

A report commissioned for the London Borough of Waltham Forest

ROLE OF BICYCLE INFRASTRUCTURE IN WALTHAMSTOW HIGH STREET REGENERATION

FINDINGS AND RECOMMENDATIONS



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Sustainable Transport Consultants
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Terms of Reference

This report serves the purpose to advise the London Borough of Waltham Forest on how sustainable mobilities can be enhanced to assist the regeneration of Walthamstow High Street. The report has been developed in line with Waltham Forest's allocated £17.2m of Levelling Up funding awarded by the UK Government in January 2023.

Executive Summary

Sustainable mobility at its core is determined to provide fair and equal, low-carbon transportation for everyone. Overseen by the more significant sustainable development paradigm that focusses on the reduction of emissions; sustainable mobility prioritises that sustainable transport is provided to everyone regardless of factors out of their control.

In the case of this report, sustainable mobility is linked with regeneration, specifically, town centre led regeneration in Walthamstow located in the London Borough of Waltham Forest. Focussing on bicycle travel, this report explores the methods in which bicycle infrastructure can be implemented in High-Streets to assist in urban regeneration. Using secondary research analysis, the report makes several key findings:

- Walthamstow High Street proves to be a desirable cycle route but causes conflict for users.
- The relationship between bicycle infrastructure and economic growth is dependent on several contextual characteristics but often leads to improvements in urban qualities of life.
- Compact town centres can be optimised to obtain economic gains from bicycle infrastructure.
- Fostering end-point bicycle infrastructure to town-centres provides regeneration opportunities.
- Shared spaces drive negative perceptions in safety for pedestrians and cyclists.
- Conveniently located bike parking allows for increased stopping frequencies leading to higher average spending.
- Secure forms of bike parking allow for consentaneous and recurring travel patterns over longer time frames.

The report draws upon such findings and as result of continued analysis, identifies three key actionable recommendations. If implemented, the changes will enable Walthamstow High Street to become sustainable mobile whilst also assisting in the wider regeneration programme. The recommendations in relation to Walthamstow High Street are as follows:

- Removal of shared space and vehicle access;
- Rearrangement of High Street streetscape;
- Integration of frequent and secure cycle parking.

Whilst radical in nature, in taking these strategic approaches, Walthamstow will be able to achieve sustainable and economically resilient outcomes.

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List of Abbreviations

LBWF: London Borough of Waltham Forest

DfT: Department for Transport (*Governmental Department*)

TfL: Transport for London

WNEZ: Walthamstow Night-time Enterprise Zone

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Introduction

Walthamstow High Street is located at the heart of Walthamstow and its weekly market showcases the economic identity of Walthamstow town. This report, commissioned by LBWF, assesses the opportunity for the enhancement of sustainable mobility in assisting town centre regeneration. *Mobility Matters* have undertaken a desktop-based research project on the deliverability of bicycle infrastructure in assisting regeneration attempts.

Section one of the report summaries the relevant background spatial material surrounding the High Street, it's current use and previous regeneration attempts. Analysis of several infrastructure-based case studies reveals there is a strong economic case for cycle infrastructure in compact urban areas. Comparable research nonetheless suggests that such attempts should be conscious of local constraints.

Section two uses a selection of bicycle infrastructure oriented sustainable transport principles to guide regeneration efforts in town centre locations. These principles are then used to inform section three that provides a selection of research informed recommendations not limited to, but primarily concerning:

- The influence of direct and safe cycle infrastructure.
- The role of convenient and secure bicycle parking.

It should be noted that this report focusses on the physical infrastructure changes appropriate for Walthamstow High Street, whilst these infrastructure changes rely upon wider-scaled integration, this report takes a spatially-micro approach as per LBWF instruction.

Methodology

The first stage of research involves preliminary background research into the sites context, surroundings and wider Council rationales. Secondary research analysis is then conducted assessing the key principles surrounding sustainable bicycle infrastructure. Case-study analysis takes an international framing of the situation allowing for recommendations to be formulated. Through enhancement of secondary desktop analysis programmes, the report provides spatially scaled responses to the initial issues raised.

