ttp consulting

transport planning specialists

Mr Victor Woolf

Lupus House, London Borough of Camden

Transport Statement

May 2019

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Contents

Appendices

1 INTRODUCTION

1.1 TTP Consulting has been appointed to provide traffic and transport advice in relation to the proposed development at Lupus House (the site), located within the London Borough of Camden (LBC).

1.2 Lupus House is located on Macklin Street within a highly accessible location in close proximity to Holborn London Underground Station and a number of bus stops along Kingsway and New Oxford Street. In addition, it is close to existing pedestrian and cycle networks and is therefore considered to be situated within a sustainable location.

1.3 The existing building provides circa 1,260 square metres (sqm) gross external area (GEA) of A1 retail space and B1 office space, and, 4 x C3 residential units. All access for pedestrians is via Macklin Street. No vehicle access is provided.

1.4 The proposals seek to extend the rear of the building across all floors generating an uplift of 234sqm of commercial floorspace. The number of residential units is set to decrease from 4 to 3 units.

1.5 This report considers the effects of the proposed extension and subsequent uplift in floorspace in terms of accessibility, parking, trip generation and servicing matters. The uplift is spread across both residential and commercial uses, albeit the number of residential units is decreasing. It is also pertinent to note that the building will not be changing its use.

1.6 The remainder of the report is set out as follows:

- Section 2 - describes the existing situation;
- Section 3 - presents relevant policy guidance;
- Section 4 - sets out the proposals and considers the effect of development; and,
- Section 5 - provides a summary and conclusion.

2 EXISTING SITUATION

Site and Surrounding Area

2.1 The existing building provides 1,260sqm of commercial floorspace, and, 4 residential flats. It is located on Macklin Street where the building is positioned halfway between Stukeley Street and Drury Lane. A site location plan is provided in **Figure 2.1**.

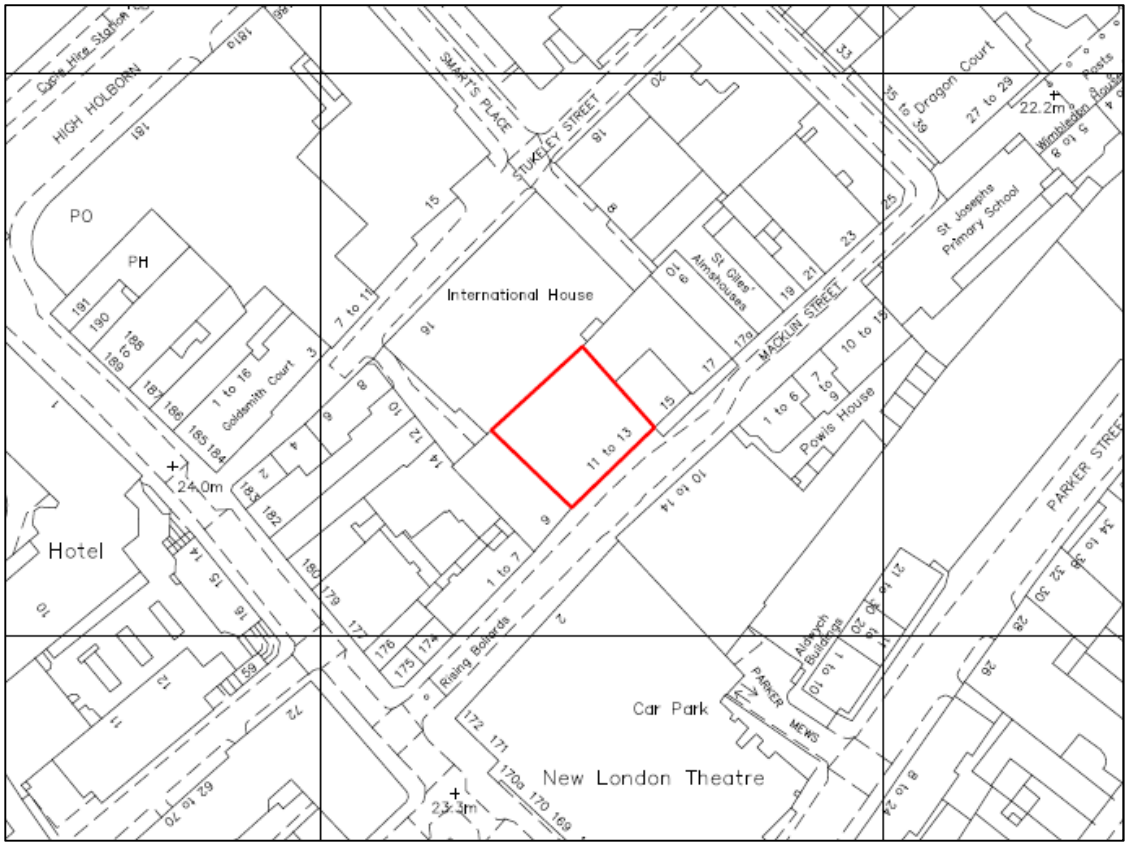


Figure 2.1: Site Location Plan

2.2 Pedestrian access to the existing building is provided via a total of 4 entrances on Macklin Street, with two into office/retail units at ground floor, one for a fire exit and one for a shared access for the commercial and residential space on the upper floors. There is no vehicle access into the site.

2.3 Lupus House is positioned within a mixed use area with residential units located above commercial units. St Joseph's Primary school is located to the north east of the site with Drury Lane to the south east. Drury Lane is an established commercial area with local businesses including hairdressers, restaurants and local shops. Holborn Station is located on the Kingsway approximately 300m to the northeast of the site, and provides access to the Central and Piccadilly Lines of the London Underground.

Local Highway Network

2.4 Macklin Street is a one-way street heading eastbound from Drury Lane through to Stukelely Street. It is restricted by a 20mph speed limit as are all roads maintained by the London Borough of Camden. It has a 7.5t vehicle access restriction and cars and motorcycles are restricted from entering the road Mon-Fri between 8:30-9:15am and 3:15-4:00pm. Double yellow lines restrict both sides of the road, apart from a small section of the southern kerbline, which accommodates a residents parking bay for circa 3 vehicles and a single separate pay and display bay. Footways are present on both sides of the road with tress planted intermittently upon the southern footway. Bollards are placed at the front of the northern footway to protect pedestrians. Macklin Street narrows a further circa 20m northeast past the site. In this narrowed section double yellow lines restrict both kerblines until joining Stukelely Street with loading restricted at all times.

