Appendix D Borough profiles

CONTENTS

North Boroughs

Page to be read in parallel with main report chapters 1 and 2

CAMDEN

Decarbonisation Pathway

This page provides a summary of the technologies chosen for the Net Zero 2040 scenario and recommendations. Key projects and recommendations are subject to the information available at the subregional level. Expected to be further evaluated and refined through Phase 2 LAEP and/or future feasibility stages.

Fabric retrofit (all domestic)

80% of total properties having some retrofit. Flats are the most common buildings flagged for fabric improvement - with 78,600 properties out of the 88,100 total retrofits being flats.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
52	12,100	264m

Fabric retrofit (social domestic)

For social housing 93% of properties are flagged for needing some retrofit - with 27,200 being flats and 1,400 houses.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
9	2,200	40m

Heat network and communal

Heat networks and communal systems are key - with 68,500 and 16,200 properties connecting respectively.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
1,700	245,200	1,002m

Heat pump

Heat pumps focus in less heat dense areas, with 35,300 property level.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
393	83,600	337m

Rooftop PV

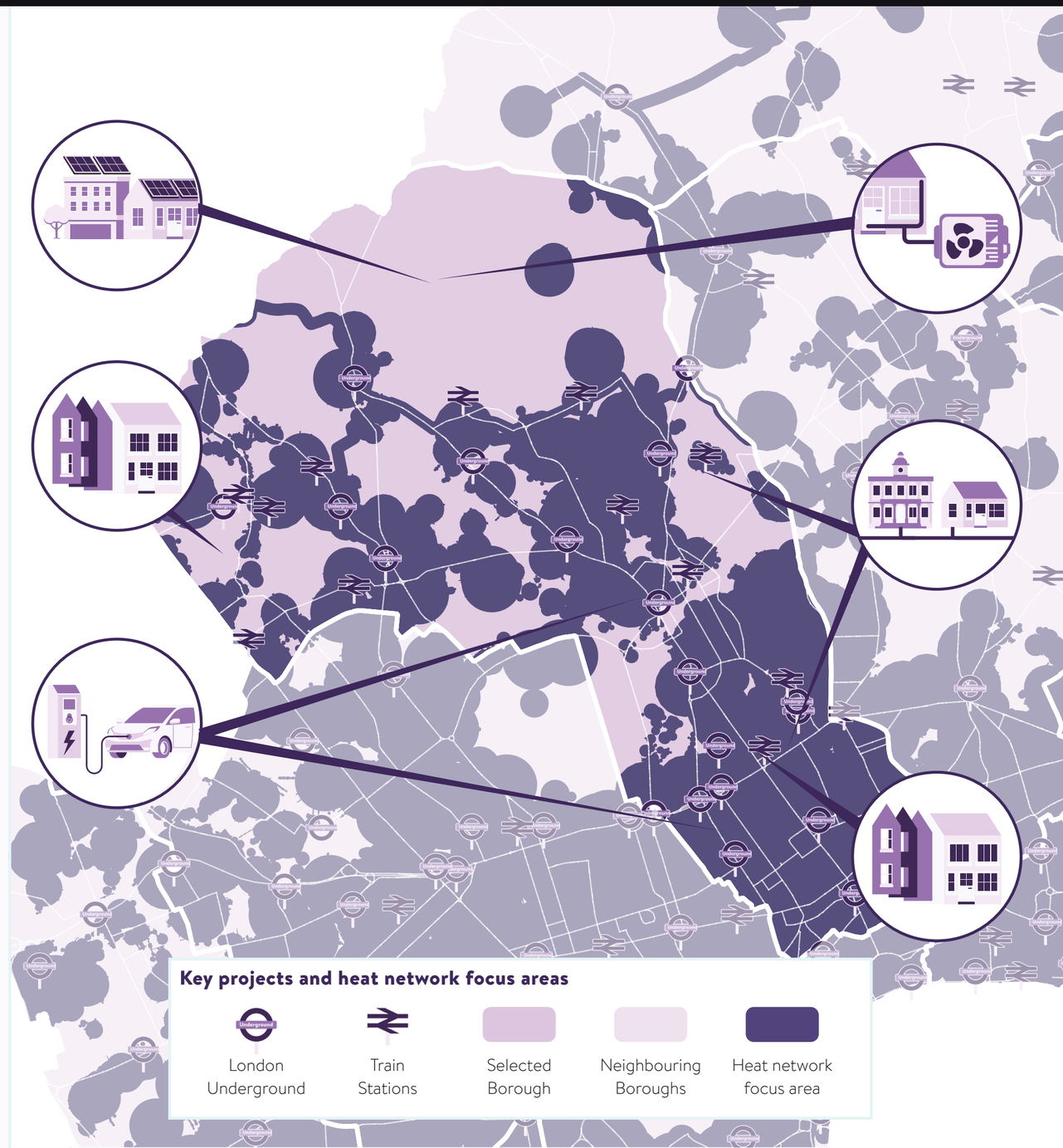
There is 267 MW of rooftop PV potential of this 60 MW is deployed in the scenario.

Electricity Generated (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
56	883	95m

EV charging

8,200 domestic properties have access to off street charging. 3,900 onstreet chargers are required.

Capacity (MW per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
179	53,400	29m



CAMDEN

Borough Key Projects*

Heat network

Tottenham Court Road area to Camden Town: High heat density areas that could benefit from the transmission of waste heat sources from across the borough boundaries.

Fabric retrofit (all)

Good opportunity for demand reduction – this should be linked to typologies and council-owned assets to provide an initial pipeline. Flats present the largest single opportunity and have the benefit of being scalable. High density identified around Camden Town and Kentish Town. Also, good opportunity in the north of the brough, where there is a higher prevalence of houses rather than flats.

On street EV charging

On-street charging needed across the borough with a particular focus in the centre of the borough (Camden Town, Euston areas).

Rooftop PV & domestic heat pump

In the north part of the borough (Hampstead), domestic properties are more likely to have PV, individual heat pumps, and access to off-street charging, and large properties also increase the potential for property-level storage. These areas have good opportunities for electricity network flexibility and could be focused on in a **Phase 2 LAEP**.

*For more on key projects please refer to the map on **Decarbonisation Pathway** and main report chapters 4 and 5.

Further Recommendations

- Electrification is high in all scenarios, meaning plans should not be considered in isolation – due to the interconnected nature of the electricity network. UKPN engagement will become increasingly important.
- For inner boroughs like Camden, the subregional decarbonisation strategy has a focus on large-scale heat networks. The heat network analysis and North London Heat Network Study identifies a good opportunity for a subregional heat network delivery partnership to enable the transmission of heat across the subregion. The collaboration could include Enfield, Haringey, Waltham Forest, Hackney, Islington and Camden.

- Large opportunity for heat networks with Phase 2 to explore the cross-borough context for heat transmission. Somers Town funding from DESNZ for AZP.
- For out of borough waste heat, Enfield is the most important borough for Camden - given the potential scale of waste heat from Energetik with the North London Waste Authority heat network study identifying this collaboration.
- Existing communal systems represent an early opportunity for decarbonisation, either through heat networks or building level heat pumps. These are spread throughout the borough, those in the south and in Camden Town centre will tend to connect to heat networks. Areas in the north west tip and north west are more likely to select building level communal systems.
- New communal systems outside of the primary heat network areas are low regrets, allowing earlier decarbonisation than a heat network connection.
- Good opportunity for demand reduction – this should be linked to typologies and council-owned assets to provide an initial pipeline. Flats present the largest single opportunity and have the benefit of being scalable in deployment.

Borough recommendations

Subregion recommendations

TOWER HAMLETS

Decarbonisation Pathway

This page provides a summary of the technologies chosen for the Net Zero 2040 scenario and recommendations. Key projects and recommendations are subject to the information available at the subregional level. Expected to be further evaluated and refined through Phase 2 LAEP and/or future feasibility stages.

Fabric retrofit (all domestic)

68% of total properties having some retrofit. Flats are the most common buildings flagged for fabric improvement - with 83,600 properties out of the 93,000 total retrofits being flats.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
31	7,200	97m

Fabric retrofit (social domestic)

For social housing 87% of properties are flagged for needing some retrofit - with 29,000 being flats and 3,500 houses.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
12	2,900	24m

Heat network and communal

Heat networks and communal systems are key - with 97,200 and 19,000 properties connecting respectively.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
1,334	215,200	944m

Heat pump

Heat pumps focus in less heat dense areas, with 24,700 property level.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
223	45,700	231m

