London School of Hygiene and Tropical Medicine (LSHTM) 15-17 Tavistock Place London

Travel Plan

Wilde

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LSHTM Tavistock Place Travel Plan

Version 2.1

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Travel Plan

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Travel Plan

Background

1 Introduction

1.1 This Travel Plan has been prepared by Wilde Carter Clack, Consulting Civil Engineers, on behalf of the London School of Hygiene & Tropical Medicine (the School) in support of a planning application for a proposed development to the rear of the existing School building at 15-17 Tavistock Place, Camden, London.

1.2 The existing building at Tavistock Place, owned by the School, is an early twentieth century brick-faced building comprising four storeys plus a basement. It faces directly onto Tavistock Place, to which it has a highways frontage and from which it is accessed by vehicles and pedestrians. To the rear of the main building is a small courtyard area and towards the rear of the site is a single storey structure being a former depot.

1.3 In January 2017, planning permission was secured for the demolition of the single storey structure to the rear of the site and the development, in its stead, of additional laboratory space. The School now seeks permission for a development of reduced scale, which would still involve the demolition of the single storey structure and the construction to the rear of the site of additional laboratory, research and higher education space.

1.4 The School building at 15 – 17 Tavistock Place lies within the King's Cross Ward of the London Borough of Camden, which is the local planning authority. Highway responsibilities within the area are split between Transport for London, which is responsible for the Transport for London Road Network, TLRN, and the London Borough of Camden, which is the local highway authority.

1.5 Consistent with the planning submission for the now-approved scheme, the present planning application is supported by a Transport Statement and this Travel Plan.

1.6 The School recognises that its activities and operations can have an impact on society and the environment and is working to reduce the negative effects of these activities and operations whilst promoting and striving for positive outcomes where possible. Although travel is necessary to enable its work, study and research activities to function, the School is seeking to reduce the amount and impact of the travel that is undertaken. It is intended that this **LSHTM Tavistock Place Travel Plan** will help the School to achieve these objectives.

1.7 The address of the development to which this **LSHTM Tavistock Place Travel Plan** relates is:

London School of Hygiene and Tropical Medicine
15 – 17 Tavistock Place
Camden
London WC1H 9SH

1.8 The overall aim of the Travel Plan is to enable efficient and optimal travel choices to be made, which support the School's business, educational and research activities, minimise social and environmental impacts and respect and contribute to the local transport agenda and London's wider transport challenges.

1.9 To achieve this, the School is seeking to reduce the amount of travel which is undertaken, and encouraging, wherever possible, a modal shift by promoting and increasing cycling, walking, and the use of 'sustainable' public transport.

1.10 Submission of this Travel Plan addresses the requirements of the London Plan (2016) and of the Camden Local Plan (2017). In compiling the Travel Plan regard has been paid to the guidance on the preparation, scope and content of travel plans published by Transport for London[1] and by the London Borough of Camden in its planning guidance document on Transport[2].

[1] TfL Travel Planning Guidance: Transport for London November 2013
[2] Camden Planning Guidance (CPG 7) – Transport: London Borough of Camden

2 What is a Travel Plan?

2.1 A Travel Plan is a way by which an organisation manages its own transport needs and those of the people who work at and visit the site so as to reduce the impact of travel and transport on the environment. Typically, it is a package of measures that promotes more sustainable ways for people and goods to travel, by encouraging greater use of more sustainable forms of transport and by reducing wherever possible the need for people to travel at all for their work. Success is measured against a set of agreed targets or outcomes.

2.2 Transport for London's guidance on the preparation of travel plans[1] provides a more rigorous definition that states that a travel plan is a long term management strategy for increasing sustainable travel by the occupiers of a development that is set out in a document that is to be regularly reviewed by the occupiers of the site and involves the development of agreed and specific outcomes, linked to an appropriate package of measures aimed at encouraging sustainable travel.

2.3 This **LSHTM Tavistock Place Travel Plan** document therefore contains the following elements:

- **Background:** detailed information about the development and the aims of the plan;
- **Objectives:** what the Travel Plan hopes to achieve (reduction in emissions, increase in active travel modes etc);
- **Policy context:** brief summary of national, regional and local policies and guidance;
- **Site Assessment:** details of local transport services, walking and cycling routes within the area;
- **Travel Surveys:** details of surveys that have been undertaken to develop a baseline;
- **Travel Plan Management:** Details of how the Travel Plan will be managed and by whom;
- **Targets:** Specific targets for actions to be achieved by the plan;
- **Actions and Measures:** what will be implemented in order to achieve the identified targets;
- **Monitoring and Review:** How the Travel Plan will be monitored and reported;

- **Action Plan:** A table setting out what will be implemented and when;
- **Securing the plan:** How the Travel Plan will be secured should planning approval be granted; and
- **Funding:** the applicant's commitment to funding the Travel Plan in order to ensure its success.

2.4 The School recognises that producing a travel plan document that addresses the above issues is not an end in itself; a travel plan should be a living document that evolves over time to meet the continuing needs of the School, its staff, students and other visitors to the development.

3 Site Location and Description

3.1 The site of the proposed development, known as 15 – 17 Tavistock Place, is located in the King's Cross Ward of the London Borough of Camden.

3.2 The subject site is located in the Bloomsbury area of Central London, within postcode area WC1.

3.3 The location of the site is shown in Figure 3.1 below.

3.4 The site is located on the northern side of Tavistock Place, approximately 150m to the north east of Tavistock Square (the easterly side of which, Woburn Place, is designated as part of the A4200) and approximately 300m south of the Euston Road, A501.

3.5 Having an area of some 0.303 hectares, the site is broadly rectangular in shape, with a single highway frontage, to Tavistock Place, which runs along its southern boundary. The main building on the site, having four-storeys plus basement, is located on this southern boundary, for all practical purposes contiguous with the highway. The proposals envisage a development towards the rear of the site.

3.6 The existing main vehicular and pedestrian access to the site is from Tavistock Place. This is located towards the westerly end of the site frontage. Given the developed form of the site, the vehicular access passes through the principal building

via a gated passageway that provides access to the internal courtyard. The main pedestrian entrance to the building is accessed from the covered passageway.

