

Methuen Park,
London



Transport Statement

Artform Group

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1 Introduction

1.1 Background

1.1.1 Lime Transport has been commissioned by Artform Group to produce a Transport Statement in support of a planning application to demolish 12 existing garages and provide one 6-bedroom house, together with cycle and car parking.

1.1.2 The site is currently occupied by 14 existing garages. It is located to the south of an existing block of flats fronting Muswell Road, Rowan, and to the east of Methuen Park in Muswell Hill. The site is approximately 270m to the east of Muswell Hill Broadway within the London Borough of Haringey and is shown in **Figure 1.1** below.

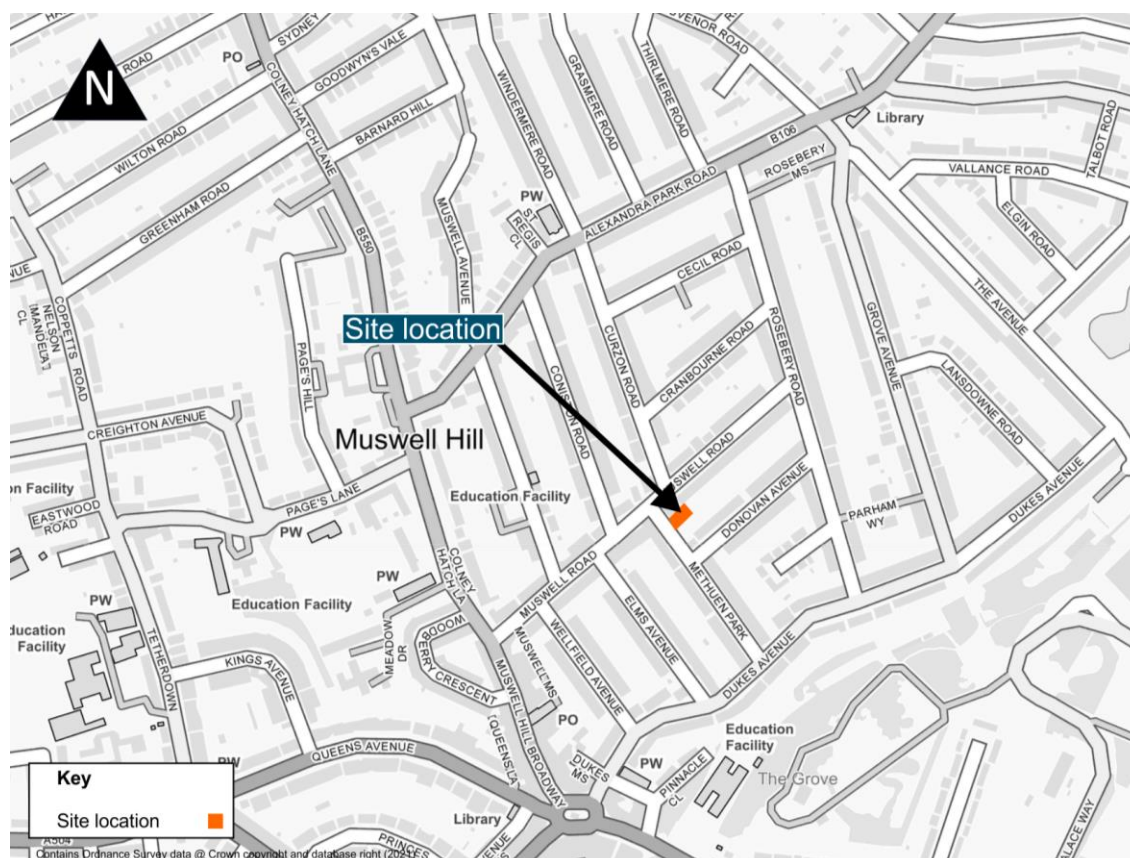


Figure 1.1 Site location

1.2 Planning history

1.2.1 Consent for two 3-bedroom houses, with two on-site parking spaces was granted in October 2021 (planning reference: HGY/2021/2061).

1.3 Scope of the Transport Statement

- 1.3.1 The purpose of this Transport Statement is to consider the transport characteristics of the proposed development, consider any impact on the surrounding transport network and identify any measures required to mitigate this impact.

1.4 Structure of the report

- 1.4.1 This report considers the highway and transport impact associated with one residential dwelling. Following this introductory chapter, the remainder of the report is structured as follows:

- Section 2 sets out national, regional and local policy relevant to the proposed development;
- Section 3 sets out who the development is for, when they will travel and why;
- Section 4 details the sustainability of the area and access to facilities within a 20-minute cycle isochrone;
- Section 5 details the development proposals and sets out the proposed access and cycle and car parking provision;
- Section 6 presents the travel characteristics of the development and considers the impact of the proposed development on the highway network;
- Section 7 sets out the results of the parking beat surveys; and,
- Section 8 provides a summary and conclusions of the report.

2 Policy compliance

2.1.1 The development supports the Mayor's Transport Strategy, Vision Zero and Healthy Streets as set out below:

Mayor's Transport Strategy

- Providing higher density residential development;
- Providing development within easy walking distance of various facilities on Muswell Hill Broadway;
- Considering the routes to key local destinations including public transport, shopping and schools;
- Providing low-car parking development; and,
- Providing high quality sheltered and secure cycle parking storage for residents.

Vision Zero

- Contributing towards the shift away from private vehicles with the promotion of travel by sustainable modes.

Healthy Streets

- Providing a low-car development for the residents;
- Providing generous, high-quality, conveniently located cycle parking for new residents;
- Considering pedestrian routes to public transport.

2.2 Pre-application consultation response

2.2.1 A pre-application was submitted for a previous scheme for two 3-bedroom houses, and Haringey's Highway Authority was consulted regarding this development as part of this process. The summary of the comments provided are set out below:

- **Location and access** – the site has a PTAL value of 3, considered 'moderate' access to public transport, with access to bus services within 5–7-minute walk to the site. No rail services are available within 960m of the site. Alexandra Palace is 25-minute walk away and Finchley Station is 29-minute walk away. The site is not located within any of the Borough's Controlled Parking Zones (CPZ), the closest is the Muswell Hill CPZ.
- **Transportation considerations** – the applicant should confirm if the garages are partly used for storage and if any are actively used for car parking by residents. It is intended to retain the southernmost vehicle crossover and it appears that two to four garages remain on the southern side of the hardstanding, but it is not completely clear. The reinstatement of the northernmost crossover will be required to provide a full height kerb and footway and the applicant will need to enter into

the appropriate Highways Act Agreement. The current proposals include the retention of both existing crossovers.

- **Parking considerations** – it is noted that the garages are partly disused. It should be clarified how many garages are to be retained. The site is not located within a CPZ, so there is potential for relocation of existing hardstanding and any garage parking into local streets, thus potentially raising on street parking pressures. The applicant will need to clarify the quantum of parking taking place within garages and the hardstanding. The applicant will need to include a Parking Stress Survey in accordance with the Lambeth Methodology and include consideration of 5m and 6m car lengths to reflect driver behaviour in this part of the borough. The application should note the combined effect of development.
- **Cycle parking** – external cycle parking is proposed. Any new cycle parking will need to meet the requirements set out in the London Plan and Chapter 8 of the London Cycle Design Standards. Cycle parking should be waterproof, secure and easy to use.
- **Servicing/refuse and recycling consideration** – the arrangements will need to meet the Borough standards for capacity, location and pull distances. It needs to be confirmed where bins will be located to await collection.
- **Construction phase** – the development will be built adjacent to sites already occupied by residents and a detailed draft of a Construction Logistics Plan will need to accompany any future application.

3 Transport planning for people

3.1 Introduction

3.1.1 This section of the report considers who the development is for, when they will travel and why.

3.2 Who will use the new development?

3.2.1 The development will be used by new residents, their visitors and deliveries. The travel characteristics of the existing residents in the surrounding area and new residents is set out below.

3.3 Travel characteristics of existing residents

3.3.1 2011 Census data has been reviewed, to establish the travel characteristics of the existing population surrounding the site, including travel to work and car ownership data.

Travel to work

3.3.2 Travel to Work data from the 2011 Census has been used to establish the mode of travel to work for existing residents in the area.

3.3.3 Lower super output areas are geographical areas built from contiguous output areas, which are consistent in population size. Between four to six output areas make up Lower Super Output Areas (LSOA), and between four to six LSOA areas make up Middle Super Output Areas (MSOA).

3.3.4 **Table 3.1** below shows the travel to work mode split for the output area for the Lower Super Output Area (LSOA 014B), the Middle Super Output Area (MSOA 014) and Haringey. This data excludes those that work from home and those not in employment.

Table 3.1 Mode split for journey to work based on 2011 Census data

Mode	Mode share (%)		
	LSOA Haringey 014B	MSOA Haringey 014	Haringey
Underground	38	38	39
Train	3	4	8
Bus, minibus or coach	19	18	19
Taxi	1	0	0
Motorcycle, scooter or moped	2	2	1
Car or van (as driver)	24	25	20
Passenger in car or van	1	1	1
Cycle	5	5	5
Walk	7	6	7
Other	0	1	1
Total		100%	

3.3.5 It should be noted that, Census Travel to Work data differs from the trip generation survey data, as the survey data records vehicle journeys for all purposes, not just work related.

3.3.6 It can be seen that a total of 72% of the population within the LSOA travel to work by sustainable modes, including walking, cycling and public transport. Approximately 24% of existing residents travel to work by car, with a further 1% travelling as passenger.

Car ownership

3.3.7 The likely car ownership rate of the future residents has been based on car or van availability data in the 2011 Census data in the area of the site. In order to predict car ownership characteristics, it is necessary to compare location and housing characteristics (tenure and size).

3.3.8 Within the lower super output area, the car ownership is 0.82 cars/vans per household. This is slightly lower than the MSOA at 0.87 and Alexandra ward at 1. Across the borough, car ownership is generally low with over 51% of households not owning a car.

3.3.9 The housing characteristics of the Alexandra ward, the MSOA and LSOA compares to the development as follows:

- **Housing tenure** – the development is for a private house, which is similar to the tenure of housing in the Alexandra ward, the MSOA and LSOA areas, with private housing comprising over 90% of all housing.
- **House size** - within the LSOA, MSOA and Alexandra ward areas, 1-bedroom properties account for between 17-30% of all dwellings, 2-bedroom properties account for between 26-32% and 3+ bedroom dwellings account for between 37-56%. The proposed development will comprise one 6-bedroom house.

3.3.10 Based on the tenure and size of housing, it is considered that car ownership among future residents is likely to be between 0.8 and 1 car per household.

3.4 When will people travel and why?

3.4.1 It is anticipated that the trip profiles of residents will fluctuate across the day with weekday peaks as follows:

- **Morning (8am to 9am)** - departures for employment and education;
- **Mid-afternoon (3pm to 4pm)** - arrivals for education; and,
- **Evening (5pm to 7pm)** - arrivals for employment and departures for retail and leisure.

3.4.2 During the weekend, trips will be more consistent across the day with trips for retail and leisure purposes.

3.4.3 **Figure 3.1** below shows the likely profile for weekday daytime trips based on comparable sites within the TRICS trip generation database.