Rooftop PV

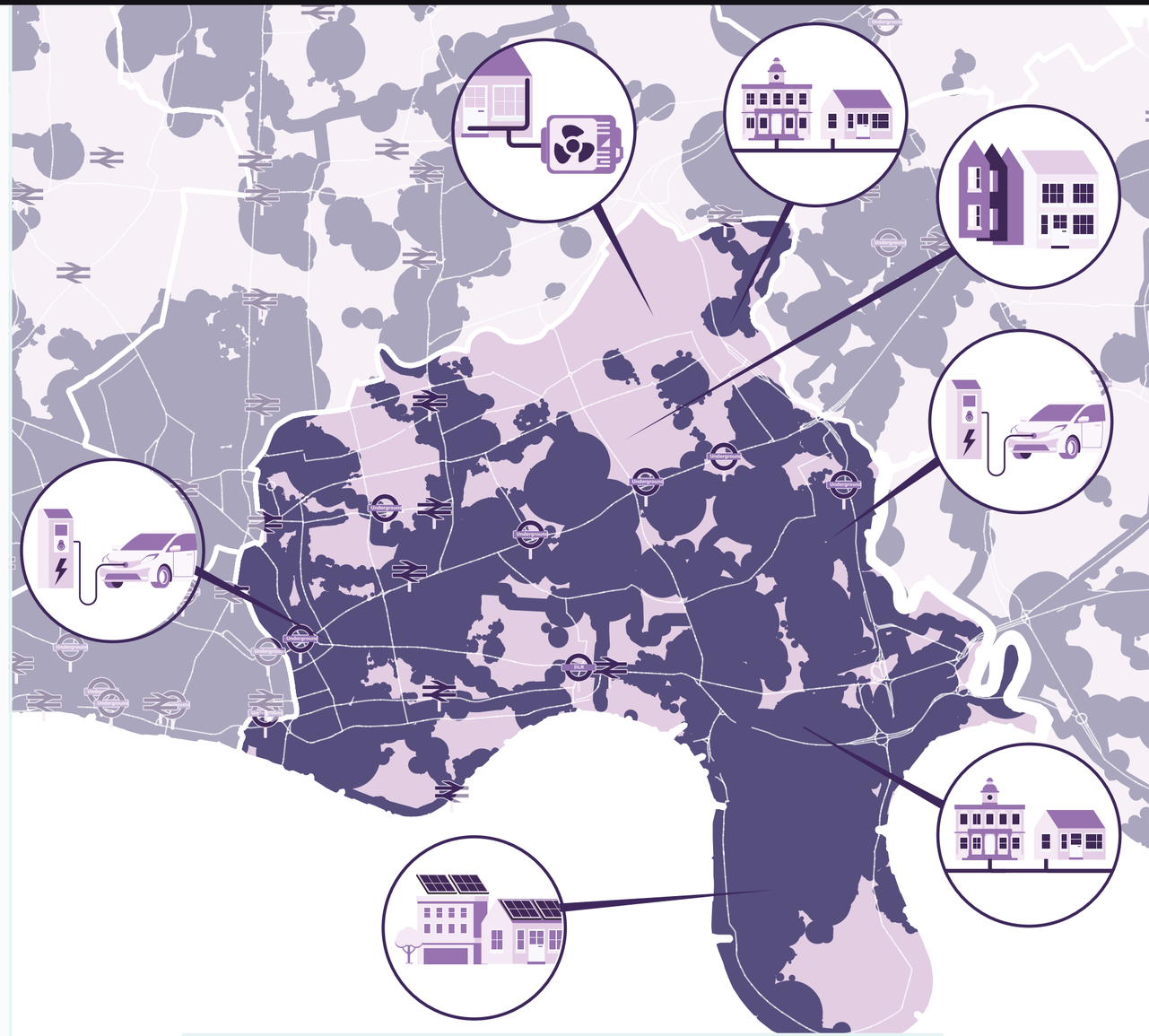
There is 289 MW of rooftop PV potential of this 57 MW is deployed in the scenario.

Electricity Generated (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
52	833	85m

EV charging

4,800 domestic properties have access to off street charging. 3,900 onstreet onstreet chargers are required.

Capacity (MW per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
188	100,800	38m



TOWER HAMLETS

Borough Key Projects*

Heat network

Large opportunity for heat networks with Phase 2 to explore the cross-borough context for heat transmission. In the near term, the development of the E14 network, using waste heat from data centres, will be a valuable evidence base for similar networks at a subregional/regional level.

Fabric retrofit (domestic)

More focused in the north, such as the area north of Mile End station.

On street EV charging

On-street charging to be spread throughout the borough with Whitechapel Rd and Commercial Rd (through the middle of the borough) being good initial focus areas due to a high need for chargers and network headroom (based on UKPN data).

Rooftop PV & domestic heat pump

Similar levels of PV deployment across the borough, early deployment in the west of the Isle of Dogs is highlighted as an early opportunity due to the network being more constrained in the summer. Some opportunities flagged in houses on the Isle of Dogs but greatest focus in more northerly areas, such as the south of Victoria Park.

*For more on key projects please refer to the map on **Decarbonisation Pathway** and main report chapters 4 and 5.

Further Recommendations

- Electrification is high in all scenarios, meaning plans should not be considered in isolation – due to the interconnected nature of the electricity network. UKPN engagement will become increasingly important as projects develop. Tower Hamlets are already actively engaged with UKPN over spatial constraints for upgrades in the Isle of Dogs. There could be valuable lessons from this in a subregional context. Increased electrification and heat network deployment will make this issue more common, particularly for inner boroughs.
- For inner boroughs, like Tower Hamlets, the subregional decarbonisation strategy has a focus on large scale heat networks, with heat being transmitted from waste heat sources across borough boundaries necessary to high heat density areas in inner boroughs **(such as those along Whitechapel Rd)**. The North London Waste Authority, GLA, and many of the other boroughs are key to engage on this topic.
- Funding will be key to unlock the scale of transition needed, a broader cross-borough approach is required for this with DESNZ grants and funding for the large-scale strategy being an enabler. The plan can also form a lobbying document to focus long term central support.
- Like many central boroughs Tower Hamlets has a high prevalence of flats, which require shallow fabric improvement and connection to central heat sources **(either communal or heat networks)**.

- For heat networks collaboration is key, particularly with City of London, Westminster, Islington, Camden and Hackney for links to central boroughs. Newham and Enfield could bring significant sources of waste heat to Tower Hamlets.
- In the near term the London Legacy Development Corporation **(and Newham)** are key for Tower Hamlets benefiting from expansion of the Olympic Park heat network. Heat from the Thames **(potentially making use of the docks)** should be considered. There is also a general opportunity to decarbonise existing networks, such as the Barkantine scheme.
- Tower Hamlets is one of the key strategic boroughs for subregional heat networks due to both high heat demand density areas and its location. This bridges inner and outer boroughs – meaning there are push factors for heat networks in terms of heat source **(waste heat available in Newham, Enfield for example)** and pull from high demands in Tower Hamlets and other central boroughs.
- Electricity network flexibility opportunities explored in Phase 2, focused on north part of borough where heat networks are less of a priority. Enablers such as more suitable typologies of domestic properties and off-street charging are present.
- Good opportunity for demand reduction – this should be linked to typologies and council owned assets **(to provide an initial pipeline)**. Flats present the largest single opportunity and have the benefit of being scalable.

Borough recommendations

Subregion recommendations

ISLINGTON

Decarbonisation Pathway

This page provides a summary of the technologies chosen for the Net Zero 2040 scenario and recommendations. Key projects and recommendations are subject to the information available at the subregional level. Expected to be further evaluated and refined through Phase 2 LAEP and/or future feasibility stages.

Fabric retrofit (all domestic)

77% of total properties having some retrofit. Flats are the most common buildings flagged for fabric improvement - with 71,200 properties out of the 83,000 total retrofits being flats.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
41	9,500	220m

Fabric retrofit (social domestic)

For social housing 93% of properties are flagged for needing some retrofit - with 29,800 being flats and 2,500 houses.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
11	2,600	46m

Heat network and communal

Heat networks and communal systems are key - with 55,500 and 17,000 properties connecting respectively.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
889	147,200	638m

Heat pump

Heat pumps focus in less heat dense areas, with 40,500 property level.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
366	77,900	377m

Rooftop PV

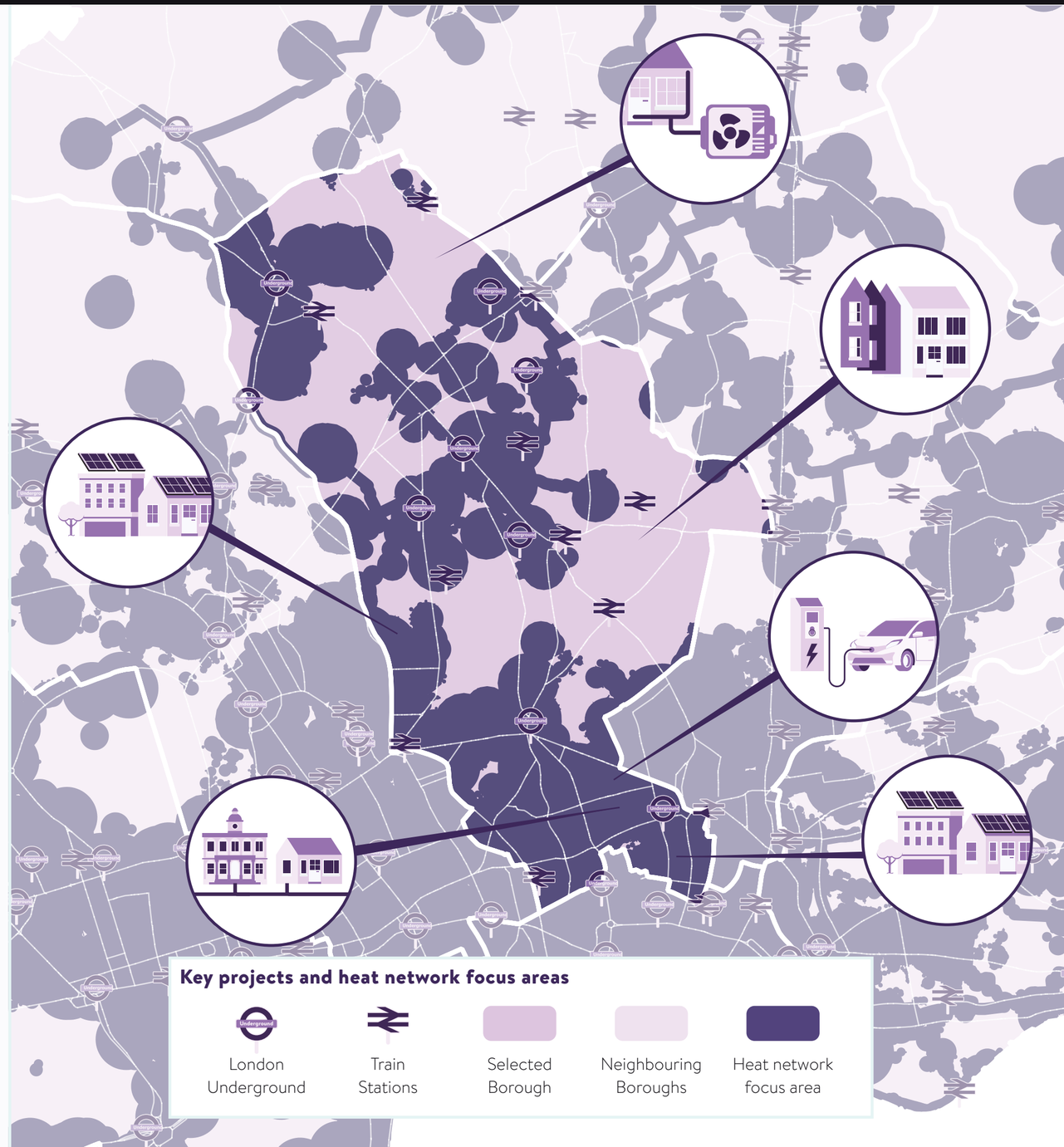
There is 257 MW of rooftop PV potential of this 59 MW is deployed in the scenario.

Electricity Generated (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
54	856	94m

EV charging

3,700 domestic properties have access to off street charging. 3,600 onstreet onstreet chargers are required.