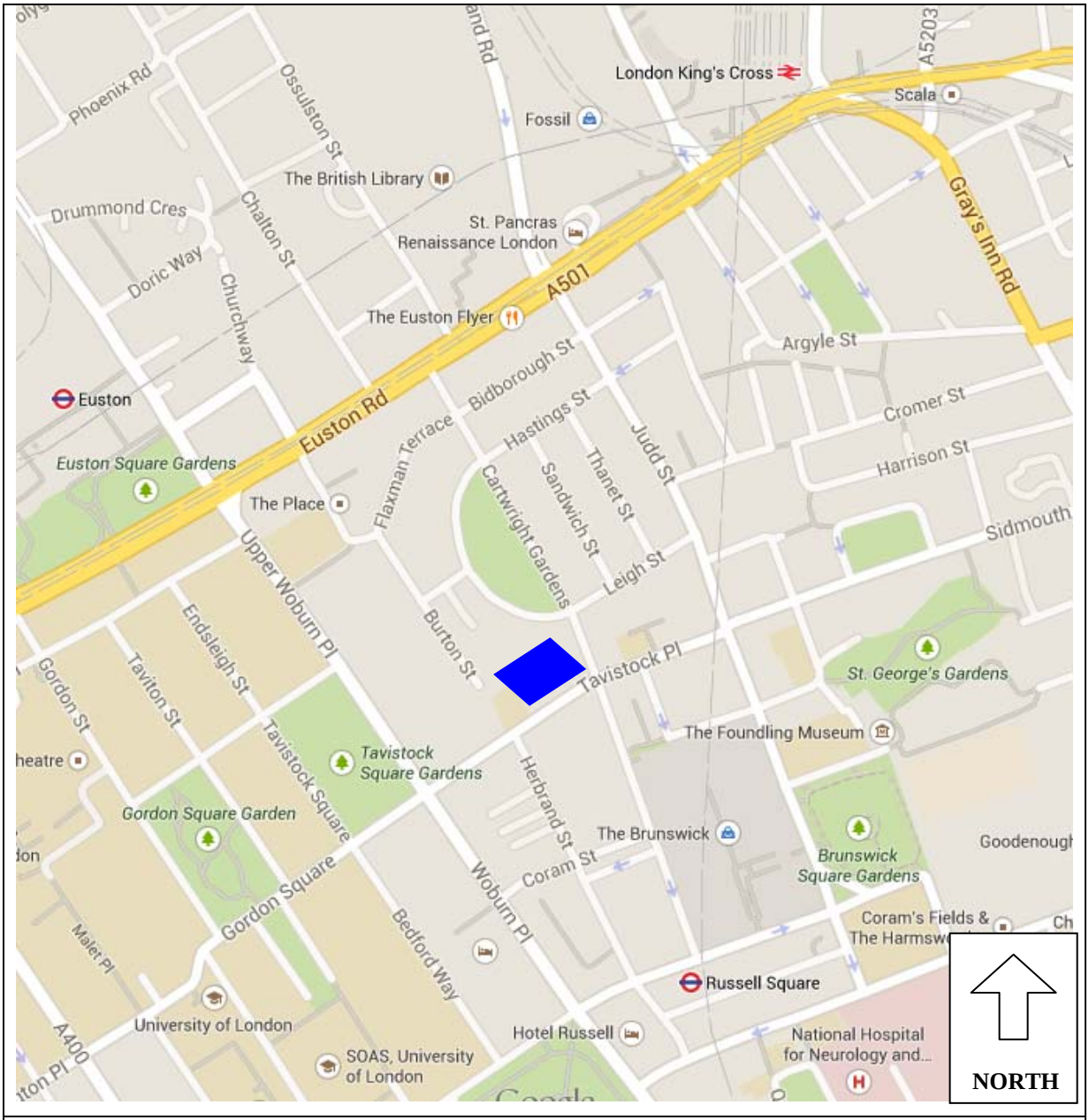


Figure 3.1 Location Plan

Location of Site

3.7 A short distance to the east of the site and separated from it by a largely retail frontage, is Marchmont Street, which runs in a generally north-south direction leading to the Euston Road to the north and to the B502 Bernard Street to the south.

3.8 Leading from the westerly side of Marchmont Street, South Crescent Mews passes through the developed frontage, to the side of the Lord John Russell public house. The cul-de-sac end of the mews provides a gated access to the School's Tavistock Place site, from which the School have a right of way for emergency evacuation only over South Crescent Mews.

3.9 The main building dates from the early twentieth century and is laid out in a 'U' shape, with the main elevation to Tavistock Place and with two rear wings, one on each side boundary. Towards the rear boundary of the site is a former depot structure, now D1 use.

3.10 The site is within the Bloomsbury Conservation Area. The building itself is not listed.

3.11 Figure 3.1 shows the location of the site relative to the local highway network and to London Underground and mainline rail stations. Euston Mainline Railway Station and Euston Underground Station are located approximately 590m to the north west of the application site, King's Cross Mainline Railway Station and King's Cross St Pancras Underground Station are located approximately 600m to the north east and Russell Square Underground Station around 280m to the south.

3.12 The application site is located within the heart of Bloomsbury, home of numerous cultural, educational and healthcare institutions, including the British Museum and Great Ormond Street Hospital. The area immediately surrounding the application site is characterised by residential accommodation, hotels, and commercial properties, the latter extending along Marchmont Street from Cartwright Gardens to the Brunswick Shopping Centre and Bernard Street. To the east of the School's building are the properties that front Marchmont Street which are generally four storeys in height, with retail and commercial activity at ground floor level and residential accommodation above. To the west of the site is a part three, part six storey residential mansion block which is divided from the application site by an access way. On the opposite side of Tavistock Place is a row of terrace properties of four storeys with basement accommodation. These buildings are predominantly in use as hotels. To the rear of the site there are residential properties, especially on Burton Street, and hotel accommodation on Cartwright Gardens.

4 The Existing and Permitted Use of the Site

4.1 In May 2009, planning permission was granted for a change of use and works of conversion of 15 – 17 Tavistock Place from offices (Use Class B1) to flexible business/non-residential institution floorspace (Use Class B1/D1). Planning permission 2009/0067/P refers.

4.2 The planning approval, since implemented, included the construction of a four-storey rear extension to the principal building to provide circulation space between the floors of the existing building, including new internal and external stairs and lift access.

4.3 The purpose of the implemented planning approval was to adapt the building to enable its use by the London School of Hygiene & Tropical Medicine. The building now accommodates a combination of educational facilities, research programmes and administrative functions.

4.4 In January 2017, planning permission was secured for a further development of the site. This allows for the demolition of the former depot and the construction, towards the rear of the site, of a part single, part two-storey and part three-storey extension, with two levels of basement accommodation, to create additional medical research laboratory and higher education facilities. Planning permission 2015/3406/P refers. The School does not intend to implement that permission and now seeks approval for a development of reduced scale, which would still involve the demolition of the single storey structure and the construction to the rear of the site of additional laboratory, research and higher education space.

5 Purpose, Aims and Objectives of the Plan

5.1 The purpose of the **LSHTM Tavistock Place Travel Plan** is to provide a formal mechanism by which the School would be able to understand the travel needs of their staff, students and visitors and to put in place a package of site-specific measures that would be designed to help people to make smarter, more sustainable, travel choices by promoting and encouraging cycling, walking, and the use of ‘sustainable’ public transport as a means for people to get to and from the site.

5.2 The aims and objectives of this site-specific Travel Plan are listed below:

The aims of this Travel Plan are to:

- **Enable efficient and optimal travel and transport choices to be made;**
- **Improve sustainability and reduce the School's social and environmental impact from travel and transport;**
- **Improve staff and student health, well-being and work-life balance;**
- **Enhance business resilience and contingency during periods of travel disruption; and**
- **Contribute to and influence the delivery of regional and local transport policies.**

These aims will be achieved through the following key objectives:

- **OBJ 1 – To reduce the need to travel for work and study, where appropriate, through IT and flexible working arrangements;**
- **OBJ 2 – To enhance travel mode choices for journeys, through the provision of appropriate information, infrastructure and support;**
- **OBJ 3 – To work in partnership with our neighbours, Camden Council, Transport for London, transport groups and other stakeholders to improve sustainable travel outcomes; and**
- **OBJ 4 – To improve the logistics of managing day-to-day operations, deliveries and servicing, thereby contributing to a reduction in traffic, congestion and improved air quality.**

5.3 The School will deliver these aims and objectives through a series of site-specific measures outlined in this document.

The Policy Context

6 The National, Regional and Local Policy Context

6.1 This Travel Plan has been prepared within a framework of national, regional and local policies that support the principle of sustainable development.

National Planning Policy Framework (NPPF) (2012)[3]

6.2 The principle of sustainable development is at the heart of the National Planning Policy Framework.

6.3 The NPPF sets out 12 core land-use planning principles, one of which is that planning should **'...actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling and focus significant development in locations which are or can be made sustainable'**. This Travel Plan, in promoting sustainable modes of transport for trips to and from the site, is consistent with that principle.

6.4 The framework establishes a presumption in favour of sustainable development. Section 4 of the NPPF (paragraphs 29-41) deals with 'Promoting Sustainable Transport'. The NPPF recognises the important role that transport policy plays in facilitating sustainable development and meeting wider sustainability and health objectives. The guiding principle is that developments generating significant numbers of trips should be located so that the need to travel can be minimised and the use of sustainable transport modes can be maximised, giving people, including those whose mobility is impaired, real travel choice. Paragraph 36 identifies Travel Plans as a 'key tool' to facilitate this objective, indicating that all such developments should be required to provide a Travel Plan. Submission of this Travel Plan is therefore consistent with national policy, providing a formal arrangement by which the School would raise the awareness of their staff, students and visitors of the impacts of their travel choices on the environment, on road safety and on traffic congestion and empowering people to make smarter travel decisions to minimise those impacts.

