutive years, from April 2014 – March 2019.

Different combinations of risk factors were systematically analysed for their predictive power in terms of key outcomes. Risk factors that duplicated 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 processes 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

A number of predictive models have been developed as part of this project which are unique to Southwark. Known stressors linked to individual properties have been modelled to calculate population level incidences and rates.

It is important to note that this approach can never be 100% accurate as all statistical models include some level of error. A more detailed description of the methodology and the specific factors selected to build bespoke predictive models for this project can be found in Appendix 2.

2.2 Results - Private Rented Sector

2.2.1 Population and distribution

The private rented sector (PRS) in Southwark has grown steadily since 2006.

Based on tenure modelling (December 2019), Southwark's PRS is now calculated to be 29.4% of housing stock (Figure 13). This compares to 19.8% of households in 2006 and 24.5% in 2011 (ONS). This represents a 20% increase over the last 13 years (Figure 14).

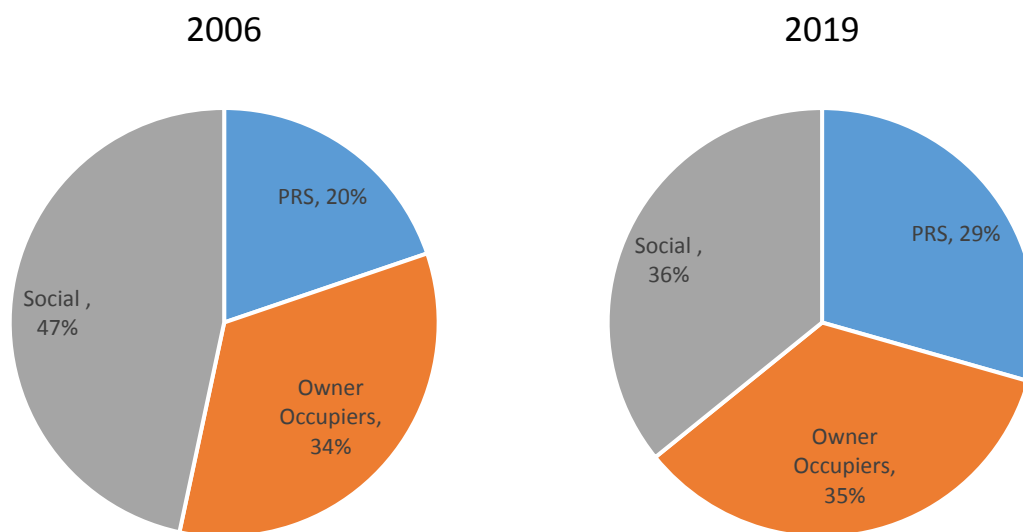


Figure 13. Tenure profile 2006 & 2019 (Source: ONS & Metastreet Ti model).

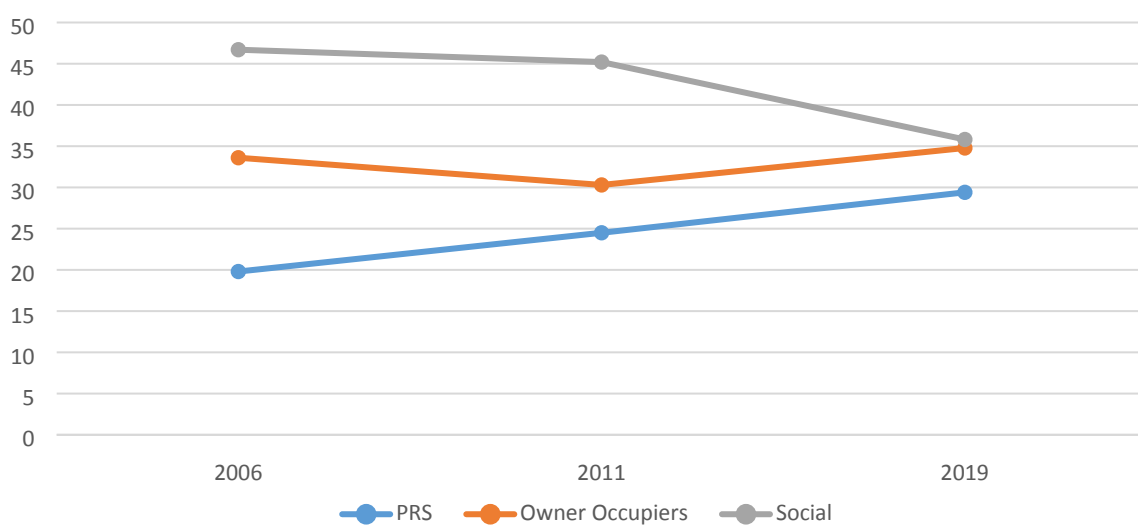


Figure 14. PRS as a percentage of total housing stock, 2006, 2011 & 2019 (Source: ONS & Metastreet).

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 ¹². 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 landlords¹³.

The PRS in Southwark is distributed across all 23 wards (Figure 15). The number of PRS per ward ranges from 3,140 (North Walworth) to 649 (Dulwich Village).

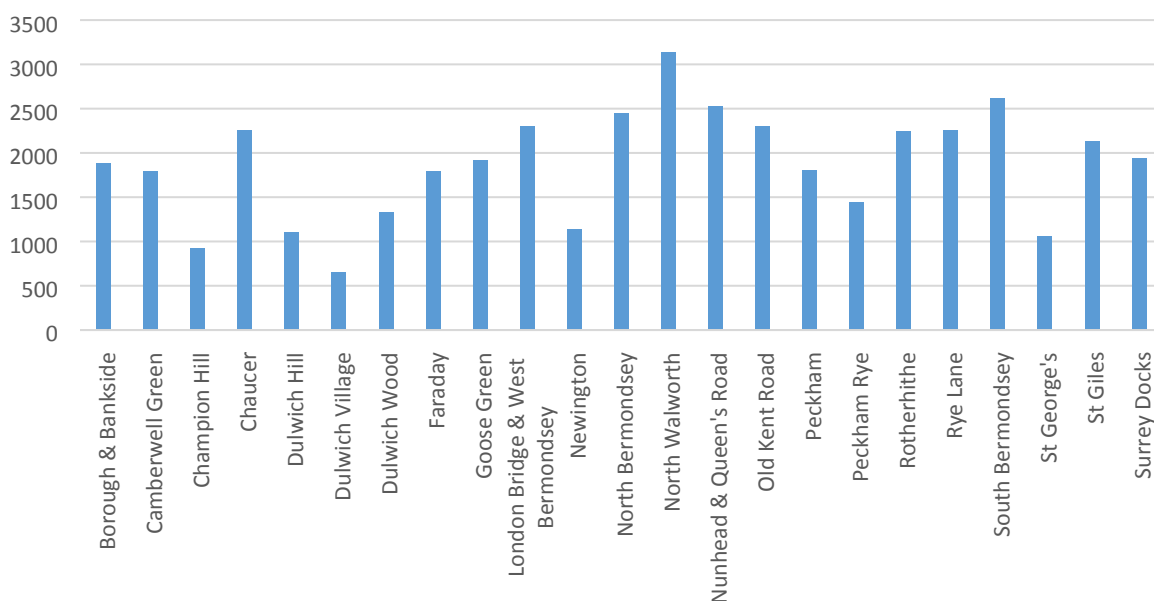


Figure 15. Number of PRS dwellings by ward (Source: Ti 2019).

The percentage of PRS properties in each ward ranges between 38.4% (North Walworth) and 16% (Dulwich Village) (Figure 16). Therefore, 21 out of 23 Southwark wards have a higher percentage PRS than the national average in 2019 (19.4%).

¹² The profile of UK private landlords Scanlon K & Woodhead C CML research. LSE London. December 2017 www.cml.org.uk

¹³ Landlord Licensing. Interim report-overview of the incidence and cost of HMO & discretionary schemes in England. February 2015. www.landlords.org.uk

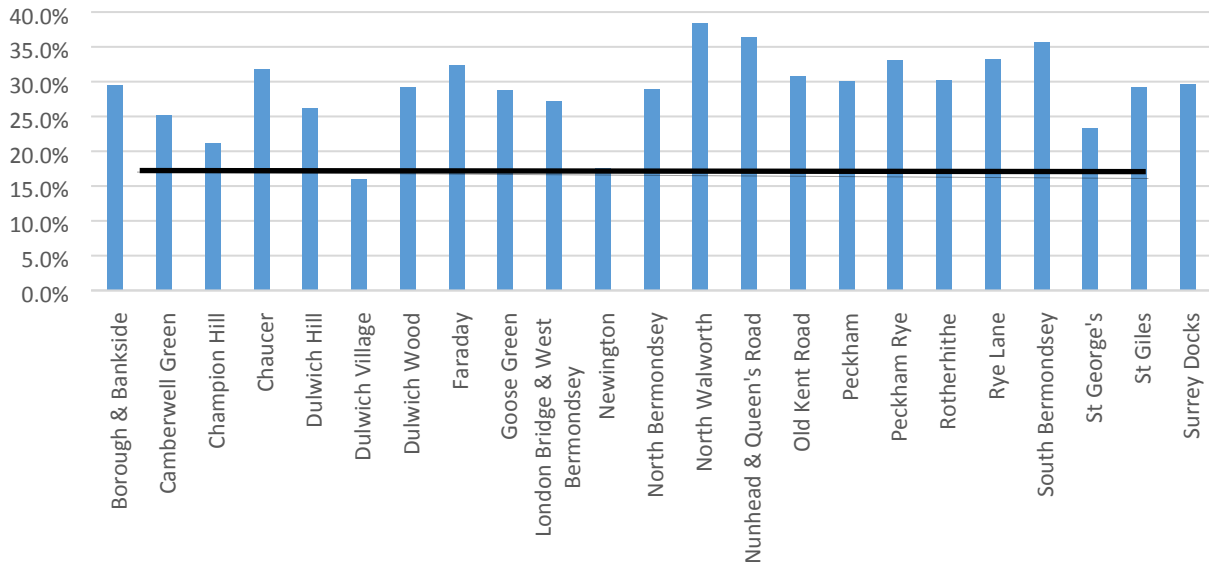


Figure 16. Percentage of PRS dwellings by each ward (Source Ti 2019). Horizontal black line shows national average 2019 (19.4%)