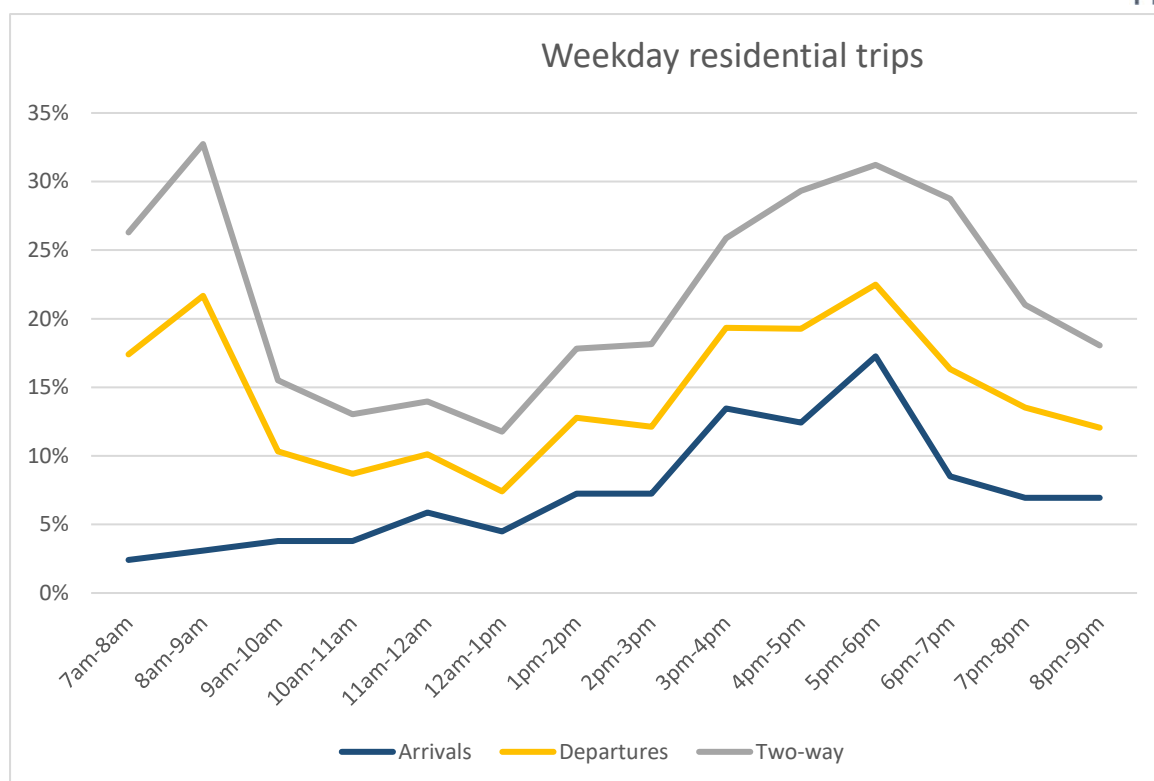


Figure 3.1 Profile of weekday trips for residential use

3.4.4 **Figure 3.2** below shows the residential trip purposes during the weekday daytime, based on London Travel Demand Survey (2018-19).

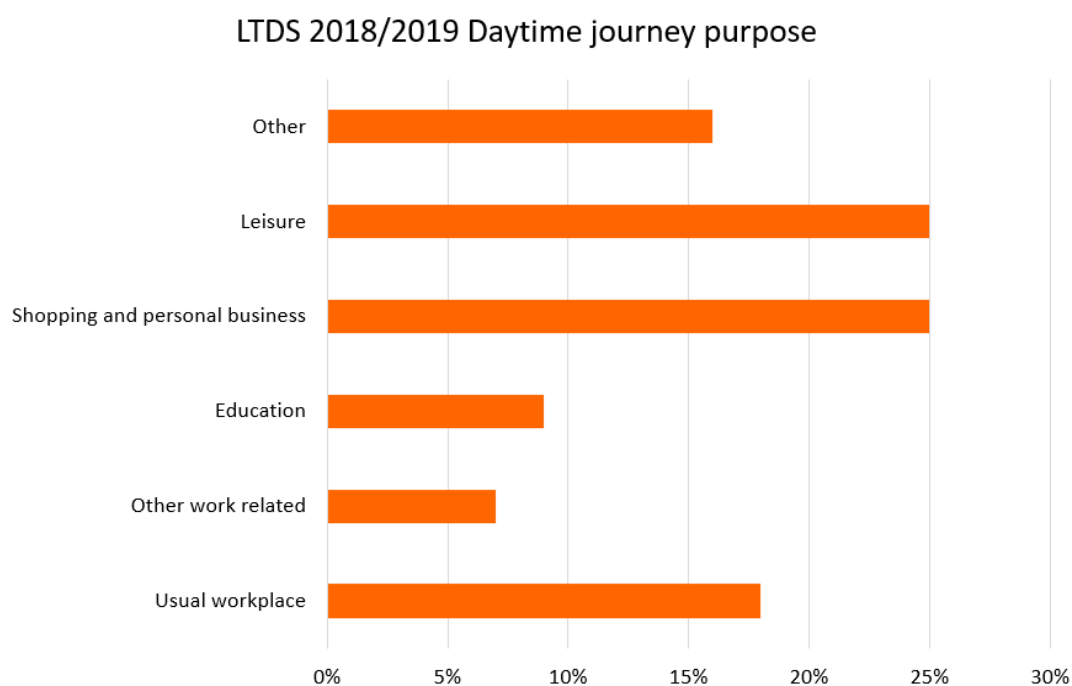


Figure 3.2 Journey purpose for residential use

4 Site and surroundings

4.1 Site location

4.1.1 This section summarises the existing transport facilities within the vicinity of the site, details connectivity by walking, cycling and public transport and includes a description of the local highway network and collision analysis along the key routes to facilities.

4.1.2 The proposed development is located off Methuen Park, within the London Borough of Haringey. The site is bounded by:

- Rowan building to the north;
- The rear of residential dwellings off Donovan Avenue to the south;
- Methuen Park to the west; and,
- The rear of residential dwellings fronting Muswell Road to the east.

4.2 Walking

4.2.1 The key desire lines for pedestrians will be to:

- Muswell Hill Broadway, with bus stops and variety of local facilities, approximately 320m to the west;
- Alexandra Park, approximately 540m to the south-east; and,
- Muswell Hill Primary School, approximately 430m to the south.

4.2.2 In addition, other desire lines are likely to be to:

- Alexandra Palace Station, approximately 1.8km (via Alexandra Park) to the north-east; and,
- Highgate Underground Station, approximately 2.2km to the south-west of the site.

4.2.3 Pedestrians are well provided for, with all streets in the vicinity of the site provided with footways on both sides of the carriageway. There are dropped kerb crossings provided on approach to the junctions. A dropped kerb crossing with tactile paving is provided on Methuen Park on approach to Muswell Road, immediately to the north of the site. The closest formal crossing is a signalised crossing on Muswell Hill Broadway, located approximately 400m to the south-west of the site. This crossing is provided with dropped kerbs and tactile paving. There are formal crossings provided along the length of Muswell Hill Broadway (the local high street in the area) and at Muswell Hill/Queens Avenue/Muswell Hill Broadway roundabout, which are either zebra crossings or signalised crossings provided with dropped kerbs and tactile paving. These crossings provide convenient access to various facilities.

4.2.4 The streets in the vicinity of the site are subject to a 20mph speed limit, including Methuen Park, Muswell Road and Muswell Hill Broadway.

4.2.5 The Chartered Institution of Highways and Transportation (CIHT) guidelines *‘Providing for Journeys on Foot’* indicates that the desirable walking distance for commuting and school journeys is 500m, the acceptable walking distance is 1km and 2km is the preferred maximum. The CIHT guidelines indicate that the desirable walking distance for ‘Elsewhere’, including local amenities, is 400m, the acceptable walking distance is 800m and 1.2km is the preferred maximum.

4.2.6 This site is in a sustainable location within easy walking distance of the neighbourhood centre approximately 320m-1.2km to the west and south-west of the site on Muswell Hill Broadway and Fortis Green Road. There are a variety of facilities available within easy walking distance of the site, including:

- Public transport (bus stops);
- Food (restaurants, takeaways, cafes, bars, pubs);
- Food stores;
- Leisure and community (Everyman Cinema, Alexandra Park, Muswell Hill Library, Birchwood Community Centre);
- Education (nurseries, primary schools, secondary schools and 6th form college)
- Retail shops;
- Financial (Post Office, building society and banks);
- Hairdresser and barbers;
- Places of worship; and,
- Health (GP surgery, dentists, pharmacies).

4.2.7 In addition, the site is located within easy cycle distance of the following:

- New Southgate employment area – 2.5-3km to the north;
- A1/Archway Road, with a variety of local facilities – 2.5-3km to the south;
- Wood Green employment area – 2.5-3km to the east;
- High Road/A105 in Wood Green, with a variety of local facilities – 3-3km to the east;
- High Road/A1000 in East Finchley 2.5-3km to the west.

4.3 Cycling

4.3.1 London Cycle Network (LCN) route 54 runs through Alexandra Park, and is provided approximately 550m to the south of the site. The route provides access to Wood Green, Tottenham and Walthamstow to the east.

4.3.2 In Tottenham (approximately 7km to the east), this route provides access to National Cycle Network (NCN) Route 1. NCN 1 is major, long-distance cycle route between Dover to Shetland. In Tottenham, this route is provided on a traffic-free route along the River Lee.

4.3.3 In addition, there are recommended cycle routes available in the vicinity of the site along Dukes Avenue, Muswell Hill Broadway and Creighton Avenue. Dukes Avenue and Creighton Avenue are generally quiet residential roads. Cyclists can also use paths provided at Alexandra Park and Highgate Wood to the south.

4.4 Accessibility by public transport

Bus services

- 4.4.1 The closest bus stop is located on Muswell Hill Broadway (Queens Avenue bus stop), approximately 425m to the west of the centre of the site. This bus stop is served by bus routes 43, 102, 134, 234, 299 and 634, which provide access to a variety of facilities, including London Bridge, Brent Cross, Edmonton Green and North Finchley.
- 4.4.2 Additional bus stops are located 500m further to the south on Muswell Hill Broadway. This bus stop is served by bus route 144 and W7, which provide access to Lower Edmonton and Finsbury Park.
- 4.4.3 The bus routes which serve these bus stops are summarised in **Table 4.1**.

Table 4.1 Summary of routes accessed at nearest bus stop

Route no.	Nearest bus stop (m)	Route	Frequency per hour
Queens Avenue stop			
43	425	London Bridge – Halliwick Park	6-12
102	425	Brent Cross – Edmonton Green Bus Station	6-10
134	425	University College Hospital/Euston Road – North Finchley	6-10
234	425	Highgate Wood – Barnet, the Spires	4
299	425	Cockfosters Station – Queens Avenue	5-6
634	425	Galley Lane – Queens Avenue	1 per day
Muswell Hill Broadway			
144	500	Edmonton Green Bus Station – Muswell Hill Broadway	5-9
W7	500	Finsbury Park Station – Muswell Hill Broadway	6-30

Rail services

- 4.4.4 The closest station is Alexandra Palace, located approximately 1.8km to the east of the site, equivalent to a 23-minute walk or a six-minute cycle journey. This station is operated by Thameslink and Great Northern and is on the Great Northern Route that forms part of the East Coast Main Line, with services during the weekday provided as follows:
- Six trains per hour to Moorgate;
 - Three trains per hour to Welwyn Garden City; and,
 - Four trains per hour to Hertford North (via Hertford Loop Line), with two services extended to Stevenage.
- 4.4.5 There are limited evening and night services provided to and from King's Lynn, Cambridge and Peterborough via Potters Bar. This station also provides weekday peak time (AM and PM) trains to and from Kings Cross.
- 4.4.6 It should be noted that weekend services are less frequent, with services provided as follows:

- Four trains per hour to Moorgate;
- Two trains per hour to Welwyn Garden City; and,
- Two trains per hour to Hertford North (via Hertford Loop Line), with one service extended to Stevenage.

4.4.7 There are 10 cycle storage spaces (five stands) provided at this station. The station is not provided with step-free access.

4.4.8 Highgate Underground station is located approximately 2.2km to the south of the site, equivalent to a 28-minute walk, a seven-minute cycle journey or accessed via bus route 43 and 134, with total journey time of approximately 15 minutes. This station is operated by London Underground and is provided on the Northern Line, with services between Morden to Edgware, Mill Hill East, High Barnet (via bank or Charring Cross). The journey time to King's Cross is approximately 20 minutes and 27 minutes to Bank.

4.4.9 There are five cycle stands provided at the northern entrance and two at the southern entrance. This station is not provided with step-free access.

4.5 Public Transport Accessibility Level

4.5.1 Public Transport Accessibility Levels (PTAL) are a theoretical measure of the connectivity of a given point to the public transport network, taking into account walk access time and service availability.

4.5.2 The PTAL is categorised in eight levels (1a to 6b), where 6b represents an excellent level of connectivity and 1a represents a poor level of connectivity.

4.5.3 The assessment methodology reflects:

- Walking time from the point of interest to the public transport access points;
- The reliability of the service modes available;
- The number of services available within the catchment; and
- The level of service at the public transport access points – i.e. average waiting time.

4.5.4 An Equivalent Doorstep Frequency (EDF) is calculated for each of the public transport services accessible from the site based on the criteria described above. These individual EDF values are then weighted to provide an Accessibility Index (AI) value for each service accessible from the site. The sum of the AIs for each mode are then aggregated to provide a single measure of connectivity.