[3] National Planning Policy Framework, Department for Communities and Local Government: March 2012

The London Plan (2016)

6.5 Spatial planning at a strategic level in London is set out in the London Plan[4], which was published in July 2011. The plan considers the future development of the Capital to 2031 and beyond. In March 2016 the Mayor formally adopted the Further Alterations to the London Plan and a consolidated, updated London Plan[5] which extends the formal end date of the plan to 2036.

6.6 As with the previous London Plan[6], the idea of **sustainable development** is central to the current London Plan and all policies in the plan are designed to promote sustainable development. The plan identifies the Mayor's aim as being to '…seek to manage growth to ensure it takes place in the most sustainable way possible.' From the Mayor's vision of the Capital as a place that 'excel[s] among global cities' to individual policies, managing and planning for growth that is sustainable is a recurring feature of the plan.

6.7 Chapter 6 of the Plan deals with London's Transport, setting out a series of strategic policies that will encourage patterns of development that reduce the need to travel, especially by car; that seek to improve the capacity and accessibility of public transport, walking and cycling; that will promote a shift to more sustainable modes of travel with significant increases in walking and cycling and a reduction in congestion; and that facilitate the efficient distribution of freight whilst minimising its impacts on the transport network.

6.8 The preparation of this Travel Plan complies with Policy 6.3 of the London Plan that states that developments with significant transport implications should have a Travel Plan. The Travel Plan supports the strategic objectives of the London Plan transport policies (Policy 6.1) by promoting public transport, walking and cycling. Travel plan measures collectively, including those that seek to exploit new and emerging technologies that reduce the need to travel, will help to alleviate local traffic congestion and therefore support the objectives of Policy 6.11. The Travel Plan is

[4] 'The London Plan – Spatial Development Strategy for Greater London' Greater London Authority, July 2011
[5] 'The London Plan – Spatial Development Strategy for London Consolidated with Alterations since 2011' Greater London Authority, March 2016
[6] 'The London Plan – Spatial Development Strategy for Greater London Consolidated with Alterations since 2004' Greater London Authority, February 2008

also consistent with the emerging Mayor's Transport Strategy, published in draft in June 2017.

Local authority policy – the Camden Local Plan (2017)

6.9 Planning decisions in the London Borough of Camden are made with regard to the London Plan and planning documents adopted by the Council. Currently, the development plan for the London Borough of Camden comprises the Local Plan[7], formally adopted by the Council on 3rd July 2017. The Local Plan provides the planning framework for the Borough until 2031. The Local Plan contains several strategic objectives and detailed policies that support and promote sustainable development.

6.10 Under Policy A1 'Managing the Impact of Development', the Council will consider the information supplied in documents such as this Travel Plan when assessing the impacts of proposed developments. Policy T1 'Prioritising walking, cycling and public transport' states that the Council will promote sustainable transport by prioritising walking, cycling and public transport in the borough. Development proposals will be required to prioritise the needs of pedestrians and cyclists and ensure that sustainable transport will be the primary means of travel to and from the site. The Transport Statement that supports the current application demonstrates that trips to and from the existing School building are undertaken predominantly by sustainable transport modes and this Travel Plan provides a mechanism to ensure that sustainable transport will continue to be the primary means of travel associated with the proposed development. Policy T2 relates to 'Parking and car-free development', stating that the Council will limit the availability of parking and require all new developments in the borough to be car-free. It is proposed to provide on-site parking only for the use of disabled persons, which is consistent with the requirements of Policy T2 and this is written into this Travel Plan.

6.11 The Travel Plan is therefore important in demonstrating to the local planning authority that the transport impacts of the proposed development are acceptable and that an enduring mechanism would be in place to effectively manage the travel demands generated by the development in the most sustainable manner possible.

[7] The Camden Local Plan 2016-2031: London Borough of Camden. Adopted July 2017

Travel plan guidance

6.12 As indicated in paragraph 1.10 above, in preparing this Travel Plan, due regard has been paid to the guidance on the preparation, scope and content of travel plans published by Transport for London[1] and by the London Borough of Camden in its planning guidance document on Transport[2].

Site Assessment

7 PTAL Assessment

7.1 PTAL (Public Transport Accessibility Level) is a measure of the accessibility of a site to public transport services. It is based on an assessment of walking distance from the site to nearby public transport access points (bus stops and railway stations) within 640m for bus services and 960m for rail, and the average waiting time in the morning peak hour (derived from the frequency of service). It results in a score of between 1 and 6, with 1 representing poor accessibility to public transport and 6 indicating excellent accessibility.

7.2 A PTAL calculation has been undertaken for 15 – 17 Tavistock Place using Transport for London's on-line PTAL calculator[8]. **This resulted in a PTAL score of 6b**, the highest and best score achievable, indicating an excellent level of accessibility to public transport services. The report generated by the calculator is presented at Appendix A to this report.

7.3 The PTAL score is calculated at a base year of 2011. The PTAL on-line calculator now also includes a facility to generate a report for a future year, 2021. **The 2021 PTAL calculation resulted in a PTAL score of 6b**, indicating that an excellent level of accessibility to public transport services in the area is expected to be maintained. The PTAL report for 2021 is also included at Appendix A.

7.4 The following paragraphs show that the site benefits from convenient access to local bus and underground services, and to regional and national rail services, offering good opportunities for those studying and working at and visiting the site to travel by public transport rather than by private car.

[8] www.webptals.org.uk Transport for London Planning Information Database

8 Site Accessibility – Bus Services

8.1 Figure 8.1 below shows the location of the nearest bus stops that are within a convenient walking distance of the application premises. All of the stops shown are within the 640m walking distance (8 minute walking time) used by Transport for London as the basis of their PTAL calculation. The two nearest stops, on Tavistock Square, are within approximately 210m and 310m from the application site, accessible within a walking time of approximately 2 to 3 minutes respectively. The bus stops indicated on Euston Road, near to the British Library, are within approximately 300m to 500m of the site, accessible on foot in around 4.5 – 6 minutes respectively. Euston Station Bus Station and bus stops at Russell Square and on Woburn Place and Gray's Inn Road are all within the 8-minute maximum walking time used in the PTAL assessment.

8.2 The nearest, Tavistock Square, stops afford access to the following bus services.

Service No.	Service Route	Frequency/Operating Hours					
		Monday- Friday		Saturday		Sunday	
		Day	Eve	Day	Eve	Day	Eve
10	Hammersmith-King's Cross	6-8 bph	6-8 bph	5-8 bph	5-6 bph	4-5 bph	4-5 bph
		24 hours		24 hours		24 hours	
59	King's Cross – Streatham Hill (Telford Avenue)	8-15 bph	5-6 bph	6-10 bph	5-6 bph	5-6 bph	5-6 bph
		0435 – 0044		0435 - 0045		0505 - 0043	
68	Euston Bus Station – West Norwood Station	6-10 bph	5-6 bph	6-10 bph	5bph	5-6 bph	5-6 bph
		0521 - 0007		0521 - 0007		0525 - 0007	
91	Trafalgar Sq – Crouch End (Rosebery Gardens)	6-10 bph	6-10 bph	5-7 bph	5-7 bph	5-7 bph	5-7 bph
		0542- 0023		0542- 0023		0702- 0023	
168	Dunton Road – Hampstead Heath (South End Green)	7-12 bph	5-8 bph	5-8 bph	5-8 bph	4-5 bph	5-7 bph
		0603 - 0046		0603 - 0046		0603 - 0046	

Table 8.1 Summary of Daytime and Evening Timetable Details for Local Bus Services Accessible From Bus Stops Nearest to 15-17 Tavistock Place

bph = buses per hour in each direction Times of first and last bus are approximate