2.5 Drury Lane is also one-way only and links Aldwych Road in the south to High Holborn. The road is restricted by a 20mph speed limit past Macklin Street. Zebra crossings are positioned at various points along its length to allow the active transfer of pedestrians across the road. Double yellow lines restrict large proportions of Drury Lane on both sides. There are however parking bays positioned on either side of the road south of Macklin Street, and on the eastern kerbline north of Stukelely Street. The section of Drury Lane that passes Macklin Street is within a Controlled Parking Zone (CPZ) which is active Mon-Sat between 8:30am-6:30pm. **Figure 2.2** displays the local highway network.

Figure 2.2: Local Highway Network

Accessibility

On-foot

2.6 Footways are located on both sides of Macklin Street. The eastern footway is generous, with streetlighting and trees planted intermittently. Travelling northeast from the site Macklin Street narrows including both footways reducing to circa 1m. Macklin Street becomes pedestrian only between Stukeley Street and Newton Street, with pedestrians using it as a cut through to reach Kingsway (A4200) or High Holborn.

2.7 The site is well connected to the main pedestrian routes that serve public transport facilities and local amenities, including Holborn and Covent Garden Underground Stations and local bus stops on corridors such as High Holborn to the north and Kingsway to the east. A 1km and 2km walking catchment map is shown at **Figure 2.3**.

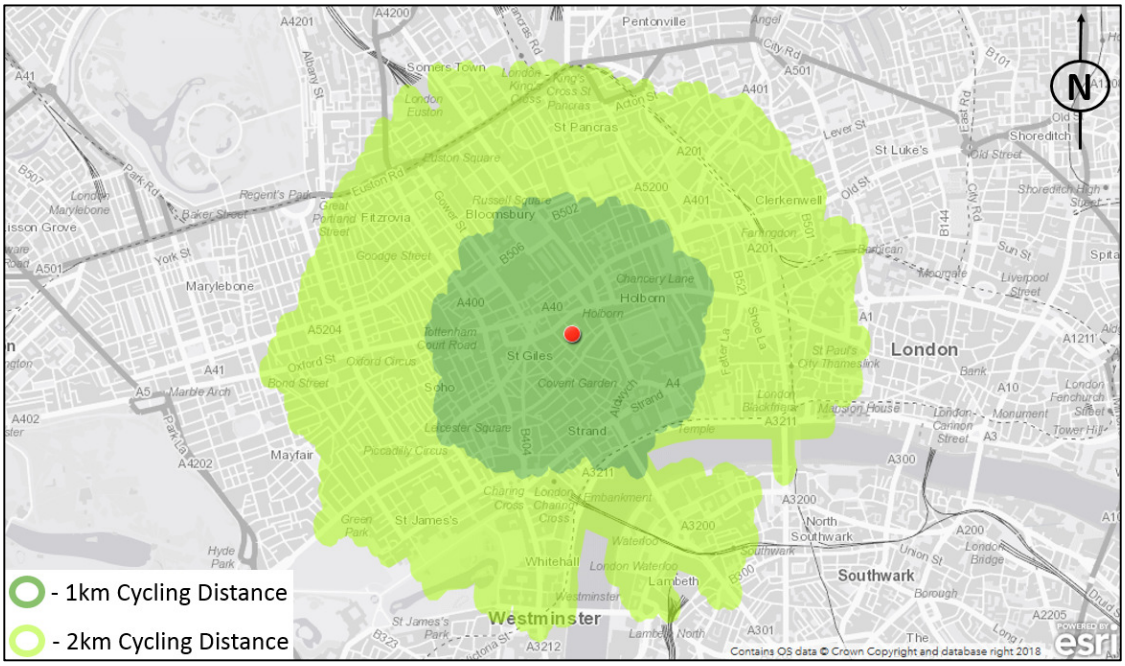


Figure 2.3: Walking Catchment Map

2.8 It is widely accepted that walking has the greatest potential to replace car journeys for distances less than 2 kilometres, with the Chartered Institution of Highways and Transportation (CIHT) Guidelines suggesting a maximum 'acceptable' walking distance for pedestrians without mobility impairment is 2 kilometres. This has been summarised in **Table 2.1**.

Table 2.1: Suggested Acceptable Walking Distances (Source: Providing for Journeys on Foot, CIHT, 2000)			
Definition	**Walking Distances (m)**		
	Town Centres	**Commuting / Schools**	**Elsewhere**
Desirable	200m	500m	400m
Acceptable	400m	1,000m	800m
Preferred Maximum	800m	2,000m	1,200m

2.9 **Table 2.2** sets out details of approximate distances between the site and local public transport opportunities and amenities. The table illustrates that there are a number of facilities located below the 'acceptable maximum walking distance' of the site.

Table 2.2: Approximate Distances to Local Amenities			
Amenity	**Location**	**Distance**	**Approximate Walking Time**
Bus Stops	Stop N & M – Kingsway	350m	4 minutes
	Stop R – New Oxford Street	350m	4 minutes
Underground / Rail Stations	Holborn Underground Station	350m	5 minutes
	Covent Garden Underground Station	450m	5 minutes
	Charing Cross Rail Station	1.2km	15 minutes
Gym	Pure Gym, Macklin Street	20m	1 minute
Convenience Store	Sainsburys Local, High Holborn	300m	4 minutes
Pharmacy	Boots Pharmacy, Kingsway	350m	5 minutes

By Bicycle

2.10 It is generally accepted that cycling is a suitable mode of travel for journeys up to 8km in length, although in London, longer journeys are commonplace. Much of Central and Inner London is within an 8km cycle ride of the site, as shown in **Figure 2.4**.