Capacity (MW per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
129	44,400	19m



ISLINGTON

Borough Key Projects*

Heat network

Large opportunity for heat networks, Phase 2 to explore the cross-borough context for heat transmission. These should be examined as part of the ongoing AZP work. For heat networks continued collaboration is key, particularly with City of London and Hackney for the Bunhill and Citigen extensions.

Fabric retrofit (domestic)

Fabric improvement is spread throughout the borough but with the greatest focus in the central eastern area.

On street EV charging

On-street charging spread across the borough with a particular focus on the southeast border with Hackney. UKPN data indicates headroom for chargers in this area.

Rooftop PV

Opportunities spread across the borough. West of Caledonian Road & Barnsbury station is a focus (due to large non-domestic buildings) and the south to offset constraint on the grid from a supply side in the summer.

Domestic heat pump

There are individual heat pump opportunities as well spread across the borough north of Regent's Canal. These opportunities for property level heat pumps align to terraced houses, however, align poorly to social/borough ownership housing so will be challeng-ing as a near term action.

*For more on key projects please refer to the map on **Decarbonisation Pathway** and main report chapters 4 and 5.

Further Recommendations

- For inner boroughs, like Islington, the subregional decarbonisation strategy has a focus on large scale heat networks. With heat being transmitted from waste heat source across borough boundaries to high heat density areas in inner boroughs **(such as Farringdon to Angel)**. The heat network analysis and North London Heat Network Study identifies a good opportunity for a subregional heat network delivery partnership to enable the transmission of heat across the subregion. The collaboration could include Enfield, Haringey, Waltham Forest, Hackney, Islington and Camden, among others. Funding will be key to unlock the scale of transition needed, a broader cross-borough approach is required for this with DESNZ grants and funding for the large-scale strategy being an enabler. The plan can also form a lobbying document to focus long term central support.
- Like many central boroughs Islington has a high prevalence of flats, which require shallow fabric improvement and connection to central heat sources **(either communal or heat networks)**.

- In the wider subregion the high heat demand density focused around Islington, City of London, Hackney, Camden, Westminster and Tower Hamlets makes collaboration between these boroughs key.
- For out of borough waste heat Enfield is the most important boroughs for Islington given the potential scale of waste heat from Energetik, but there is also demand from other boroughs for this heat source. Continued exploration of opportunities for heat transmission from Barking should also be explored. The scale of demand for inner boroughs multiple heat sources will be required. The AZP work means Islington is well placed in Phase 2 to inform wider subregional decisions relating to these sources.
- Existing communal systems represent an early opportunity for decarbonisation, either through heat networks or building level heat pumps. New communal systems outside of the primary heat network areas are low regrets, allowing earlier decarbonisation than heat network connection.
- Good opportunity for demand reduction – this should be linked to typologies and council owned assets **(to provide an initial pipeline)**. Flats present the largest single opportunity and have the benefit of being scalable. This retrofit should be considered alongside heating system retrofit – to reduce overall disruption time.

Borough recommendations

Subregion recommendations

WALTHAM FOREST

Decarbonisation Pathway

This page provides a summary of the technologies chosen for the Net Zero 2040 scenario and recommendations. Key projects and recommendations are subject to the information available at the subregional level. Expected to be further evaluated and refined through Phase 2 LAEP and/or future feasibility stages.

Fabric retrofit (all domestic)

63% of total properties having some retrofit. Flats are the most common buildings flagged for fabric improvement - with 29,900 properties out of the 66,800 total retrofits being flats.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
44	10,300	360m

Fabric retrofit (social domestic)

For social housing 79% of properties are flagged for needing some retrofit - with 10,700 being flats and 5,800 houses.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
5	1,200	20m

Heat network and communal

Heat networks and communal systems are key - with 11,700 and 8,900 properties connecting respectively.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
327	54,700	237m

Heat pump

Heat pumps focus in less heat dense areas, with 84,900 property level.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
832	174,400	797m

Rooftop PV

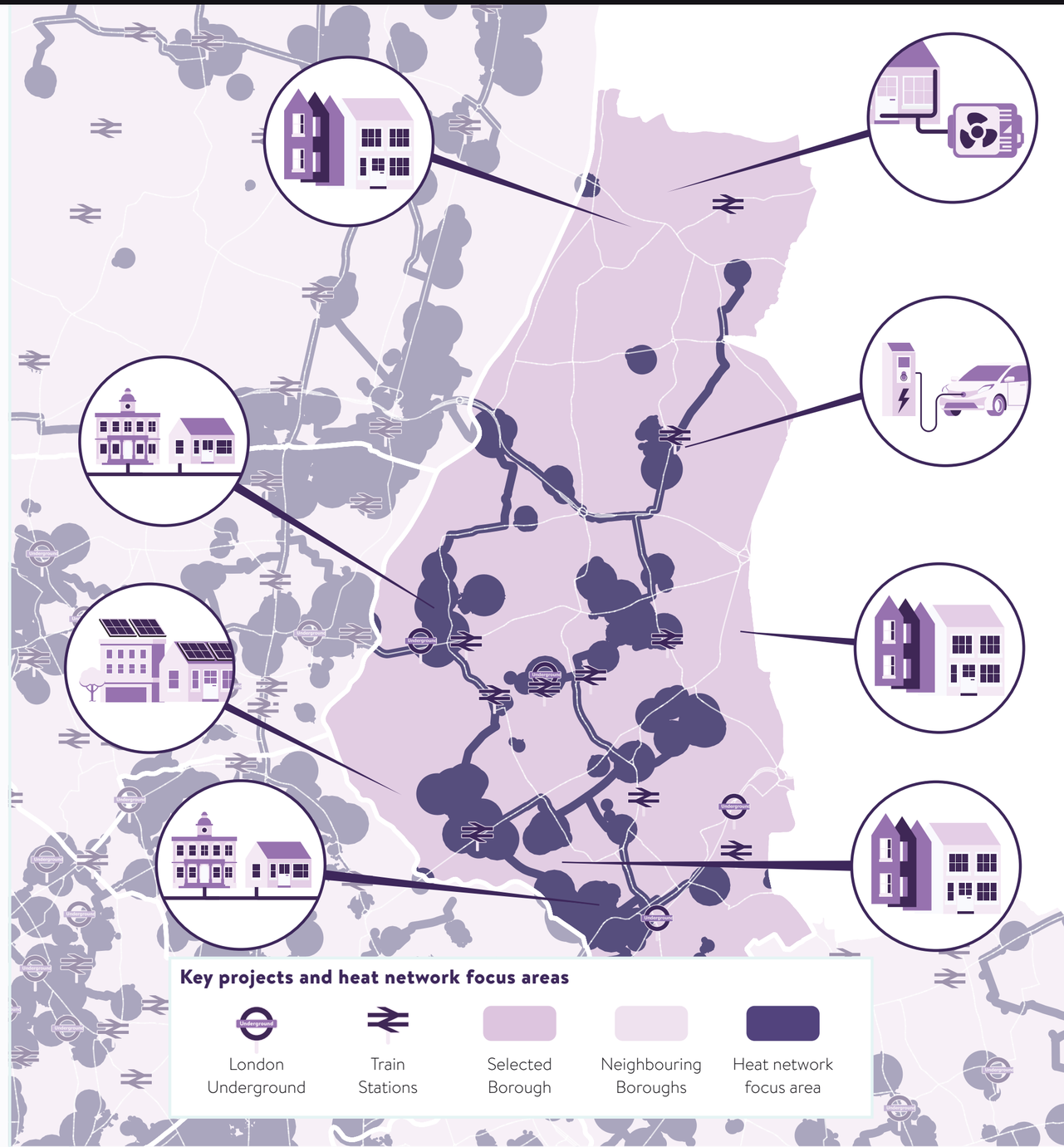
There is 486 MW of rooftop PV potential of this 153 MW is deployed in the scenario.

Electricity Generated (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
141	2,200	277m

EV charging

16,300 domestic properties have access to off street charging. 4,100 onstreet onstreet chargers are required.

Capacity (MW per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
277	98,100	46m



WALTHAM FOREST

Borough Key Projects*

Heat network

Heat networks - Phase 2 should confirm the preferred strategy for Energetik. This includes strategic engagement at a suberegional level in addition to a preferred option for Waltham Forest.One of the more developed options runs past the Banbury Reservoir along Blackhorse Lane connecting new developments, toward Lea Bridge and connecting to Olympic Park.

Fabric retrofit (domestic)

Early fabric improvement focuses on the south of the borough (due to fuel poverty). This is focused on the private sector, with private rented flats being the most common for retrofit. The highest total improvement is in the north and east of the borough – to allow property level heat pumps to function effectively.

On street EV charging

On street EV charging focuses in a line up the centre of the borough as far as Chingford.

Rooftop PV

Areas in the central west side of the borough are a priority for solar to offset grid constraint. Opportunities include rooftop PV (both domestic and large industrial units) and floating solar on reservoirs.

Domestic heat pump

Heat pumps are a common solution identified across Waltham Forest particularly dominant in the north of the borough and in the east along the forest.

*For more on key projects please refer to the map on **Decarbonisation Pathway** and main report chapters 4 and 5.

Further Recommendations

- From a subregional perspective Waltham Forest is strategically important for heat networks. Being next to Enfield it is close to the largest waste heat source in the subregion – which provides good heat network opportunities for Waltham Forest. How this aligns to a broader strategy for where this heat is transmitted should be considered at a subregional level. The heat network analysis and North London Heat Network Study identifies a good opportunity for a subregional heat network delivery partnership to enable the transmission of heat across the subregion. The collaboration could include Enfield, Haringey, Waltham Forest, Hackney, Islington and Camden.
- Funding will be key to unlock the scale of transition needed, a broader cross-borough approach is required for this with DESNZ grants and funding for the large-scale strategy being an enabler. The plan can also form a lobbying document to focus long term central support.