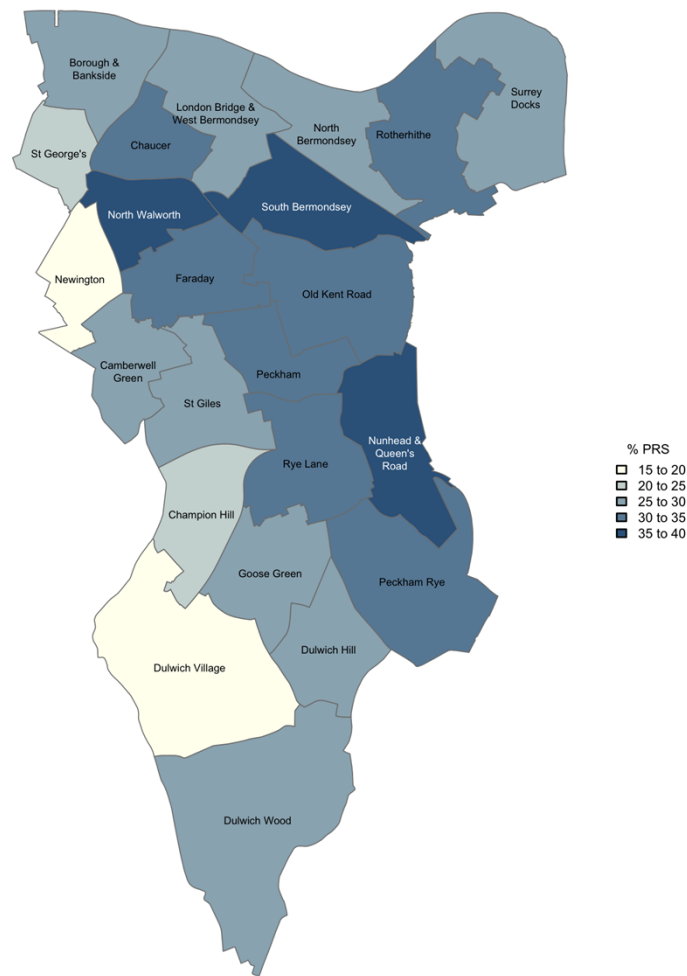
Ward	% PRS	No. PRS
Borough & Bankside	29.5%	1,880
Camberwell Green	25.2%	1,791
Champion Hill	21.2%	924
Chaucer	31.8%	2,254
Dulwich Hill	26.2%	1,102
Dulwich Village	16.0%	649
Dulwich Wood	29.2%	1,326
Faraday	32.4%	1,794
Goose Green	28.8%	1,918
London Bridge & West Bermondsey	27.2%	2,303
Newington	17.6%	1,141
North Bermondsey	28.9%	2,441
North Walworth	38.4%	3,140
Nunhead & Queen's Road	36.5%	2,523
Old Kent Road	30.8%	2,297
Peckham	30.1%	1,807
Peckham Rye	33.1%	1,438
Rotherhithe	30.3%	2,247
Rye Lane	33.3%	2,258
South Bermondsey	35.7%	2,617
St George's	23.4%	1,055
St Giles	29.2%	2,126
Surrey Docks	29.7%	1,933

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

Ward	% PRS	No. PRS
Borough & Bankside	29.5%	1,880
Camberwell Green	25.2%	1,791
Champion Hill	21.2%	924
Chaucer	31.8%	2,254
Dulwich Hill	26.2%	1,102
Dulwich Village	16.0%	649
Dulwich Wood	29.2%	1,326
Faraday	32.4%	1,794
Goose Green	28.8%	1,918
London Bridge & West Bermondsey	27.2%	2,303
Newington	17.6%	1,141
North Bermondsey	28.9%	2,441
North Walworth	38.4%	3,140
Nunhead & Queen's Road	36.5%	2,523
Old Kent Road	30.8%	2,297
Peckham	30.1%	1,807
Peckham Rye	33.1%	1,438
Rotherhithe	30.3%	2,247
Rye Lane	33.3%	2,258
South Bermondsey	35.7%	2,617
St George's	23.4%	1,055
St Giles	29.2%	2,126
Surrey Docks	29.7%	1,933

Table 1. Percentage and number of PRS properties by ward (Source Ti 2019).

PRS properties are distributed across the borough (Map 2). Dulwich Village (16%) and Newington (17.6%) wards have the lowest concentration of PRS.



Map 2. PRS properties as percentage of dwellings in Southwark (Source: Ti 2019, map by Metastreet).

2.2.2 Housing conditions

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 hazards have a physiological or psychological impact on the occupant and may result in medical treatment. ¹⁴

In 2017, 14% of private rented dwellings in England had at least one Category 1 hazard; this was a higher proportion than the average for the total housing stock (11%) ¹⁵. It is notable that there is a

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 MHCLG Private rented sector 2017-18 English Housing survey Headline Report, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/834603/2017-18_EHS_Headline_Report.pdf

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 1980¹⁶.

A council's property age profile can have an impact on housing conditions. Southwark has a high number of residential properties built pre 1900 (Figure 17)¹⁷.

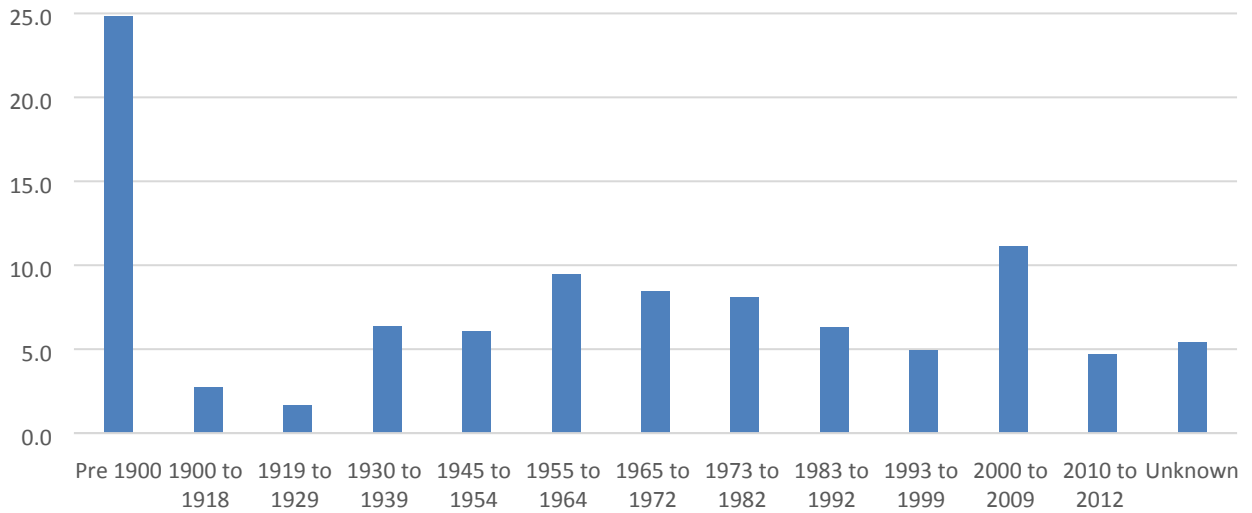
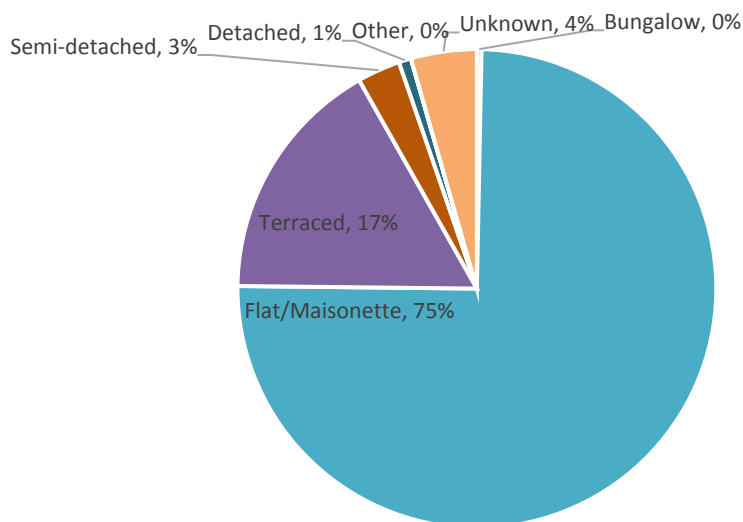


Figure 17. Age profile of Housing stock (%) for all tenures (Source: VOA 2015).

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 (0.3%) (



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-isoa>

Figure 18).

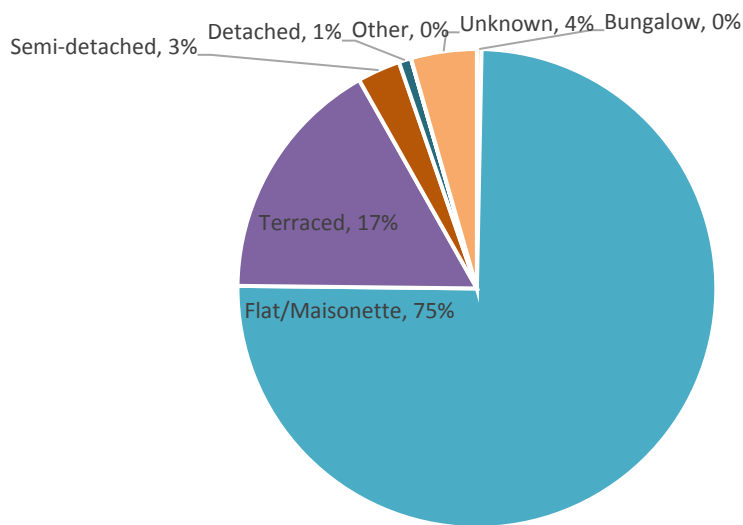


Figure 18. Property type as a percent of total (Source: VOA 2015).

Using a sample of properties that are known to have at least one serious housing hazard (Category 1, HHSRS), it is possible to predict the number of PRS properties with at least one serious hazard across the borough (Figure 19).

There are 8,497 private rental properties in Southwark that are likely to have a serious home hazard (Category 1, HHSRS). PRS properties with serious hazards are distributed across the borough. Nunhead & Queen's Road (578) and North Walworth (570) have the highest number of properties with at least one Category 1 hazard.