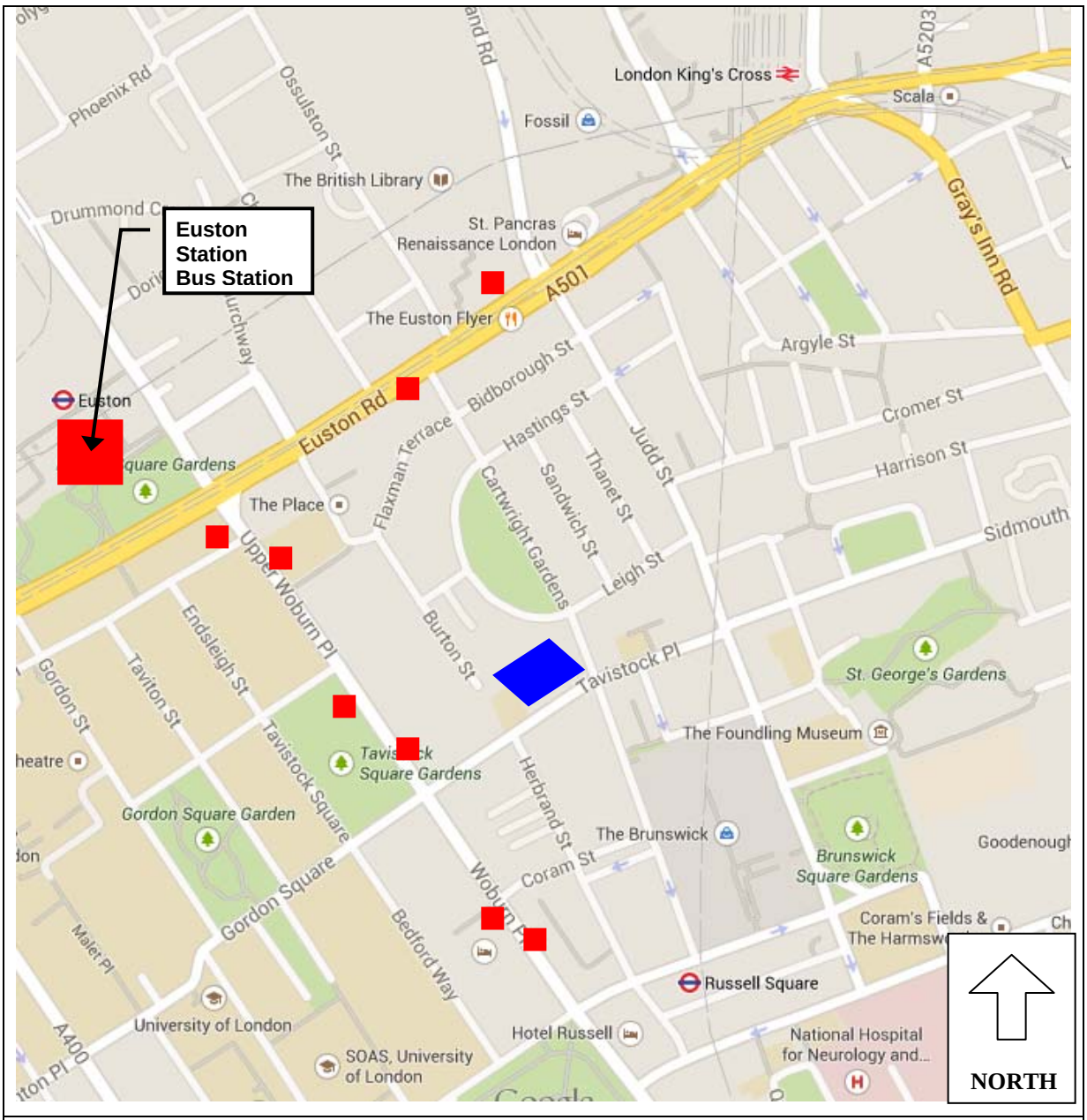


Figure 8.1 Location Plan

Location of Nearby Bus Stops

Location of Site

8.3 The Euston Road bus stops afford access to the bus services detailed in Table 8.2 below.

Service No.	Service Route	Frequency/Operating Hours					
		Monday- Friday		Saturday		Sunday	
		Day	Eve	Day	Eve	Day	Eve
10	Hammersmith-King's Cross	6-8 bph	6-8 bph	5-8 bph	5-6 bph	4-5 bph	4-5 bph
		24 hours		24 hours		24 hours	
30	Marble Arch – Hackney Wick	5-8 bph	5 bph	5-7 bph	5-7 bph	4-5 bph	4-5 bph
		0514 - 0034		0514 - 0036		0514 - 0036	
59	King's Cross – Streatham Hill (Telford Avenue)	8-15 bph	5-6 bph	6-10 bph	5-6 bph	5-6 bph	5-6 bph
		0435 – 0105		0455 - 0105		0525 - 0105	
73	Holles Street – Stoke Newington	10-20 bph	7-15 bph	7-15 bph	7-15 bph	7-12 bph	7-12 bph
		0522 - 0036		0532 - 0037		0538 - 0036	
91	Trafalgar Sq – Crouch End (Rosebery Gardens)	6-10 bph	6-10 bph	6-9 bph	6-9 bph	5-8 bph	5-8 bph
		0524- 0034		0524- 0034		0524- 0034	
205	Bow Church – Paddington (Cleveland Terrace)	6-8 bph	5 bph	5-9 bph	4-6 bph	4-6 bph	4-6 bph
		0532 – 0115		0533 - 0123		0535 - 0104	
390	Archway Station – Victoria Bus Station	8-15 bph	6-8 bph	10-20 bph	6 bph	5-8 bph	5-8 bph
		24 hours		24 hours		24 hours	
476	Euston Bus Station – Northumber-land Park	7-12 bph	5-7 bph	5-8 bph	5-6 bph	5-6 bph	5-6 bph
		0607 - 0022		0606 - 0027		0603 - 0019	

Table 8.2 Summary of Daytime and Evening Timetable Details for Local Bus Services Accessible From Bus Stops on Euston Road Nearest to 15-17 Tavistock Place

bph = buses per hour in each direction Times of first and last bus are approximate

8.4 Additionally, the stops on Gray's Inn Road to the east of the site provide access to services 17, 45 and 46, which operate respectively between London Bridge and Archway Station, St Pancras and New Park Road, and Lancaster Gate Station and St Bartholomew's Hospital (via Hampstead).

8.5 All of these services operate throughout the daytime and evening on all days of the week. Service 17 operates with a frequency of every 6-10 minutes on Mondays to Fridays, 9-11 minutes on Saturdays and 15 minutes on Sundays. Service 45 operates with a frequency of every 8-12 minutes in the daytime and every 15 minutes in the evening on Mondays to Fridays, every 9-13 minutes in the daytime and every 15 minutes in the evening on Saturdays and every 15 minutes throughout the day on Sundays. Service 46 operates with a frequency of every 9-13 minutes in the daytime and every 15 minutes in the evening on Mondays to Fridays, every 10-12 minutes in the daytime and every 15 minutes in the evening on Saturdays and every 15 minutes throughout the day on Sundays.

8.6 Euston Station Bus Station is within a 7 – 8 minute walk of the site. The bus station provides access to further services as shown in the Bus Station map included at Appendix B to this plan.

8.7 From the map it will be seen that a wide range of destinations can be reached from the Euston Station Bus Station throughout the day. Destinations served include Wembley, Harlesden, Camden Town, Hampstead Heath, Archway, Tottenham, Hackney, Islington, Bow, Elephant and Castle, Brixton, West Norwood, Streatham Hill, Hammersmith, Kensington, Victoria, and Paddington as well as the City and the West End.

8.8 The above text and tables show that from stops within close proximity of 15 – 17 Tavistock Place a large number of bus services operate at high frequencies throughout the daytime and evening to a broad range of destinations across London, including to the south of the river. All of the routes serving these destinations operate on all days of the week, throughout the likely opening hours of the School buildings.

8.9 The above demonstrates that the application site is exceptionally well served by local bus services, as the excellent PTAL score would suggest. Local bus services therefore offer an excellent alternative to the private car for students, employees or visitors wishing to travel to and from the application site.

8.10 Continuing improvements to local bus stops, including the provision of passenger shelters, site-specific timetable information, route maps and real time passenger information including Countdown information, will enhance the passenger waiting

experience, whilst on-bus facilities such as CCTV (now fitted to all London buses) will make passengers feel safer. Strict bus lane enforcement is one factor in ensuring greater service reliability, which is likely to promote greater confidence in bus services. Introduction of the Oyster Card, a ‘’pay-as-you-go” re-usable smart card, has made bus travel faster, easier and cheaper than paying by cash in the conventional way. All of these factors help to make bus travel more attractive and an increasingly realistic alternative to the use of the private car.