4.5.5 TfL's WebCAT online calculation tool identifies the site as having a PTAL rating of 3 indicating a moderate level of connectivity to public transport (accessibility index 10.47). **Figure 4.1** below presents an extract from the TfL WebCAT programme, for the immediate area surrounding the site.

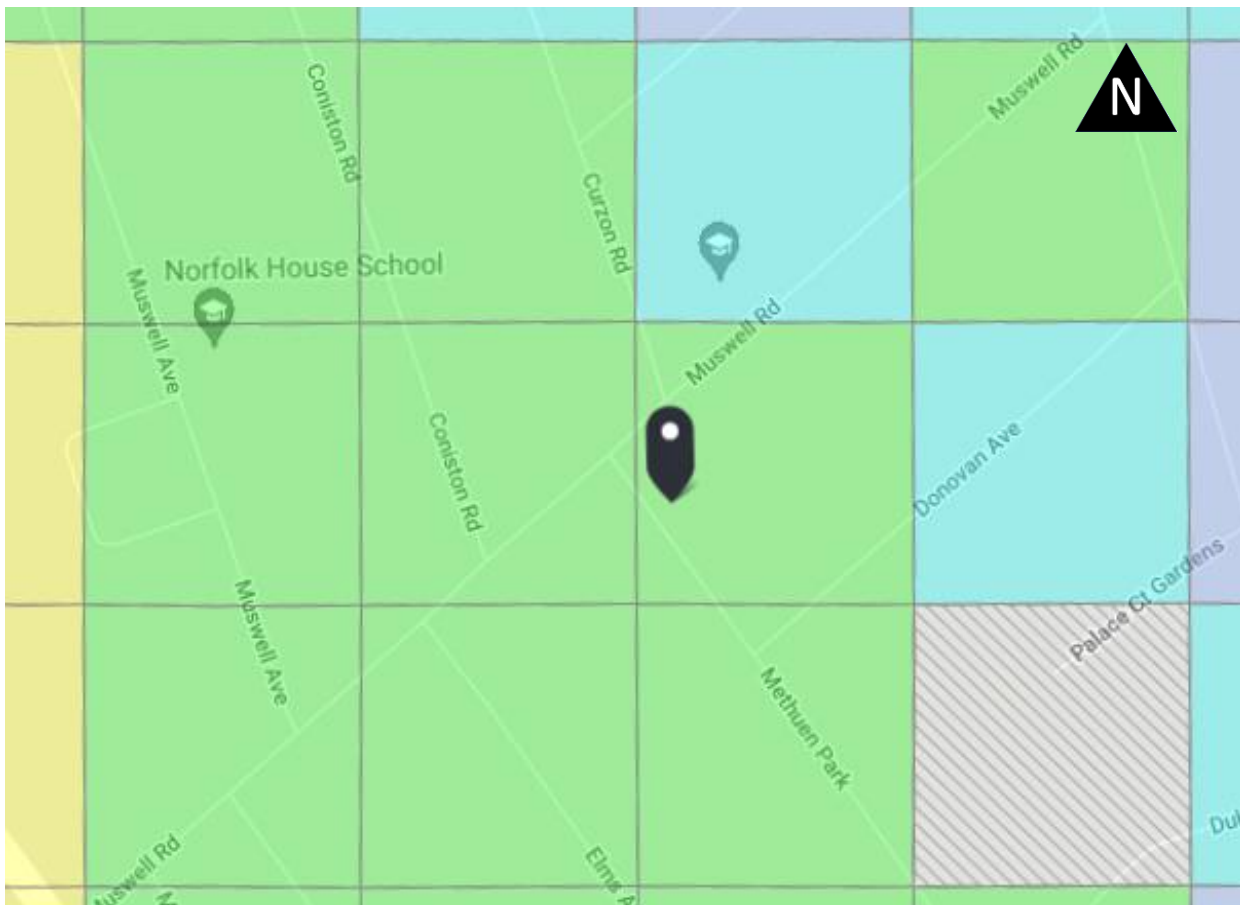


Figure 4.1 Public Transport Accessibility Level (PTAL)

1.1.1 TfL's PTAL rating is an excellent tool for identifying strategic issues related to public transport provision, however, PTAL does not consider the overall sustainability of a site, simply its connectivity to public transport in broad terms. PTAL does not take into account the following:

- **Facilities within easy walking distance** – Muswell Hill and Fortis Green Road are local high streets in the area, with a wide variety of essential facilities including health, leisure, retail, shopping and financial services meaning that many day-to-day trips can be undertaken by walking. Other major town centres, including Wood Green, Archway Road and New Southgate, are within 2.5-3km of the site, equivalent to a 9-minute cycle journey, and can be accessed by local bus routes.
- **Public transport services outside 640m walk distance to access buses and 960m to access trains** – Alexandra Palace and Highgate Underground stations are not included within the PTAL score, given that they fall outside the acceptable walk distance. However, the frequency and speed of services, particularly from Highgate Underground station makes this an attractive travel mode, as demonstrated in Census travel to work data, which shows that approximately 38% travel to work (main mode) by underground;

- **Public transport destinations** – the journey time from the development to King’s Cross is approximately 36 minutes and 42 minutes to Bank (including walk to station time), with services running approximately every five minutes.
- **Access to cycle network** – London Cycle Network (LCN) routes are available in the vicinity of the site, including Route 54, which runs between Muswell Hill and Walthamstow. In the vicinity of the site, it is provided along a traffic-free route at Alexandra Park.

4.6 Car clubs

- 4.6.1 Car club cars reduce the need to own a car and tend to be more energy efficient and cleaner than average cars. Car club members tend to cycle more and use public transport more than the average Londoner. Research suggests that *‘for each car club vehicle, 5.8 cars have been removed from the road as a result of car club members who have sold a car. ... In addition, 30% of car club members have deferred their planned purchase of a car’* (Carplus (2014) Annual Survey: London).
- 4.6.2 The London Plan, however, states that each car club vehicle typically results in eight privately owned vehicles being sold. TfL’s report (2014) Parking and Car Club Potential Users and Use (Systra) supports the potential for reducing car ownership, stating that *‘car club membership may prove to be an effective tool in deferring or reducing private vehicle ownership, thus leading to a net reduction in total future car demand’* which would have an impact on reducing parking demand.
- 4.6.3 Car club cars tend to be newer and, therefore, more energy efficient and cleaner than average cars. It is considered that car clubs provide the following benefits:
- Relieve parking pressures within the borough;
 - Reduce the reliance on the private motor-vehicle;
 - Provide an attractive and convenient alternative to travel or owning a car;
 - Cost effective for those that drive fewer than 8,000 miles per year; and,
 - Act as a catalyst to use sustainable modes of travel.
- 4.6.4 Zipcar and Enterprise are the current car club operators in Haringey. Zipcar has recently introduced flexi car-club spaces, meaning that the cars are constantly moving around within the borough. With flexible car club spaces, the location of the cars can be tracked and dropped off anywhere within the borough.
- 4.6.5 In addition to flexible car club cars, there are round-trip vehicles, where the vehicles need to be returned to the point of origin. The closest round-trip cars to the site are provided at the following locations:
- Coniston Road, approximately 85m to the north (Zipcar);
 - Page’s Lane, approximately 630m to the west (Zipcar); and,
 - Summerland Gardens car park, approximately 690m to the south (Zipcar).

- 4.6.6 Given the distance to these car club spaces, it is likely that they will be attractive to future residents.

4.7 Local highway network

- 4.7.1 Table 4.2 below describes the existing highway network near the site.

Table 4.2 Description of local highway network

Road name	Description
Methuen Park	
Description	A single carriageway, residential road, which can be accessed via a priority junction with Muswell Road to the north and Duke's Avenue to the south. There are footways provided on both sides of the carriageway.
Carriageway width	Approximately 8m wide
Speed limit	20mph
Street lighting	Yes, along the length of the carriageway
Crossing facilities	Dropped kerbs are provided on approach to the junction with Muswell Road to the north (with tactile paving) and Dukes Avenue to the south.
Bus route	No
On-street parking	Unrestricted parking on both sides of the carriageway with some blue badge bays and double yellow lines on approach to the junctions.
Character	A quiet residential street, fronted with residential dwellings on both sides of the carriageway
Muswell Road	
Description	A single carriageway, residential access road, which can be accessed via a priority junction with Muswell Hill Broadway/Colney Hatch Lane to the west and via a priority junction with Rosebery Road to the east. There are footways provided on both sides of the carriageway.
Carriageway width	Approximately 10m
Speed limit	20mph
Street lighting	Yes, provided along the length of the carriageway.
Crossing facilities	Dropped kerbs crossing on approach to junctions (with occasional tactile paving provision)
Bus route	No
On-street parking	Generally unrestricted parking, with some blue badge bays, double yellow lines on approach to junctions and driveways
Character	A residential street, fronted with residential dwellings on both sides of the carriageway

4.8 The Active Travel Zone

- 4.8.1 The Active Travel Zone Assessment is a qualitative analysis of the walking and cycling infrastructure from the proposed development to key destinations. Given that the development falls below the threshold for a Healthy Streets Transport Assessment, a simplified application has been adopted in this report.

4.8.2 The key spatial scales considered include 20-minute active travel zone, neighbourhood scale and neighbourhood healthy characteristics.

4.8.3 The prioritised active travel key destinations for pedestrians and cyclists within the Active Travel Zone is based on the likely primary user of the development, in this case residents. The following destinations are prioritised as follows:

- Nearest town centre, retail and food shopping – high priority;
- Public transport services – high priority;
- Local cycle network – medium priority;
- Education – high priority;
- Employment – medium priority; and,
- Recreation – medium priority.

4.8.4 The 20-minute cycle isochrone is shown in **Figure 4.2** below.

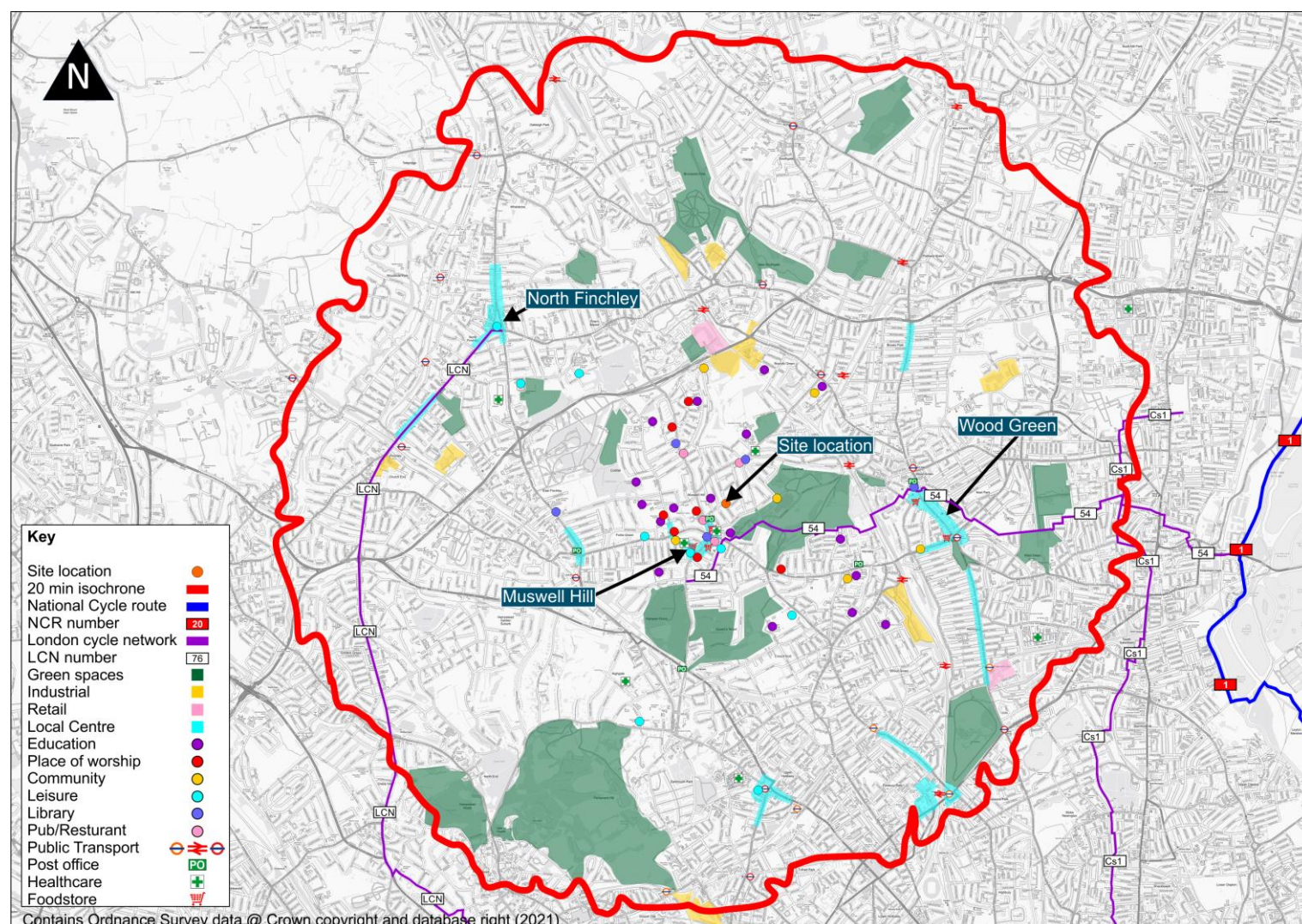


Figure 4.2 20-minute cycle isochrone

4.8.5 The neighbourhood scale map remaps the Active Travel Zone to include the most important key destinations including the key routes set out below.