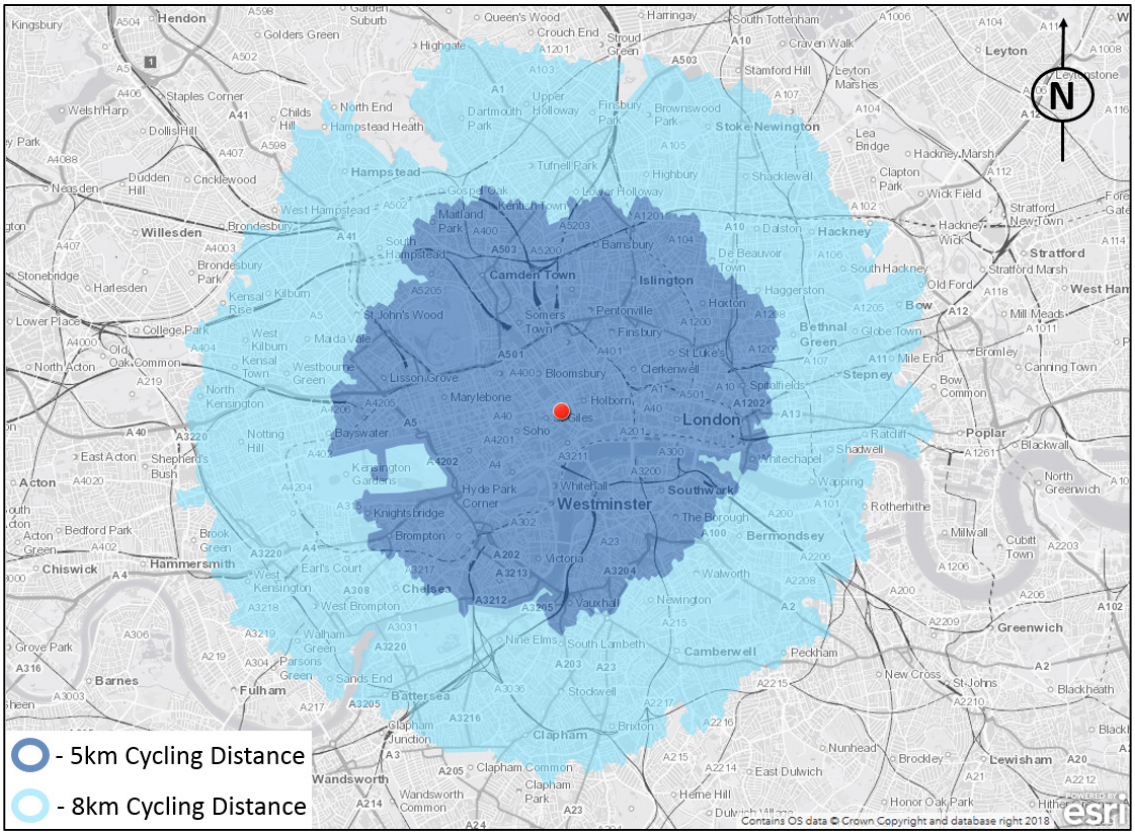


Figure 2.4: Cycle Catchment Map

2.11 A large proportion of local roads are suitable for cyclists and recommended via TfL's journey planner website. There are 13 cycle stands located on Macklin Street, east of the site and, the closest Santander docking station is located circa 200m south on Drury Lane, which has 27 cycles. Cycle Super-Highway 3 (CS3) is within a 5 minute ride south via Bow Street and Savoy Street. CS3 provides east and west travel between Lancaster Gate and Tower Hill.

Public Transport

Bus

2.12 The closest bus stops to the site are located on Kingsway and New Oxford Street, which are 350m east and north respectively. Kingsway bus stops offer a total of 7 bus routes and New Oxford Street offers a further 5 bus routes. There are further bus stops within a suitable walking distance of the site, as set out in **Figure 2.5**.

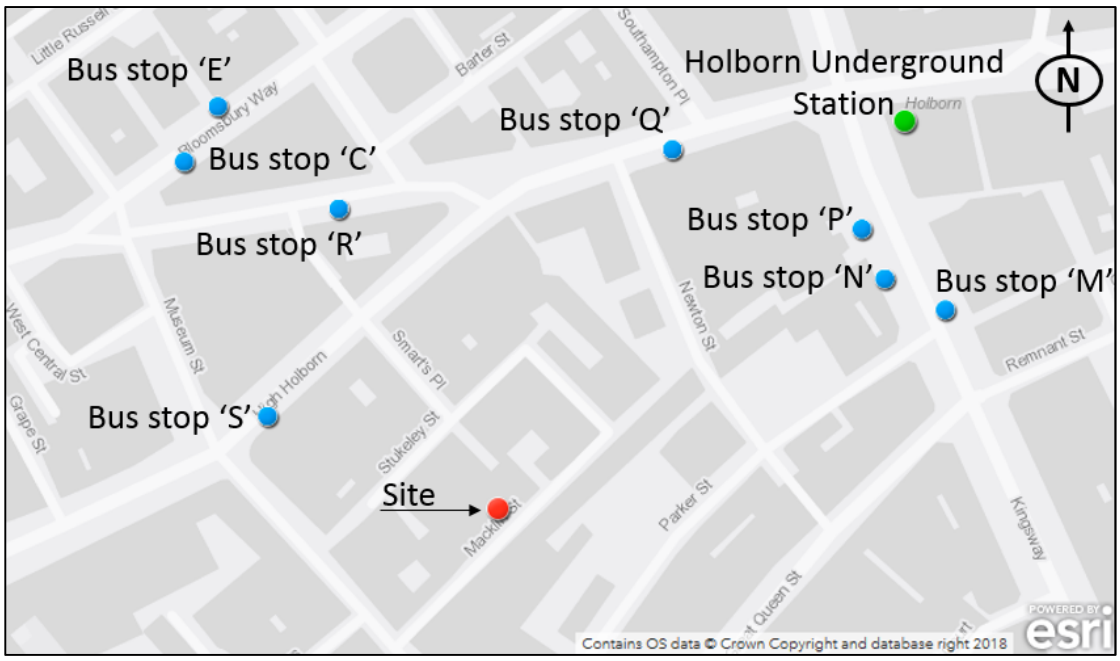


Figure 2.5: Location of Bus Stops in Proximity to the Site

2.13 The local bus services are summarised in **Table 2.3** and the TfL Bus Spider Map is provided in **Appendix A**.

Table 2.3: Summary of Bus Service Frequency

Bus Stop Location	No.	Route	Weekly Frequency (per minute)		
			Mon-Fri	Sat	Sun
Bus Stop 'N' Kingsway	59	Telford Avenue – King's Cross Station/York Way	4-8 minutes	6 – 10 minutes	10 – 12 minutes
	68	St Julian's Farm Road – Euston Bus Station	6 – 9 minutes	8 – 12 minutes	10 – 14 minutes
	91	Tottenham Lane Y M C A – Whitehall/Trafalgar Square	6 – 10 minutes	8 – 12 minutes	8 – 12 minutes
	168	Royal Free Hospital – Dunton Road	5 – 8 minutes	7 – 11 minutes	11 – 14 minutes
	188	North Greenwich Station – Russell Square	6 – 10 minutes	7 – 10 minutes	9 – 13 minutes
	N91	Cockfosters Station – Whitehall/Trafalgar Square	Night service from 00:58 to 5:28, 2 per hour		
	X68	West Croydon Bus Station – Russell Square	First Service at 6:40, last service at 09:45. School service		
Bus Stop 'R' New Oxford Street	98	Pound Lane/Willesden bus Garage – Red Lion Square	6 – 10 minutes	6 – 8 minutes	8 – 12 minutes
	N8	The Lowe – Holles Street	Night Service from 01:22 to 6:00, 3 per hour		