Borough recommendations

Subregion recommendations

- Other heat network opportunities flagged that would be a priority for Phase 2 are based around Highams Park, Waltham Forest College, Whips Cross Hospital.
- Apart from the Whips Cross Hospital area the priority heat network areas all have a substantial number of communal systems which could connect. Others are spread throughout the borough and the modelling outputs indicate areas which already have communal systems are going to be those prioritized for other properties to switch to a communal solution.
- A substantial number of Thames Water sites that could be suitable heat sources are flagged in the borough. These should be explored in Phase 2 as the heat available from Energetik **(particularly when other borough ambitions are taken into account)** is unlikely to be sufficient for all of Waltham Forest's heat network demands.
- The south-west corner also contains a large number of houses suitable for heat pumps but the potential for heat networks in the area means this decision is not as clear cut as properties in the north and is thus not considered a priority. Phase 2 should carry out local analysis, in combination with considering funding schemes, to finalise focus areas for heat pumps and communal systems.
- With fabric retrofit of flats there should be an effort to coordinate with heating system decarbonisation **(generally through communal heat pump)** to minimise total disruption time and cost.
- UKPN substation data indicates there is headroom in most of the potential areas for heat pumps, apart from the Chingford Mount area where capacity is limited. This constraint appears to be based around summer demand so capacity may be available for heat pumps. Consequently, engaging UKPN is seen as a key focus for enabling heat pump and other electrification options in the area in the near term.
- Electricity network flexibility opportunities should be explored in Phase 2 alongside property level decarbonisation solutions. There are few immediate flexibility opportunities flagged by UKPN aligning to relatively strong grid capacity. These will focus alongside property level heat pumps, with the north of the borough identified as a strong opportunity.

RBKC

Decarbonisation Pathway

This page provides a summary of the technologies chosen for the Net Zero 2040 scenario and recommendations. Key projects and recommendations are subject to the information available at the subregional level. Expected to be further evaluated and refined through Phase 2 LAEP and/or future feasibility stages.

Fabric retrofit (all domestic)

84% of total properties having some retrofit. Flats are the most common buildings flagged for fabric improvement - with 63,200 properties out of the 73,200 total retrofits being flats.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
53	12,500	294m

Fabric retrofit (social domestic)

For social housing 93% of properties are flagged for needing some retrofit - with 14,800 being flats and 600 houses.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
6	1,300	26m

Heat network and communal

Heat networks and communal systems are key - with 48,700 and 17,700 properties connecting respectively.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
1,100	185,700	844m

Heat pump

Heat pumps focus in less heat dense areas, with 24,400 property level.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
334	71,500	231m

Rooftop PV

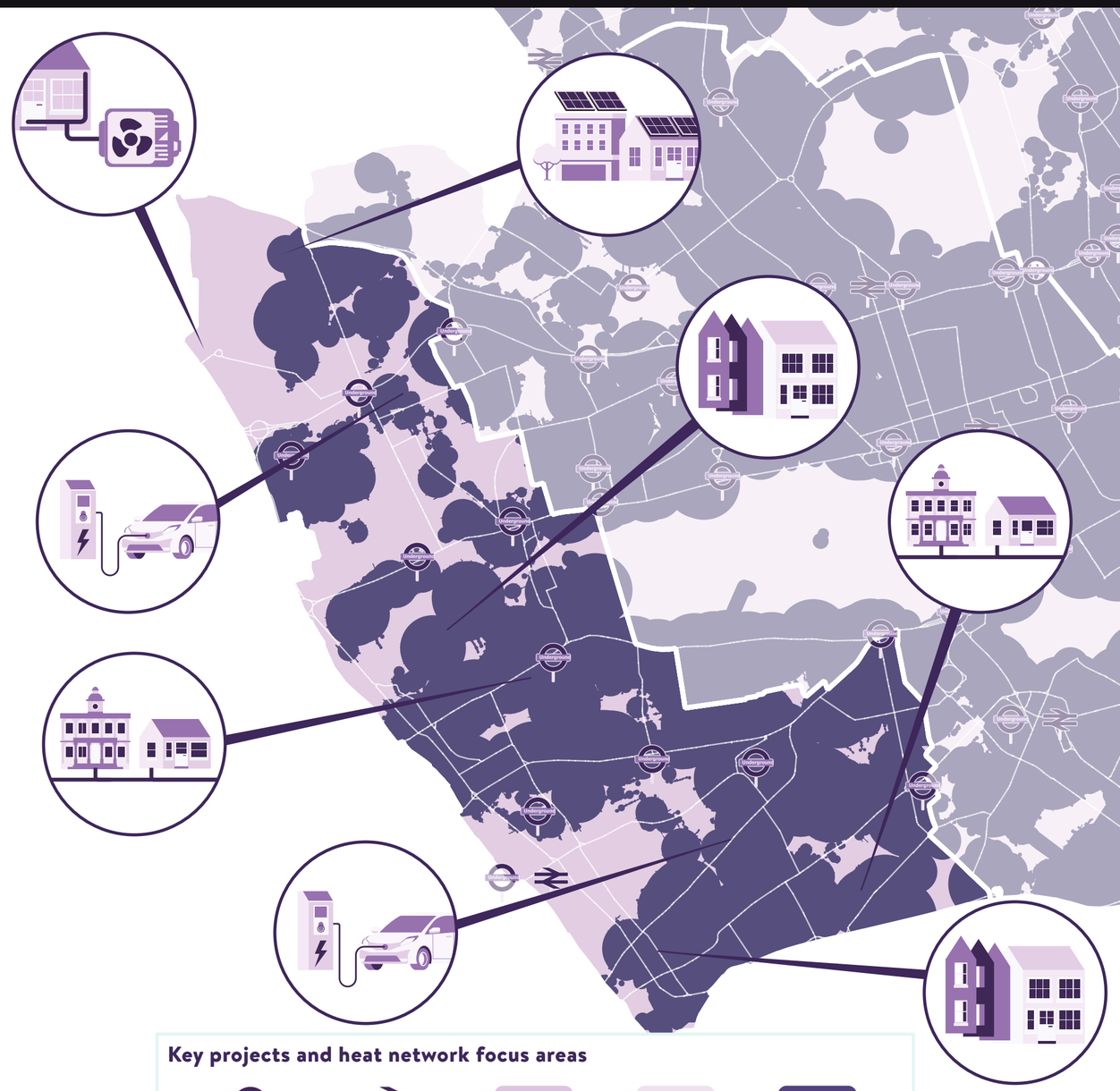
There is 160 MW rooftop PV potential of this 38 MW is deployed in the scenario.

Electricity Generated (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
35	552	64m

EV charging

4,700 domestic properties have access to off street charging. 5,300 onstreet onstreet chargers are required.

Capacity (MW per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
151	58,300	19m



RBKC

Borough Key Projects*

Heat network

Large opportunity for heat networks, Phase 2 to explore the cross-borough opportunities. For heat networks continued collaboration is key, particularly with Westminster and Hammersmith Fulham.

Fabric retrofit (domestic)

Opportunities across the borough for fabric improvement . Phase 2 will need to consider the challenges of this in historic building stock – Westminster has similar challenges and could be a good partner.

On street EV charging

The need for on-street charging is some of the highest in the subregion and spread across the borough making it an important transport action – alongside active travel and public transport that form the majority of journeys.

Rooftop PV

PV is spread across the borough with a focus in the most northerly area (from large non-domestic buildings) and the Holland Park area from large domestic properties.

Domestic heat pump

There are individual heat pump opportunities spread throughout the borough, focusing on areas with houses rather than flats. Examples include Highlever Rd and Oxford Gardens.

*For more on key projects please refer to the map on **Decarbonisation Pathway** and main report chapters 4 and 5.

Further Recommendations

- For inner boroughs, like RBKC, the subregional decarbonisation strategy has a focus on large scale heat networks. With heat being transmitted from waste heat source across borough boundaries to high heat density areas in inner boroughs.

  Funding will be key to unlock the scale of transition needed, a broader cross-borough approach is required for this with DESNZ grants and funding for the large-scale strategy being an enabler. The plan can also form a lobbying document to focus long term central support.

- Like many central boroughs RBKC has a high prevalence of flats, which require shallow fabric improvement and connection to central heat sources **(either communal or heat networks)**. In RBKC this is also complicated by a large number of historic buildings, Westminster is similar and, in this respect, collaboration between the boroughs could improve decarbonisation routes and policy for these buildings.

- One of the main challenges for RBKC is waste heat. TfL and Thames Water have some assets that could be explored but are not at the scale of the demand suited to heat networks in RBKC. Extracting heat from the Thames should also be explored, this can build on the work of the SWAN scheme in Westminster. The ongoing OPDC work in AZP should help explore heat opportunities for RBKC.
- Existing communal systems represent an early opportunity for decarbonisation, either through heat networks or building level heat pumps. These are well spread across the borough. An early focus could be in Notting Hill, where the are large number of social tenure communal systems. These would tend to connect to a heat network – aligning with the Notting Dale scheme.
- In smaller flats, which would often be considered for individual property heat pumps, a communal heat pump is frequently preferred in conservation areas and listed properties. This is due to planning constraints to reduce the visual impact. There is additional complexity to this deployment approach which could be explored in Phase 2.
- There are some flexibility opportunities flagged by UKPN but not a strong concentration in RBKC. In Phase 2, longer-term opportunities could be explored.
- Some opportunity for fabric improvement for social flats in the north of the borough. This retrofit should be considered alongside heating system retrofit – either to heat network, electrified communal or new communal/heat network. Combining both actions will reduce overall disruption time.

Borough recommendations

Subregion recommendations

NEWHAM

Decarbonisation Pathway

This page provides a summary of the technologies chosen for the Net Zero 2040 scenario and recommendations. Key projects and recommendations are subject to the information available at the subregional level. Expected to be further evaluated and refined through Phase 2 LAEP and/or future feasibility stages.