Section 1: Discussion

Banister (2008) sets out that by having clear planning strategy, cities are to be designed at the personal scale to allow both high-quality accessibility and a high-quality environment. This report focuses on the role of the bicycle within sustainable mobility. Lehmann (2019) argues that because of its simplistic and energy efficient characteristics the bicycle is given a central role within the sustainability mobility paradigm. Thaller et al. (2021) expand upon this suggesting that the bicycle does not only return human scale to urban areas but is also “essential for the effective design of any intermodal system of sustainable metropolitan public transport” (2021, p. 59).

Walthamstow Market

Walthamstow Market first opened in 1885 and is Europe’s self-proclaimed longest outdoor street market running the length of the High Street from Hoe Street to the east through to St James Street to the west (LBWF, 2024a). **Figure 1** shows the context of the Market in relation to wider Walthamstow town centre. The market runs from Tuesday to Sunday and characterises a wide range of market traders managed by LBWF Council on a temporary basis. Surrounding the market traders are permanent High Street shops.

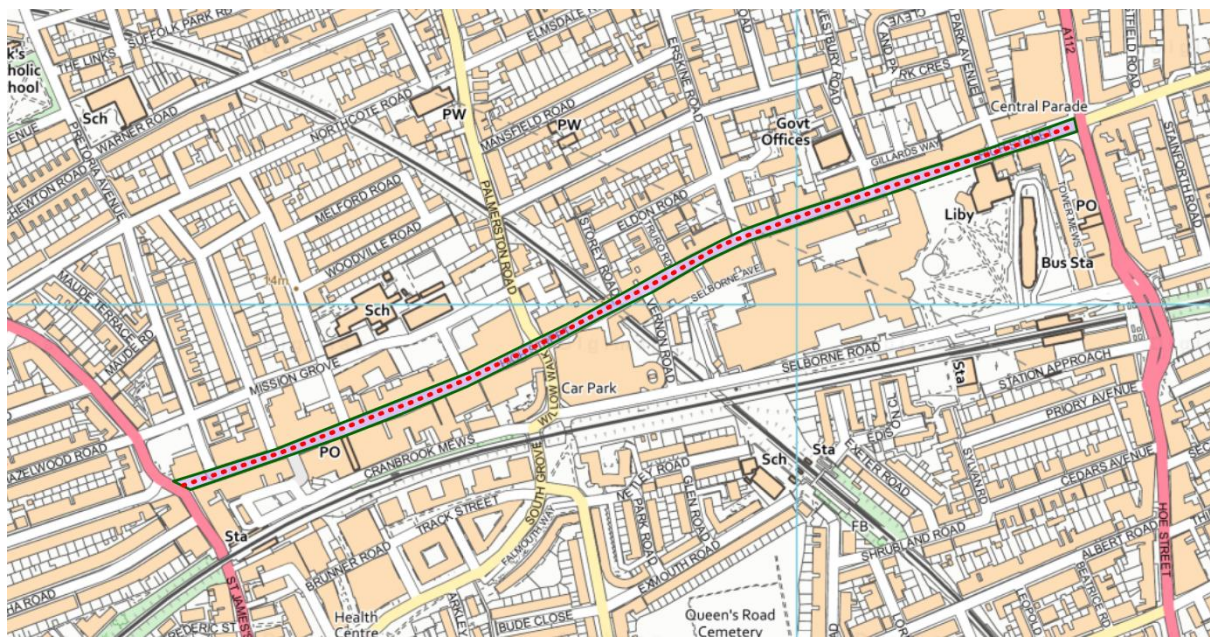


Figure 1: Walthamstow High Street Map (DigiMap, 2024)

Crucially in the case of this report, the market is fully pedestrianised, with vehicle access restricted to loading at specific times as depicted in **Figure 2** (below). Whilst there is no physical barrier stopping vehicles, this is enforced using Automatic Number Plate Recognition (ANPR) cameras.