	N25	Holles Street – Hainault Street	Night Service from 01:17 to 5:00, every 7 – 13 minutes
	N98	Stanmore Station – Red Lion Square	Night Service from 00:32 to 06:00, 4 per hour
	N207	Uxbridge Station – Bloomsbury Square	Night Service from 00:00 to 05:15, 4 per hour

Underground Services

2.14 Due to the central location of the site there are many London Underground Stations within walking distance which are listed below with walking distance and time.

- Holborn Underground Station - 350m (5 minute walk);
- Tottenham Court Road Underground Station - 650m (9 minute walk);
- Covent Garden Underground Station - 450m (5 minute walk);
- Leicester Square Underground Station - 700m (8 minute walk);
- Piccadilly Circus Underground Station - 1.2km (14 minute walk); and,
- Charing Cross Underground Station - 1.1km (14 minute walk).

2.15 Piccadilly Line services are available from both Holborn and Covent Garden stations providing access towards locations between Heathrow and Cockfosters. Services operate every 2-3 minutes.

2.16 Additionally, Central Line services are also available from Holborn Station and Tottenham Court Road providing access towards stations between West Ruislip and Epping. Services operate every 2-3 minutes. Northern and Bakerloo line services can also be caught from Tottenham Court Road and Piccadilly Circus Underground Stations respectfully.

Rail Services

2.17 Charing Cross Rail Station is located 1.2km (15 minutes walking) south of the site, it offers onward travel south of the River Thames to destinations such as Dartford, Ashford, Dover, Gravesend, Hayes, Sevenoaks, Tonbridge and Tunbridge

Public Transport Accessibility Level (PTAL)

2.18 Public Transport Accessibility Levels (PTALs) are a theoretical measure of the accessibility of a given point to the public transport network, taking into account walk access time and service availability. The method is essentially a way of measuring the density of the public transport network services/routes at a particular point.

2.19 The site has a PTAL level of 6b, the highest classification available, demonstrating that it has an excellent level of accessibility to public transport. **Appendix B** includes a summary of the PTAL report.

Car Club

2.20 There are a number of car club vehicles located on surrounding streets. This includes vehicles on Parker Street and Keeley Street, approximately 150m and 350m respectively south of the site. The vehicles are operated by Zipcar.

Method of Journey to Work

2.21 The 2011 Census has been examined to establish the method of journey to work for employees and residents in the area (associated with the longest part of their journey). **Table 2.4** indicates that, in the Middle Layer Super Output Area Camden 028C, 44% of residents and 83% of employees use public transport, whilst 49% of residents and 11% of employee's movements are undertaken by active modes of travel.

Table 2.4: Existing Modal Split (Census 2011)

Mode	Residents (%)	Workplace Population (%)
Underground	21%	37%
Train	8%	35%
Bus	15%	11%
Taxi	1%	0%
Motorcycle	1%	1%
Car Driver	5%	5%
Car Passenger	0%	0%
Bicycle	4%	6%
On foot	45%	5%
Total	**100%**	**100%**

3 POLICY

National

National Planning Policy Framework

3.1 The revised National Planning Policy Framework (NPPF) was published on the 19th February 2019 setting out the Government's planning policies for England and how these are expected to be applied.

3.2 When considering the transport effects of a development, NPPF states that:

"All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed."

3.3 Plans or applications for development should take account of whether:

"a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

b) safe and suitable access to the site can be achieved for all users; and

c) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."

3.4 Paragraph 109 advises 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."

3.5 Paragraph 110 states that:

"Within this context, applications for development should:

a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;

b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;

c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;

d) allow for the efficient delivery of goods, and access by service and emergency vehicles; and

e) be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations."

3.6 In the context of the NPPF the proposed development is not considered to have a significant travel demand and a Transport Statement is a suitable means of assessment.

Regional

The London Plan

3.7 The London Plan (March 2016) is a Spatial Development Strategy which sets out the framework for the development of London over the next 20-25 years.

3.8 Policy 6.1 sets out a number of strategic aims, with those relevant to the proposals as follows:

a) *"encouraging patterns and nodes of development that reduce the need to travel, especially by car;*
b) *seeking to improve the capacity and accessibility of public transport, walking and cycling, particularly in areas of greatest demand;*
c) *improving interchange between different forms of transport, particularly around major rail and Underground stations, especially where this will enhance connectivity in outer London;*
d) *promoting walking by ensuring an improved urban realm."*

3.9 With respect to parking, standards for all uses typically seek to limit or restrict parking in areas of good accessibility. For cycle parking, the standards within The London Plan are summarised in **Table 3.1**.

Table 3.1. Cycle Parking Standards

Type	Long-stay	Short-stay
B1 Office	1 per 90 sqm	First 5,000 sqm: 1 per 500 sqm Thereafter: 1 per 5,000 sqm
A1/A2/A3 Retail	1 per 175-250 sqm	1 per 40-125 sqm
C3 Residential	1 per studio/1-bed 2 per other dwellings	1 per 40 units

Draft New London Plan

3.10 The Draft New London Plan was published for consultation between December 2017 and March 2018. The current 2016 plan is still the adopted Development Plan; however, the Draft London Plan is a material consideration in planning decisions.

3.11 Policy T1 seeks a strategic approach to transport and states at paragraph 10.1.1. that:

"The integration of land use and transport, and the provision of a robust and resilient public transport network, are essential in realising and maximising growth and ensuring that different parts of the city are connected in a sustainable and efficient way. In order to help facilitate this, an integrated strategic approach to transport is needed, with an ***ambitious aim to reduce Londoners' dependency on cars*** *in favour of increased walking, cycling and public transport use. Without this shift away from car use, London cannot continue to grow sustainably".*

3.12 Furthermore, T2 sets out the Healthy Streets Approach which states that:

"Development proposals and Development Plans should deliver patterns of land use that facilitate residents making shorter, regular trips by walking or cycling."