Fabric retrofit (all domestic)

61% of total properties having some retrofit. Flats are the most common buildings flagged for fabric improvement - with 39,800 properties out of the 72,500 total retrofits being flats.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
38	9,000	261m

Fabric retrofit (social domestic)

For social housing 92% of properties are flagged for needing some retrofit - with 15,500 being flats and 6,900 houses.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
9	2,000	29m

Heat network and communal

Heat networks and communal systems are key - with 30,300 and 8,800 properties connecting respectively.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
1,100	178,400	763m

Heat pump

Heat pumps focus in less heat dense areas, with 79,000 property level.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
767	157,600	758m

Rooftop PV

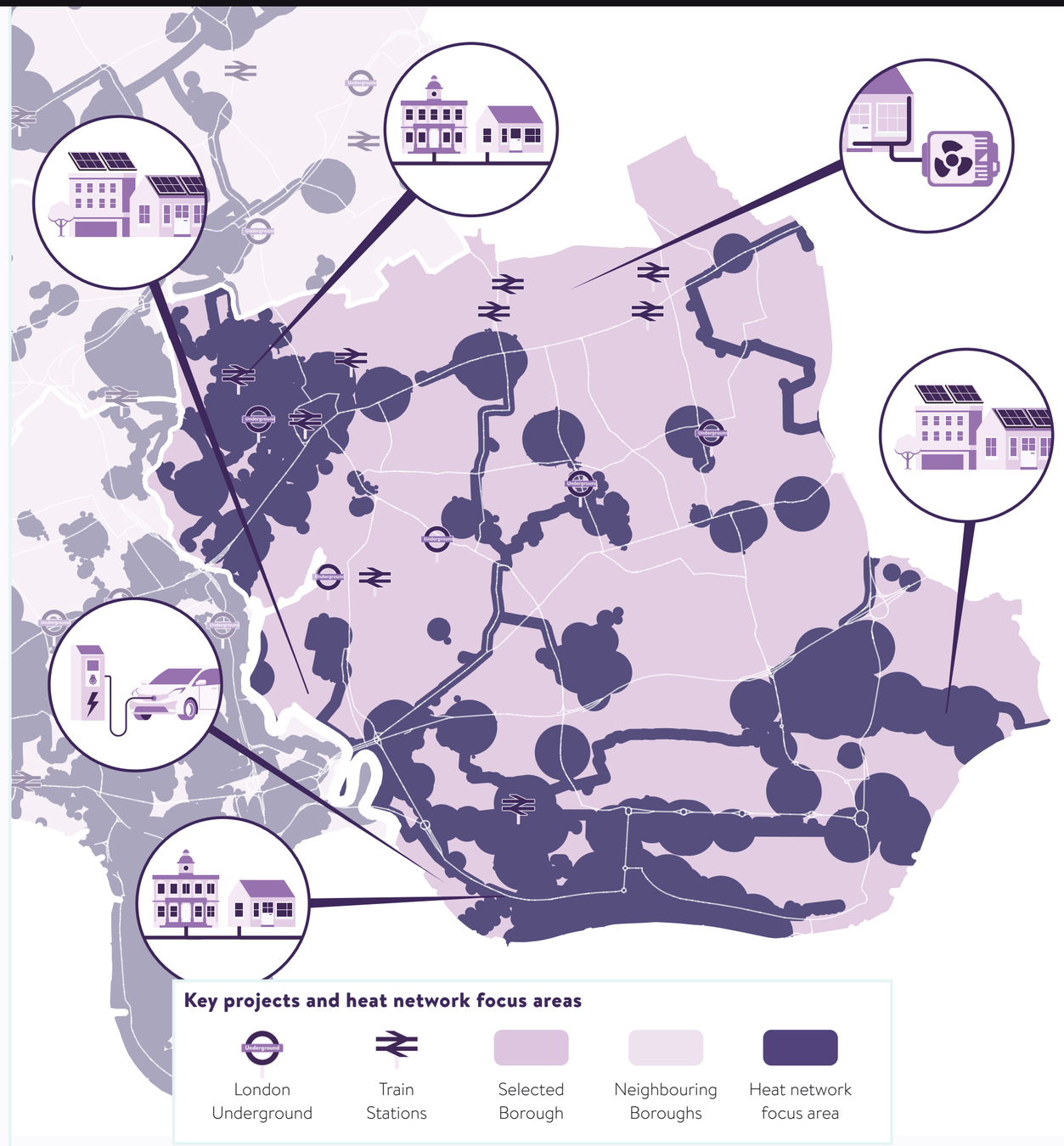
There is 544 MW of rooftop PV potential of this 166 MW is deployed in the scenario.

Electricity Generated (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
152	2,400	282.1m

EV charging

10,600 domestic properties have access to off street charging. 4,800 onstreet onstreet chargers are required.

Capacity (MW per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
444	110,100	107m



NEWHAM

Borough Key Projects*

Heat network

Phase 2 should explore the opportunities for cross borough heat networks, with Tower Hamlets and Waltham forest being the initial focus. Short term focus will be around the AZP at Olympic Park, Royal Docks and EDEC.

Fabric retrofit (domestic)

Fabric improvement is prioritised in the northwest of the borough as it is associated with high levels of fuel poverty. Private rented stock would be the target for this improvement.

On street EV charging

On-street charging is needed throughout the borough – in the east the UKPN network constraint is likely to make this challenging to deploy in the near term. Off-street charging is generally focused around the perimeter of the borough.

Rooftop PV

There is opportunity for domestic PV but large non-domestic properties in the south of the borough dominate the areas with maximum deployment – aligning to higher demand constraint in these areas.

Domestic heat pump

Individual heat pumps are most commonly seen in terraced housing in the modelling located in the centre of the borough (one example being the Forest Gate area).

*For more on key projects please refer to the map on **Decarbonisation Pathway** and main report chapters 4 and 5.

Further Recommendations

- From a subregional perspective Newham is important strategically for heat networks. It contains one of the large sources of waste heat in the area **(Beckton Sewage Treatment Works)**. It also has a DESNZ AZP area based around Olympic Park **(with LLDC being the core stakeholder)**. These make it a strategically significant borough for the transmission of heat.

  Funding will be key to unlock the scale of transition needed, a broader cross-borough approach is required for this with DESNZ grants and funding for the large-scale strategy being an enabler. The plan can also form a lobbying document to focus long term central support.

- Electrification is high in all scenarios, meaning plans should not be considered in isolation – due to the interconnected nature of the electricity network. UKPN engagement will become increasingly important as projects develop. This is a large issue in the east of the borough.

- EDEC could potentially extend into other inner boroughs **(City of London, Islington, Camden and Westminster)**, but this would exceed the heat from Beckton so other sources would need to be considered. Heat from the Thames should be considered as well as data centres. Data centres are a growing opportunity in the borough.
- DESNZ flags the majority of the borough for heat networks well the LAEP is more focused. Phase 2 would concentrate on these focus areas for initial project but also account for the opportunity to expand in the future as indicated by DESNZ.
- Phase 2 should explore communal opportunities in social flats – it was highlighted that many of these were historically communal but were switched to individual boilers. Understanding if any infrastructure remains could aid transition to a low carbon solution is important for how these opportunities are prioritised.
- Heat pumps are spread across the borough and in the short-term these should avoid the east due to UKPN data flagging headroom issues. Phase 2 local analysis, in combination with considering funding schemes, to identify priority areas.
- The headroom constraint in the east should be explored further in Phase 2 with UKPN. Despite this the focus for flexibility in the near term is close to the Stratford Market depot. Phase 2 could explore the potential of domestic and non-domestic properties to contribute to this – including the impact of heat network extension.
- The greatest benefit from fabric retrofit is seen in the north and centre of the borough. Fabric improvement should be considered alongside other approaches **(such as increased radiator size)** to help keep costs low.
- Phase 2 should explore these heat pump opportunities, considering factors like property readiness, tenure, fuel poverty and funding schemes to prioritise areas for deployment.

Borough recommendations

Subregion recommendations

HARINGEY

Decarbonisation Pathway

This page provides a summary of the technologies chosen for the Net Zero 2040 scenario and recommendations. Key projects and recommendations are subject to the information available at the subregional level. Expected to be further evaluated and refined through Phase 2 LAEP and/or future feasibility stages.

Fabric retrofit (all domestic)

69% of total properties having some retrofit. Flats are the most common buildings flagged for fabric improvement - with 46,700 properties out of the 75,000 total retrofits being flats.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
54	12,700	347m

Fabric retrofit (social domestic)

Social housing has generally better fabric with 79% of properties having improvement. With 14,700 being flats and 5,900 houses.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
8	1,800	36m

Heat network and communal

Heat networks and communal systems are key - with 22,100 and 16,800 properties connecting respectively.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
540	92,200	404m

Heat pump

Heat pumps focus in less heat dense areas, with 71,800 property level.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
761	161,000	668m

Rooftop PV

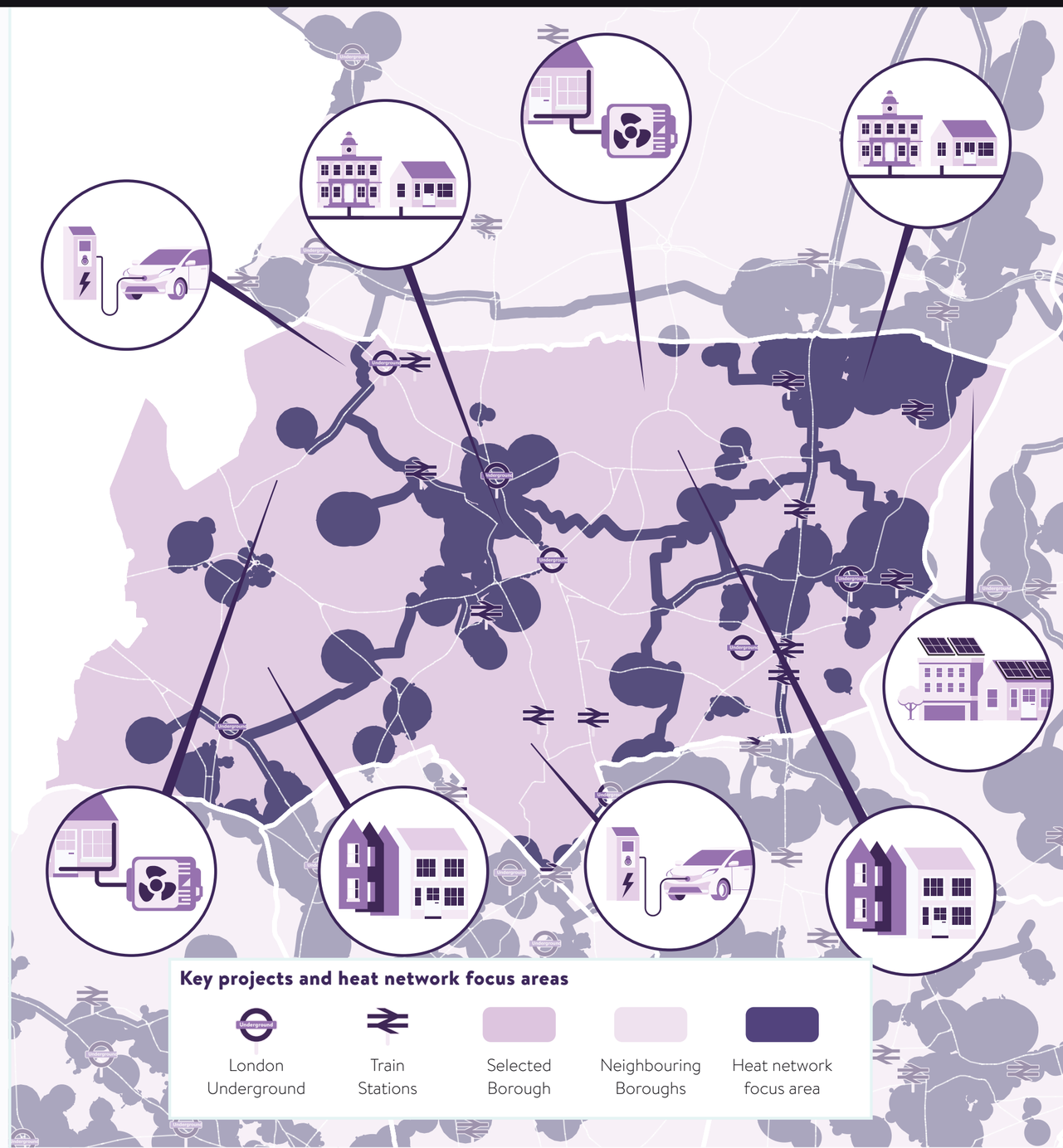
There is 412 MW of rooftop PV potential of this 112 MW is deployed in the scenario.