- **Route 1** – 6-minute walk to bus stops and facilities along Muswell Hill Broadway;
- **Route 2** – 7-minute walk to Alexandra Park; and,
- **Route 3** – 5-minute walk to Muswell Hill Primary School.

4.8.6 The neighbourhood scale map identifies the routes to these key destinations and killed and seriously injured (KSI) collision data along the routes, refer to **Figure 4.3**.

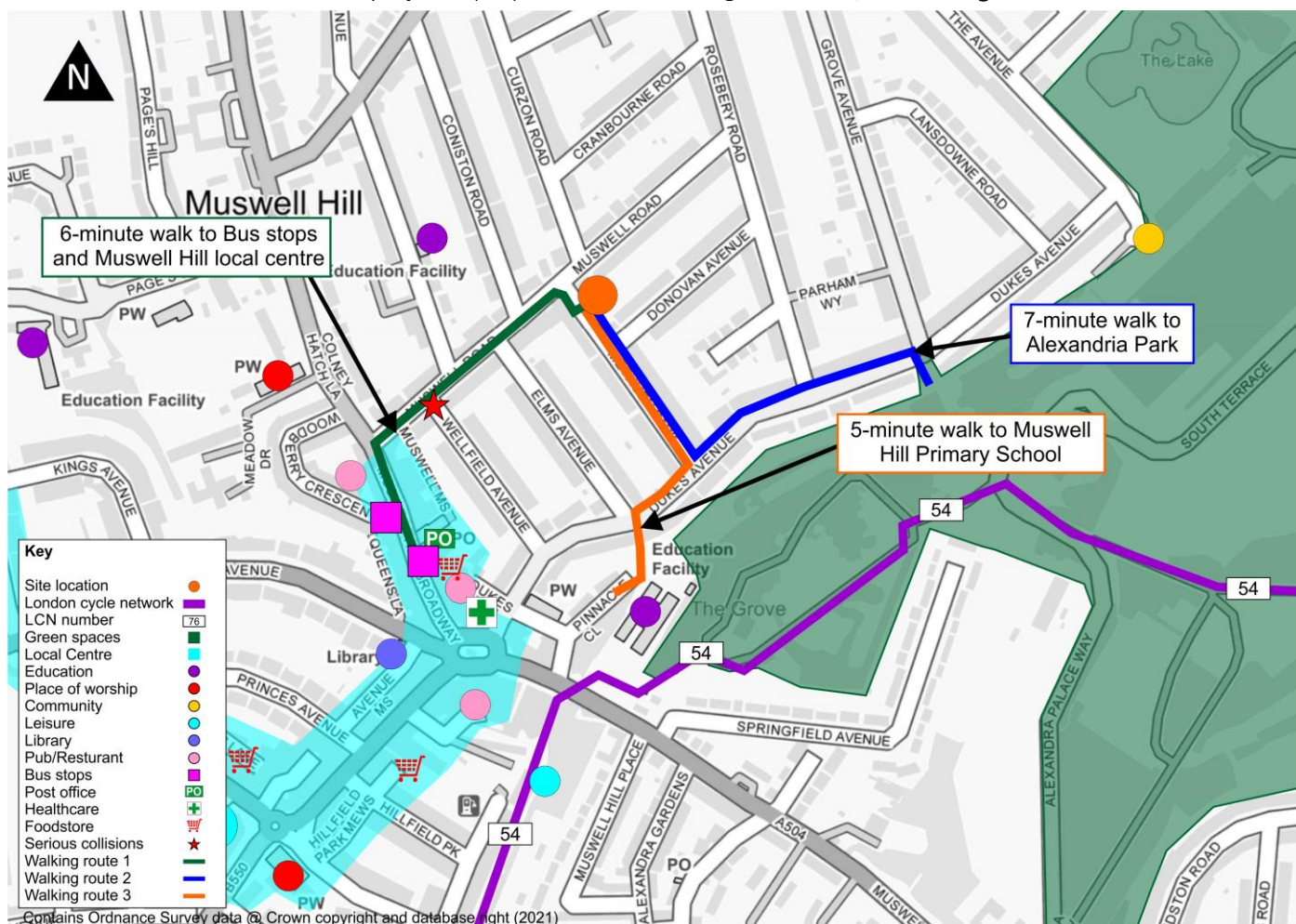


Figure 4.3 Active Travel Zone Neighbourhood safety and most important journeys

Description of routes to key destinations

4.8.7 As part of the Active Travel Zone Assessment, the route to each key destination has been considered. This includes three routes as set out below.

- **Route 1** – to bus stops and a range of local facilities along Muswell Hill Broadway, approximately a 6-minute walk away from the site. This route is via Muswell Road to the north, with lighting and footways provided on both sides of the carriageway, and informal crossings provided at the junction with Methuen Park (dropped kerbs

and tactile paving), Elms Avenue, Wellfield Avenue, Muswell Mews and Muswell Hill Broadway (dropped kerbs). The speed limit is 20mph and traffic flow is likely to be low.

- **Route 2** – to Alexandra Park, located approximately 7-minute walk from the site. There is good footway provision on the surrounding roads, with likely low traffic flow and speed along Methuen Park and Dukes Avenue. There are wide footways and informal crossing facilities provided along Methuen Park and Dukes Avenue, and the road is subject to a 20mph speed limit. The route is lit and benefits from passive surveillance from residential and commercial dwellings along the carriageway.
- **Route 3** – to Muswell Hill Primary School, located on Pinnacle Close, approximately 5-minute walk away from the site. There is good footway provision on the surrounding roads, with likely low traffic flow and speed along Methuen Park and Dukes Avenue. There are a wide footways and a zebra crossing (with refuge island, dropped kerbs and tactile paving) is provided from Duke's Avenue to Pinnacle Close. The route is generally well-lit and benefits from passive from residential properties fronting the route. Traffic flow and speed is likely to be low, given the 20mph speed limit.

4.8.8 It is considered that all routes are pleasant with good footway provision and safe crossing facilities. Traffic volume and speed are likely to be low with no particular concerns relating to safety, air quality or noise disturbance. The routes are generally lit and passing residential frontages or the high street facilities along Muswell Hill Broadway.

4.9 Vision Zero

4.9.1 Personal injury collision data has been obtained for the period 2017 to 2021 (inclusive) for the routes to key destinations. It can be seen from Figure 4.3 that there are no clusters of collisions resulting in serious or fatal personal injury being sustained along any of the key routes identified above.

4.9.2 However, one collision occurred which involved a pedestrian casualty sustaining serious injury at Wellfield Avenue/Muswell Road junction.

4.10 Neighbourhood healthy characteristics

4.10.1 The neighbourhood characteristics including green spaces and land uses are described below:

- **Land use** – town centre land uses including food stores and restaurants provided along Muswell Hill Broadway. The nearest education facilities is the primary school located to the south on Pinnacle Close.
- **Street density** – there is very good footway provision in the vicinity of the site leading to the key destinations.
- **Green space** – to the south of the site there is Alexandra Park (550m south) and Highgate Wood (approximately 2km further to the south).

- **Public transport density** – the site is located in close proximity to a comprehensive level of bus provision with a number of bus stops serving various routes along Muswell Hill Broadway.
- **Permeability** – there are extensive routes around the site, with various pedestrian and cycle routes provided via Alexandra Park, improving permeability in the area.

5 Development proposals

5.1.1 As part of the development, it is proposed to provide one 6-bedroom house. The development currently comprises 14 garages, of which 12 will be demolished with two retained. The proposed development is illustrated in **Figure 5.1** below.

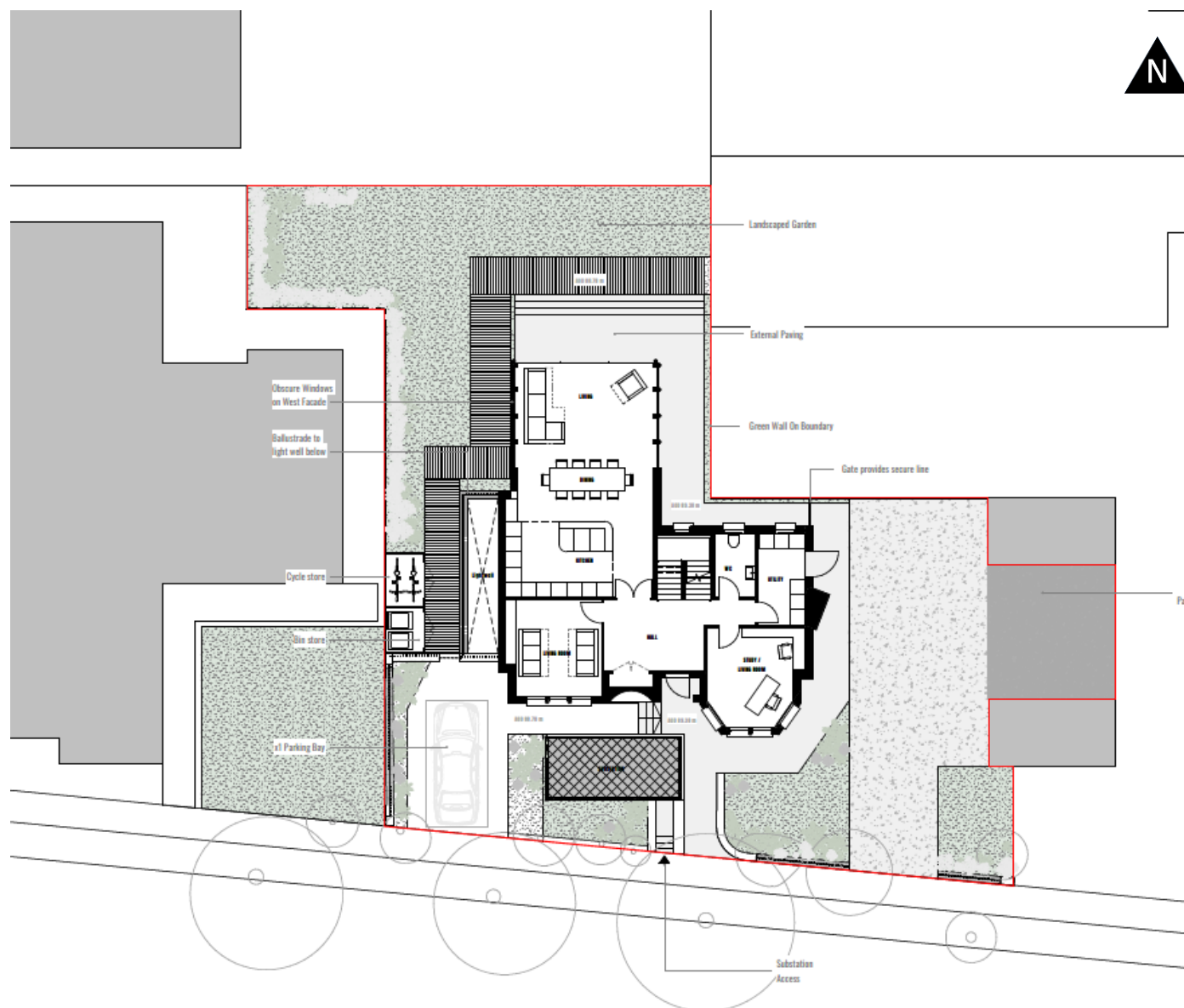


Figure 5.1 Development proposals

5.2 Pedestrian access

- 5.2.1 Pedestrian access will be gained via Methuen Park to the west, which provides convenient access to Muswell Road.