3.13 With regards to cycle parking, the relevant standards are set out in **Table 3.2**.

Table 3.2. Draft New London Plan Cycle Parking Standards

Type	Long-stay	Short-stay
B1 Office	1 per 75 sqm	First 5,000 sqm: 1 per 500 sqm Thereafter: 1 per 5,000 sqm
A1/A2/A3 Retail	1 per 175-250 sqm	1 per 20-60 sqm
C3 Residential	1 per studio or 1 person 1-bedroom dwelling 1.5 spaces per 2-person 1-bedroom unit dwelling 2 spaces per all other dwellings	5 to 40 dwellings: 2 spaces Thereafter: 1 space per 40 units dwellings

3.14 Policy T6 Car Parking states that car parking should be restricted in line with levels of existing and future public transport accessibility and connectivity. Table 10.3 states that all sites with a PTAL rating of 5 – 6 should be car-free.

Local

Camden Local Plan

3.15 The Local Plan was adopted by the Council on the 3rd July 2017 and has replaced the Core Strategy and Camden Development Policies documents as the basis for planning decisions and future development in the borough.

3.16 Chapter 10 provides details on the transport policy objectives for the borough including:

- Policy T1 - Prioritising walking, cycling and public transport;
- Policy T2 - Parking and car-free development;
- Policy T3 - Transport infrastructure; and
- Policy T4 - Sustainable movement of goods and materials.

3.17 With regards to cycle parking the document states that developments should provide for accessible, secure cycle parking facilities exceeding minimum standards outlined within the London Plan.

3.18 For car parking, the document states that the Council will limit the availability of parking and require all new developments in the borough to be car-free.

3.19 Further guidance on transport matters is set out within Camden's Supplementary Guidance.

4 ASSESSMENT OF THE PROPOSALS

The Proposal

4.1 The proposals include an extension to the rear of the site which will span across all floors of the development. There will be an increase in 234sqm of commercial space and a reduction of 1 residential unit. In total the development will include 1,494sqm of commercial floorspace, and 3 residential flats.

Trip Generation

4.2 The site has a PTAL rating of 6b, will not be providing on-site parking and is located within a Controlled Parking Zone. On this basis, vehicle activity with the proposed uses will be limited to deliveries, taxis, disabled users and servicing. The impact on the local highway network is therefore expected to be negligible, especially when considered in context with the existing and previous uses.

4.3 The uplift in office floorspace within the building is expected to accommodate approximately 15 additional employees based on British Council of Offices (BCO) 2013 publication "Occupier Density Study", which suggests a mean density of one workplace per 10.9sqm NIA. The vast majority of employees would typically arrive between 7am and 10am and depart between 4pm and 7pm.

4.4 The Census data set out in **Table 2.4** suggests that 37% of employees (5 people) would travel by underground for the longest part of their journey to work, 35% (5 people) by rail and 11% (2 person) by bus. From this it is reasonable to see that the minor increase to employees would be absorbed into the local transport network without a material impact. As aforementioned, the site achieves the highest PTAL rating possible with Holborn, Tottenham Court Road, Covent Garden and Charing Cross Stations all within walking distance.

4.5 The decrease in residential units is not envisaged to result in a material change on the highway network. Whilst floorspace will increase, the number of occupants is unlikely to significantly change and therefore there is unlikely to be an impact in transport terms.

4.6 Similarly it is not anticipated that there will be any material increase in trips generated by the additional retail floorspace within the site.

4.7 Based on the above there is expected to be no impact on the local road and public transport networks.

Access

4.8 The existing building is currently served by 4 pedestrian accesses including a fire exit. The proposals will provide 5 entrance points in total. There will be no vehicular access for the development given the car-free nature of the scheme.

Parking

4.9 The development will be car-free. This is considered appropriate given the site has an excellent PTAL rating and is in close proximity to public transport opportunities as well as walking and cycling routes. The existing CPZ restrictions that are in operation within the local area will also deter any parking on-street. On this basis, the proposals are in accordance with local policy.

Cycle Parking

4.10 Cycle parking will be secured by way of condition.

4.11 A cycle store for the office units is proposed and located on the ground floor within the central core of the building. This is an improvement to the existing building which currently is not supplied with a cycle store. This will provide access to 20 bike spaces in a two-tier format.

4.12 A cycle store for the residential units will also be provided at ground floor level. This is also an improvement to the existing situation with no cycle parking facilities currently provided for residents. This will provide access to 10 bike spaces in the form of Sheffield stands.

4.13 Cycle parking for the retail units would be expected to be contained within each individual unit.

Deliveries and Servicing

4.14 Deliveries and servicing will take place on-street as existing within the existing pay by phone bays located on Macklin Street or on the double yellow lines opposite the site.

4.15 Office developments typically generate approximately 0.25 deliveries per 100sqm. As such, the increase in office space is likely to result in no more than 1 additional delivery per day.

4.16 Retail units generate in the order of 0.5-1.35 deliveries per 100sqm therefore the increase in floorspace arising from the development would result in approximately 1 additional delivery per day.

4.17 The development proposes a decrease in residential units therefore it is reasonable to assume deliveries are unlikely to materially change from the existing development.

4.18 The majority of deliveries to commercial and residential units are typically associated with post, online orders, supplies, etc., which typically take place by light goods vehicles such as from Luton or Transit style vans. Many vehicles making deliveries are also already travelling in the area in any event as part of their schedule of multiple drop-offs and therefore they have little or no impact on the surrounding area.

4.19 The waste collection strategy will continue as existing with all collections undertaken on-street and waste operatives transferring waste between the bin store or roadside to the collection vehicle. A total of 4 1100l Eurobins are proposed within the bin store. Bins would be returned to the store once emptied.

4.20 Based on the above, the delivery and servicing arrangements associated with the proposals are not expected to have an impact on the local road network with there being little change from the existing situation.

5 SUMMARY AND CONCLUSION

Summary

5.1 TTP Consulting has been appointed to provide traffic and transport advice in relation to the proposed development at Lupus House, located within the London Borough of Camden.