Figure 2: High Street Vehicle Restrictions (Harding, 2024)



Figure 3: 2019 Wayfinding Regeneration (Mima, 2019)

Regeneration of the Market / High Street

As per the adopted Local Plan, Walthamstow town is the allocated major centre within the LBWF representing the primary retail core and “*economic heart of the borough*” (LBWF, 2024b, p. 36). Regeneration of the High Street has to date been limited. In 2019 a wayfinding project was completed aimed at strengthening and enhancing the overall look and feel of the High Street, as per **Figure 3** (above).

In January 2023 LBWF was awarded £17.2m of Levelling Up Funding, with an allocation directed to deliver High Street improvements. LBWF’s bid statement emphasises sustainable travel and refers to “*improving direct bicycle access into the economic heart of Walthamstow*” (LBWF, 2024c, p. 3).

LBWF recognise the town centre as a key delivery component of Walthamstow’s regeneration. The Walthamstow Town Centre Action Plan (LBWF, 2014) states there should be a drive in “*improving connectivity into the town centre using active modes of travel*” (2014, p. 6). Recent discussion with LBWF Assistant Director of Place and Design; Sarah Parsons highlights the importance in connectivity and when questioned on the accessibility of the High Street for cyclists, states:

At present there is a real conflict in transport uses for the High Street. Whilst the space is only supposed to be used by pedestrians, there is a strong desire for cyclists to access the market and surrounding High Street shops without having to stop at either end of the High Street. It is a problem we are acutely aware of and are currently looking for solutions.
 (Parsons, 2024)

Cycling and Regeneration

The *Value of Cycling* report commissioned by the DfT provides a framework for the economic case for cycling in a UK perspective. In assisting town centre regeneration, the report states:

The bicycle can help reduce the negative impact of motorised traffic on the urban quality of life. Which, especially in city centres, can lead to a more attractive retail climate for business owners.
(Rajé and Saffrey, 2015, p.16)

A study undertaken by the University of Westminster finds that compact town centre locations in London that are developed and optimised for cycling can have a retail density 2.5 times higher than that of a typical town centre (Aldred and Sharkey, 2018). This is reiterated in research by Blondiau et al. (2016) that suggests cycle parking can deliver up to a five times higher retail spend per square meter than the same area of car parking. Whilst detailed research on the direct economic benefit of cycling is becoming readily accessible; Mejia-Dorantes and Lucas (2014) caution that the relationship between the development of bicycle infrastructure and economic growth is “*far from conclusive and consistent*” (2014, p. 241). The latter stages of the research suggest that the extent of such relationship is dependent on “*the type and scale of the infrastructure provided, its location and specific operating characteristics*” (2014, p. 263).

Empirical evidence matched with recent discussions with LBWF representatives have indicated both a desire and cost-ratio benefit in improving bicycle connectivity into Walthamstow town centre. In synthesising the relevant material, section 2 of this report outlines three key physical methods that can be implemented to increase bicycle travel to town centre locations and resultantly increase economic activity.

Section 2: Findings

Taking the preliminary research into account, this report takes two key findings to explore in greater depth. These relate to physical infrastructure changes that can be implemented to assist in regeneration attempts and are explained in greater detail below.

Direct and safe bicycle access

Aldred et al. (2019) suggest that directness of cycle infrastructure as a primary factor in increasing frequency of cycling into town centres. This is emphasised in national cycle infrastructure design guidance document LTN 1/20 that states:

“Routes should provide the shortest and fastest way of travelling from place to place that minimise delay and the need to stop... enabling cyclists to take the shortest route should be the default approach in traffic management.”
(DfT, 2020, p .30)

Research from Davis (2010) has found that when bicycle infrastructure provides a direct end-user connection to the town centre, the space becomes economically desirable for businesses. Taking Iowa as a case study, research conducted by Flusche (2013) concludes that through “*fostering direct bicycle infrastructure Iowa town centre has seen considerable economic benefits by attracting businesses, tourism and active residents to cycle*” (2013, p. 24). **Table 1** outlines the predicted economic benefit that Iowa has acquired since the introduction of a direct cycle routes connecting the town centre.