Electricity Generated (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
103	1,600	200m

EV charging

12,200 domestic properties have access to off street charging. 5,000 onstreet onstreet chargers are required.

Capacity (MW per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
255	1,200	39m



HARINGEY

Borough Key Projects*

Heat network

Phase 2 should confirm the preferred strategy for Energetik. This includes strategic engagement at a subregion level in addition to a preferred option within Haringey. The three main areas flagged for heat networks are already being explored in the north east, Tottenham Hale and Wood Green areas.

Fabric retrofit (domestic)

Fabric improvements are well spread in the borough – with the greatest potential in the west of the borough. The initial focus is in the north near Lordship Ln – where there is high level of fuel poverty and social housing that would benefit from fabric improvement.

On street EV charging

On street EV charging focuses in a line up the centre and eastern thirds of the borough – which could be challenging to deploy in the near term due to lack of headroom. There is also a smaller focus are in the north west.

Rooftop PV

Spread across the borough with the most focused area being the north east due to large non-domestic roof space.

Domestic heat pump

Heat pumps are a common solution identified across Haringey – with a particular focus in the central northern area and the west.

*For more on key projects please refer to the map on **Decarbonisation Pathway** and main report chapters 4 and 5.

Further Recommendations

- From a subregional perspective Haringey is important strategically for heat networks. Being next to Enfield **(and Energetik)** it is close to the largest waste heat source in the subregion - which could supply Haringey heat network opportunities. However, from a subregional perspective this is one of the best routes to higher heat density in inner boroughs. The heat network analysis and North London Heat Network Study identifies a good opportunity for a subregional heat network delivery partnership to enable the transmission of heat across the subregion. The collaboration could include Enfield, Haringey, Waltham Forest, Hackney, Islington and Camden. This is key to ensure key benefits for Haringey from subregional heat transmission. Funding will be key to unlock the scale of transition needed, a broader cross-borough approach is required for this with DESNZ grants and funding for the large-scale strategy being an enabler. The plan can also form a lobbying document to focus long term central support.
- Electrification is high in all scenarios, meaning plans should not be considered in isolation – due to the interconnected nature and competing demands on the electricity network. UKPN engagement will become increasingly important as projects develop. The immediate constraint is focused in the south east of the borough.

- The NLWA heat network study appraises multiple options which should continue to be considered at the subregional level.

  Key parties to engage would be Waltham Forest as well as the inner boroughs (Islington, Hackney, Tower Hamlets, Camden, City of London and Westminster).

  Other waste heat sources can be explored within the borough, including some of TfL's larger vent shafts and Thames Water sites.
- Existing communal systems represent an early opportunity for decarbonisation, either through heat networks or building level heat pumps. Heat density modelling and timing of technology change needs consideration in next planning phases. Heat networks dominate most council systems as the preferred option **(one exception being Cedar Court)**. Private sector communal systems are more widely spread with communal building level heat pumps often preferred. New communal systems outside of the primary heat network areas are low regrets, allowing earlier decarbonisation than heat network connection. Communal systems also future proof buildings, making them suitable for connection if heat networks expand.
- Phase 2 should carry out local analysis, in combination with considering funding schemes, to finalise these focus areas for heat pumps. UKPN substation data indicates there is headroom in the north for heat pumps but more constraint in the south – so immediate deployment will be more challenging.
- This means flexibility will be required in the south in the near term to allow for electrification. UKPN will need to be engaged as despite headroom constraints limited flexibility opportunities are flagged in their data.
- Larger houses in the west have greater access to off-street parking and charging potential. These houses also have higher uptake of PV in the scenarios to provide cheaper charging.

Borough recommendations

Subregion recommendations

HACKNEY

Decarbonisation Pathway

This page provides a summary of the technologies chosen for the Net Zero 2040 scenario and recommendations. Key projects and recommendations are subject to the information available at the subregional level. Expected to be further evaluated and refined through Phase 2 LAEP and/or future feasibility stages.

Fabric retrofit (all domestic)

75% of total properties having some retrofit. Flats are the most common buildings flagged for fabric improvement - with 73,600 properties out of the 87,800 total retrofits being flats.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
38	8,900	196m

Fabric retrofit (social domestic)

For social housing 92% of properties are flagged for needing some retrofit - with 34,200 being flats and 4,200 houses.

Energy Saving (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
13	2,900	44m

Heat network and communal

Heat networks and communal systems are key - with 63,500 and 14,800 properties connecting respectively.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
723	128,000	528m

Heat pump

Heat pumps focus in less heat dense areas, with 43,100 property level.

Heat Provided (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
396	81,300	406m

Rooftop PV

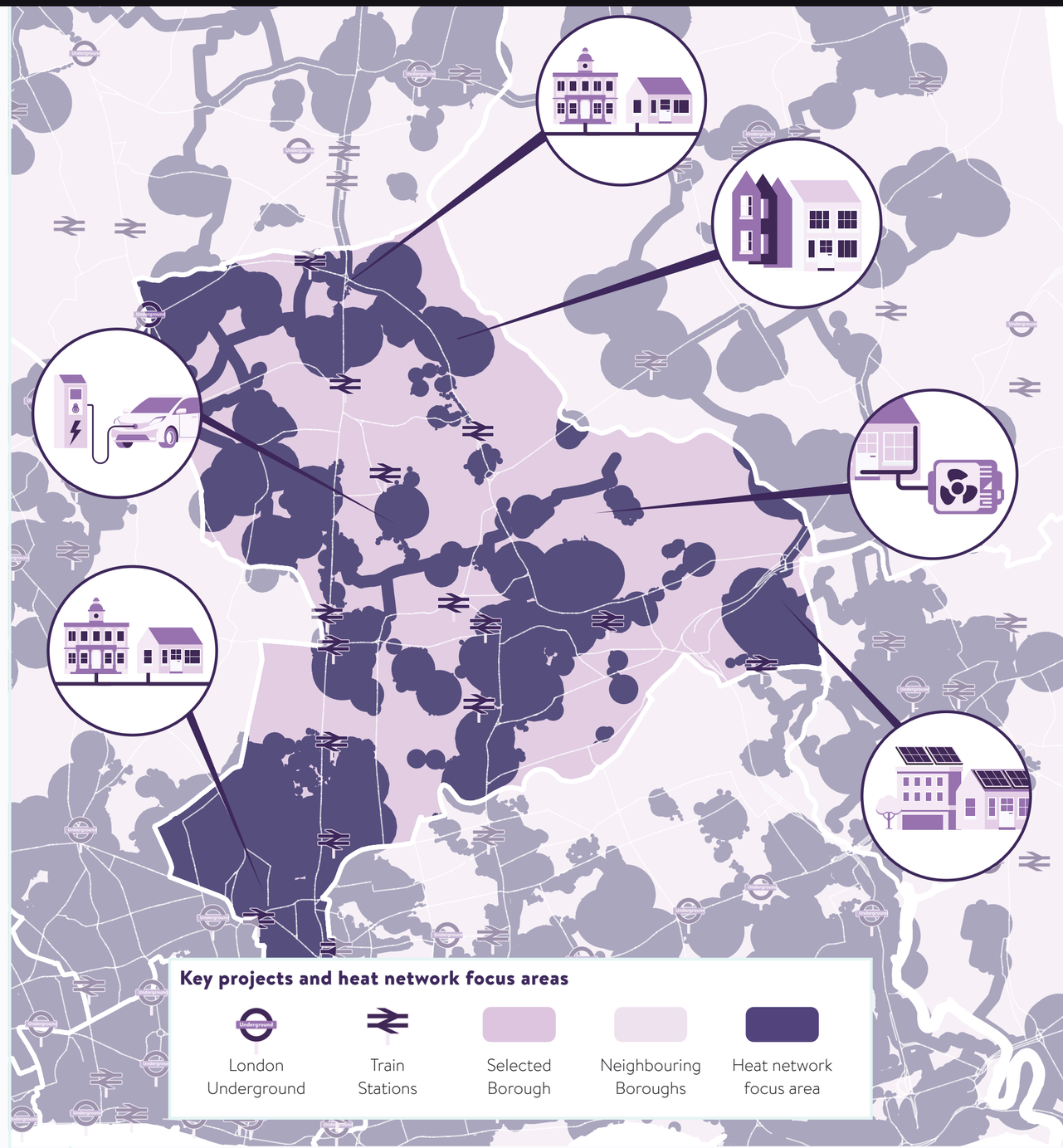
There is 309 MW of rooftop PV potential of this 78 MW is deployed in the scenario.

Electricity Generated (GWh per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
72	1,100	125m

EV charging

4,800 domestic properties have access to off street charging. 4,300 onstreet onstreet chargers are required.

Capacity (MW per year)	Carbon Saving (tCO_2e for year 2040)	Investment (GBP)
156	53,700	24m



HACKNEY

Borough Key Projects*

Heat network

Islington and City are particularly important for short term projects – including the Citigen extension. Haringey and Enfield are significant due to potential routing of waste heat from Energetik – working with other boroughs to establish the best use for this heat is a key part of the subregional strategy.