5.2 The proposals can be summarised as follows:

- The development will be car-free, as existing. This is appropriate given the excellent accessibility of the site;
- Cycle parking will be provided in accordance with standards and secured by way of condition. Office parking will be located within a secure cycle store at ground floor level in the core of the building. A residential cycle store will also be provided at ground floor level. Cycle parking for the retail units is likely to be accommodated within each unit. This is an improvement from the current arrangement whereby there is no cycle storage;
- The pedestrian access arrangements at the site will be amended with minor changes to widths. A new entrance will also be introduced for the office use;
- The increase in floorspace will not result in a material increase in total person trips. As such, there is not expected to be a harmful impact on the local road and public transport networks;
- The increase in floorspace is not expected to result in a noticeable change in deliveries. All activity would continue to take place on-street as per the existing situation; and
- Refuse will be collected in a similar manner to the existing arrangement with vehicles stopping on-street and refuse operatives removing waste from the bin store or roadside.

Conclusion

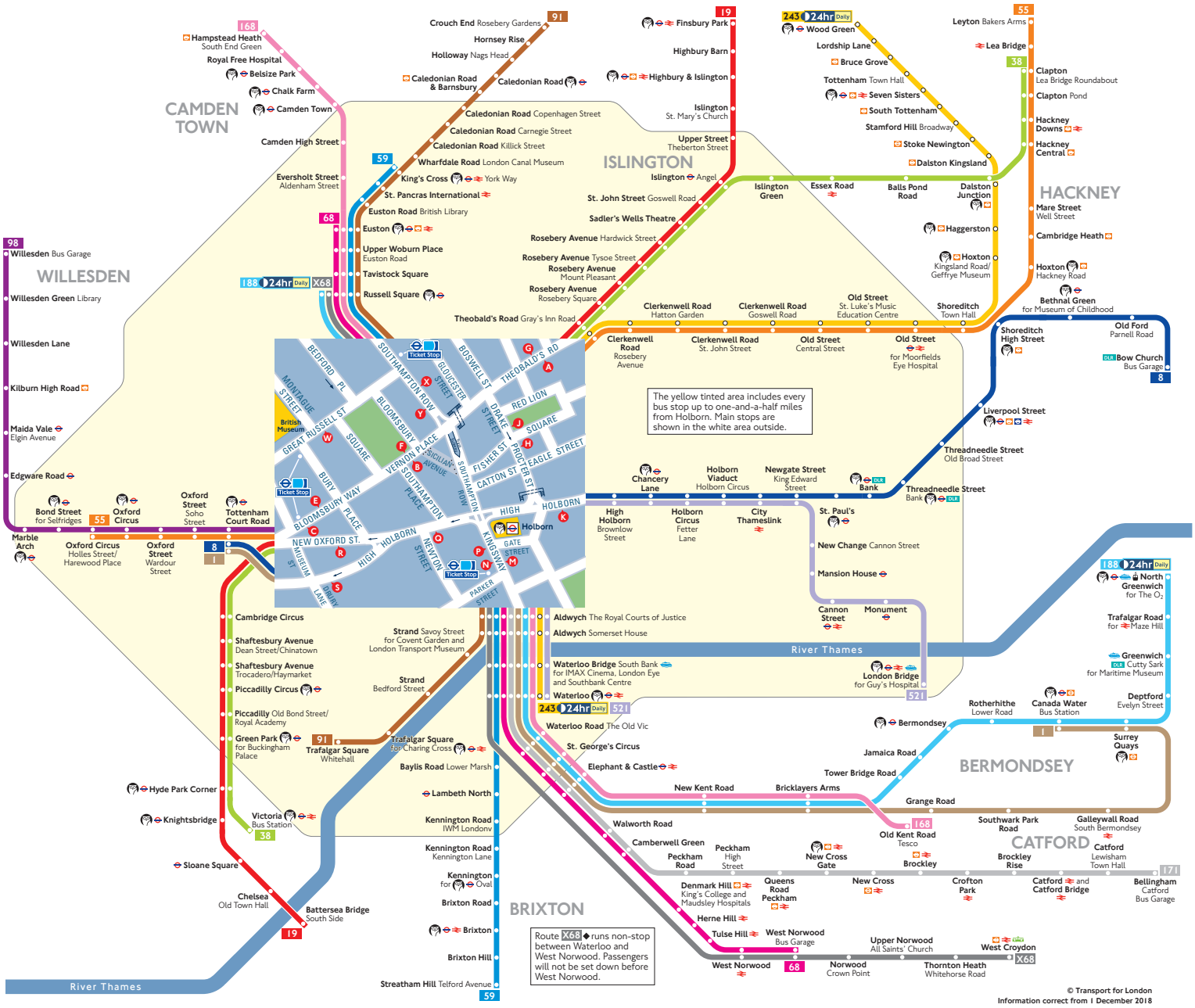
5.3 The proposed development is not expected to result in any material transport related impacts. It therefore meets the test of the NPPF and paragraph 109, which states:

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

5.4 In light of the above, we conclude that the proposals are acceptable in traffic and transport terms.

Appendix A

Buses from Holborn



Route finder

Bus route	Towards	Bus stops
1	Canada Water	E M
	Tottenham Court Road	P S
8	Bow Church	E H
	Tottenham Court Road	K O S
19	Battersea Bridge	A B C
	Finsbury Park	E F G
38	Clapton	E F G
	Victoria	A B C
55	Leyton	E F G
	Oxford Circus	A B C
59	King's Cross	N Y
	Streatham Hill	M X
68	Euston	N Y
	West Norwood	M X
91	Crouch End	N Y
	Trafalgar Square	M X
98	Willesden	J
168	Hampstead Heath	N Y
	Old Kent Road	M X
171	Bellingham	E M
188 24hr Daily	North Greenwich	M X
	Russell Square	N Y
243 24hr Daily	Waterloo	A M
	Wood Green	G P
521	London Bridge ■	H P
	Waterloo ■	K M
X68	Russell Square ▼	N Y
	West Croydon ◆	M X

Key

- Connections with London Underground
- Connections with London Overground
- Connections with TfL Rail
- Connections with National Rail
- Connections with DLR
- Connections with London Trams
- Connections with river boats
- Connections with Emirates Air Line
- ◆ Limited stop, Mondays to Fridays afternoon peak hours only
- ▼ Mondays to Fridays morning peak hours only
- ■ Mondays to Fridays only
- Tube/London Overground station with 24-hour service Friday and Saturday nights

Ways to pay

Use contactless (card or device). It's the same fare as Oyster pay as you go and you don't need to top up

Download the free TfL app to top up or buy a ticket anytime, anywhere, or visit tfl.gov.uk/oyster. Alternatively, find your nearest Oyster Ticket Stop at tfl.gov.uk/ticketstopfinder or visit your nearest TfL station