Economic and Health Benefits of Bicycling in Iowa	
<i>Bicycle Commuters</i>	
Estimated bicycle commuters	24,921
Economic activity	\$51,965,317
Health savings	\$13,266,020
<i>Recreational Riders</i>	
Estimated riders	149,916
Economic activity	\$364,864,202
Health savings	\$73,942,511

Table 1: Bicycle Infrastructure Economic Gains Iowa (Flusche, 2013)

Research from Gravett and Mundaca (2011) outlines the safety-in-numbers effect in terms of cycle infrastructure; “*safer infrastructure facilitates safer cycling and safer cycling facilitates more cycling*” (2011, p. 14). In terms of infrastructure, Banister (2008) argues that routes should be clearly delineated between different nodes of sustainable transport, having “*exclusive routes for people and cyclists*” (2008, p. 76-7). Research from Aldred (2015) assesses the perception of safety for several differing bicycle infrastructure types, across multiple age groups. **Table 2** outlines the results whereby increased perception of safety is represented by a higher percentage score, clear, the success of kerb-segregated infrastructure in perception of personal safety.

	<i>On Own</i>	<i>Carrying Child</i>	<i>With 8 Year Old</i>	<i>By 12 Year Old</i>	<i>Most People</i>	<i>Average (final four scenarios)</i>
Busy Road	66%	19%	6%	8%	11%	11%
Residential Rat Run	76%	42%	21%	25%	29%	29%
Shared bus lane	86%	50%	26%	30%	39%	36%
Cross busy road	85%	55%	28%	29%	37%	37%
Painted cycle lane	88%	57%	33%	42%	46%	45%
Armadillo segregation	90%	76%	61%	69%	71%	69%
Kerb segregation	86%	85%	80%	83%	81%	82%

Table 2: Cycle Infrastructure - Perception of Safety (Aldred, 2015)

In relation to town centres, Clarke (2006) suggests that cycling through town centres is often perceived as dangerous due to the conflictual nature of movements. Shared spaces, commonly recognised as streets without signs, road markings, traffic lights and segregations (Monderman, 2008) are cited as a key driver in such negative perceptions for safety. Research conducted by Howell-Jones suggests that shared spaces fail in busy town centre locations because of the power imbalances forced upon different users resulting in unwarranted conflict.



Figure 4: Shared Space in Brighton (PPS, 2017)



Figure 5: Walthamstow Shared Space (Harding, 2024a)

Secure and Convenient Cycle Parking

In order to fully acquire the benefits from directness; bicycle infrastructure must successfully incorporate the ability for cyclists to easily stop and stay in a specified location. Research from Heinen and Buehler (2019) concludes that the presence of bicycle parking the convenience and security of the locations, its quality, and potential cost facilitate or hinder cycling. A study assessing cycling rates in Australian cities found that the main obstacles to cycling into town centre locations are fear of theft (46%) and the lack of proper cycle parking (57%) (Castillo-Manzano et al., 2015).

As per guidance set by TfL on cycle parking, town centre locations should adapt to “*increased bicycle footfall though provision of additional short-term bicycle parking spaces requiring a pragmatic and tactical approach*” (TfL, 2019, p. 42). Several studies have found that while cyclists spend less per visit, they often visit shops with increased frequency, resulting in higher weekly spends (Clifton, 2012; O’Connor et al, 2011). Further to this, research suggests that the majority of town centre trips can be conducted using bicycles, TfL (2011) report that 40% of town centre customers are making an ‘unencumbered trip’ (not carrying large/bulky items) suggesting cycling as an key alternative.

Apparent, is the requirement for town centres to allocate sufficient space for cycle parking allowing for greater frequencies. Consideration should also be given to allow larger types of cargo-bicycles to access locations in order to adapt for the predicted increase in cargo cycles for urban freight transport (Schliwa et al., 2015).



Figure 6: Parking Space Cycle Parking (Penninton, 2024)



Figure 7: Cargo Bike Cycle Parking (Saris, 2024)

To accommodate for longer stays, more secure forms of cycle parking should also be provided. Research suggests that the ability for users to access long-term secure cycle parking results in increased economic viability for an area, providing options for continuous and recurring travel patterns (Flusche, 2013; UCD 2015). An inner-city Melbourne study found that when comparing secure vehicle parking and secure cycle parking, each square of allocated bike parking generated \$31 per hour compared to \$6 for each square meter used for car parking (Lee and Marsh, 2010), emphasising the economic significance that long-stay cycle parking can have.