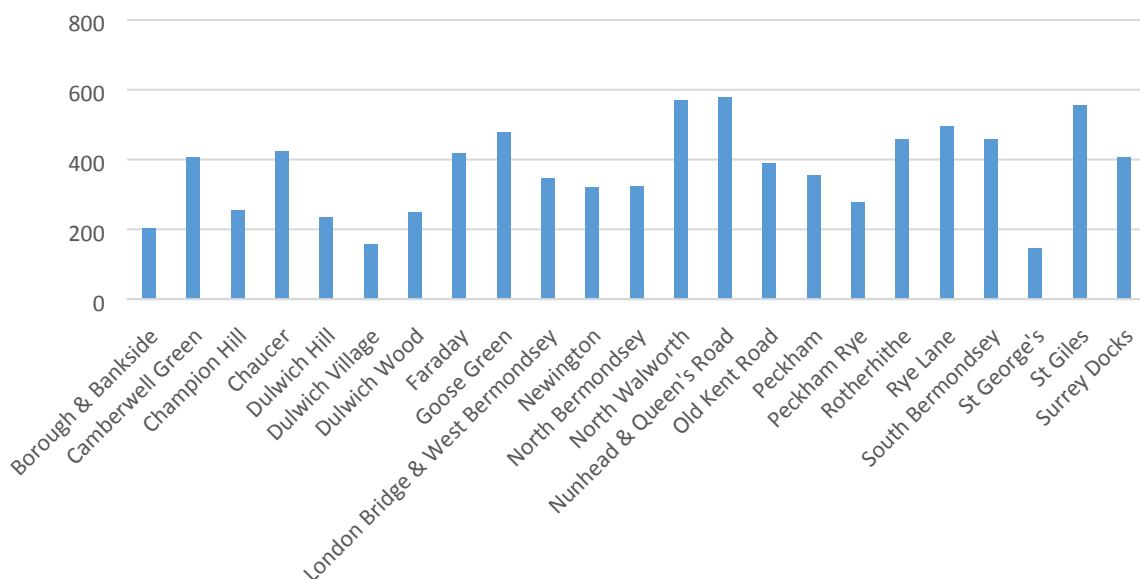
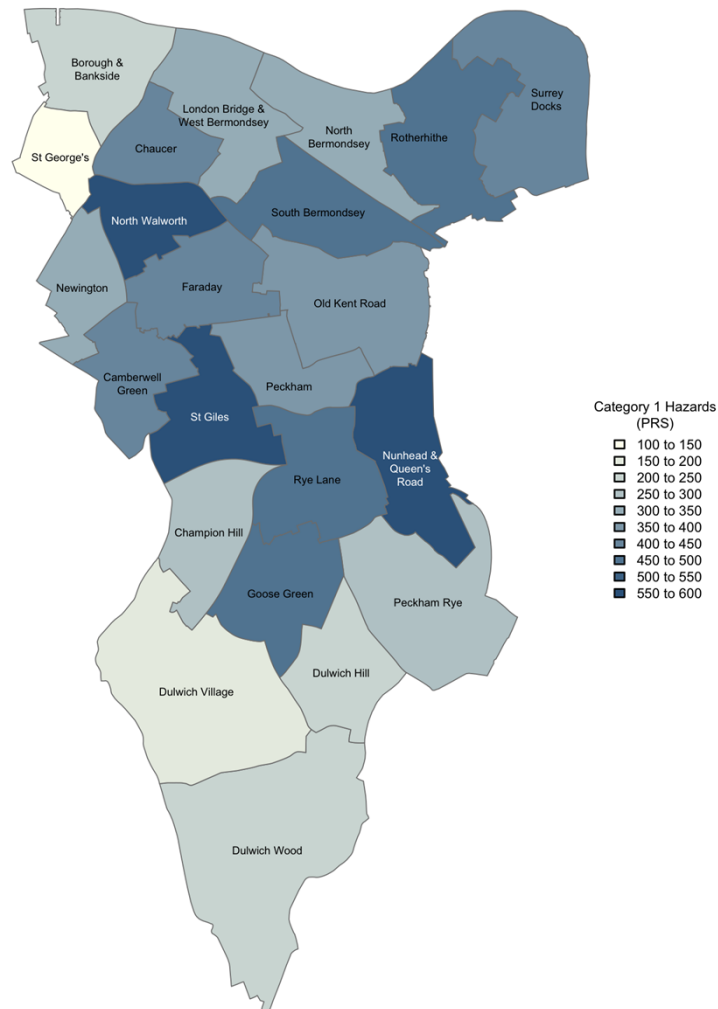


Figure 19. Predicted number of Category 1 hazards by ward (Source: Ti 2019).

Category 1 hazards in the PRS are distributed across the whole borough. Concentrations of properties with serious hazards can be found in the central and northern wards.



Map 3. Distribution of PRS properties with category 1 hazards (Source: Ti 2019, map by Metastreet).

The rates of Category 1 hazards per 1,000 PRS properties reveals a wide distribution across Southwark (Figure 20). Although Dulwich Village and Newington wards have the smallest PRS populations, they have high rates of PRS properties with Category 1 hazards.

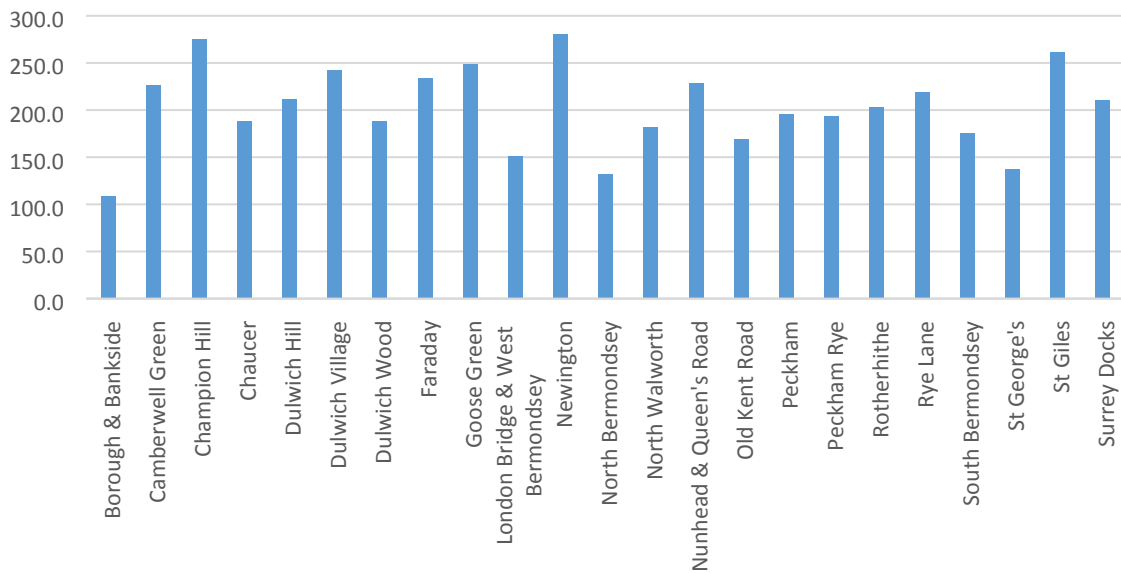


Figure 20. Rates per 1,000 PRS properties of predicted Category 1 hazards by ward (Source: Ti 2019).

Complaints made by PRS tenants to the council about poor property conditions and inadequate property management are a direct indicator of low quality PRS. Southwark received 1,848 complaints from tenants over a 5-year period.

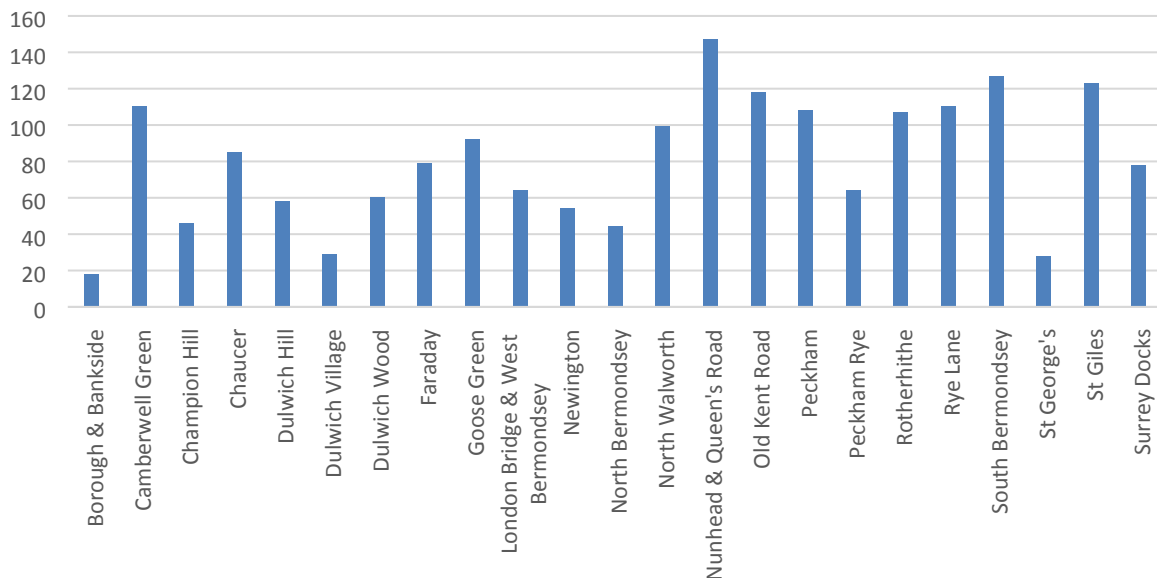


Figure 21. PRS disrepair complaints made by private tenants to the Council (2016-19) (Source: Ti 2019)

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 11,869 EPC ratings were matched to PRS properties (Figure 22). All figures have been modelled from this this group.

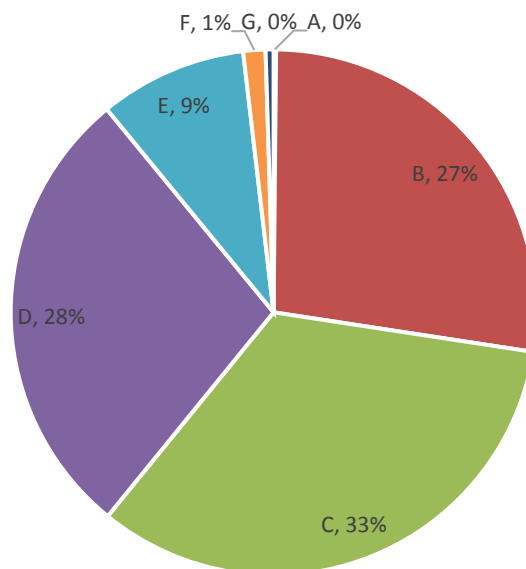


Figure 22. Distribution of Energy Performance Certificate ratings in PRS (Rating A-G) (Source: Ti 2019).

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% of PRS properties in Southwark have an E, F, and G rating. 2% of PRS properties have an F and G rating (Figure 22). Extrapolated to the entire PRS, 790 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 death¹⁸. 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 1980¹⁹. Therefore, the sizeable number of F and G properties present a serious risk to the occupants' health, particularly if over the age of 65.

2.2.3 PRS enforcement interventions by council

Southwark uses a range of proactive regulatory interventions to address poor housing standards in the PRS. These are often as a result of a complaint being made by a tenant or local intelligence. Over a 5-year period (2014-19) this resulted in 609 housing notices served to address hazards (Figure 23).

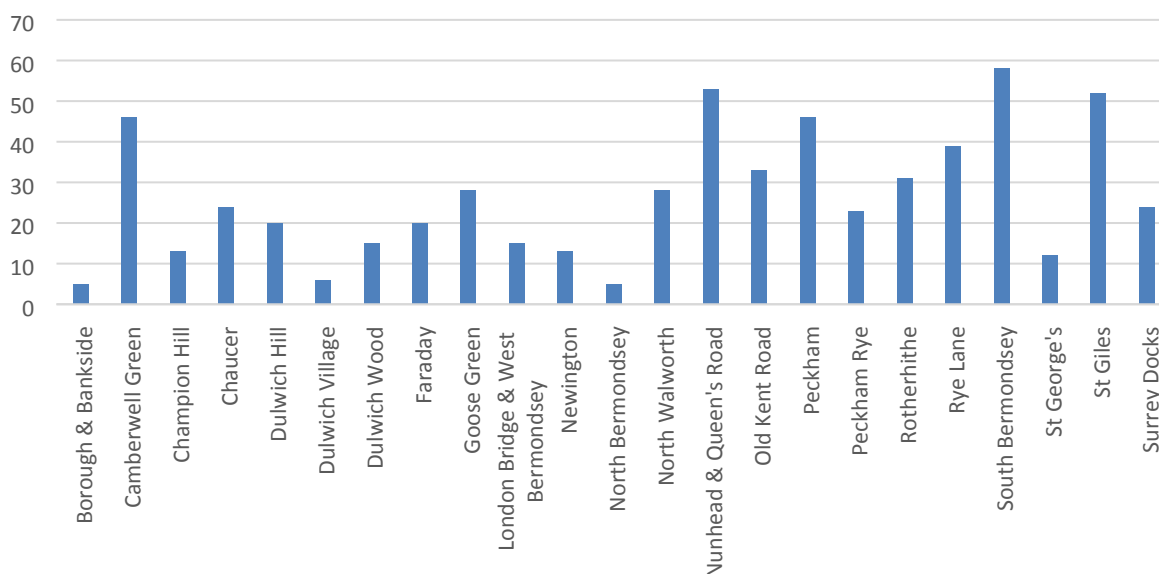


Figure 23. Housing notices served on PRS properties by ward (Source: Ti 2019).