Fabric retrofit (all)

Initial focus for fabric retrofit in flats in the north east of the borough due to overall fabric performance and the increased risk of fuel poverty. These flats are a mix of social, private rented (most dominant for fabric improvement) and owner occupied. This retrofit should be considered alongside heating system retrofit (communal heat pump or heat network connection) – to reduce overall disruption time.

On street EV charging

On-street charging requirement is spread across the borough. UKPN data indicates outside of the south of the borough there is headroom for early charger deployment.

Rooftop PV

Spread across the borough with a focus with a stronger focus in the east due to large non-domestic buildings.

Domestic heat pump

Property level heat pump opportunities are spread across the borough, with a focus east of Hackney Downs park.

*For more on key projects please refer to the map on **Decarbonisation Pathway** and main report chapters 4 and 5.

Further Recommendations

- For inner boroughs, like Hackney, the subregional decarbonisation strategy has a focus on large scale heat networks. With heat being transmitted from waste heat source across borough boundaries to high heat density areas in inner boroughs. The heat network analysis and North London Heat Network Study identifies a good opportunity for a subregional heat network delivery partnership to enable the transmission of heat across the subregion. The collaboration could include Enfield, Haringey, Waltham Forest, Hackney, Islington and Camden.
- Funding will be key to unlock the scale of transition needed, a broader cross-borough approach is required for this with DESNZ grants and funding for the large-scale strategy being an enabler. The plan can also form a lobbying document to focus long term central support.

- Large opportunity for heat networks already being explored, Phase 2 to explore further the cross-borough context for heat transmission. Many of the boroughs are key to collaborate with on this – Haringey, Enfield, Waltham Forest, Islington, Camden, City of London, Tower Hamlets and Westminster.
- Given the scale of demand for inner boroughs, multiple heat sources will be required. In the Shoreditch area there is a large density of data centres – Phase 2 should examine in more detail the potential of waste heat use across boroughs.
- Existing communal systems represent an early opportunity for decarbonisation, either through heat networks or building level heat pumps. New communal systems outside of the primary heat network areas are low regrets, allowing earlier decarbonisation than heat network connection. Communal systems also future proofs buildings, making them suitable for connection if heat networks expand.
- Electricity network flexibility opportunities explored in Phase 2, there is a focus in the southwest corner of the borough. This area also has limited headroom.

Borough recommendations

Subregion recommendations

WESTMINSTER

Opportunities

Heat network | Fabric retrofit (domestic) | On street EV charging | Rooftop PV | Domestic heat pump

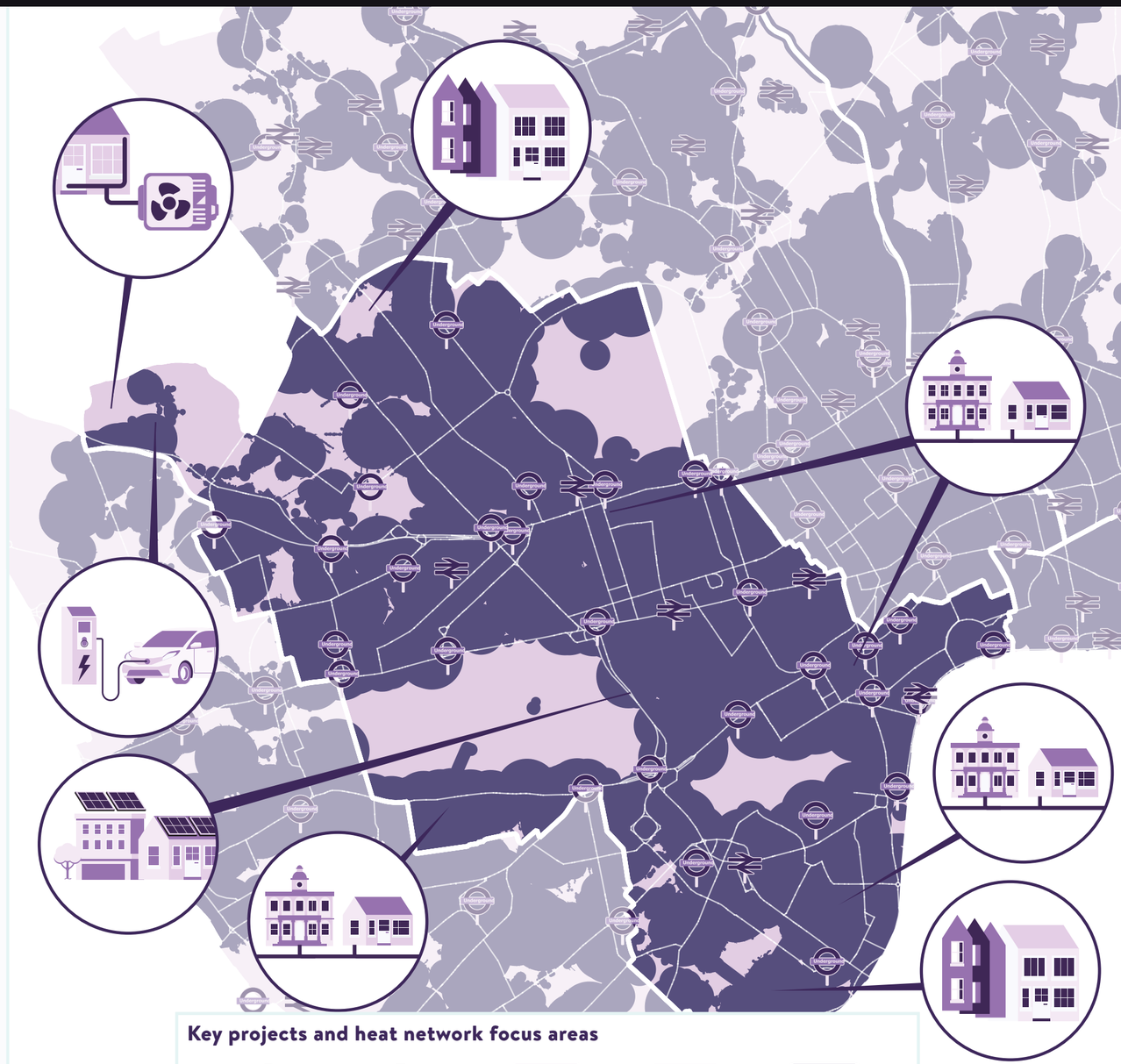
Further Recommendations

- For inner boroughs, like Westminster, the subregional decarbonisation strategy has a focus on large scale heat networks. With heat being transmitted from waste heat source across borough boundaries to high heat density areas in inner boroughs. Engage subregionally with the GLA and other boroughs, potentially linked to any subregional heat network delivery partnerships.
- Funding will be key to unlock the scale of transition needed, a broader cross-borough approach is required for this with DESNZ grants and funding for the large-scale strategy being an enabler. The plan can also form a lobbying document to focus long term central support at the subregional level alongside the more detailed Westminster LAEP.

- Identify and work with other boroughs and stakeholders **(GLA and NLWA)** to identify how best to get heat to Westminster's high heat demand areas.
- This should feed into sub-regional transmission of heat strategy, ongoing AZP will assist with this.
- Engagement of large heat demands is important – Westminster has the largest number of mandatable loads under the DESNZ heat network scheme so engagement is vital.
- Linked to this is continuing to work with stakeholders in the borough – the Great Estates are highly engaged and progressing decarbonisation plans.
- Explore approaches to decarbonize historic buildings, RBKC would be a good partner, facing similar challenges.
- Continue to progressprecise projects and funding schemes to achieve these.

Borough recommendations

Subregion recommendations



CITY OF LONDON

Opportunities

Heat network

On street EV charging

Rooftop PV

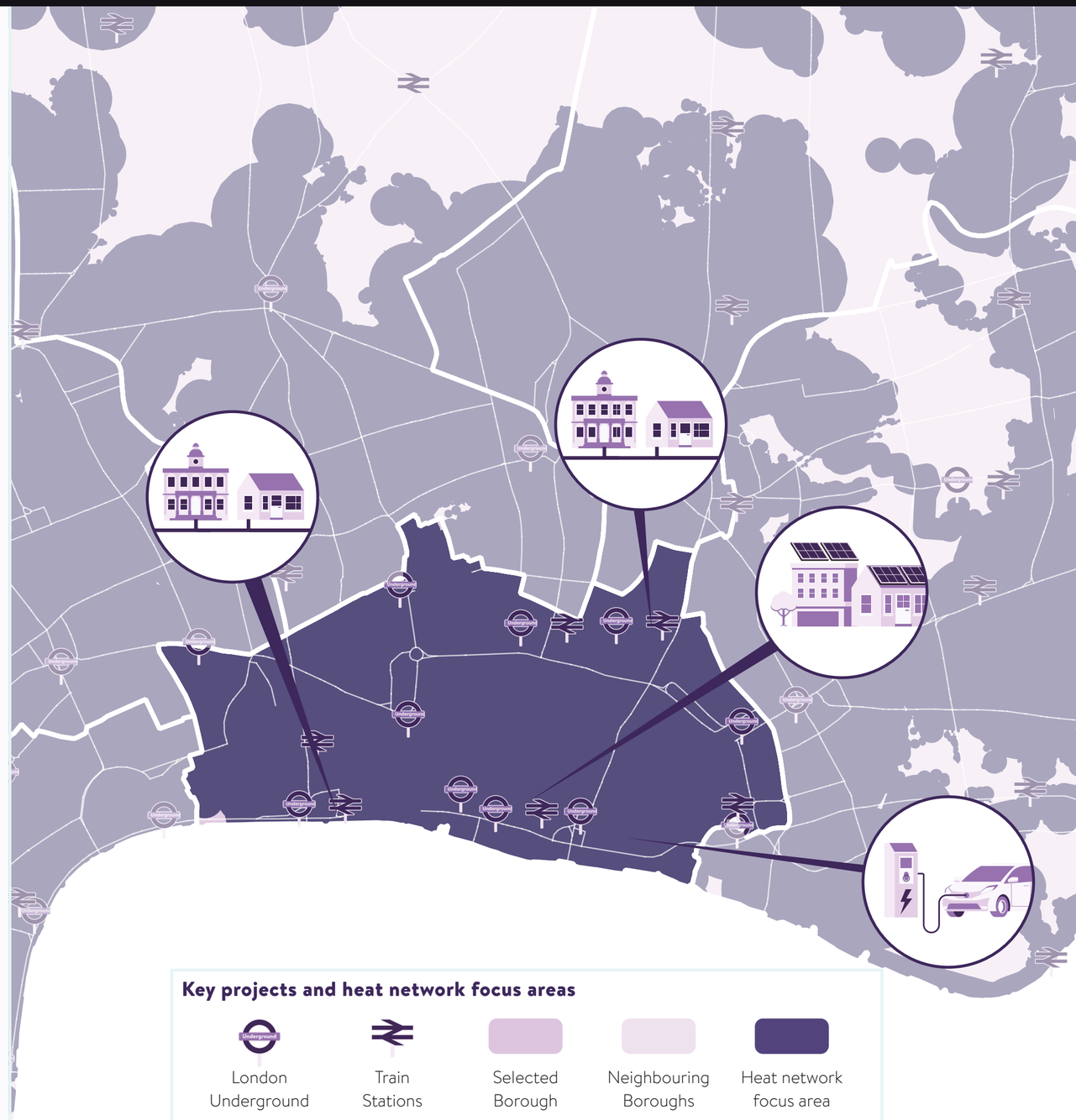
Further Recommendations

- For inner London areas, like City of London, the subregional decarbonisation strategy has a focus on large scale heat networks. With heat being transmitted from waste heat source across local authority boundaries to high heat density areas in inner local authorities. The North London Waste Authority, GLA as well as many of the other local authorities are key to engage on this topic.
- Funding will be key to unlock the scale of transition needed, a broader cross-borough approach is required for this with DESNZ grants and funding for the large-scale strategy being an enabler. The plan can also form a lobbying document to focus long term central support at the subregional level alongside the more detailed City of London LAEP.