8.11 The Countdown Live bus arrivals system is just one measure that has been introduced by Transport for London to promote greater bus patronage in the area. Each bus stop offers a mobile telephone text message service allowing intending passengers to receive details of the next bus to arrive at that stop on their mobile telephone by sending the bus stop code as a text message to TfL. The information can also be accessed on line.

9 Site Accessibility – Rail Services

9.1 The acceptable walking time for access to rail services used by TfL in its PTAL calculation is 12 minutes, a distance of 960m.

9.2 Five Underground stations and three mainline railway stations meet these criteria.

9.3 The nearest Underground station is Russell Square, accessible within a walking time of around 4 minutes from the application site. Russell Square provides access to London Underground services on the Piccadilly Line, operating between Heathrow and Cockfosters via Hounslow, Acton, Hammersmith, Central London, King’s Cross and Finsbury Park. There are numerous connections to other London Underground lines, including the Victoria Line linking to Brixton in the south and Walthamstow in the north east. Trains operate to and from Russell Square to an average 10-minute frequency between approximately 5.30am and 1am on Mondays to Thursdays, and continuously between approximately 5.30 am on Fridays and 11.30pm on Sundays. The journey time between Russell Square and Heathrow is 54 minutes and between Russell Square and Cockfosters is 34 minutes. All of the stations on the Piccadilly Line are therefore within acceptable commuting time of the application site, offering a convenient alternative to the private car.

9.4 King's Cross St Pancras is a ten-minute walk from the application site and offers access to London Underground services on the Piccadilly Line, Victoria Line, Northern Line, Hammersmith and City Line, Circle Line and Metropolitan Line. Northern Line trains operate between High Barnet or Edgware to the north and Morden to the south. The Metropolitan Line provides links to the north west of London, including Watford, Amersham and Uxbridge whilst the Hammersmith and City Line provides an east-west connection between Barking in the east and Hammersmith in the west. Via the Metropolitan Line, Watford is accessible in approximately 50 minutes from King's Cross, Amersham in 59 minutes and Uxbridge in 52 minutes. Northern Line services provide access from King's Cross to High Barnet in 33 minutes, Edgware in 26 minutes and Morden in 35 minutes. The Hammersmith and City Line offers a travel time of 25 minutes from King's Cross to Hammersmith and 33 minutes to Barking. All of these destinations, and intermediate stations, are within acceptable commuting times of the application site.

9.5 Euston Underground Station is accessible within a 9-minute walking time of the site and provides access to Northern Line and Victoria Line services, Goodge Street (an approximate 11½-minute walk) to the Northern Line and Euston Square Underground Station (a similar 11½-minute walk) to Metropolitan, Circle and Hammersmith and City Lines.

9.6 All of the above London Underground lines provide high frequency services on all days of the week throughout the day and evening. Additionally, as indicated in respect of the Piccadilly Line in paragraph 9.3 above, London Underground services are now operating during the night on Fridays and Saturdays on the Victoria, Jubilee, and most of the Central, Northern and Piccadilly lines; these services, operating continuously between early Friday morning and late Sunday night, provide enhanced accessibility to the application site by Underground services.

9.7 The three mainline railway stations readily accessible on foot from the application site are King's Cross, St Pancras and Euston. King's Cross provides the London terminal of the East Coast mainline and services to destinations such as Cambridge and Peterborough. Euston provides the London terminal of the West Coast mainline, London Midland services to destinations such as Watford and Milton Keynes and London Overground services to Wembley and Watford Junction. St Pancras provides a terminal for domestic services linking to Luton Airport, Bedford and the Midlands.

National rail services therefore provide regional connections to the site serving a range of destinations to the north of London that are within acceptable commuting time. The School is also, therefore, readily accessible by rail for visitors travelling from the Midlands, the north of the country and Scotland.

9.8 The London Overground service between London Euston and Watford Junction, provides access to destinations in north west London, including South Hampstead, Willesden, Harlesden, Wembley, Kenton, Harrow and Wealdstone, Hatch End, Carpenders Park and Bushey. The service operates on all days of the week, providing journey times of 6 minutes to South Hampstead, 14 minutes to Willesden, 16 minutes to Harlesden, 21 minutes to Wembley Central, 27 minutes to Kenton, 29 minutes to Harrow and Wealdstone, 34 minutes to Hatch End, 37 minutes to Carpenders Park, 40 minutes to Bushey and 47 minutes to Watford Junction, all within an acceptable commuting time of 15 – 17 Tavistock Place. Trains operate between 0537 and 0044 northbound and 0511 and 0013 southbound on Mondays to Saturdays and 0647 and 0038 northbound and 0651 and 0010 southbound on Sundays with generally 2 or 3 trains per hour in the daytime and evenings.

9.9 Rail services therefore provide frequent connections within acceptable commuting times between the application site at 15 – 17 Tavistock Place and a broad range of destinations throughout the opening hours of the development, providing an efficient and practical alternative to the use of the private car.

10 Site Accessibility – Walking and Cycling

10.1 The Government's former guidance to local planning authorities on the transport aspects of planning policy, PPG13[9], sought to achieve an integration between planning and transport at all levels so that the need to travel, (especially by car), is reduced, more sustainable transport choices are encouraged and accessibility to jobs, leisure facilities, services and shopping by public transport, by cycle and on foot is promoted.

10.2 PPG13 stated that walking is the most important mode of travel at the local level, offering the greatest potential to replace short car trips of up to 2km. The Chartered

[9] Planning Policy Guidance Note 13 – Transport: Department for Communities and Local Government, January 2011. Replaced by National Planning Policy Framework March 2012

Institution of Highways and Transportation (CIHT) suggests walking to be a 'desirable' mode for journeys up to 400m and 'acceptable' for journeys up to 800m with a preferred maximum of 1200m.

10.3 Not only is walking important as a mode of travel in itself, it also generally forms the start and end of every journey type. Walking is obviously an important part of public transport journeys and the quality and convenience of the walking environment could be a crucial element in mode choice decisions. For those travelling further distances it is important that local public transport facilities, such as bus stops, are readily accessible on foot if trips by private car to and from these more remote locations are to be discouraged. As already described, public transport facilities, including bus stops, five London Underground stations and three mainline railways stations are within 960m of the site and are therefore within acceptable walking distance, offering connections to many parts of London and beyond.

10.4 The walking environment in the vicinity of the site is good, with all roads having footways of an appropriate standard and reasonable quality, and with street lighting to aid personal security and promote road safety. To assist pedestrians to safely cross the roads in the vicinity of the site, there are signalised pedestrian crossing facilities at the traffic signal controlled junctions of Tavistock Place with Woburn Place/Upper Woburn Place and with Marchmont Street, with similar facilities at traffic signal-controlled junctions further afield. At these junctions and at other, uncontrolled junction crossing points, there is good provision of dropped crossings and tactile paving to assist pedestrians, especially those with mobility impairment.

10.5 The application site lies within the heart of Bloomsbury, within convenient walking distance of a range of educational, cultural, leisure, residential and shopping facilities. University College London's main buildings are located an approximate 800m walking distance to the west of the application site, the British Library on Euston Road, a walking distance of around 500m to the north, and the British Museum is within a one-kilometre walking distance to the south.

10.6 There are extensive shopping and leisure facilities within the immediate vicinity of the School building, allowing a number of trips for a variety of purposes (shopping, banking, fitness and leisure trips for example) to be undertaken on foot during break periods.

10.7 On Marchmont Street, north of Tavistock Place, a short walk of under 1 minute, there is a public house, café, laundrette, betting shop, book shop, dentist and supermarket, together providing a range of goods and services. To the south of Tavistock Place, Marchmont Street offers a further range of commercial outlets, including further cafes and food outlets, a computer shop, dry cleaner, newsagent and post office. A short distance to the south is The Brunswick, a purpose built pedestrianised district shopping centre that provides a broad range of retail outlets and service providers, including a Waitrose supermarket, Sainsbury's Local supermarket and Boots the Chemist, in addition to restaurants, food outlets, card shop, clothes shops, opticians, mobile phone shops, betting shop and an NHS medical centre. A health club is located on Woburn Place within a walking distance of approximately 160m of the School building.