Part of the housing conditions review is to report on council intervention and service requests in the private rented sector. These include proactive and reactive inspections of residential properties by council officers to identify poor housing standards. Property licensing has been used in Southwark in a targeted way to maximise the effectiveness of housing interventions.

¹⁸ Housing Health and Rating System, Operation Guidance, 2006

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/15810/142631.pdf

¹⁹ Housing Health and Rating System, Operation Guidance, 2006

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/15810/142631.pdf

Southwark made 14,570 interventions in PRS properties across a range of services over a 5-year period, this was made up of proactive inspections and inspection after receiving a complaint or service request related to ASB. North Walworth (1,126) and St. Giles (970) received the greatest number of council service requests relating to PRS housing (Figure 24 & Map 4).

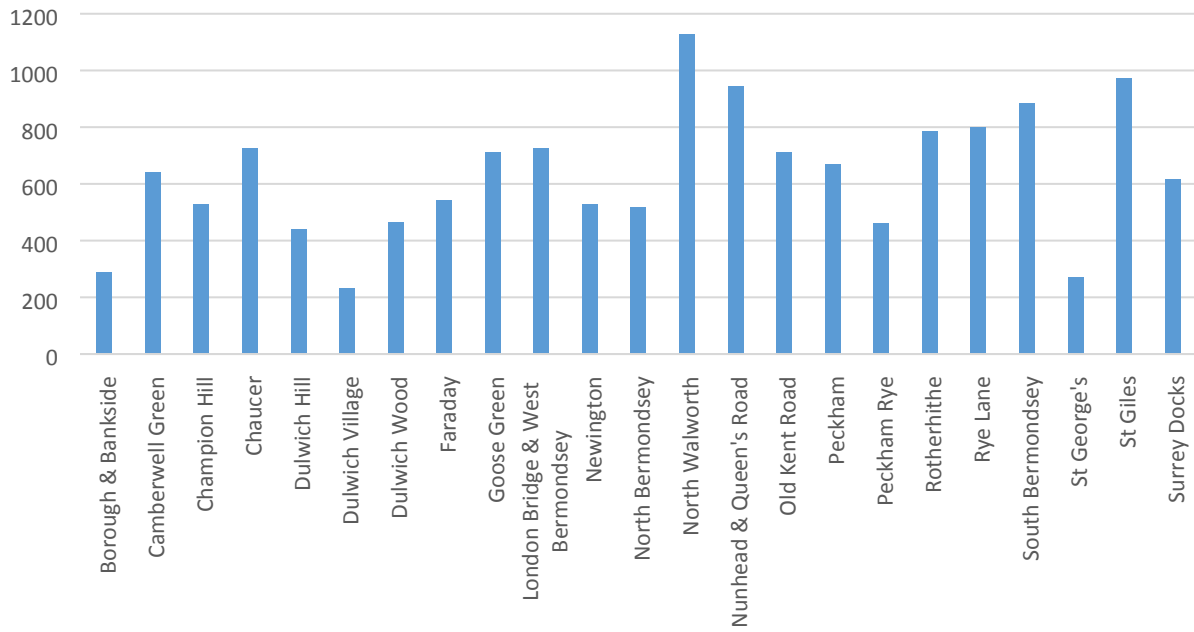
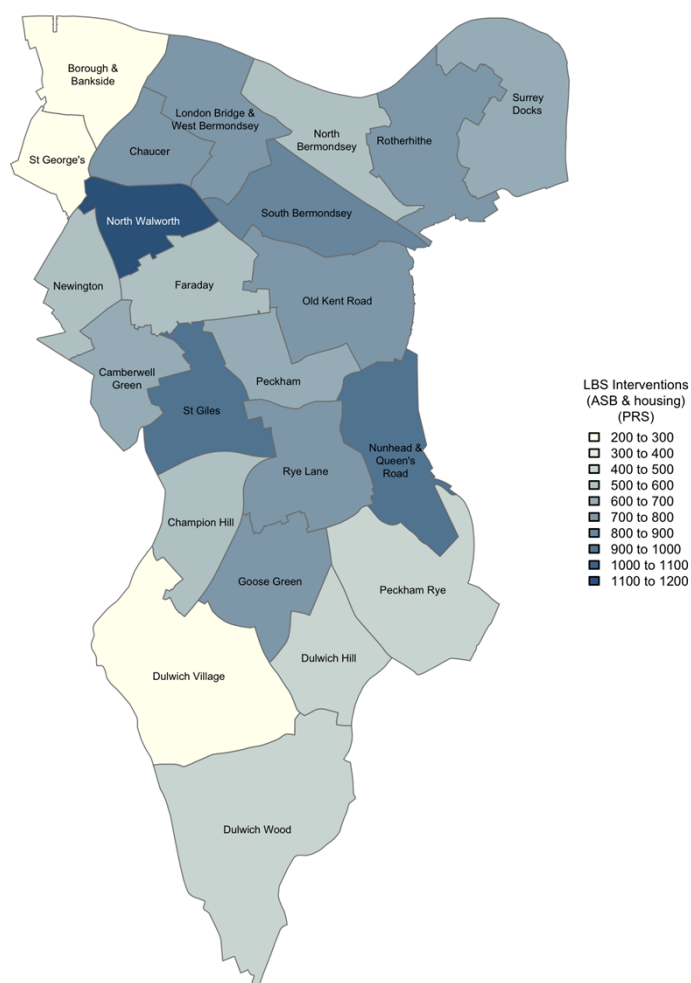


Figure 24. PRS interventions by ward (Source: Ti 2019).



Map 4. Distribution of PRS interventions (Source: Ti 2019, Map by Metastreet).

2.2.4 Anti-social behaviour (ASB)

The number of ASB incidents that resulted in an intervention by the council are shown below. They relate to ASB associated with residential premises only. For example, ASB incidents investigated on a street corner that cannot be linked to a residential property are excluded.

Rates of ASB investigations in the social sector are higher than other tenures (Figure 25). PRS properties are 61 times more likely have an ASB incident compared to owner occupied properties. HMOs (as a subset of PRS) have the highest rates of all tenures.

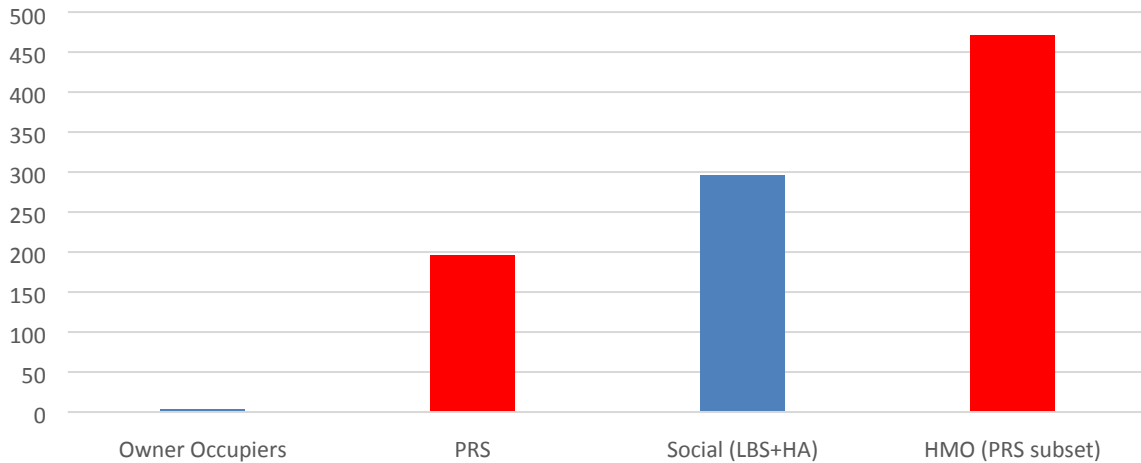


Figure 25. ASB rates per 1000 dwellings by tenure (Source: Ti 2019).

There are high levels of ASB linked to private rented properties across the borough (Figure 26). Over a 5-year period (2014-19), 8,431 ASB incidents have been recorded. Nunhead & Queen’s Road (571) has the highest levels and St George’s (154) has the lowest level of PRS ASB incidents.

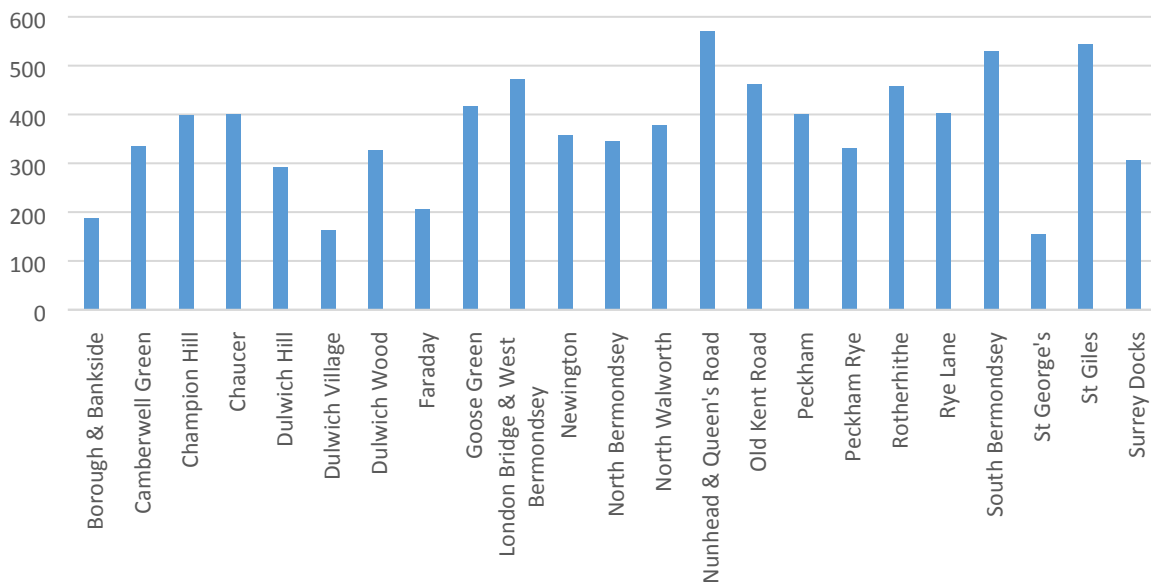


Figure 26. Number of ASB incidents linked to PRS by ward (Source Ti 2019).