Section 3: Recommendations

Taking these findings into account, this report proposes three key infrastructure recommendations to assist the future regeneration of Walthamstow High Street in relation to sustainable mobility.

1. Removal of Shared Space and Vehicle Access to High Street

The current vehicle restrictions allow for vehicles to access the High Street at specific loading times, cycles are also not permitted but are seen to access the High Street regularly. Research suggests that in areas of high transit movements, shared spaces are not viable.

In this respect, this report proposes the complete removal of vehicles from the High Street, this would negate the use of the private car, encouraging bicycle use and subsequently lead to a longer-term model shift towards sustainable mobility access to the High Street. This recommendation is developed in greater depth in recommendation two.

2. Rearrangement of High Street streetscape

Currently, access though Walthamstow High Street serves as a disputed space for active travel, research suggests that direct and safe access should be provided in this space. The Enjoy Waltham Forest Walking and Cycling Account (2020) states that shared spaces “*should be avoided at all costs, instead segregated cycle routes are recommended for best practice*” (LBWF, 2022, p. 23). This is echoed in Policy 60 of the LBWF Local Plan that states development should “*create safe, legible, prominent and coherent wayfinding for cycling through local centres*” (LBWF, 2024b, p. 42).

Undertaking a desktop aerial assessment of the High Street reveals that at its shortest width, the High Street measures 13.5m. Using Streetmix; an online transportation planning tool, to replicate the streetscape, **Figure 8** shows how the space is currently occupied.

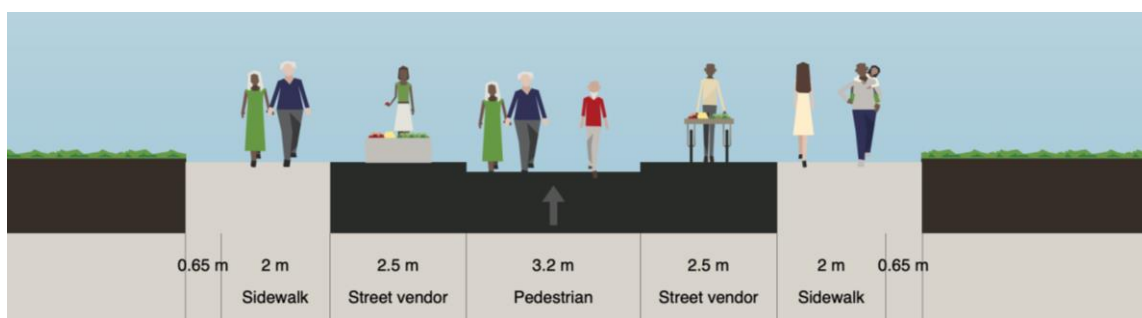


Figure 8: Walthamstow High Street Existing Streetscape (Streetmix, 2024)

To better cater for the bicycle, this report suggests a rearrangement of the street scene, to allow for the integration of a ‘market-segregated’ bike lane spanning the entirety of the High Street connecting Hoe Street with St James Street. **Figure 9** illustrates the streetscape that such proposal would take, whilst also retaining ample pedestrian and market trading space.

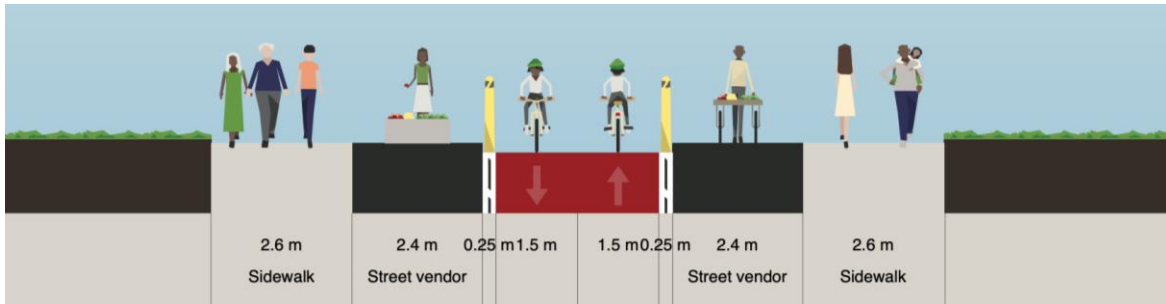


Figure 9: Walthamstow High Street Proposed Streetscape (Streetmix, 2024)