- Identify and work with other boroughs and stakeholders **(GLA and NLWA)** to identify how City of London fits in a subregional heat transmission strategy.
- Use of data centre waste heat and heat from the Thames should be explored within City.
- Engagement of large heat demands is important – gas use is dominated by loads that would be mandatable under the DESNZ heat network scheme so engagement is vital.
- The initial focus on council assets will help progress early decarbonisation.
- The Citigen expansion is a key ongoing project with neighbouring boroughs.
- Engage with Westminster and the AZP work over the SWAN scheme which adjoins City.

Borough recommendations

Subregion recommendations



ENFIELD

Opportunities

Heat network | Fabric retrofit (domestic) | On street EV charging | Rooftop PV | Domestic heat pump

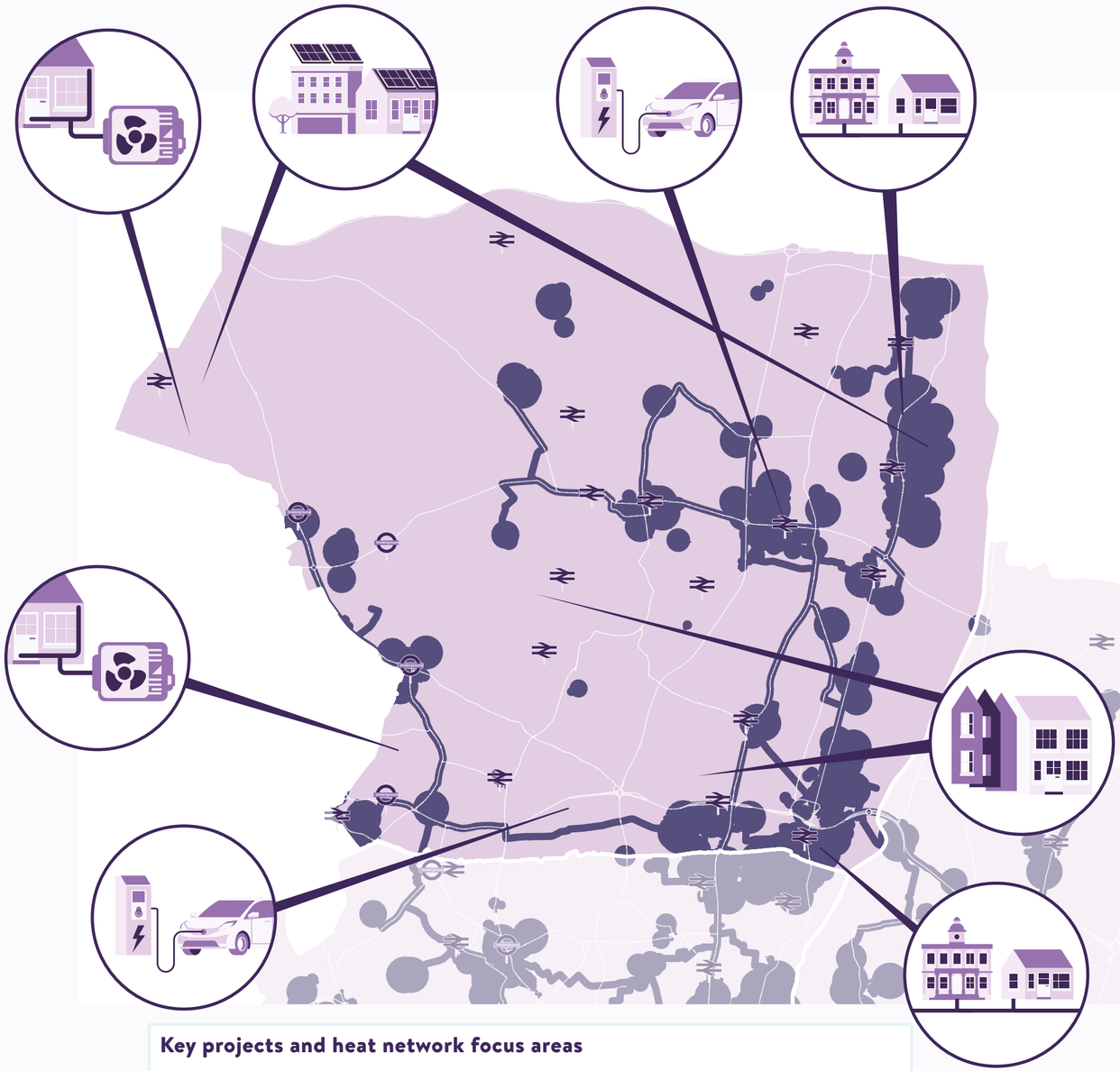
Further Recommendations

- Enfield is central to the subregional decarbonisation strategy – due to the waste heat resources in the borough. The heat network analysis and North London Heat Network Study identifies a good opportunity for a subregional heat network delivery partnership to enable the transmission of heat across the subregion. The collaboration could include Enfield, Haringey, Waltham Forest, Hackney, Islington and Camden. Key to this subregional strategy is whether the waste heat **(with an initial focus on Energetik)** is best used within the borough or exported into more heat dense central boroughs and should be explored through AZP.
- Funding will be key to unlock the scale of transition needed, a broader cross-borough approach is required for this with DESNZ grants and funding for the large-scale strategy being an enabler. The plan can also form a lobbying document to focus long term central support at the subregional level alongside the more detailed Enfield LAEP.

- Funding already secured for decent homes standard to progress domestic improvement.
- Strategy is already focusing around the Energetik site for domestic – which aligns to subregional analysis which highlights opportunities alongside high fuel poverty.
- Help develop a subregional strategy for the best use of Enfield's assets.
- This will require a complex balance between benefits to Enfield and other outer boroughs and provision of heat to high heat density inner boroughs.
- Financing and funding mechanisms are already being explored – which is key to unlock the large potential of these assets.

Borough recommendations

Subregion recommendations



Key projects and heat network focus areas

London Underground | Train Stations | Selected Borough | Neighbouring Boroughs | Heat network focus area

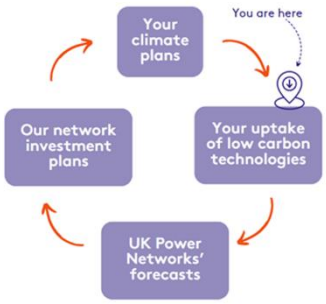
Appendix E UK Power Networks Note

How subregional LAEP informs UK Power Networks' network investment plan

Note that this text has been provided by UK Power Networks Distribution System Operator (DSO)

As London heads towards Net Zero, London Boroughs will do so at different speeds using a range of low carbon technologies (LCTs) such as electric vehicles (EV), heat pumps and solar PV. UK Power Networks DSO is here to facilitate these plans and provide, at lowest cost, enough electricity capacity across London to facilitate local growth and decarbonisation.

To do this our dedicated Local Net Zero team is here to proactively engage and support the Greater London Authority's (GLA) Subregional Local Area Energy Plan (LAEP) programme and each London Borough's LAEP activities. The Local Net Zero team developed new ways for Boroughs to share plans, and manages the three-tiered LAEP framework to process plans to enhance the forecasts used to shape network investments with Boroughs' local intelligence, ensuring sufficient electricity capacity when and where it is needed.



We have collaborated with GLA to ensure a "share once" approach for London Boroughs to share forecasts of low carbon technologies (LCTs) like electric vehicles and heat pumps and for growth like new homes, community facilities and businesses. Using the LAEP framework, we are engaging with London Boroughs to enable these local ambitions by ensuring that we can be confident before any forecast from local authorities are used to adjust our annually updated Distribution Future Energy Scenarios (DFES) and subsequent network planning forecasts. By working together, we are facilitating local Net Zero Plans and investing with confidence.

For example, the Subregional LAEP Phase 1 London plans have been shared and processed through the LAEP Tier 2 assessments, namely the materiality and confidence assessments. Initial analysis shows that the North and South London Subregional LAEPs Phase 1 forecasts are greater than our 2024 DFES forecast, including projected LCTs deployment in heat and power sectors. This means the projected forecasts are greater than our current planning baseline, and we have continued our close conversations with GLA and London Boroughs to understand together the robustness of relevant plans for confidence assessment.

With supplementary information from GLA, it has been determined that the forecast in the Subregional LAEPs has reached a certain level of confidence, and they will be used to inform our annually updated DFES that is scheduled to publish in early 2025. Our DFES is used to inform UK Power Networks' wider network planning activities including load forecasting, network development plans and Distribution Network Options Assessment (DNOA) process. For example, our DNOA reports provide transparency about our decisions to meet future capacity needs with lowest overall cost solutions, including where we expect to need flexible solutions across our network on a site-by-site basis.

In summary, engaging with GLA and London Boroughs enhances our planning forecasts. This helps us to make an informed decision about whether to deploy smart solutions (like flexibility services) to get more capacity out of existing infrastructure or invest strategically in new infrastructure to serve local needs. Working more closely with local authorities means that UK

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