5.3 Vehicle access

- 5.3.1 Vehicle access will be gained from Methuen Park using the existing crossover and both crossovers to the site will be retained.

5.4 Car parking

- 5.4.1 Based on Census data for the surrounding area, the new household is likely to own a total of up to one car. It is proposed to provide one new on-site parking space, in accordance with the London Plan parking standards. The London Plan states that for outer London areas of PTAL 3, a maximum of 1 space per dwelling is required for 3+bedroom dwellings.
- 5.4.2 The proposed development will result in a loss of 12 garages. The usage of the existing garages is outlined in detail in Section 7.

5.5 Cycle parking

- 5.5.1 It is proposed to provide cycle parking in accordance with the London Plan. The cycle parking requirement for 2+bedroom dwellings is two spaces per dwelling. The development falls below the requirement for visitor cycle parking. Two cycle parking spaces will be provided in a secure store, conveniently located at the front of the site (see Figure 5.1 above).

5.6 Delivery and servicing, refuse and emergency vehicles

Deliveries

- 5.6.1 It is likely that deliveries and servicing arrangements will be carried out from Methuen Park fronting the development.
- 5.6.2 It is anticipated that the development will generate one delivery and servicing trip per one to two weeks. The likely maximum size of vehicle that would be reasonably expected to deliver to any residential development will be a 10m rigid vehicle. In practice, it is more likely that the maximum size of vehicle will be an 8m rigid vehicle, with transit sized vehicles being much more commonly used.

Refuse

- 5.6.3 Residential refuse will be stored separately in conveniently located bin stores in the north-western corner of the site, with convenient access to Methuen Park. It is anticipated that all refuse generated by the development will be collected by the local authority as part of the existing refuse collection.

Emergency

- 5.6.4 It is anticipated that access for emergency vehicles (fire and ambulance) will be provided from Methuen Park. It is considered that the building is within an acceptable distance for access by emergency vehicles.

5.7 Healthy Streets Indicators

- 5.7.1 A review of the proposals has been carried out based on the 10 Healthy Streets Indicators and set out in **Table 5.1** below. The purpose of the review of the development is to ensure that the layout has been designed to be attractive to people from all walks of life and people choose to walk, cycle and use public transport. It provides a design check to ensure that the development layout is healthy, safe and welcoming.

Table 5.1 Healthy Streets Indicators

Healthy Streets Indicator	Proposed development
Pedestrians from all walks of life – streets should be welcoming places where people can walk, spend time and engage in community life	The demolition of the garages will improve the streetscape.
Easy to cross – making streets easy to cross can encourage more people to walk and connect communities, therefore direct routes are preferred. Physical barriers, fast moving or heavy traffic can make streets difficult to cross.	There is good access from the site to the key facilities in the surrounding area.
Shade and shelter – providing shelter from high winds, heavy rain and direct sunlight will enable everyone to use the streets in whatever weather	It is proposed to retain the existing trees, which will provide shade, shelter from rain and protection from high winds.
Places to stop and rest – a lack of resting places can limit mobility for certain groups of people. Provision of resting places can encourage people to visit, spend time in and meet people on the streets	Residential properties are provided in close proximity to Methuen Park and Muswell Road. Residents can rest on low lying walls and at bus stops along the key routes.
Not too noisy – reducing the noise impact of motor traffic will improve the street environment and encourage active travel and human interaction	The site has a low level of car parking and it is anticipated that traffic levels and speed will be low.
People choose to walk, cycle and use public transport – a successful transport system encourages and enables people to walk and cycle, which can be achieved through reduction of volume and dominance of cars	The development is well located for pedestrians and cyclists to access Muswell Hill.
People feel safe – people should feel comfortable on streets at all times and not be worried about road danger or experience threats	Methuen Park and Muswell Road are residential roads, with low traffic flow and speed and benefit from passive surveillance from residential properties. The existing trees will be retained which will provide a buffer between the development and Methuen Park.
Things to see and do – people are more likely to use streets when the journey is stimulating, with attractive views, buildings, planting and street art.	The existing trees along the site frontage will be retained and the demolition of existing garages will create a more pleasant environment.

People will be less dependent on cars if facilities are within short distances	
People feel relaxed – more people will choose to walk or cycle if streets are not dominated by cars and if pavements and cycle paths are not overcrowded, dirty cluttered or in disrepair	The development has a low level of parking and is located to ensure that day-to-day trips by car-free modes are feasible.
Clean air – improving air quality delivers benefits and reduces health inequalities	Provision of low car parking and high-quality cycle parking means that people will choose to use sustainable modes of travel improving air quality.

6 Transport characteristics

6.1 Trip generation

6.1.1 In order to assess the impact of the proposed development of one residential house on the existing highway network, it is necessary to assess the number of trips likely to be generated by the proposed development. This section, therefore, outlines the methodology used to predict the person trip generation (by mode).

6.1.2 The TRCIS (v.7.6.4) trip generation database has been reviewed to predict the likely level of trips generated by the proposed development. There are limited sites available in London in the private house category. Therefore, private flat category has been selected. The sites were selected on the basis of the following criteria:

- Land use: residential; private flats;
- Survey type: Multi-modal
- Survey days: Monday - Thursday
- Number of units: 0 to 30 dwellings; and,
- Type of location: PTAL 2-4;
- Location of development: London.

6.1.3 A total of four sites have been selected, and the AM, PM and daily trips generated by the proposed development is summarised in **Table 6.1** below and is included in full in **Appendix A**. It should be noted that 50th percentile trip rates have been used as there is insufficient data to use the 85th percentile.

Table 6.1 Weekday person trip rates

Time period	Arrival trip rate	No. of arrivals	Depart trip rate	No. of departs	Total trip rate	Total movements
Vehicles						
8am–9am	0.039	0	0.145	0	0.184	0
5pm–6pm	0.118	0	0.039	0	0.157	0
7am–7pm	1.104	1	1.173	1	2.277	2
Pedestrians						
8am–9am	0.039	0	0.263	0	0.302	0
5pm–6pm	0.211	0	0.145	0	0.356	0
7am–7pm	1.373	1	1.413	1	2.786	3
Cyclists						
8am–9am	0.013	0	0.026	0	0.039	0
5pm–6pm	0.026	0	0.000	0	0.026	0
7am–7pm	0.215	0	0.169	0	0.384	0
Public transport users						

8am–9am	0.026	0	0.289	0	0.315	0
5pm–6pm	0.171	0	0.039	0	0.21	0
7am–7pm	1.006	1	1.156	1	2.162	2
Total						
8am–9am	0.118	0	0.750	1	0.868	1
5pm–6pm	0.474	0	0.211	0	0.685	1
7am–7pm	3.813	4	4.036	4	7.849	8

- 6.1.4 It can be seen from the table above that the proposed development could generate a total of eight person movements per day with two daily vehicle movements. It is considered that this level of vehicle use can be accommodated within the surrounding highway network.

6.2 Servicing trip generation

- 6.2.1 It is anticipated that the delivery and servicing vehicle trips for the proposed development will be as set out below (and these are included in the vehicle trips set out in Table 6.1 above).

- 6.2.2 There is a limited number of sites available in the TRICS database which detail the likely servicing associated with residential use. Given the increase in home deliveries in recent months, there is also a lack of up-to-date data. Therefore, the frequency of delivery and service trips has been estimated using an independent survey carried out at the Cherry Orchard Road residential development in Croydon (comprising 300 dwellings) on 2nd July 2020. The survey was undertaken between 7am and 10pm and includes deliveries (by LGVs, HGVs, motorbikes and cars) as well as maintenance and security vehicles. The survey results are set out in **Table 6.2** below.

Table 6.2 Predicted delivery and servicing trips for the development

Time period	Total trip rate/day	Total no. of trips/day	Total no. of trips/week
LGVs			
8am–9am	0	0	0
5pm–6pm	0.003	0	0
7am–10pm	0.0737	0	1
OGVs			
8am–9am	0	0	0
5pm–6pm	0.003	0	0
7am–10pm	0.017	0	0
Motorbikes			
8am–9am	0	0	0
5pm–6pm	0	0	0
7am–10pm	0.007	0	0
Cars			

8am–9am	0	0	0
5pm–6pm	0	0	0
7am–10pm	0.01	0	0
Total			
8am–9am	0	0	0
5pm–6pm	0.006	0	0
7am–10pm	0.1077	0	1

6.2.3 Light goods vehicles (LGVs) are defined as cars and small vans under 3.5T and with 2-axes, and ordinary goods vehicles (OGVs) are defined as over 3.5T with 2-axes or more.

6.2.4 Based on the independent survey results, very few trips are observed during the AM or PM peak periods. Based on the above, it is likely that the development will generate one trip per one to two weeks.

6.3 Potential impact

6.3.1 This section of the report, therefore, considers the potential effect of the development on the transport network.

Walking

6.3.2 The development is likely to generate three daily pedestrian movements. In addition, a further two daily public transport movements are likely to walk to reach public transport. The walking trips will be spread across a number of local streets and it is anticipated that there will be no adverse impact to the pedestrian network.

Cycling

6.3.3 There are likely to be a small number of cycle movements during the day. The cycling trips will be spread across a number of local routes and it is anticipated that there will be no adverse impact to the cycle network. Whilst this is low, there are proposals across London to encourage active travel and this has the potential to increase.

Public transport

6.3.4 The development is likely to generate two public transport movements per day. These are likely to be mainly undertaken by bus and some by rail and it is considered that this level of additional passengers will not have a material impact on the public transport network.

Vehicles

6.3.5 It is predicted that the scheme is likely to generate two vehicle movements (including servicing trips) throughout the day and it is considered that the proposed development will have a minimal impact on the surrounding local roads.

6.3.6 Based on the volume of trips identified above, it is considered that the proposed development will have a minimal impact on the surrounding transport network, and that the proposed development can be accommodated within the existing highway and public transport networks.

6.4 Design solutions and mitigation measures

6.4.1 This Transport Statement has demonstrated that the development will not have a significant impact on the surrounding streets and the following measures are proposed to reduce any impact further.

6.4.2 A range of measures are embedded within the scheme design including:

- Provision of high-quality cycle parking provided in a secure store, conveniently located at the front of the property.
- Provision of parking in accordance with the London Plan.
- Demolition of existing garages, which will create a more pleasant streetscape.

7 Parking surveys

- 7.1.1 As requested by the Highway Authority, a parking stress survey has been undertaken to assess the impact of the development and establish whether there is scope to accommodate any potential over-spill car parking in the vicinity of the site.
- 7.1.2 In order to assess whether there is scope to accommodate any potential over-spill car parking in the vicinity of the site, parking beat surveys have been carried out to determine the parking stress within the surrounding area.
- 7.1.3 To determine the impact of the development on the surrounding highway network, this section considers the following:
- Impact of existing garage use;
 - Policy context associated with parking provision;
 - Likely car ownership of future residents; and,
 - Sustainability of site's location (set out in Section 4); and,
 - On-street parking stress.

7.2 Impact of existing use

- 7.2.1 There are 16 garages provided to the rear of Rowan at Muswell Road. The site comprises 14 garages, of which 12 will be demolished and two will be retained (No. 2 and No. 3). The remaining two garages are owned by residents at 1 and 1A Donovan Road (garage nos. 1 and 4). **Table 7.1** below outlines the existing usage of each garage.

Figure 7.1 Existing garages

Garage no.	Owner address	Purpose	Future status
2	N10	Classic car storage	Retained
3	Rowan resident	Car storage	Retained
5	N10	General storage	Demolished
6	N10	Unknown	Demolished
7	N10	Classic car storage	Demolished
8	N10	Classic car storage	Demolished
9	Rowan resident	Car storage	Demolished
10	-	Business storage	Demolished
11	N10	General storage	Demolished
12	NW5	Unknown	Demolished
13	-	General storage	Demolished
14	NW5	Business storage	Demolished
15	N10	Classic car storage	Demolished
16	N10	Classic car storage	Demolished

- 7.2.2 Based on the table above, it can be seen both retained garages are currently used for car storage. Of the remaining 12 garages:

- Three are used for general storage;
- Two are used for business storage;
- Two have unknown use purpose (one is owned by a local resident with a N10 postcode and one by a resident with a NW5 postcode);
- Four are used for storage of classic cars by residents from the N10 postcode area; and,
- One is used for general car storage by resident at Rowan.