The Hopper fare offers you unlimited pay as you go Bus and Tram journeys within one hour for £1.50. Always use the same card or device to touch in

TfL 792.10.18 (P)

Appendix B

TRANSPORT FOR LONDON

PTAL output for Base Year
6b

WC2B 5NH
Macklin St, London WC2B 5NH, UK
Easting: 530344, Northing: 181341

Grid Cell: 84832

Report generated: 12/03/2019

Map key - PTAL

0 (Worst)	1a
1b	2
3	4
5	6a
6b (Best)	

Map layers

PTAL (cell size: 100m)

Calculation Parameters

Day of Week	M-F
Time Period	AM Peak
Walk Speed	4.8 kph
Bus Node Max. Walk Access Time (mins)	8
Bus Reliability Factor	2.0
LU Station Max. Walk Access Time (mins)	12
LU Reliability Factor	0.75
National Rail Station Max. Walk Access Time (mins)	12
National Rail Reliability Factor	0.75

Calculation data

Mode	Stop	Route	Distance (metres)	Frequency(vph)	Walk Time (mins)	SWT (mins)	TAT (mins)	EDF	Weight	AI
Bus	ALDWYCH WEST ARM	11	588.83	7.5	7.36	6	13.36	2.25	0.5	1.12
Bus	ALDWYCH WEST ARM	23	588.83	8	7.36	5.75	13.11	2.29	0.5	1.14
Bus	ALDWYCH WEST ARM	9	588.83	12	7.36	4.5	11.86	2.53	0.5	1.26
Bus	ALDWYCH WEST ARM	26	588.83	7.5	7.36	6	13.36	2.25	0.5	1.12
Bus	ALDWYCH WEST ARM	13	588.83	8	7.36	5.75	13.11	2.29	0.5	1.14
Bus	ALDWYCH WEST ARM	4	588.83	6	7.36	7	14.36	2.09	0.5	1.04
Bus	ALDWYCH WEST ARM	15	588.83	7.5	7.36	6	13.36	2.25	0.5	1.12
Bus	ALDWYCH WEST ARM	341	588.83	6	7.36	7	14.36	2.09	0.5	1.04
Bus	ALDWYCH WEST ARM	76	588.83	7.5	7.36	6	13.36	2.25	0.5	1.12
Bus	ALDWYCH WEST ARM	87	588.83	10	7.36	5	12.36	2.43	0.5	1.21
Bus	ALDWYCH WEST ARM	172	588.83	6	7.36	7	14.36	2.09	0.5	1.04
Bus	ALDWYCH WEST ARM	6	588.83	10	7.36	5	12.36	2.43	0.5	1.21
Bus	COVENT GARDEN RUSSELL STREET	RV1	523.25	6	6.54	7	13.54	2.22	0.5	1.11
Bus	HOLBORN STATION KINGSWAY	59	472.83	10	5.91	5	10.91	2.75	0.5	1.37
Bus	HOLBORN STATION KINGSWAY	243	472.83	11	5.91	4.73	10.64	2.82	0.5	1.41
Bus	HOLBORN STATION KINGSWAY	521	472.83	27	5.91	3.11	9.02	3.33	0.5	1.66
Bus	HOLBORN STATION KINGSWAY	91	472.83	9	5.91	5.33	11.24	2.67	0.5	1.33
Bus	HOLBORN STATION KINGSWAY	68	472.83	9	5.91	5.33	11.24	2.67	0.5	1.33
Bus	HOLBORN STATION KINGSWAY	X68	472.83	4	5.91	9.5	15.41	1.95	0.5	0.97
Bus	HOLBORN STATION KINGSWAY	188	472.83	8	5.91	5.75	11.66	2.57	0.5	1.29
Bus	HOLBORN STATION KINGSWAY	168	472.83	9	5.91	5.33	11.24	2.67	0.5	1.33
Bus	BLOOMSBURY NEW OXFORD ST	8	340.58	10	4.26	5	9.26	3.24	0.5	1.62
Bus	BLOOMSBURY NEW OXFORD ST	38	340.58	10	4.26	5	9.26	3.24	0.5	1.62
Bus	BLOOMSBURY NEW OXFORD ST	25	340.58	8	4.26	5.75	10.01	3	0.5	1.5
Bus	BLOOMSBURY NEW OXFORD ST	19	340.58	8	4.26	5.75	10.01	3	0.5	1.5
Bus	BLOOMSBURY NEW OXFORD ST	171	340.58	7.5	4.26	6	10.26	2.92	0.5	1.46
Bus	BLOOMSBURY NEW OXFORD ST	55	340.58	10	4.26	5	9.26	3.24	0.5	1.62
Bus	HIGH HOLBORN POST OFFICE	242	248.11	6.5	3.1	6.62	9.72	3.09	0.5	1.54
Bus	HIGH HOLBORN POST OFFICE	1	248.11	8	3.1	5.75	8.85	3.39	0.5	1.69
Bus	BLOOMSBURY ST SHAFTESBURY AVE	24	385.54	10	4.82	5	9.82	3.06	0.5	1.53
Bus	BLOOMSBURY ST SHAFTESBURY AVE	134	385.54	12	4.82	4.5	9.32	3.22	0.5	1.61
Bus	BLOOMSBURY ST SHAFTESBURY AVE	29	385.54	15	4.82	4	8.82	3.4	1	3.4
Bus	BLOOMSBURY ST SHAFTESBURY AVE	176	385.54	8.5	4.82	5.53	10.35	2.9	0.5	1.45
Bus	BLOOMSBURY ST SHAFTESBURY AVE	14	385.54	13	4.82	4.31	9.13	3.29	0.5	1.64
Bus	BLOOMSBURY STREET	10	617.57	4.5	7.72	8.67	16.39	1.83	0.5	0.92
Bus	BLOOMSBURY STREET	390	617.57	8	7.72	5.75	13.47	2.23	0.5	1.11
Bus	BLOOMSBURY STREET	73	617.57	18	7.72	3.67	11.39	2.63	0.5	1.32
Bus	GT RUSSELL ST MUSEUM ST	98	486.56	9	6.08	5.33	11.42	2.63	0.5	1.31
LUL	Covent Garden	'Cockfosters-LHRT4LT'	459.71	4.67	5.75	7.17	12.92	2.32	0.5	1.16
LUL	Covent Garden	'RayLane-Cockfosters'	459.71	3.67	5.75	8.92	14.67	2.04	0.5	1.02
LUL	Covent Garden	'LHRT4LT-ArnosGrove'	459.71	4.67	5.75	7.17	12.92	2.32	0.5	1.16
LUL	Covent Garden	'ArnosGrove-RayLane'	459.71	0.33	5.75	91.66	97.41	0.31	0.5	0.15
LUL	Covent Garden	'ArnosGrove-Nthfields'	459.71	3	5.75	10.75	16.5	1.82	0.5	0.91
LUL	Covent Garden	'Nthfields-Cockfoster'	459.71	1	5.75	30.75	36.5	0.82	0.5	0.41
LUL	Covent Garden	'LHRT5-Cockfosters'	459.71	6	5.75	5.75	11.5	2.61	0.5	1.3
LUL	Covent Garden	'Uxbridge-Cockfosters'	459.71	3.67	5.75	8.92	14.67	2.04	0.5	1.02
LUL	Covent Garden	'Ruislip-Cockfosters'	459.71	2.33	5.75	13.63	19.37	1.55	0.5	0.77
LUL	Covent Garden	'ArnosGrove-Uxbridge'	459.71	1	5.75	30.75	36.5	0.82	0.5	0.41
LUL	Covent Garden	'Oakwood-Uxbridge'	459.71	0.33	5.75	91.66	97.41	0.31	0.5	0.15
LUL	Covent Garden	'Oakwood-Ruislip'	459.71	0.33	5.75	91.66	97.41	0.31	0.5	0.15
LUL	Tottenham Court Road	'Hainault-Nacton'	668.38	1.33	8.35	23.31	31.66	0.95	0.5	0.47
LUL	Tottenham Court Road	'Morden-Edgware'	668.38	4.67	8.35	7.17	15.53	1.93	0.5	0.97
LUL	Tottenham Court Road	'HighBarnet-Morden'	668.38	0.33	8.35	91.66	100.01	0.3	0.5	0.15
LUL	Tottenham Court Road	'Kennington-Edgware'	668.38	14.67	8.35	2.79	11.15	2.69	1	2.69
LUL	Tottenham Court Road	'HighBarnet-Kenningt'	668.38	5.33	8.35	6.38	14.73	2.04	0.5	1.02
LUL	Tottenham Court Road	'MillHill-Morden'	668.38	1.67	8.35	18.71	27.07	1.11	0.5	0.55
LUL	Tottenham Court Road	'MillHillE-Kenningt'	668.38	1.67	8.35	18.71	27.07	1.11	0.5	0.55
LUL	Holborn	'Epping-Ealing'	516.3	3	6.45	10.75	17.2	1.74	0.5	0.87