10.8 Figure 10.1 below shows the area in the immediate vicinity of the School site and the various facilities that are readily accessible on foot. The approximate distances and walking times to a number of these shops and services are presented in Table 10.1 below.

10.9 It is clear, therefore, that should planning permission be granted, students, staff and visitors to the School development would be able to choose to walk to and from the application premises for a variety of trip purposes.

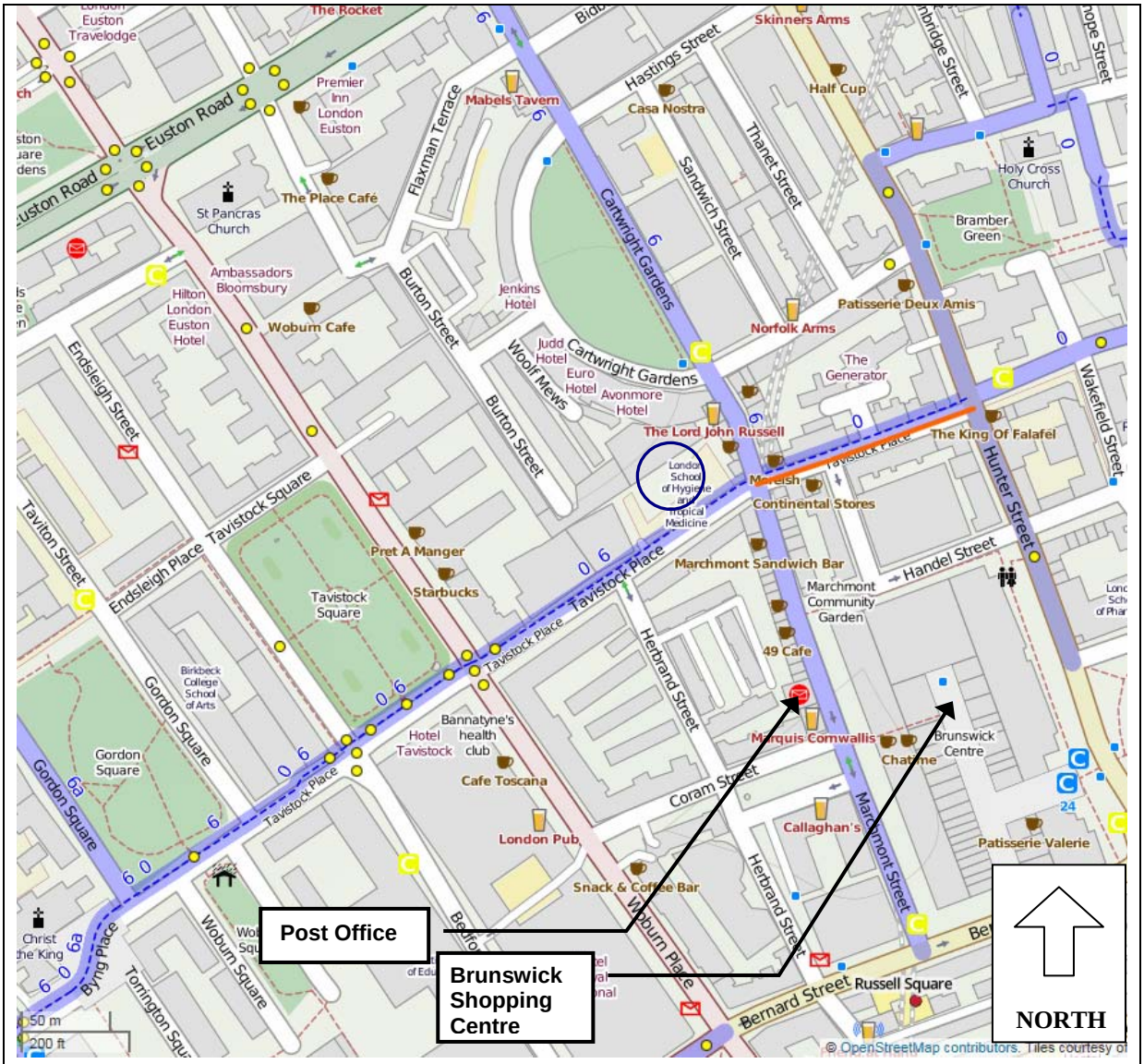


Figure 10.1 Facilities and Cycle Routes in the Vicinity of the Site

© OpenStreetMap

10.10 PPG13 also stated that cycling has the potential to replace car trips of, in particular, 5km or less in length. Clearly, all the local shopping, service and leisure amenities that are within a short and convenient walking distance of the site are also readily accessible by cycle, but far more extensive residential areas lie within 5km of the site, making the School readily accessible by bicycle to those commuting to the application site.

Facility	Approximate Distance from site (m)	Approximate Walking Time (mins', secs")
Marchmont Street shops (north of Tavistock Place)	70	1
Marchmont Street shops (south of Tavistock Place)	80	1
Health Club Woburn Place	160	2
Marchmont Street Post Office	160	2
Tavistock Square Bus Stop (southbound)	211	2' 40"
Tavistock Square Bus Stop (northbound)	320	4'
Brunswick Shopping Centre	320	4'
Russell Square Underground Station	329	4' 10"
Euston Road Bus Stop (westbound)	350	4' 30"
Euston Station Bus Station	640	8'
Euston Railway Station	692	8' 40"
UCL Chadwick Building	965	12'

Table 10.1 Approximate Walking Distances and Associated Walking Times to Public Transport Facilities, Shops and Services within the Immediate Vicinity of 15-17 Tavistock Place

10.11 Facilitating access to the site by bicycle, the School building lies at the intersection of two designated local cycle routes, 0 and 6. The alignments of these cycle routes are shown in pale blue on Figure 10.1 above.

10.12 These two designated cycle routes share facilities along Tavistock Place, passing the frontage of the School building. London Borough of Camden has recently introduced a traffic scheme, the effect of which has been to make Tavistock Place one-way eastbound for motor vehicles, from Gower Street to Judd Street. The formerly two-

way dedicated cycle facility running along the northerly side of Tavistock Place, segregated from general traffic by a series of raised, kerbed and paved islands, has been retained, but is now reserved for one-way eastbound cyclists. The raised islands provide a largely continuous division of the cycle lane from the main carriageway, interrupted only to provide level crossing points for pedestrians and to afford vehicular access to off-street parking and loading areas. There is a break in the island at the existing vehicular access points to the subject site from Tavistock Place. The darker, dashed line, on Figure 10.1 shows the extent of the segregated facility, extending from Goodge Street in the west to Judd Street in the east. Restricting motorised traffic to a single, one-way eastbound lane has allowed road space to be re-allocated, providing a one-way westbound cycle lane on the southerly side of Tavistock Place, segregated from general traffic by the use of 'armadillo' units.

10.13 Route 0 extends from Marble Arch to the west to Finsbury (1 mile) and the City (2½ miles) in the east and on to Elephant and Castle, with a spur to Kings Cross St Pancras Station and another to Old Street. Route 6 provides a north-south route, starting near to Waterloo, south of the river and running via Covent Garden and the British Museum to Tavistock Place, then turning northwards via Marchmont Street and Cartwright Gardens and extending to Camden Town (1½ miles) and to the vicinity of Caledonian Park. The two routes connect with a network of other cycle routes serving the area, facilitating and promoting access to the site by bicycle.

10.14 The Tavistock Place cycle route is one of the busiest in Camden. Cycling is already a popular means of getting around this part of London and would provide an attractive means of travel to and from the application site.

11 The Local Highway Network

11.1 In the vicinity of the application site, Tavistock Place is a single carriageway, one-way urban street, allowing for eastbound general traffic, with carriageway-level eastbound and westbound segregated cycle tracks and with footways to both sides of the carriageway. At this location the development within the street is predominantly residential in character, some premises providing hotel accommodation.