ASB in the PRS expressed as incidents per 1000 dwellings, shows a wider distribution across all wards (Figure 27). Using this measure, Champion Hill (431 per 1000) and Newington (313 per 1000) wards have the greatest number of ASB incidents proportional to the size of the PRS.

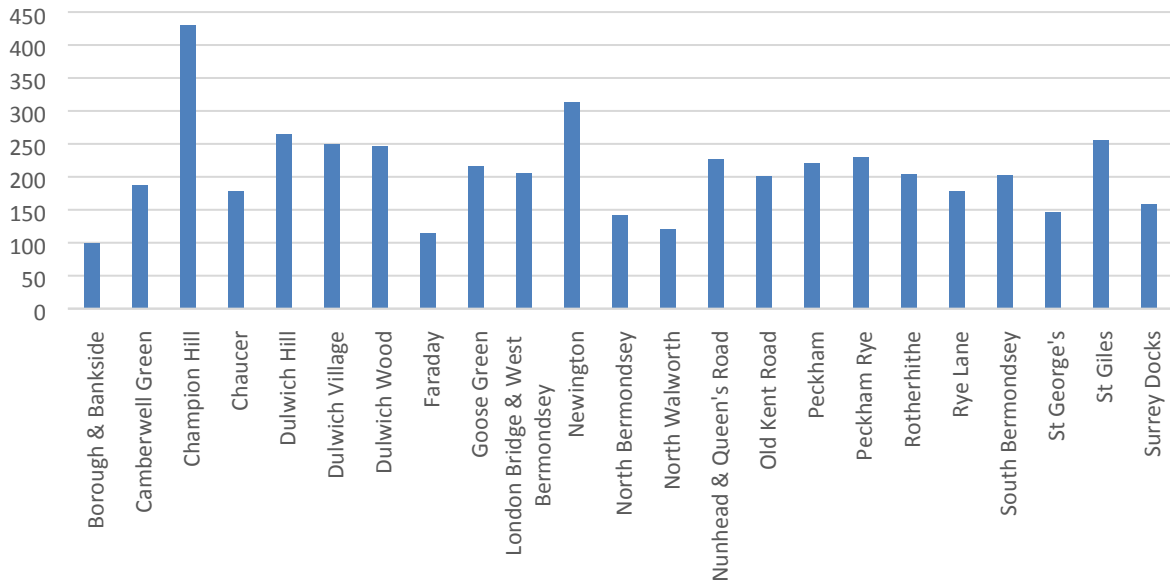
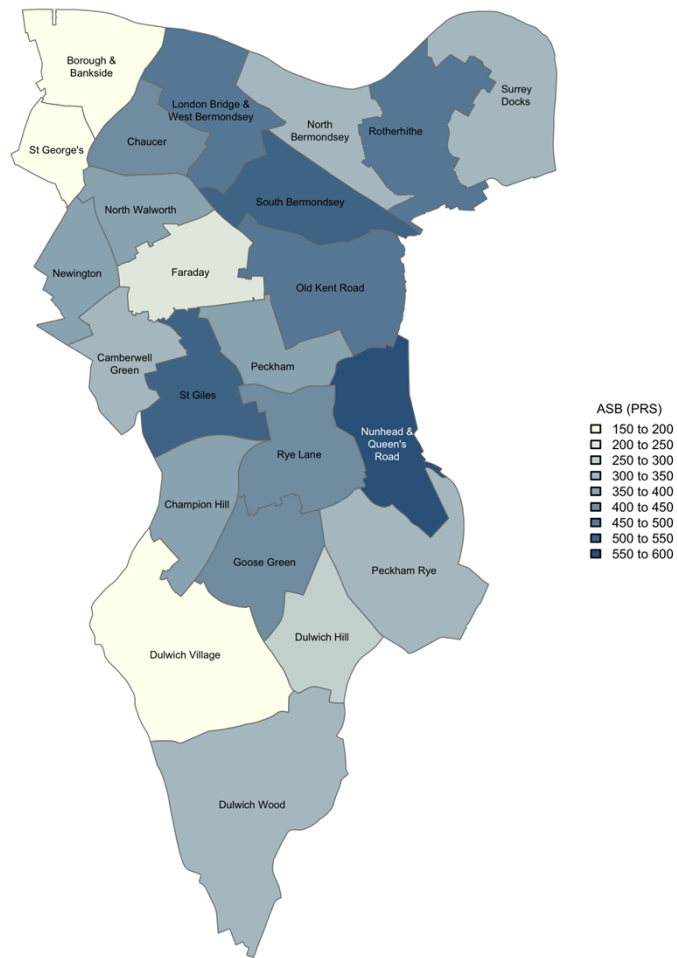


Figure 27. ASB incidents linked to PRS per 1000 properties by ward (Source: Ti 2019).



Map 5. Distribution of ASB linked to PRS properties (Source: Ti 2019, Map by Metastreet).

Recorded ASB investigations in the PRS have been split into two types. Noise (96%) and other ASB (4%) (Figure 28). Other ASB category includes, verbal abuse, harassment, intimidation, nuisance animals, nuisance vehicles, drugs cultivation and substance misuse, domestic violence, rubbish and fly tipping. All incidents are directly linked to a PRS property.

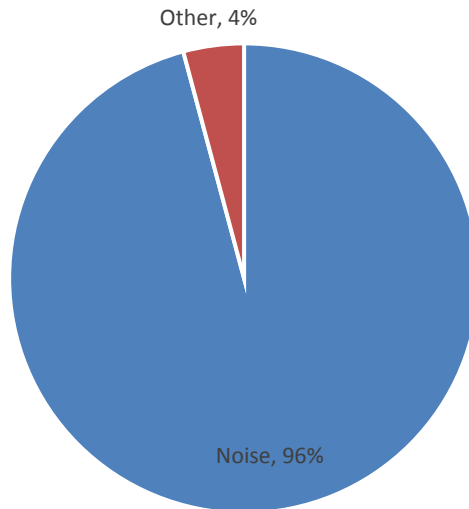


Figure 28. Types of ASB linked to PRS properties (Source: Ti 2019).

2.2.5 PRS and financial vulnerability

Housing benefit payments related to the PRS can be an indicator of financially vulnerable households and deprivation. Southwark processed 10,020 housing benefit claims relating to unique PRS households between 2014-2019 (Figure 29). Housing benefit applications are distributed across all wards.

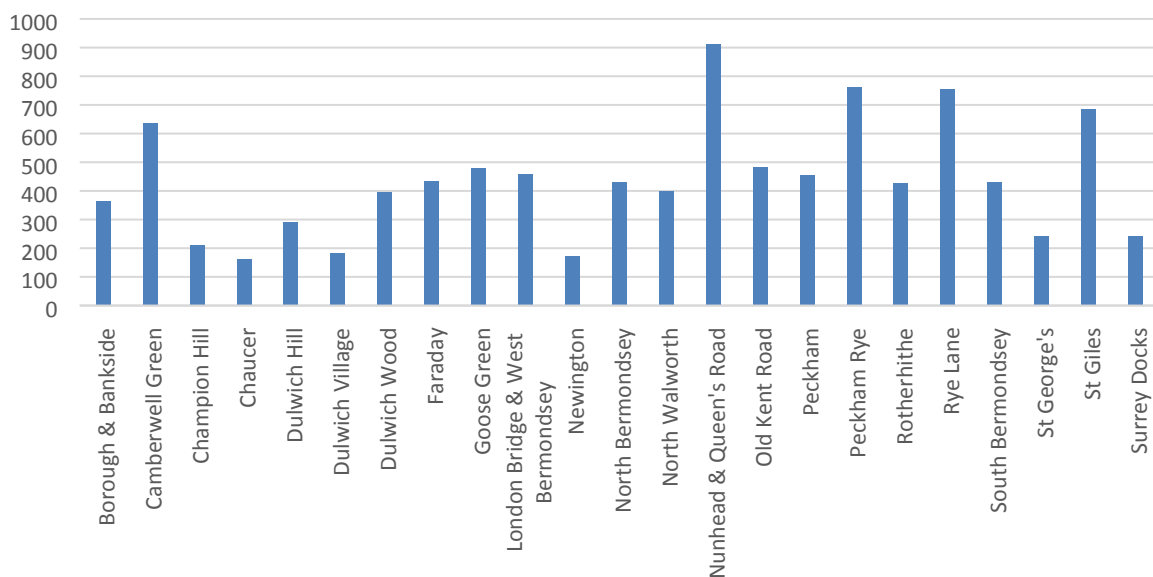


Figure 29. PRS housing benefit payments by ward (Source: Ti 2019).

2.3 Results - Houses in Multiple Occupation

Houses in Multiple Occupation (HMO) are a sub-set of properties within the PRS and represent the cheapest rental accommodation; rented by room with the sharing of amenities (usually kitchen/bathroom). The Housing Act 2004 defines HMOs as a “dwelling of 3 or more persons not forming a single household”. This definition has been used for the purposes of this report.

2.3.1 Population and distribution

HMOs are the cheapest form of private housing available and have traditionally been occupied by single adults. Pressure on affordable housing and higher rates of homelessness has driven up demand for this type of dwelling. Greater demand has resulted in growth in this sector across London over the last decade.

The total number of predicted HMOs across 23 wards is 5,031 properties (Figure 30). North Walworth has the highest concentration of HMOs (575).