Mode	Stop	Route	Distance (metres)	Frequency(vph)	Walk Time (mins)	SWT (mins)	TAT (mins)	EDF	Weight	AI
LUL	Holborn	'WRuislip-Epping '	516.3	3	6.45	10.75	17.2	1.74	0.5	0.87
LUL	Holborn	'RuislipGar-Epping '	516.3	1	6.45	30.75	37.2	0.81	0.5	0.4
LUL	Holborn	'WhiteCity-Epping '	516.3	0.33	6.45	91.66	98.11	0.31	0.5	0.15
LUL	Holborn	'Epping-NActon '	516.3	1	6.45	30.75	37.2	0.81	0.5	0.4
LUL	Holborn	'Northolt-Epping '	516.3	0.67	6.45	45.53	51.98	0.58	0.5	0.29
LUL	Holborn	'Debden-WRuislip '	516.3	0.33	6.45	91.66	98.11	0.31	0.5	0.15
LUL	Holborn	'WhiteCity-Debden '	516.3	0.33	6.45	91.66	98.11	0.31	0.5	0.15
LUL	Holborn	'Debden-Northolt '	516.3	1	6.45	30.75	37.2	0.81	0.5	0.4
LUL	Holborn	'RuislipGdns-Debden '	516.3	0.33	6.45	91.66	98.11	0.31	0.5	0.15
LUL	Holborn	'Loughton-WRuislip '	516.3	1	6.45	30.75	37.2	0.81	0.5	0.4
LUL	Holborn	'NActon-Loughton '	516.3	0.67	6.45	45.53	51.98	0.58	0.5	0.29
LUL	Holborn	'RuislipGdns-Loughton'	516.3	0.67	6.45	45.53	51.98	0.58	0.5	0.29
LUL	Holborn	'Loughton-WhiteCity'	516.3	0.67	6.45	45.53	51.98	0.58	0.5	0.29
LUL	Holborn	'Loughton-Northolt '	516.3	0.33	6.45	91.66	98.11	0.31	0.5	0.15
LUL	Holborn	'Ealing-Loughton '	516.3	1	6.45	30.75	37.2	0.81	0.5	0.4
LUL	Holborn	'Ealing-NewburyPark '	516.3	0.67	6.45	45.53	51.98	0.58	0.5	0.29
LUL	Holborn	'WRuislip-NewburyPark'	516.3	0.33	6.45	91.66	98.11	0.31	0.5	0.15
LUL	Holborn	'NActon-NewburyPark '	516.3	0.33	6.45	91.66	98.11	0.31	0.5	0.15
LUL	Holborn	'Hainault-Ealing '	516.3	5.33	6.45	6.38	12.83	2.34	0.5	1.17
LUL	Holborn	'WRuislip-Hainault '	516.3	3	6.45	10.75	17.2	1.74	0.5	0.87
LUL	Holborn	'RuislipGdns-NP-Hain '	516.3	0.67	6.45	45.53	51.98	0.58	0.5	0.29
LUL	Holborn	'Hainault-WhiteCity'	516.3	1.67	6.45	18.71	25.17	1.19	0.5	0.6
LUL	Holborn	'Hainault-NP-Northolt'	516.3	1	6.45	30.75	37.2	0.81	0.5	0.4
LUL	Holborn	'GrangeHill-WD-Eal '	516.3	1	6.45	30.75	37.2	0.81	0.5	0.4
LUL	Holborn	'GrangeHill-Wdfd-Whit'	516.3	0.67	6.45	45.53	51.98	0.58	0.5	0.29
LUL	Holborn	'GrangeHill-Wdfd-WRsp'	516.3	0.67	6.45	45.53	51.98	0.58	0.5	0.29
LUL	Holborn	'Oakwood-RayLane '	516.3	0.33	6.45	91.66	98.11	0.31	0.5	0.15
									Total Grid Cell AI:	**77.98**