11.2 The junction of Tavistock Place with Marchmont Street is controlled by traffic signals. The left turn for general traffic from Tavistock Place into the northerly arm of Marchmont Street and the right turn for cyclists into the southerly arm of Marchmont Street are prohibited at this junction. Marchmont Street to the south of the Tavistock Place junction is one-way in a southwards direction, leading away from the junction.

11.3 Effectively, therefore, within the immediate vicinity of its junction with Tavistock Place, Marchmont Street to the north of the junction is one-way southbound for motor vehicles, with only pedal cyclists allowed to turn into Marchmont Street to proceed in a northerly direction. Nevertheless, this single carriageway road is marked with a single traffic lane southbound, approaching the signals, with a full-width northbound lane preserved.

11.4 The Marchmont Street frontages within the vicinity of the subject site are largely retail and commercial in character and are likely, therefore, to generate a requirement for on-street loading and servicing activity. Footways are present on each side of the street.

11.5 The application site lies within a Controlled Parking Zone (CPZ). The King's Cross CPZ (CA-D) extends from Euston Road in the north to Holborn/High Holborn in the south and from Woburn Place/Southampton Row in the west to the easterly side of Gray's Inn Road. Within the CPZ the standard waiting restrictions are No Waiting Monday – Friday, 0830 – 1830 and Saturday, 0830 – 1330. These restrictions, identified by single yellow lines, are in force on both sides of Marchmont Street to the easterly side of the application site. More restrictive waiting restrictions are in force on Tavistock Place to the frontage of the application site, with double yellow waiting restriction lines in evidence on both sides of the road, indicating No Waiting At Any Time.

11.6 Residents' permit parking is in operation within the CPZ, allowing residents' vehicles to be parked in marked bays during the operative hours. This applies to both sides of Burton Street, for example, to the north west of the application site. Residents can apply for visitor permits. Business permits are available within the CPZ for commercial vehicles for which on-street parking is required for the operational needs of the business concerned (i.e. not to accommodate commuter parking). Business permits would not be granted in circumstances where public transport offers a

reasonable alternative. On-street parking for non-residents' vehicles is therefore closely controlled and largely restricted. This serves to provide a disincentive to travel to and from the application site by private motorcar and encourages sustainable travel. A designated bay for Car Club Permit Holders is located on Marchmont Street, a short distance to the south of the School.

11.7 A borough-wide 20mph speed limit order applies to all roads that are managed by London Borough of Camden Council, including Tavistock Place and other roads in the immediate vicinity of the application site. The restriction excludes the majority of the Transport for London Road Network (TLRN).

Travel Surveys

12 Travel Characteristics of the Existing Site

12.1 As indicated above, the School propose to develop the existing School building at 15 – 17 Tavistock Place to provide additional laboratory, research and higher education space. The existing School building is currently in similar use and the travel characteristics of the existing site therefore provide a reliable indication of the travel characteristics of the proposed development once complete and in operation.

12.2 In order to determine the existing pattern of trips to and from the present site, a multi-modal survey was commissioned and was undertaken on Tuesday, 21 April 2015 by an independent survey company. This date was selected because it was during term time and was regarded as a 'typical' day as advised by the School.

12.3 The survey consisted of two elements. Firstly, a count of all arrivals and departures at the site entrance was undertaken, recorded in fifteen-minute intervals between the hours of 0800 and 1800. The School advised that the opening hours of the building for the majority of staff, students and visitors are 0900 – 1700. The School confirmed that only the single entrance to the School building at Tavistock Place, located under the arch furthest from Cartwright Gardens, is in use for normal arrivals/departures of people. The numbers of people entering and leaving the building during the survey period are presented in Table 12.1 below.

12.4 From Table 12.1 below it will be seen that over the ten-hour survey period between 0800 and 1800, a total of 464 people arrived at 15 – 17 Tavistock Place and a total of 396 departed from the site. A total of 860 people trips equates to 1.43 arrivals or departures per minute on average. As arrivals exceed departures over the survey period there are clearly some trips that took place outside the survey times of 0800 to 1800, however these trips are considered unlikely to have a significant impact on the transport system due to the lower level of activity generally on the network at these other times.

12.5 It will also be noted that the peak periods for arrivals and departures at the site do not coincide with the traditional peak hours of 0800-0900 and 1700-1800. Between 0800 and 0900 only 43 person trips were generated, 35 arriving and 8 departing, fewer than one per minute on average. Between 1700 and 1800 a higher number of trips was recorded, with 88 people arriving or departing, 19 arriving at and 69 leaving the site.

12.6 The peak period for trips associated with the existing School building occurred between 1200 and 1400. This is perhaps not surprising, as this period would coincide with lunch breaks when people might reasonably be expected to make short trips into the surrounding neighbourhood for a variety of trip purposes and with the end of morning and commencement of afternoon study/work periods. The highest number of trips, 126, was recorded between 1200 and 1300 (65 arriving and 61 departing) with a slightly lower number, 121, between 1300 and 1400 (66 arriving and 55 departing), in each case representing in broad terms one arrival and one departure per minute on average, which is not considered to be a high flow.

12.7 Outside of these peak hours, the highest number of hourly trips recorded was 103 (81 arriving and 22 departing) between 1000 and 1100. 81 was the highest number of arrivals recorded in any of the ten surveyed hours. 69 was the highest number of departures per hour, between 1700 and 1800.

12.8 The second element of the survey was to record mode of travel. This was achieved by direct interview with people arriving at the building. As many interviews as possible were recorded. As this type of survey relies on the co-operation of those being interviewed, the survey was confined to simple questions about mode of travel

and where people were making their second or subsequent entry to the building, and identified themselves to the interviewers as such, they were not asked further questions. It is considered reasonable to assume that most peoples' first interview would relate to their 'commuting trip', rather than, say, to a lunchtime trip within the local neighbourhood or short trip between buildings, and is therefore more likely to lead to an over-estimate of trips by car or public transport and an under-estimate of trips on foot for example. Of the 464 people entering the site during the survey period only 13, 2.8%, were recorded as 'missed or refused to answer'. A good sample size of interviews was therefore achieved and the results are considered to be representative of travel patterns to the site.

12.9 With regards to the method of travel of those people interviewed, enumerators were asked to establish from interview and record the following trip types:

- Cycle
- Walk
- Walk and Private Car
- Walk and taxi
- Walk and bus
- Walk and train
- Walk and tube
- Walk and motorcycle
- Cycle and rail

12.10 Only the main secondary mode, by distance, was to be recorded.

12.11 The resulting modal split of trips to the site over the course of the ten-hour study period is presented in Table 12.2 below.

TIME (start)	IN			OUT			TOTAL		
	Arrive (1/4 hr)	Time (Hour)	Arrive (Hour)	Depart (1/4 hr)	Time (Hour)	Depart (Hour)	Total (1/4 hr)	Time (Hour)	Depart (Hour)
0800	6	0800 - 0900	35	2	0800 - 0900	8	8	0800 - 0900	43
0815	6			1			7		
0830	10			5			15		
0845	13			0			13		
0900	10	0900 - 1000	71	1	0900 - 1000	11	11	0900 - 1000	82
0915	21			1			22		
0930	16			3			19		
0945	24			6			30		
1000	29	1000 - 1100	81	5	1000 - 1100	22	34	1000 - 1100	103
1015	21			6			27		
1030	19			4			23		
1045	12			7			19		
1100	10	1100 - 1200	42	2	1100 - 1200	27	12	1100 - 1200	69
1115	6			3			9		
1130	8			8			16		
1145	18			14			32		
1200	8	1200 - 1300	65	13	1200 - 1300	61	21	1200 - 1300	126
1215	16			12			28		
1230	20			14			34		
1245	21			22			43		
1300	16	1300 - 1400	66	16	1300 - 1400	55	32	1300 - 1400	121
1315	12			10			22		
1330	19			9			28		
1345	19			20			39		
1400	13	1400 - 1500	38	20	1400 - 1500	48	33	1400 - 1500	86
1415	9			7			16		
1430	6			8			14		
1445	10			13			23		
1500	13	1500 - 1600	27	10	1500 - 1600	44	23	1500 - 1600	71
1515	4			8			12		
1530	9			17			26		
1545	1			9			10		
1600	4	1600 - 1700	20	10	1600 - 1700	51	14	1600 - 1700	71
1615	7			13			20		
1630	5			18			23		
1645	4			10			14		
1700	7	1700 - 1800	19	18	1700 - 1800	69	25	1700 - 1800	88
1715	5			15			20		
1730	4			22			26		
1745	3			14			17		
TOTAL	**464**			**396**			**860**		