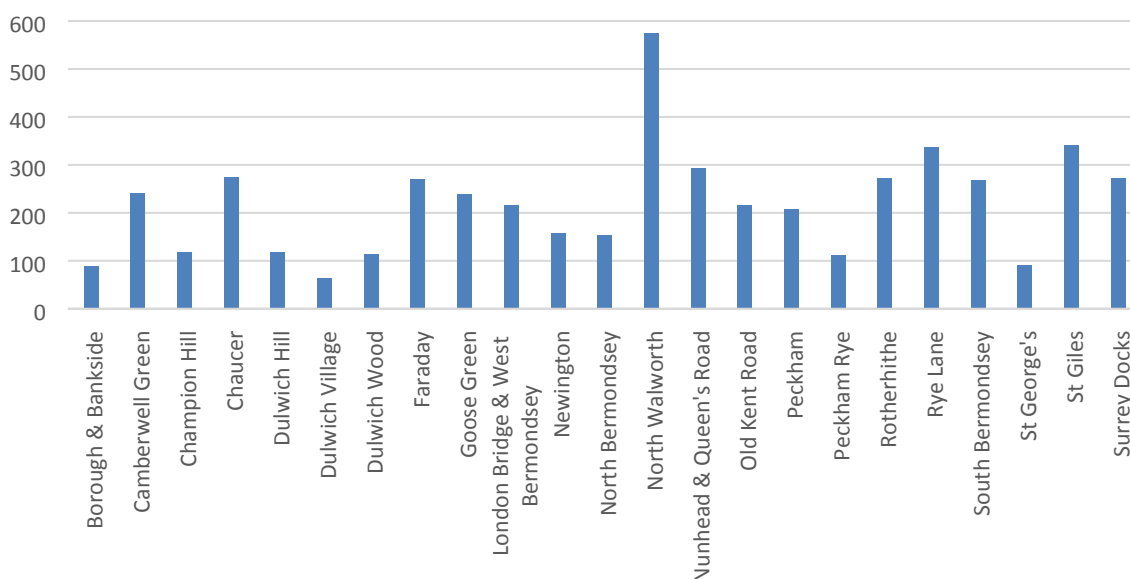
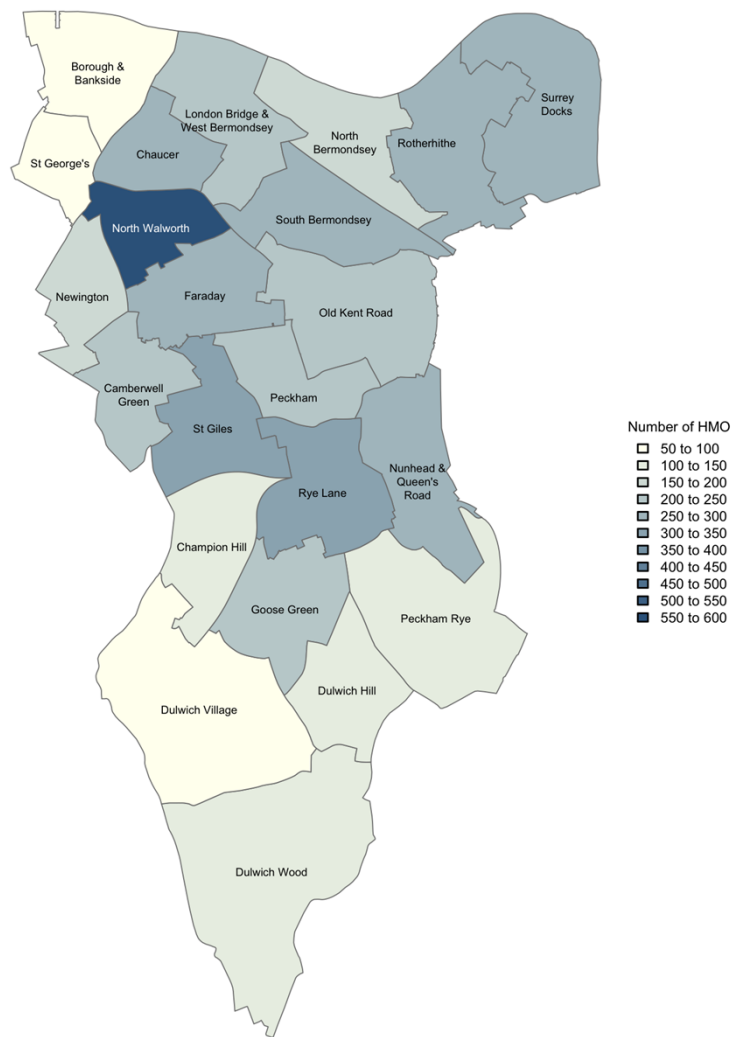


Figure 30. Number of HMOs by ward (Source Ti 2019)



Map 6: Distribution of HMOs (Source Ti 2019, map by Metastreet)

2.3.2 HMO & Housing conditions

HMOs have some of the poorest housing conditions of any tenure. Analysis shows that 4,342 of 5,031 (86.3%) HMOs in Southwark are predicted to have serious hazards (Category 1 HHSRS). HMOs are generally at higher risk of fire, disrepair and overcrowding.

The number of Category 1 hazards is highest in HMOs in North Walworth (322) (Figure 31). All wards have HMOs with Category 1 hazards.

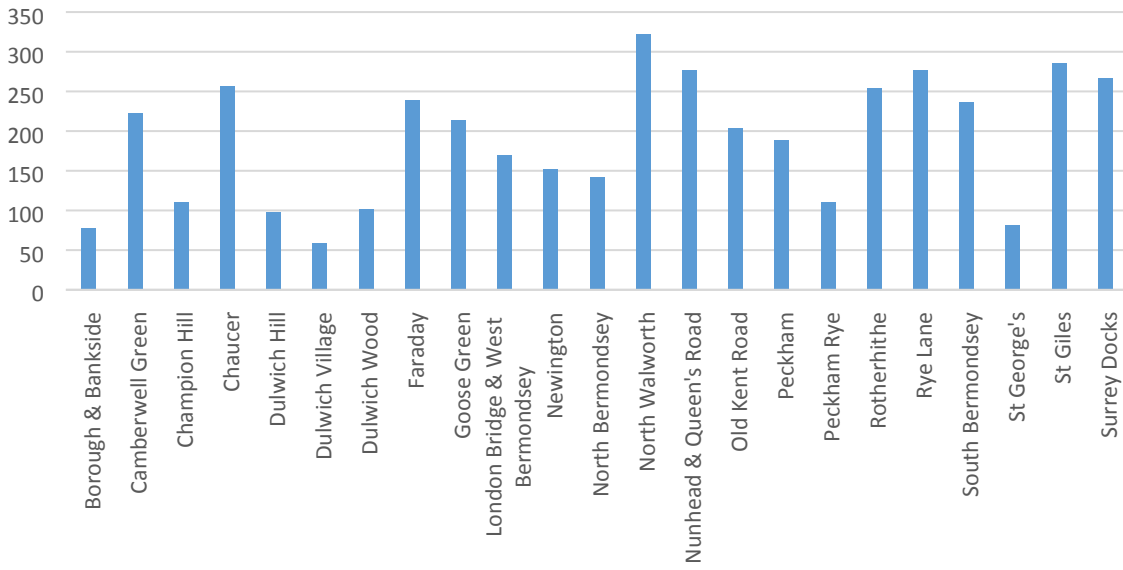
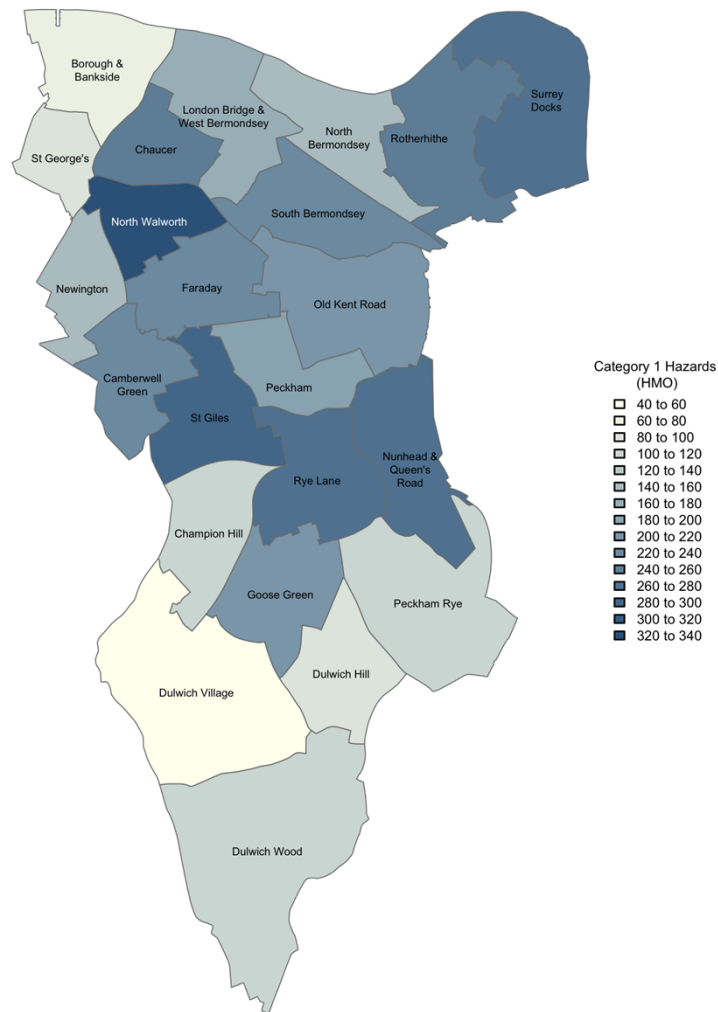


Figure 31. Predicted number of HMO with Category 1 hazards by ward (Source Ti 2019).



Map 7: Distribution of HMOs with Category 1 hazards (Source Ti 2019, map by Metastreet)

Figure 32 shows the level of service demand that HMOs place on the council, inspections and enforcement interventions to tackle housing hazards. 1,391 service requests relating to private housing were received over a 5-year period. This illustrates the large demand and costs that HMOs can place upon council services

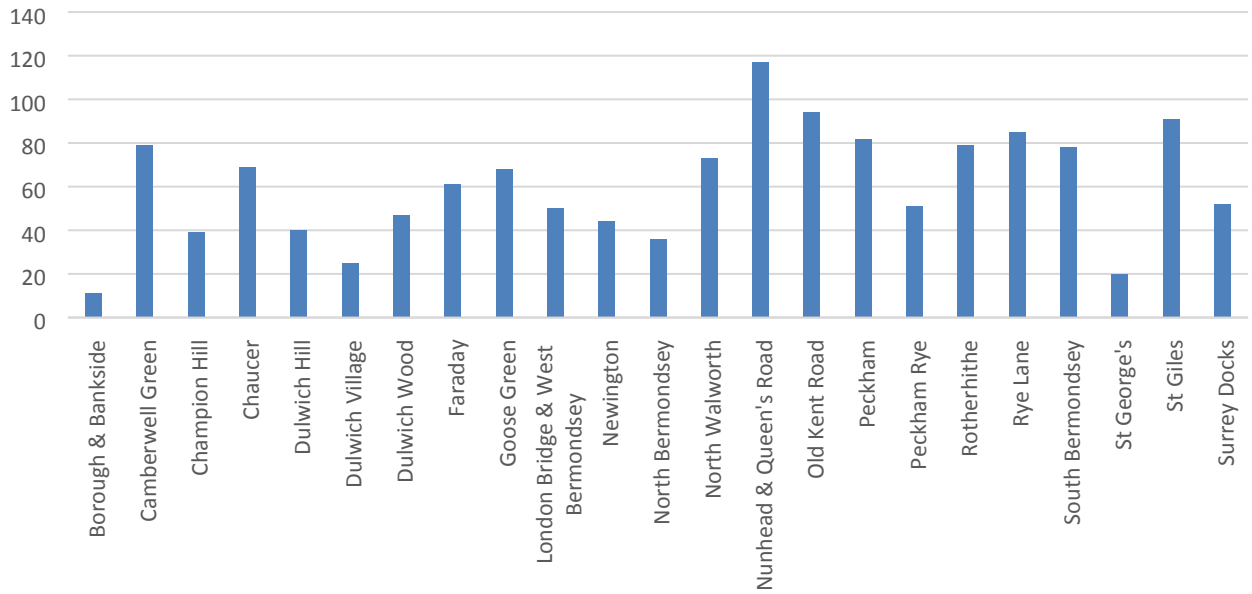


Figure 32. Service requests and interventions by ward linked to HMOs per 100 properties (Source Ti 2019).

Service requests and interventions linked to HMOs are distributed across all wards, Nunhead & Queen's Road has 117 incidents per 100 properties (Figure 33).