In practice, full kerb separation would allow for a safe passage of flow for cyclists to directly access any point of the High Street both conveniently and safely. The economic case for such provision is clear and whilst drastic in scope, would reinvent how the current space is optimised in terms of access and economic viability.

3. Integration of frequent and secure cycle parking.

Secondary research (**Appendix 1**), finds that the High Street is currently served by 27 cycle parking spaces representing a significant under provision of cycle parking on the High Street. Research from Heinen and Buehler (2019) suggests that this could be detrimental in encouraging bicycle use to the High Street. It is essential therefore that cycle parking is delivered in line with any infrastructure improvements to the street scene.

To increase short-term cycle parking provision, this report suggests the use of ‘on-street’ cycle parking provision proposed in easily accessible, central locations on the High Street. In the case whereby vehicle access is entirely restricted, cycle stands that can also accommodate cargo bikes should be implemented this will allow for larger loads to be transported and stored using bicycles. Underutilised space situated within the market stalls would allow for small-scale but frequent rows of cycles to be parked as like pictured in **Figure 10**.

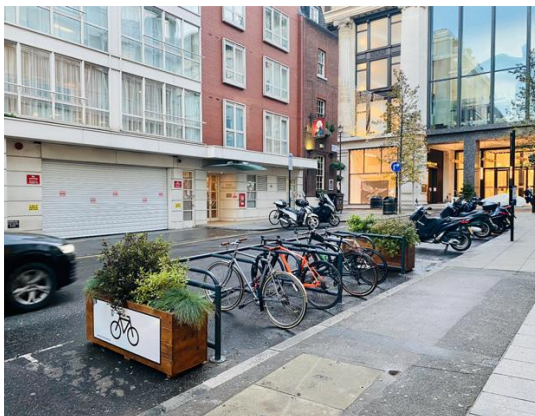


Figure 10: On-Street Cycle Parking (Cyclehoop, 2022)



Figure 11: Station Approach Cycle Hub (Cyclepods, 2017)

Since the initiation of the ‘Enjoy Waltham Forest’ programme, several Cycle Hub Locations have been developed, **Appendix 2** outlines this list in full. These hubs as pictured in **Figure 11** are convenient and secure options for medium-long term cycle storage fit with secure entry, CCTV, lighting, and two-tiered storage. Integration of a secure Cycle Hub into the High Street would allow the High-Street to become an end-point destination for visitors to Walthamstow. The Walthamstow Night-time Enterprise Zone

(WNTÉZ) as depicted in **Figure 12**, centres itself around the High Steet and aims to “*increase the range of services and activities past 6pm*” (LBWF, 2020, p. 5). The ability for cycles to be left overnight would also assist in Waltham Forests wider regeneration programme of the town-centre night-time economy.



Figure 12: Walthamstow Night-Time Enterprise Zone (LBWF, 2020)

Conclusion

This research report aims to initiate discussion surrounding the planning related dilemmas on how best to integrate sustainable mobility into an ever-changing town centre. Taking inner-town regeneration as the core motive, the report concludes with three key recommendations for Walthamstow High Street:

- Removal of shared space and vehicle access;
- Rearrangement of High Street streetscape;
- Integration of frequent and secure cycle parking.

The recommendations provided pave the way in allowing an economically resilient yet sustainably oriented transport course of action for the LBWF, meeting the needs of future visitors and residents to come. By enabling the delivery of the suggested infrastructure changes, Walthamstow High Street has the opportunity to showcase itself as a best practice model for sustainable mobility regeneration programmes.