7.2.3 Based on the above, it is considered that at least five of these garages are used for car storage by residents at Rowan and the surrounding area. Given that the purpose of garage no. 6 is unknown, it is assumed that this garage is used for car storage. The use of garage no. 12 is not known but it is owned by a resident with a NW5 postcode and, therefore, it is assumed that it does not contain a car for day-to-day purposes.

7.2.4 On the busiest night of the survey, three cars were observed parked on the garage forecourt. These vehicles will also be displaced as a result of the proposals.

7.2.5 Based on the above, it is considered that the demolition of 12 existing garages will result in six cars being displaced from the garages and three from the forecourt. Given that four of these garages are used for storage of classic cars, it is highly likely that the owners will make alternative arrangements for their storage and they will not be displaced on-street. The following section of the report considers the impact of two cars being displaced from garages and three from the forecourt onto the surrounding roads. In addition, a worst-case of six cars being displaced from the garages and three from the forecourt has also been considered.

7.3 Parking policy

7.3.1 Parking standards are guidelines that form a consistent basis for discussion between developers applying for permission and the Local Planning Authority. It is recognised that situations arise where local circumstances justify a variation from the standards. It is important to consider local car ownership data, access to local facilities and the availability of alternative means of travel when determining the appropriate level of parking.

The London Plan (2021)

7.3.2 In terms of transport, the aim for London is to rebalance the transport system towards walking, cycling and public transport and significantly increase the use of these modes to improve health inequalities.

7.3.3 In terms of parking, the London Plan states that:

- Parking should be restricted in line with levels of existing and future public transport accessibility and connectivity.
- Car-free development should be a starting point for all development in places well-connected by public transport, with development elsewhere designed to provide

the minimum necessary parking. Car-free development should still provide disabled persons parking.

- An absence of local on-street parking controls should not be a barrier to new development and boroughs should look to implement parking controls where necessary.
- The maximum car parking standards should be applied to development proposals and used to set local standards.
- Adequate provision should be made for efficient deliveries and servicing and emergency access.
- Where sites are re-developed, parking provision should reflect the current approach and not be re-provided at previous levels where this exceeds the standards set out in this policy.

7.3.4 The London Plan states that the maximum parking standard for Outer London boroughs, with a PTAL rating of 3, is up to one space per dwelling for 3+bedroom dwellings.

Haringey's Local Plan Strategic Policies (March 2013)

7.3.5 Policy SP4 focuses on creating a low carbon borough. Therefore, the Council encourages new developments to be located near transport hubs to support sustainable travel modes by minimising car parking provision, increasing cycling parking provision and encourage modal shift through travel planning and design of public realm to support non-car use.

7.3.6 Policy SP7 focuses on sustainable transport and tackling of climate change. The policy states that where more sustainable travel options are not practical, car clubs and car sharing offer alternatives to privately owned cars. Car clubs allow households to avoid the costs of car ownership and reduce the amount of car parking required. The Council encourages low emission vehicles by providing electric charging vehicle points.

Haringey Development Management DPD (July 2017)

7.3.7 Policy DM32 focuses on parking and states the following:

- Development proposals will need to be assessed against the car and cycling parking standards set out in the London Plan;
- The Council will encourage contributions to or the provision of car club bays as an alternative to on-site parking;
- The Council will support development with limited or no on-site parking where there are alternative and accessible means of transport available, PTAL level is at least 4, a CPZ exists or will be provided, parking is provided for disabled people, parking is designated for occupiers of developments specified as car capped.

7.4 Car ownership

7.4.1 The likely car ownership rate of the future residents has been based on car or van availability data in the 2011 Census data in the area of the site, as set out in Section 3.

- 7.4.2 Based on this, it is considered that the car ownership at the proposed development will be a maximum of one car.

7.5 On-street parking surveys

Methodology

- 7.5.1 To establish residential overnight parking demand, night-time parking surveys were carried out on two-weekday nights. Parking beat surveys were carried out on the nights of Wednesday 19th May and Thursday 20th May, 2021. These surveys followed the principles set out in the industry standard London Borough of Lambeth's 'Residential Parking Survey Methodology'.
- 7.5.2 The surveys were carried out on two weekday nights between 12.30am and 5.30am (excluding public and school holidays). This is to ensure that the maximum demand for residential parking is captured. The surveys covered a two-minute walk from the site and covered all roads within 200m. This is considered a reasonable distance that a resident is prepared to leave their vehicle and walk to their home.
- 7.5.3 The results were recorded per street, per night and by type of parking location. The following parking types were noted on the busiest night:
- Unrestricted parking;
 - Blue badge parking bays;
 - Car club permit holders only;
 - Other (e.g. double yellow lines and dropped kerbs).

Extent of survey

- 7.5.4 The extent of the surveys within 200m of the site is shown on **Figure 1** (at the end of the report) and includes the following roads within 200m of the proposed development:
- Muswell Road;
 - Coniston Road;
 - Curzon Road;
 - Cranbourne Road;
 - Elms Avenue;
 - Methuen Park; and,
 - Donovan Avenue.

Number of parking spaces

- 7.5.5 It is stated in the Lambeth Parking survey guidance that '*to calculate parking capacity each length of road between obstructions...must be measured and then converted into parking spaces by dividing the length by 5m and rounding down to the nearest whole number*'.

7.5.6 The Highway Authority has requested that both 5m and 6m car lengths are considered when establishing the number of spaces. **Table 7.2** below outlines the number of spaces based on 5m, 5.5m and 6m car lengths.

Table 7.2 Number of parking spaces

Street	Road length (m) excluding obstructions	Total no. of parking spaces available (5m car length)	Total no. of parking spaces available (5.5m car length)	Total no. of parking spaces available (6m car length)	No. of spaces based on survey company results
Muswell Road	500	100	90	83	94
Coniston Road	410	80	75	67	74
Curzon Road	395	79	71	66	71
Cranbourne Road	73	15	13	12	13
Elms Avenue	61	12	11	10	12
Methuen Park	330	66	60	55	58
Donovan Avenue	325	65	59	54	65
Total		417	379	347	387

7.5.7 Based on the table above, the number of spaces established by the survey company are relatively comparable with the 5.5m car length. The results from the survey company best reflect the practical use of the kerbside. The number of spaces available on each road based on the survey company observations, therefore, provides a robust scenario, which takes into account a range of vehicle sizes.

Survey results

7.5.8 **Table 7.3** below shows the results of the parking beat surveys per street within the study area, including parking provision and demand for the busiest night of the survey (Wednesday) with 331 vehicles parked. On Thursday, 330 vehicles were parked.

7.5.9 The summary of the parking survey results is shown in **Figure 2** (number of spaces available and occupied per street) and **Figure 3** (parking stress per street) at the end of the report.

Table 7.3 Summary of parking beat surveys for the busiest night

Street	Total no. of parking spaces available	Total spaces used	% of parking spaces used	No. of available spaces before 85% capacity reached	No. of unoccupied spaces
Muswell Road	94	87	93	0	7
Coniston Road	74	70	95	0	4
Curzon Road	71	65	92	0	6
Cranbourne Road	13	13	100	0	0
Elms Avenue	11	10	83	0	2
Methuen Park	58	39	67	10	19

Donovan Avenue	65	47	72	8	18
Total	387	331	86	18	56

7.5.10 It should be noted that there is one car club holder only bay provided on Coniston Road. This space has been excluded from the table above, given that the space is reserved for a car club. No car was observed to be parking here on both nights of the survey.

7.5.11 It should be noted that the following vehicles were observed to be parking in restricted areas during the night-time surveys:

- Three vehicles parked on double yellow lines (with one on Muswell Road, one on Coniston Road and one on Curzon Road) on Wednesday; and,
- One vehicle parked across a dropped kerb on Coniston Road on Wednesday night.

7.5.12 These vehicles were included in parking demand, given the high level of existing parking stress in the area, to represent a worst-case scenario.

Analysis

7.5.13 Typically, practical capacity is reached when 85% of the available spaces are occupied. Above this level of parking stress, finding a space may become difficult and vehicles may need to circulate within an area. Also, depending on the layout and width of the carriageway, streets fully parked on both sides may have fewer passing places, which can affect vehicle circulation in an area and possibly access by large vehicles. It can be seen from the table above that parking stress is an average of 86% across the area, which is just above the practical capacity.

7.5.14 However, this parking stress does not reflect the wide range of stress occurring on different roads, with some roads are operating at parking stress as high as 92 to 100% capacity and other roads operating at 67 to 72% capacity. The highest parking stress was observed on Cranbourne Road, with 100% of spaces used and the lowest at Methuen Park with a stress of 67%.

7.5.15 There are 56 spaces unoccupied before full capacity is reached on all roads and 18 before practical capacity is reached, with 10 spaces available on Methuen Park and eight on Donovan Park, before practical capacity is reached on these roads. The full survey results are contained in **Appendix B**.

7.6 Impact of the development

7.6.1 As stated in Section 3, it is proposed to provide one 6-bedroom house, which will be provided with one parking space in accordance with the standards and based on the existing car ownership in the surrounding area. Therefore, it is highly unlikely there will be any overspill parking associated with residents of the proposed house.

- 7.6.2 It is proposed to demolish 12 of the existing garages and it is likely that there will be displacement of five cars on-street. In the worst-case, if all owners of the classic cars currently stored in the garages choose to displace these vehicles on-street, this could result in a displacement of nine vehicles. However, it is likely that alternative secure arrangements will be found for these vehicles.
- 7.6.3 As set out above, there are 18 spaces available on Donovan Avenue and Methuen Park before practical capacity is reached (at 85%) on these roads. Therefore, it is considered that any displaced cars from the existing garages or the forecourt can be accommodated on either Methuen Park or Donovan Avenue without increasing parking stress on these roads beyond 85%. Even the worst-case scenario of all nine vehicles being displaced on-street can be accommodated on Methuen Park alone, without increasing parking stress on this road beyond 85%, as there are 19 spaces unoccupied with 10 of these available before practical capacity is reached.

7.7 Complementary measures

- 7.7.1 To complement the low-parking provision, the following will be provided:
- Cycle parking – a good level of well-located cycle parking in accordance with the London Plan standards.
 - Residents Travel Information Pack – provision of a Residents' Travel Information Pack upon first occupancy will improve the awareness of travel options and promote the use of sustainable travel modes and may include a voucher (either for a cycle shop or for public transport use).

8 Summary and conclusions

8.1 Introduction

- 8.1.1 Lime Transport has been commissioned by Artform Group to produce a Transport Statement in support of a planning application to demolish 12 existing garages and provide one 6-bedroom house, together with cycle parking, car parking and landscaping. Cycle and car parking will be provided in accordance with the London Plan standards, which will ensure there is no impact on parking stress in the surrounding area.

8.2 Sustainability of site's location

- 8.2.1 The site is located within a PTAL 3, however, this does not acknowledge the overall sustainability of the site, including:

- Facilities within easy walking distance - on Muswell Hill Broadway and Fortis Green Road.
- Public transport destinations and journey times – Kings Cross can be reached within approximately 40 minutes from the site.

- 8.2.2 The demolition of 12 garages will result in the likely displacement of five vehicles. In the worst-case scenario, assuming the classic cars currently stored in the garages are displaced on street, this could result in the displacement of nine vehicles. These vehicles can be accommodated on Methuen Park alone, without increasing the parking stress beyond 85%.

- 8.2.3 The proposed residential use will give rise to a small number of vehicle movements, and it is considered the surrounding highway network can accommodate these additional trips.

8.3 Conclusion

- 8.3.1 This Transport Statement reviews the existing conditions and likely transport impacts associated with the development. It concludes that the development is compliant with national, regional and local policy and in particular with the Mayor's Transport Strategy, Healthy Streets and Vision Zero. It is considered that it will not have a significant impact on the transport network. Any impact can be further reduced by the design measures highlighted, including generous cycle parking, provision of parking for residents and safe pedestrian access from the site to Methuen Park.

- 8.3.2 It is considered that the proposed development of one house does not have an unacceptable impact on highway safety, the residual cumulative impacts can be accommodated on the road network and are not severe. National Planning Policy Framework (NPPF) states in Paragraph 109 that:

'Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.'