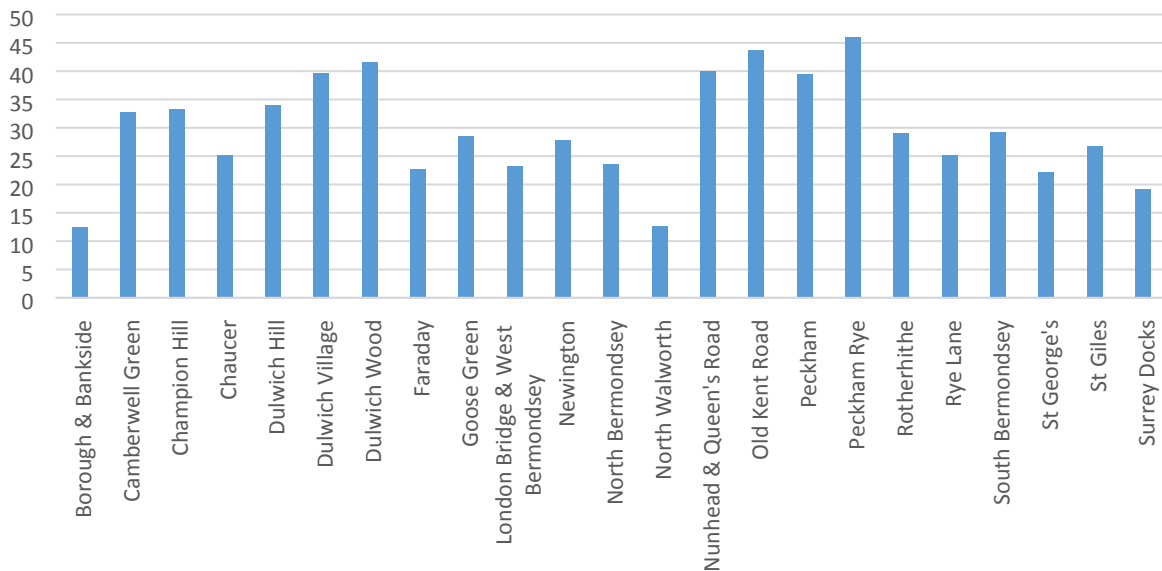


Figure 33. Rates of HMOs service requests and interventions made to council by ward per 100 properties (Source Ti 2019).

2.3.3 HMO & Anti-Social Behaviour

Figure 34 shows the number of ASB incidents associated with HMO premises (commercial and ASB incidents not linked to residential premises are excluded from these figures). ASB incidents investigated include; noise, verbal abuse, harassment, intimidation, nuisance animals, nuisance vehicles, drug cultivation and substance misuse, domestic violence, rubbish and fly tipping.

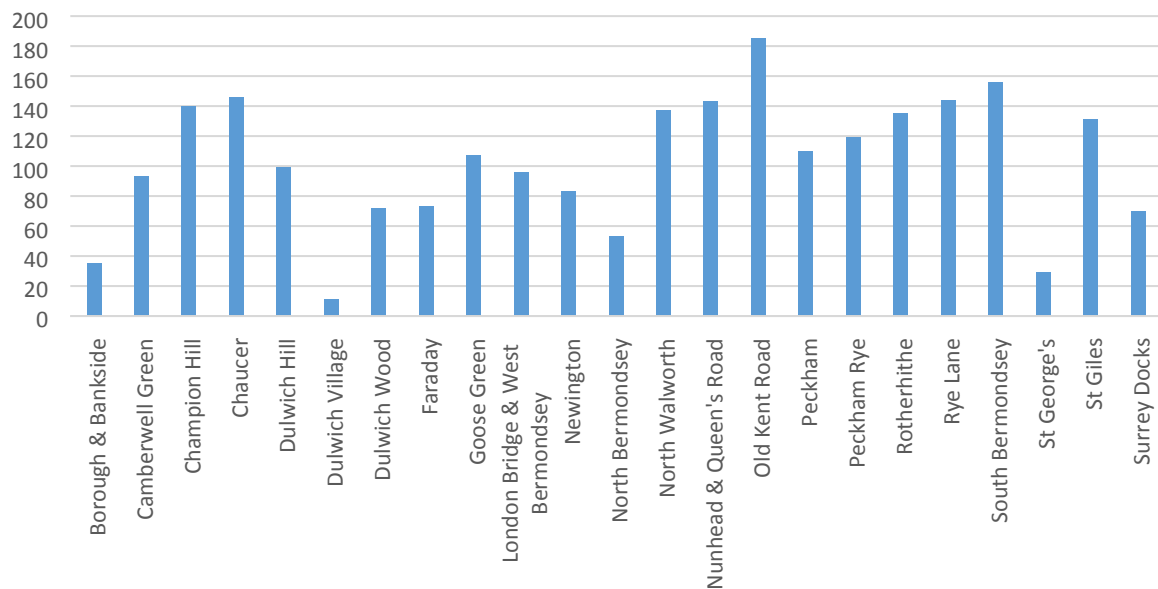


Figure 34. Number of ASB incidents linked to HMOs by ward (Source Ti 2019).

High level of ASB can be used as a proxy indicator of poor property management. HMO properties often have higher levels of transience which can result in higher waste production and ASB by tenants.

ASB incidence rates per 100 HMOs range between 120 (Champion Hill) and the lowest rates 17 (Dulwich Village). However, it also shows that ASB linked to HMOs occurs across all wards (Figure 35).

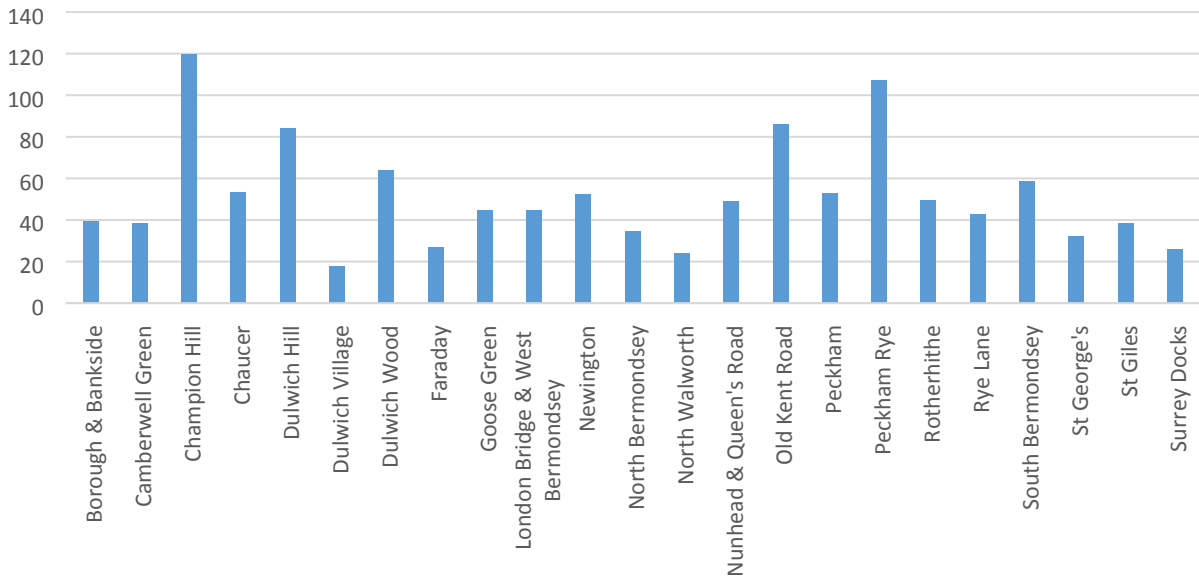
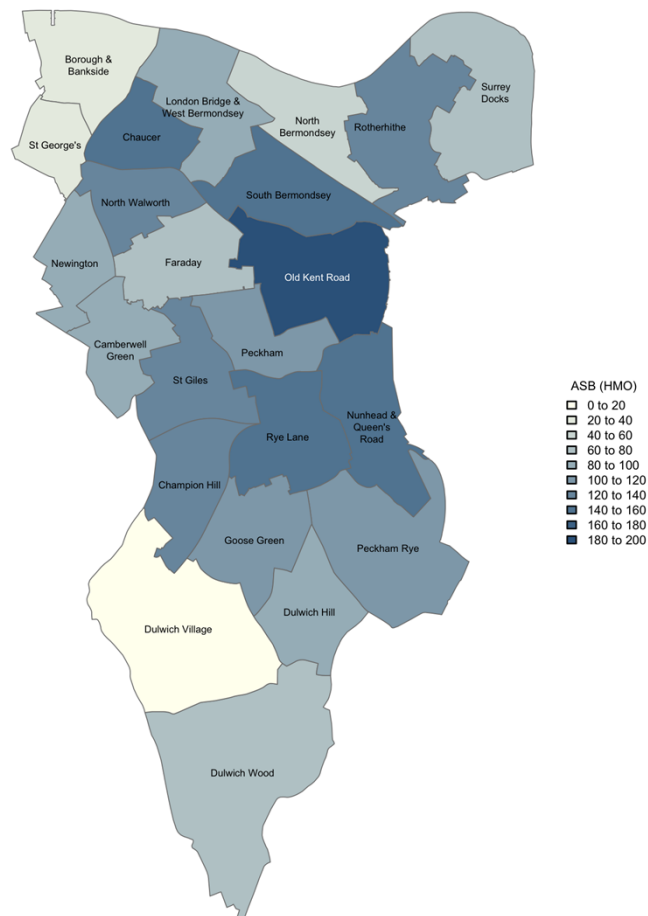


Figure 35. ASB linked to HMOs per 100 properties by ward (Source Ti 2019).



Map 8: Distribution of HMOs with ASB (Source Ti 2019, map by Metastreet)

3 Policy Context

3.1 PRS Strategy - London

Rapid PRS growth has been seen across London over the last 15 years. The policy response has generally been for greater regulation of the market through property licensing to mitigate some of the concerns that accompany large and growing PRS populations, including HMOs (Table 2).

Table 2. Overview of the PRS and property licensing across London.

Borough	No. PRS	% PRS	Selective Licensing (Y/N)	Additional Licensing (Y/N)	Notes
L.B. Haringey	43,775	40.2%	No	Yes	Additional licensing introduced in 2019 borough wide
L.B Newham	52,000	47%	Yes	Yes	Borough wide additional and selective licensing introduced in 2013, renewed in 2017 excluding Olympic Park area.
L.B. Havering	30,215	29%	No	Yes	Additional licensing introduced in 2018 in 12 of 18 wards
L.B. Croydon	58,585	35.6%	Yes	No	Borough wide selective licensing, due for renewal in 2020
L.B. Enfield	43,500	34%	No	No	Currently proposing a borough wide additional licensing and large selective scheme
L.B Barking and Dagenham	21,000	28%	Yes	No	Borough wide selective licensing introduced in 2014, Renewed in 2019
L.B. Waltham Forest	38,000	39%	Yes	No	Borough wide licensing introduced in 2015, currently under renewal
Westminster C.C.	55,784	44%	No	No	Currently no discretionary property licensing
L.B. Redbridge	30,000	30%	Yes	Yes	Borough wide additional and 78% Selective introduced in 2016

L.B. Islington	25,217	27%	No	No	Proposed borough wide additional and ward based selective
L.B. Brent	35,000	32%	Yes	Yes	Borough wide additional, ward based selective
L.B Camden	NA	32.2%	No	Yes	Borough-wide additional licensing
L.B Southwark	42,964**	29.4%	Yes	Yes	Borough wide additional, area based selective
L.B. Hammersmith & Fulham	NA	33%	Yes	Yes	Borough wide additional, area based selective

*Additional licensing - relates to small HMOs only (3 & 4 person) **Selective licensing - related to all private single-family dwellings ** Figures updated by this report

4 Conclusions

Southwark's PRS has grown steadily in recent years, from 19.8% (2006) to 29.4% (2019). The PRS in Southwark is distributed across all 23 wards (Figure 15 & Map 2).