Crucially, to be effective, the findings of this report rely upon wider integration of both the physical scheme and sustainable mobility paradigm. Whilst the physical infrastructure modifications can be implemented, it will be the adaptability and resilience of the High Street and market that will ultimately pose the greatest challenge for successful regeneration.

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Appendix

Appendix 1: Map of Walthamstow Central Cycle Parking

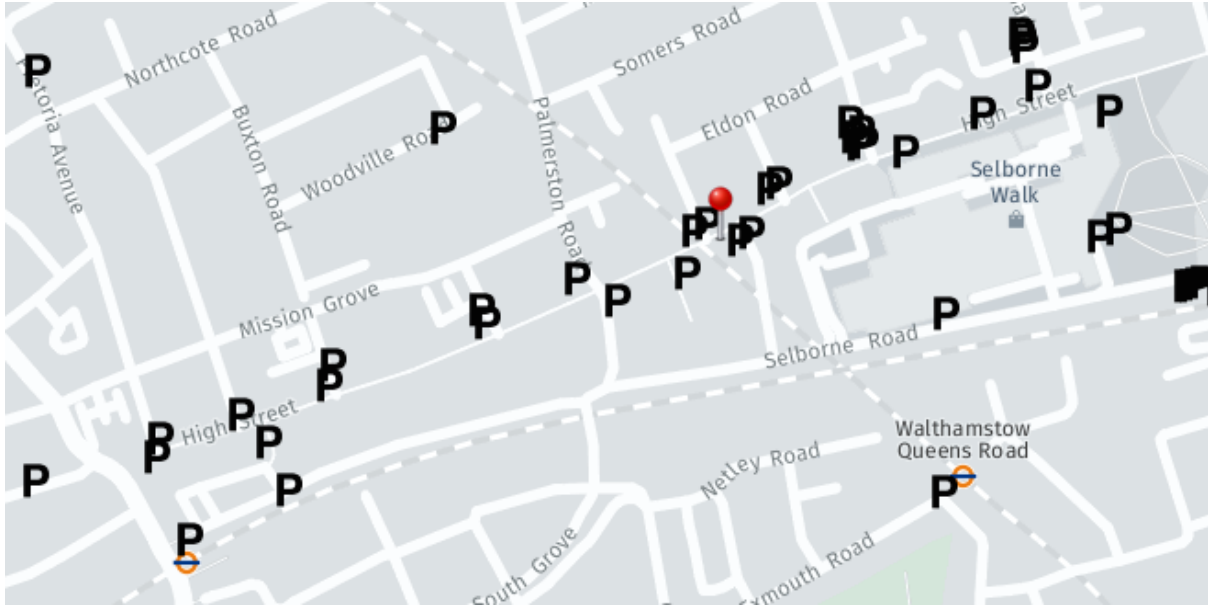


Figure 13: Walthamstow Cycle Parking (Stolen Ride, 2024)

Appendix 2: Cycle Hub Locations and Details

Cycle Hub	Location	Spaces	Facilities
Blackhorse Road (a)	Blackhorse Tube Station Car Park	72	38 two-tier racks Air pump and tools
Blackhorse Road (b)	4/10 Forest Road	70	35 two-tier racks Air pump and tools
Chingford	Chingford Station Car Park	26	14 two-tier racks
Highams Park	Highams Park Station Car Park	28	13 two-tier racks
Lea Bridge	Argall Way	48	23 two-tier racks 1 cargo bike/adapted cycle parking Air pump and repair tool kit
Leyton	Leyton High Road, opposite Leyton Mills Retail Park	166	30 two-tier racks (lower floor) 1 cargo bike/adapted bike (lower floor) 52 two-tier racks (upper floor) Air pump and repair tool kit on both floors
Leytonstone	Church Lane	50	25 two-tier racks Air pump and repair tool kit
St James Street	St James Street, outside Crate	40	20 two-tier racks Air pump and repair tool kit

Walthamstow Central	Selborne Road	156	77 two-tier racks 2 cargo bike/adapted cycle parking Air pump
Train Station	Station Approach	80	38 two-tier racks 2 cargo bike/adapted cycle parking Air pump and repair tool kit
Wood Street	Junction of Wood Street and Vallentin Road	28	14 two-tier racks