Appendices



Appendix A



Calculation Reference: AUDIT-258601-210527-0541

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
 Category : C - FLATS PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

01	GREATER LONDON	
	HG HARINGEY	1 days
	HO HOUNSLOW	1 days
	KI KINGSTON	1 days
	NH NEWHAM	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
 Actual Range: 12 to 30 (units:)
 Range Selected by User: 0 to 30 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/13 to 06/03/20

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Wednesday	1 days
Thursday	1 days
Friday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaken using machines.

Selected Locations:

Edge of Town Centre	1
Suburban Area (PPS6 Out of Centre)	1
Edge of Town	1
Neighbourhood Centre (PPS6 Local Centre)	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	4
------------------	---

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	4 days
----	--------

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:

All Surveys Included

Population within 1 mile:

20,001 to 25,000	1 days
25,001 to 50,000	1 days
50,001 to 100,000	2 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

500,001 or More	4 days
-----------------	--------

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	1 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

No	4 days
----	--------

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

2 Poor	2 days
3 Moderate	1 days
4 Good	1 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1	HG-03-C-02	BLOCK OF FLATS		HARINGEY
	HIGH ROAD			
	WOOD GREEN			
	WOODSIDE PARK			
	Suburban Area (PPS6 Out of Centre)			
	Residential Zone			
	Total No of Dwellings:	30		
	Survey date: WEDNESDAY	01/10/14	Survey Type: MANUAL	
2	HO-03-C-05	BLOCK OF FLATS		HOUNSLOW
	PARK LANE			
	HOUNSLOW			
	CRANFORD			
	Edge of Town			
	Residential Zone			
	Total No of Dwellings:	14		
	Survey date: FRIDAY	06/03/20	Survey Type: MANUAL	
3	KI-03-C-03	BLOCK OF FLATS		KINGSTON
	PORTSMOUTH ROAD			
	SURBITON			
	Edge of Town Centre			
	Residential Zone			
	Total No of Dwellings:	20		
	Survey date: MONDAY	11/07/16	Survey Type: MANUAL	
4	NH-03-C-01	BLOCK OF FLATS		NEWHAM
	ARTHINGWORTH STREET			
	STRATFORD			
	Neighbourhood Centre (PPS6 Local Centre)			
	Residential Zone			
	Total No of Dwellings:	12		
	Survey date: THURSDAY	14/11/13	Survey Type: MANUAL	

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
 MULTI-MODAL TOTAL VEHICLES
 Calculation factor: 1 DWELLS
 BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	19	0.039	4	19	0.105	4	19	0.144
08:00 - 09:00	4	19	0.039	4	19	0.145	4	19	0.184
09:00 - 10:00	4	19	0.013	4	19	0.039	4	19	0.052
10:00 - 11:00	4	19	0.066	4	19	0.066	4	19	0.132
11:00 - 12:00	4	19	0.026	4	19	0.039	4	19	0.065
12:00 - 13:00	4	19	0.105	4	19	0.066	4	19	0.171
13:00 - 14:00	4	19	0.039	4	19	0.066	4	19	0.105
14:00 - 15:00	4	19	0.118	4	19	0.132	4	19	0.250
15:00 - 16:00	4	19	0.053	4	19	0.066	4	19	0.119
16:00 - 17:00	4	19	0.132	4	19	0.079	4	19	0.211
17:00 - 18:00	4	19	0.118	4	19	0.039	4	19	0.157
18:00 - 19:00	4	19	0.092	4	19	0.066	4	19	0.158
19:00 - 20:00	2	17	0.176	2	17	0.147	2	17	0.323
20:00 - 21:00	2	17	0.088	2	17	0.118	2	17	0.206
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.104			1.173			2.277

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: $COUNT/TRP*FACT$. Trip rates are then rounded to 3 decimal places.

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Parameter summary

Trip rate parameter range selected: 12 - 30 (units:)
 Survey date range: 01/01/13 - 06/03/20
 Number of weekdays (Monday-Friday): 4
 Number of Saturdays: 0
 Number of Sundays: 0
 Surveys automatically removed from selection: 0
 Surveys manually removed from selection: 0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED

MULTI-MODAL CYCLISTS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	19	0.013	4	19	0.039	4	19	0.052
08:00 - 09:00	4	19	0.013	4	19	0.026	4	19	0.039
09:00 - 10:00	4	19	0.039	4	19	0.039	4	19	0.078
10:00 - 11:00	4	19	0.000	4	19	0.013	4	19	0.013
11:00 - 12:00	4	19	0.013	4	19	0.000	4	19	0.013
12:00 - 13:00	4	19	0.000	4	19	0.000	4	19	0.000
13:00 - 14:00	4	19	0.026	4	19	0.013	4	19	0.039
14:00 - 15:00	4	19	0.000	4	19	0.013	4	19	0.013
15:00 - 16:00	4	19	0.000	4	19	0.000	4	19	0.000
16:00 - 17:00	4	19	0.026	4	19	0.013	4	19	0.039
17:00 - 18:00	4	19	0.026	4	19	0.000	4	19	0.026
18:00 - 19:00	4	19	0.000	4	19	0.013	4	19	0.013
19:00 - 20:00	2	17	0.059	2	17	0.000	2	17	0.059
20:00 - 21:00	2	17	0.000	2	17	0.000	2	17	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:		0.215			0.169				0.384

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: $COUNT/TRP*FACT$. Trip rates are then rounded to 3 decimal places.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED

MULTI-MODAL PEDESTRIANS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	19	0.039	4	19	0.079	4	19	0.118
08:00 - 09:00	4	19	0.039	4	19	0.263	4	19	0.302
09:00 - 10:00	4	19	0.066	4	19	0.092	4	19	0.158
10:00 - 11:00	4	19	0.053	4	19	0.092	4	19	0.145
11:00 - 12:00	4	19	0.079	4	19	0.066	4	19	0.145
12:00 - 13:00	4	19	0.118	4	19	0.026	4	19	0.144
13:00 - 14:00	4	19	0.053	4	19	0.079	4	19	0.132
14:00 - 15:00	4	19	0.092	4	19	0.039	4	19	0.131
15:00 - 16:00	4	19	0.092	4	19	0.105	4	19	0.197
16:00 - 17:00	4	19	0.197	4	19	0.118	4	19	0.315
17:00 - 18:00	4	19	0.158	4	19	0.132	4	19	0.290
18:00 - 19:00	4	19	0.211	4	19	0.145	4	19	0.356
19:00 - 20:00	2	17	0.029	2	17	0.118	2	17	0.147
20:00 - 21:00	2	17	0.147	2	17	0.059	2	17	0.206
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.373			1.413			2.786

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: $COUNT/TRP*FACT$. Trip rates are then rounded to 3 decimal places.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED

MULTI-MODAL PUBLIC TRANSPORT USERS

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	19	0.013	4	19	0.368	4	19	0.381
08:00 - 09:00	4	19	0.026	4	19	0.289	4	19	0.315
09:00 - 10:00	4	19	0.026	4	19	0.092	4	19	0.118
10:00 - 11:00	4	19	0.026	4	19	0.026	4	19	0.052
11:00 - 12:00	4	19	0.013	4	19	0.066	4	19	0.079
12:00 - 13:00	4	19	0.026	4	19	0.026	4	19	0.052
13:00 - 14:00	4	19	0.013	4	19	0.053	4	19	0.066
14:00 - 15:00	4	19	0.039	4	19	0.013	4	19	0.052
15:00 - 16:00	4	19	0.092	4	19	0.039	4	19	0.131
16:00 - 17:00	4	19	0.118	4	19	0.066	4	19	0.184
17:00 - 18:00	4	19	0.171	4	19	0.039	4	19	0.210
18:00 - 19:00	4	19	0.355	4	19	0.079	4	19	0.434
19:00 - 20:00	2	17	0.059	2	17	0.000	2	17	0.059
20:00 - 21:00	2	17	0.029	2	17	0.000	2	17	0.029
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.006			1.156			2.162

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: $COUNT/TRP*FACT$. Trip rates are then rounded to 3 decimal places.

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED

MULTI-MODAL TOTAL PEOPLE

Calculation factor: 1 DWELLS

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	4	19	0.092	4	19	0.605	4	19	0.697
08:00 - 09:00	4	19	0.118	4	19	0.750	4	19	0.868
09:00 - 10:00	4	19	0.145	4	19	0.263	4	19	0.408
10:00 - 11:00	4	19	0.145	4	19	0.197	4	19	0.342
11:00 - 12:00	4	19	0.132	4	19	0.171	4	19	0.303
12:00 - 13:00	4	19	0.224	4	19	0.118	4	19	0.342
13:00 - 14:00	4	19	0.171	4	19	0.224	4	19	0.395
14:00 - 15:00	4	19	0.276	4	19	0.197	4	19	0.473
15:00 - 16:00	4	19	0.276	4	19	0.237	4	19	0.513
16:00 - 17:00	4	19	0.513	4	19	0.276	4	19	0.789
17:00 - 18:00	4	19	0.474	4	19	0.211	4	19	0.685
18:00 - 19:00	4	19	0.658	4	19	0.316	4	19	0.974
19:00 - 20:00	2	17	0.324	2	17	0.265	2	17	0.589
20:00 - 21:00	2	17	0.265	2	17	0.206	2	17	0.471
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.813			4.036			7.849

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

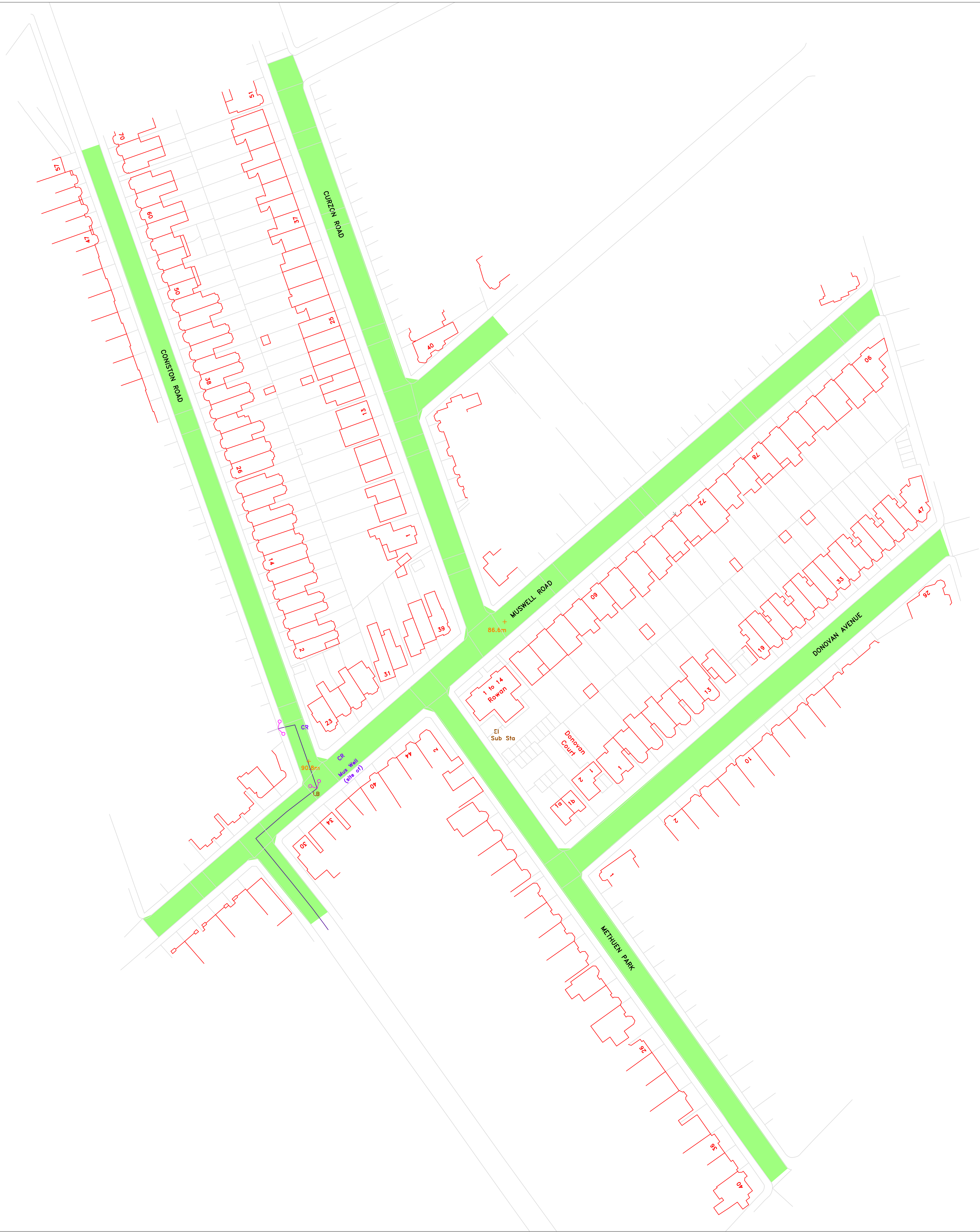
To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: $COUNT/TRP*FACT$. Trip rates are then rounded to 3 decimal places.