There are a total of 146,112 residential properties in Southwark, 29.4% (42,964) of which are PRS, 34.8% (50,821) are owner occupied and 35.8% (52,327) socially rented (Figure 13).

Poor housing conditions are prevalent in the PRS. **8,497** PRS properties are predicted to have at least 1 serious hazard (Category 1, HHSRS). This represents 19.7% of the PRS stock, higher than the national average (14%). (Figure 19).

There are significant levels of ASB linked to private rented properties across the borough (Figure 26). Over the last 5-years, 8,431 ASB incidents in the PRS have been recorded. PRS properties are significantly more likely have an ASB incident compared to owner occupied properties. Most ASB incidents are domestic noise.

Southwark Council makes significant numbers of PRS interventions. (Figure 24 & Map 3). Council officers carried out 14,570 interventions in PRS properties over a 5-year period, this was made up of proactive visits and inspection after receiving a complaint. This resulted in 609 housing and public health notices. (Figure 23).

11% of PRS properties in Southwark have an E, F, and G rating. 2% of PRS properties have an F and G rating (Figure 22). Extrapolated to the entire PRS, 790 PRS properties are likely to fail the MEES statutory minimum requirement.

Southwark has some of the highest statutory homelessness rates in London (ranked 6, Figure 11). Southwark faces challenges relating to IMD, with 16 of 23 wards have aggregated IMD rankings below the national average. However, Southwark has better than average scores for evictions from rented property.

Southwark has 5,031 properties predicted to be HMOs (Figure 30 & Map 6). HMOs are distributed across all wards. HMOs as a subset of the PRS in Southwark have higher rates of ASB and Category 1 hazards.

Appendix 1 – Ward summaries

Table 3. Ward summary overview (Source Ti 2019).

Ward	Summary (All council data is 5 consecutive years, from April 2014 – March 2019)	
Borough & Bankside	Total residential stock	6381
	% PRS	29.5%
	No. PRS	1,880
	No. ASB incidents	188
	No. Category 1 hazards	204
Camberwell Green	Total residential stock	7,115
	% PRS	25.2%
	No. PRS	1,791
	No. ASB incidents	335
	No. Category 1 hazards	405
Champion Hill	Total residential stock	4,364
	% PRS	21.2%
	No. PRS	924
	No. ASB incidents	398
	No. Category 1 hazards	254
Chaucer	Total residential stock	7,090
	% PRS	31.8%
	No. PRS	2254
	No. ASB incidents	401
	No. Category 1 hazards	424
Dulwich Hill	Total residential stock	4,211
	% PRS	26.2%
	No. PRS	1,102
	No. ASB incidents	292
	No. Category 1 hazards	233
Dulwich Village	Total residential stock	4,059
	% PRS	16.0%
	No. PRS	649
	No. ASB incidents	162
	No. Category 1 hazards	157
Dulwich Wood	Total residential stock	4,546
	% PRS	29.2%
	No. PRS	1,326
	No. ASB incidents	327
	No. Category 1 hazards	249
Faraday	Total residential stock	5,530

	% PRS	32.4%
	No. PRS	1,794
	No. ASB incidents	205
	No. Category 1 hazards	419
Goose Green	Total residential stock	6,668
	% PRS	28.8%
	No. PRS	1,918
	No. ASB incidents	416
	No. Category 1 hazards	477
London Bridge & West Bermondsey	Total residential stock	8,453
	% PRS	27.2%
	No. PRS	2,303
	No. ASB incidents	473
	No. Category 1 hazards	347
Newington	Total residential stock	6,478
	% PRS	17.6%
	No. PRS	1,141
	No. ASB incidents	357
	No. Category 1 hazards	320
North Bermondsey	Total residential stock	8,448
	% PRS	28.9%
	No. PRS	2,441
	No. ASB incidents	345
	No. Category 1 hazards	322
North Walworth	Total residential stock	8,177
	% PRS	38.4%
	No. PRS	3,140
	No. ASB incidents	377
	No. Category 1 hazards	570
Nunhead & Queen's Road	Total residential stock	6,921
	% PRS	36.5%
	No. PRS	2,523
	No. ASB incidents	571
	No. Category 1 hazards	578
Old Kent Road	Total residential stock	7,469
	% PRS	30.8%
	No. PRS	2,297
	No. ASB incidents	461
	No. Category 1 hazards	388
Peckham	Total residential stock	6,003
	% PRS	30.1%
	No. PRS	1,807

	No. ASB incidents	400
	No. Category 1 hazards	354
Peckham Rye	Total residential stock	4,345
	% PRS	33.1%
	No. PRS	1,438
	No. ASB incidents	330
	No. Category 1 hazards	278
Rotherhithe	Total residential stock	7,428
	% PRS	30.3%
	No. PRS	2,247
	No. ASB incidents	457
	No. Category 1 hazards	457
Rye Lane	Total residential stock	6,781
	% PRS	33.3%
	No. PRS	2,258
	No. ASB incidents	402
	No. Category 1 hazards	495
South Bermondsey	Total residential stock	7,331
	% PRS	35.7%
	No. PRS	2,617
	No. ASB incidents	529
	No. Category 1 hazards	459
St George's	Total residential stock	4,513
	% PRS	23.4%
	No. PRS	1,055
	No. ASB incidents	154
	No. Category 1 hazards	145
St Giles	Total residential stock	7,288
	% PRS	29.2%
	No. PRS	2,126
	No. ASB incidents	544
	No. Category 1 hazards	555
Surrey Docks	Total residential stock	6,513
	% PRS	29.7%
	No. PRS	1,933
	No. ASB incidents	307
	No. Category 1 hazards	407

Ward	No. HMOs	No. Category 1 hazards	No. ASB incidents
Borough & Bankside	89	77	35
Camberwell Green	241	222	93
Champion Hill	117	110	140
Chaucer	274	257	146
Dulwich Hill	118	98	99
Dulwich Village	63	59	11
Dulwich Wood	113	102	72
Faraday	270	239	73
Goose Green	239	214	107
London Bridge & West Bermondsey	216	170	96
Newington	158	152	83
North Bermondsey	153	142	53
North Walworth	575	322	137
Nunhead & Queen's Road	293	277	143
Old Kent Road	215	203	185
Peckham	208	188	110
Peckham Rye	111	110	119
Rotherhithe	272	254	135
Rye Lane	337	277	144
South Bermondsey	267	236	156
St George's	90	81	29
St Giles	340	286	131
Surrey Docks	272	266	70

Table 4. Ward HMO summary data (Source Ti 2019).

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

This Appendix explains at a summary level Metastreet’s Tenure Intelligence (Ti) methodology (Figure 36).

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 Southwark 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.

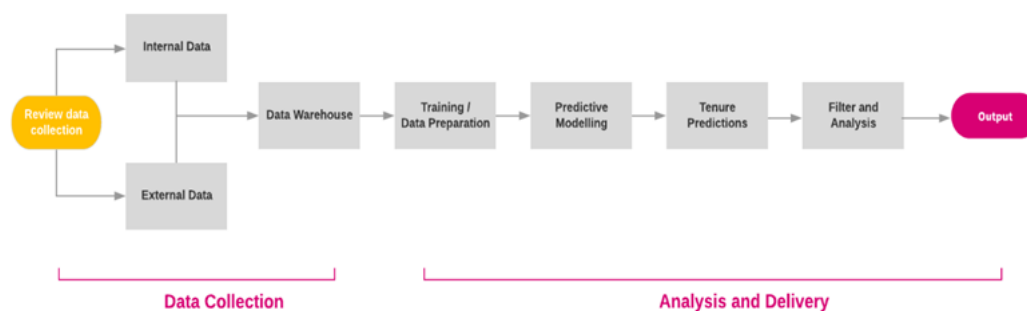


Figure 36. Summary of Metastreet Tenure Intelligence methodology.

Methodology

Metastreet has worked with Southwark Council to create a residential property data warehouse based on a detailed specification. This has included linking approximately 8 million cells of data to 164,378 unique property references, including council and externally sourced data. All longitudinal council held data is 5 consecutive years, from April 2014 – March 2019

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 Southwark, they include:

- Owner occupiers
- Private rented sector (PRS)
- Houses in Multiple occupation (HMO)
- 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 4 categories described above. Practitioner skill and experience with the data and subject matter is used to achieve the most accurate tenure split.

It is important to note that this approach cannot be 100% accurate as all mathematical models include error for a range of reasons. The D^2 value is one measure of model “effectiveness”. The true test of predictions is field trials by the private housing service. However, error is kept to a minimum through detailed post analysis filtering and checking to keep errors to a minimum.

A continuous process of field testing and model development is the most effective way to develop accurate tenure predictions.

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.

Owner occupier model

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 73% (Table 5).

Table 5. Owner occupier predictive factors.

Risk factors selected	<u>Pr(>Chi)*</u>
No. of accounts in 5 years	0.0009172
Liabile address same as responsible	1.109e-10
Mosaic Public Sector 6 Type	0.0009484
EPC transaction type	4.679e-11
Earliest year of current electors	0.0964847
Training data, n= 386	
D ² test = 0.73**	

* Pr(>Chi) = Probability value/null hypothesis test, ** D² 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 6).

Table 6. PRS predictive factors.

Risk factors selected	Pr(>Chi)
Mosaic Public Sector 6 Type	0.0009484

No. of accounts in 5 years	0.0009172
Tenancy deposit	0.0291487
HB claims last 3 years	0.0291487
LBS interventions	2.2e-16
Training data, n= 386	
D ² test = 0.86	

HMO (House in Multiple Occupation) model

This model predicts the likelihood that a UPRN will be a HMO (Table 7). Each of the 5 model terms is statistically significant and the overall model has a “predictive capacity” of around 75%.

Table 7. HMO predictive factors.

Risk factors selected	Pr(>Chi)
LBS interventions	0.0027080
Ctax number of liable occupants	0.0074888
Electors in 5 years	1.966e-09
Ctax liability order	8.621e-11
EPC no. habitable rooms	2.2e-16
Training data, n= 519	
D ² test = 0.745	

Category 1 (HHSRS) hazards model

Numerous properties where the local housing authority has taken action to address serious hazards were sampled for training data, including poor housing conditions. Specifically, this included Housing Act 2004 Notices served on properties to address Category 1 hazards. The model results show that each of the model terms is statistically significant, with the overall model having a “predictive capacity” of around 83% (Table 8).

Table 8. Category 1 (HHSRS) hazard predictive factors.

Risk factors selected	<u>Pr (>Chi)</u>
HB claims last 3 years	0.0069933
EPC heating cost current	0.0033476
LBS interventions	1.390e-06
Ctax liability order	2.876e-08
Ctax balance all liabilities	0.0004409
Training data, n= 338	
D ² test = 0.83	

Version, Final

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