Appendix B



Road Name/Time of Beat	Roadside	Total Spaces	Unrestricted Kerbside		Disabled Badge Holders Only		Car Club Permit Holders Only		Drop Kerb	Double Yellow	Total Parked
			Spaces	Used	Spaces	Used	Spaces	Used	Used	Used	
MUSWELL RD	North	46	44	41	2	2	0	0			43
	South	48	48	43	0	0	0	0		1	44
CONISTON RD	East	44	42	39	1	1	1	0	1		41
	West	31	30	27	1	1	0	0		1	29
CURZON RD	East	33	33	29	0	0	0	0			29
	West	38	37	34	1	1	0	0		1	36
CRANBOURNE RD	North	6	6	6	0	0	0	0			6
	South	7	7	7	0	0	0	0			7
ELMS AVE	East	5	5	4	0	0	0	0			4
	West	7	7	6	0	0	0	0			6
METHUEN PARK	East	27	27	16	0	0	0	0			16
	West	31	30	23	1	0	0	0			23
DONOVAN AVE	North	30	30	26	0	0	0	0			26
	South	35	34	20	1	1	0	0			21

Road Name/Time of Beat	Roadside	Total Spaces	Unrestricted Kerbside		Disabled Badge Holders Only		Car Club Permit Holders Only		Drop Kerb	Double Yellow	Total Parked
			Spaces	Used	Spaces	Used	Spaces	Used	Used	Used	
MUSWELL RD	North	46	44	42	2	2	0	0			44
	South	48	48	41	0	0	0	0		1	42
CONISTON RD	East	44	42	37	1	1	1	0		1	39
	West	31	30	28	1	1	0	0	1	2	32
CURZON RD	East	33	33	31	0	0	0	0		1	32
	West	38	37	33	1	1	0	0			34
CRANBOURNE RD	North	6	6	5	0	0	0	0			5
	South	7	7	7	0	0	0	0			7
ELMS AVE	East	5	5	4	0	0	0	0			4
	West	7	7	4	0	0	0	0			4
METHUEN PARK	East	27	27	14	0	0	0	0			14
	West	31	30	25	1	0	0	0			25
DONOVAN AVE	North	30	30	25	0	0	0	0			25
	South	35	34	23	1	0	0	0			23



NOT FOR CONSTRUCTION

GENERAL NOTES

1. This drawing to be read in conjunction with all relevant civil engineering drawings.

LEGEND



Site location



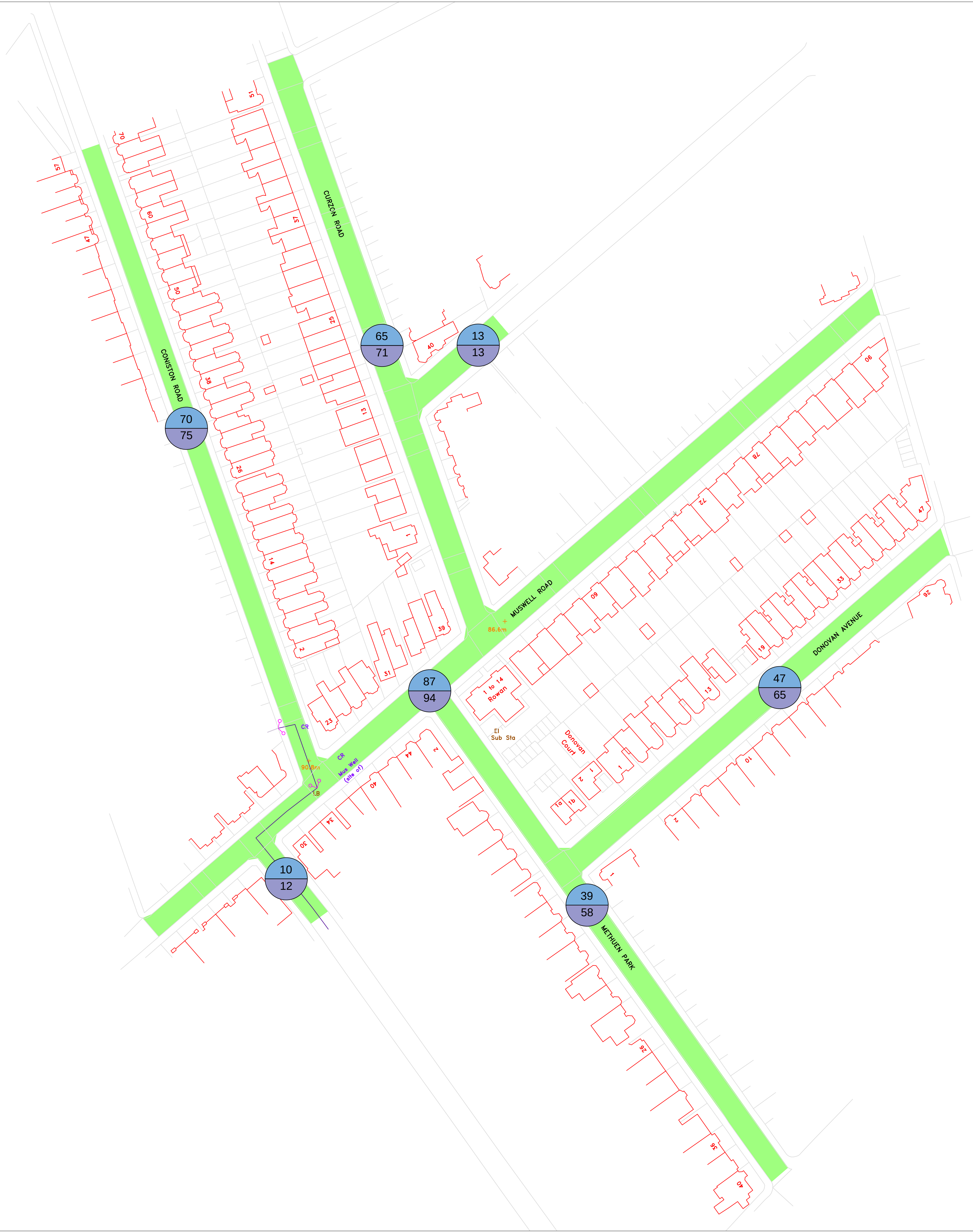
Study area

Rev	Date	Description	Drawn	Check
-----	------	-------------	-------	-------



5A Andrews Buildings
Penarth, CF64 2AA
Tel 029 2070 0924
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Drawing Status	Date	27/05/2021
PRELIMINARY	Scale	NTS
Project	Drawn	JP
Rowan, Muswell Road	Checked	HLJ
	Project No	21042
Title	Revision	
Parking beat survey; extent of survey area.	Figure	
Drawing No		
Figure 1		

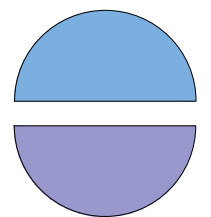


NOT FOR CONSTRUCTION

GENERAL NOTES

- This drawing to be read in conjunction with all relevant civil engineering drawings.

LEGEND

-  Site location
-  Extent of survey area
-  Occupied spaces
Available spaces

Rev	Date	Description	Drawn	Check
-----	------	-------------	-------	-------



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Drawing Status Date 27/05/2021

PRELIMINARY Scale NTS

Project Drawn JP

Rowan, Muswell Road Checked HLJ

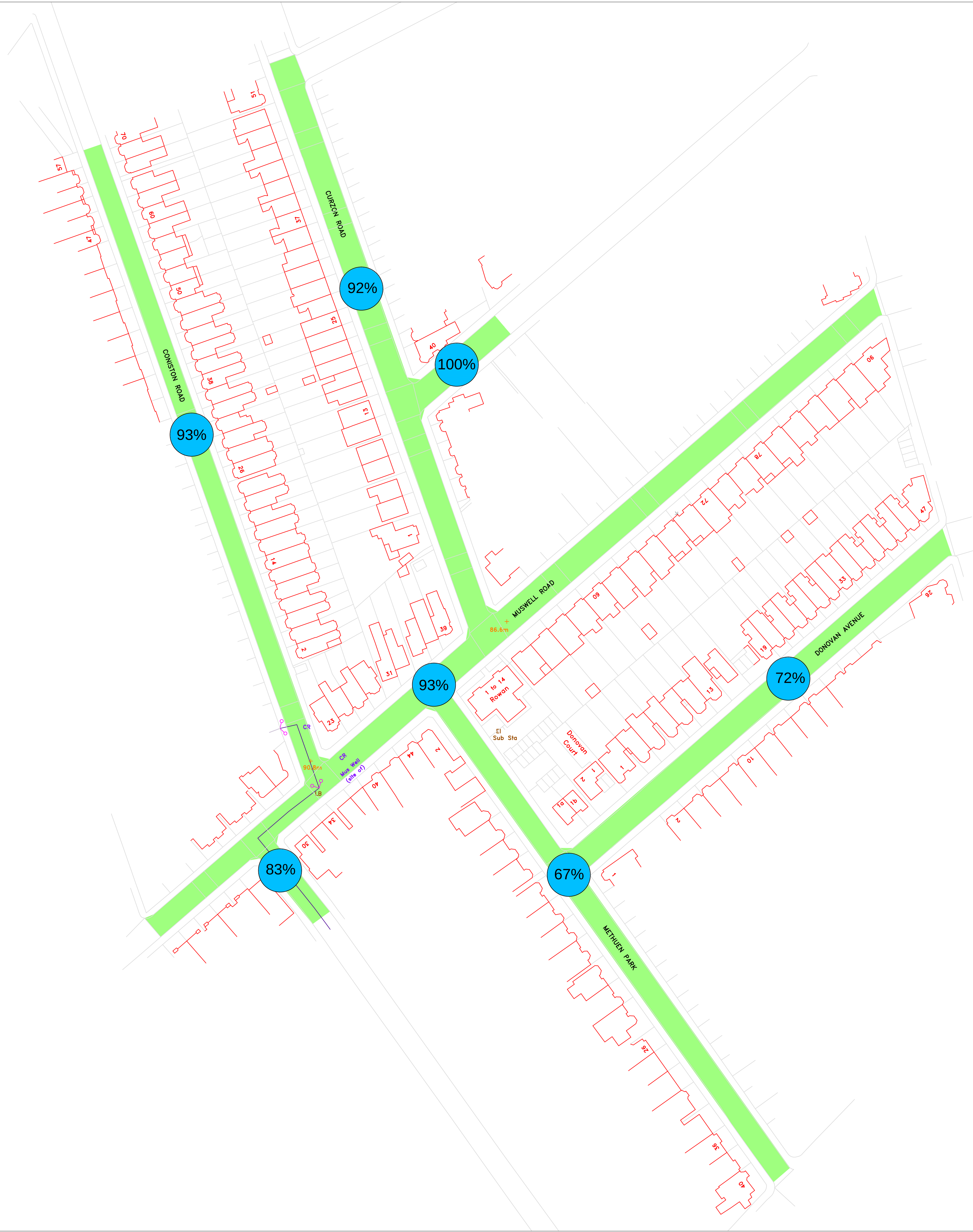
Project No
21042

Title Revision

Parking beat survey;
extent of survey area;
amount of occupied spaces. Figure

Drawing No

Figure 2

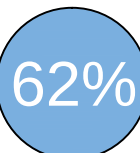


NOT FOR CONSTRUCTION

GENERAL NOTES

1. This drawing to be read in conjunction with all relevant civil engineering drawings.

LEGEND

-  Site location
-  Extent of survey area
-  % of spaces occupied

Rev	Date	Description	Drawn	Check
-----	------	-------------	-------	-------



5A Andrews Buildings
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Drawing Status	Date	27/05/2021
PRELIMINARY	Scale	NTS
Project	Drawn	JP
Rowan, Muswell Road	Checked	HLJ
	Project No	21042
	Revision	
Title	Figure	
Parking beat survey; extent of survey area; percentage of occupied spaces.		
Drawing No		
Figure 3		