Table 12.1 Results of Multi-Modal Survey of Arrivals and Departures at 15 – 17 Tavistock Place on Tuesday 21 April 2015 (Part 1 – Numbers of Trips)

Mode of Travel (including main secondary mode by distance travelled)	Mode Share (%) All Hours
Walk all the way	32.5%
Walk and Tube	28.4%
Walk and Train	15.5%
Cycle all the way	12.2%
Walk and Bus	7.7%
Walk and Taxi	1.8%
Cycle and Rail	1.5%
Walk and Motorcycle	0.4%
Walk and Motor Car	0.0%
TOTAL	**100%**

Table 12.2 Results of Multi-Modal Survey of Arrivals and Departures at 15 – 17 Tavistock Place on Tuesday 21 April 2015 (Part 2 – Modal Share of Trips)

12.12 From Table 12.2 above it will be seen that no-one arriving at the School during the survey hours travelled by private car, and only 0.4% by motorcycle, with 1.8% arriving by taxi. Almost a third of those travelling to the site did so on foot for the whole of the journey (32.5%) and 12.2% travelled all the way by bicycle.

12.13 Over half of journeys (53.1%) involved a trip by public transport, with 51.6% completing their journey on foot having travelled by tube (28.4%), train (15.5%) and bus (7.7%), and with 1.5% completing their rail journey by bicycle.

12.14 Overall during the survey period, 44.7% travelled wholly by non-motorised means (32.5% walking and 12.2% cycling), whilst 53.1% of trips involved public transport. In total 97.8% of trips were made by sustainable modes of transport.

12.15 If the morning peak period, from 0800-1000, is considered, the effects of non-interviewed second entrances are minimised, with only two people falling into this category and with only 4 people (3.77%) recorded as ‘missed or refused to answer’. The modal split of those arriving during this period is presented in Table 12.3 below.

12.16 From Table 12.3 it will be seen that in the period between 0800 and 1000, over half of arrivals (56%) travelled by rail, completing their journeys on foot, (38% by tube and 18% by train) with a further 3% travelling by rail and completing the journey by cycle. 18% of arrivals cycled all the way, higher than for the day as a whole, whilst walking all the way was lower in the 0800-1000 period (12%) compared with the day as a whole (32.5%). Bus journeys accounted for a higher proportion of trips between 0800 and 1000 compared with the day as a whole (10% and 7.7% respectively). Nevertheless, 30% travelled wholly by non-motorised means (12% walking and 18% cycling), whilst 69% of trips involved public transport. In total 99% of trips were made by sustainable modes of transport. No journeys were made by private car and only 1% of trips were made by motorcycle.

Mode of Travel (including main secondary mode by distance travelled)	Mode Share (%) 0800 - 1000
Walk and Tube	38%
Cycle all the way	18%
Walk and Train	18%
Walk all the way	12%
Walk and Bus	10%
Cycle and Rail	3%
Walk and Motorcycle	1%
Walk and Taxi	0%
Walk and Motor Car	0%
TOTAL	**100%**

Table 12.3 Results of Multi-Modal Survey of Arrivals and Departures at 15 – 17 Tavistock Place on Tuesday 21 April 2015 (Part 2 – Modal Share of Trips) (0800 – 1000)

12.17 Applying the above modal split to the overall number of arrivals surveyed provides an indication of the number of people arriving at the School by mode of travel. This information is presented in Table 12.4 below.

12.18 Table 12.4 indicates that in the morning peak period between 0800 and 1000, of the 106 people arriving at the School, 32 would either have cycled or walked for the whole of their journey, 62 would have travelled by rail, completing their journey on foot or by bicycle, and 11 would have travelled by bus. Only one person travelled by a motor vehicle, in this case a motorcycle. For the whole of the survey period, 0800 – 1800, of the 464 people arriving at the School, 208 would either have cycled or walked for the whole of their journey, 211 would have travelled by rail, completing their journey on foot or by bicycle, and 36 would have travelled by bus. Ten journeys were made by motor vehicle, including 8 by taxi.

Mode of Travel (including main secondary mode by distance travelled)	Mode Share (%) 0800 - 1000	Arrivals by Mode 0800 - 1000		Mode Share (%) 0800 - 1800	Arrivals by Mode 0800 - 1800	
Walk all the way	12%	13	**32**	32.5%	151	**208**
Cycle all the way	18%	19		12.2%	57	
Walk and Tube	38%	40	**62**	28.4%	132	**211**
Walk and Train	18%	19		15.5%	72	
Cycle and Rail	3%	3		1.5%	7	
Walk and Bus	10%	11	**11**	7.7%	36	**36**
Walk and Motorcycle	1%	1	**1**	0.4%	2	**10**
Walk and Taxi	0%	0		1.8%	8	
Walk and Motor Car	0%	0		0.0%	0	
TOTAL	**100%**	**106**		**100%**	**464**	

Table 12.4 Number of Arrivals by Mode of Travel for Morning Peak Period (0800 – 1000) and for Overall Survey Period (0800 – 1800) based on Surveyed Modal Split

12.19 The survey enumerators were asked to record the number of motor vehicles entering the site. These would be expected to be either delivery vehicles or disabled persons.

The enumerators recorded that, during the ten-hour survey period, only two motor vehicles entered the site, viz:

At 1012 a delivery vehicle arrived and left again at 1035

At 1058 a delivery vehicle arrived and left again at 1117

No other motor vehicles were recorded as entering the courtyard.

12.20 To complement this information the School were asked to record details of delivery and service vehicle activity at the site, each day for the working week 20th – 24th April 2015. This includes the period of the above survey. The results of this survey are presented in Table 12.5 below.

TIME OF ARRIVAL	TYPE OF VEHICLE (eg Transit, large box van, refuse vehicle, articulated lorry, rigid lorry)	PURPOSE (eg refuse collection, delivery to refectory, personal, postal etc)	TIME OF DEPARTURE	CURRENT FREQUENCY OF DELIVERY/ COLLECTION
	NO VEHICLE DELIVERIES ON MONDAY OR THURSDAY			
1010 Tue	**TRANSIT VAN**	**WATER DELIVERY**	**1035**	**WEEKLY**
1059 Tue	**SCHOOL VAN**	**PORTERING**	**1116**	**AS AND WHEN REQUIRED**
1120 Wed	**TRANSIT VAN**	**CONTRACTOR**	**1350**	**ONE OFF**
1200 Wed	**TRUCK**	**RUBBISH REMOVAL**	**1220**	**WEEKLY**
1350 Fri	**SCHOOL VAN**	**ESTATES**	**1400**	**AS AND WHEN REQUIRED**
1455 Fri	**SCHOOL VAN**	**IT EQUIPMENT**	**1520**	**AS AND WHEN REQUIRED**

Table 12.5 Recorded Service/Delivery Vehicle Activity 20 – 24 April 2015 by Day and Time and Type of Vehicle and Purpose

12.21 From Table 12.5 it will be seen that activities at the School generate few service and delivery vehicle movements. In the week under consideration, 20 – 24 April 2015, there were no service/delivery vehicles recorded on Monday or Thursday and only two vehicle movements on each of the other three days.

12.22 The School confirm that the number of service and delivery vehicles accessing the site as recorded above is typical. It should also be noted that three of the six deliveries are identified as 'School van'; this is in the ownership of the School and therefore under the School's direct control.

13 Transport Characteristics of the Proposed Development

Description of the Proposed Development

13.1 As indicated in paragraph 1.3, planning permission was secured in January 2017, for the demolition of the single storey structure to the rear of the site and the development, in its stead, of additional laboratory space. This is referred to below as the approved scheme. The School now seeks permission for a development of reduced scale, which would still involve the demolition of the single storey structure and the construction to the rear of the site of additional laboratory, research and higher education space.

13.2 The approved scheme comprised two basement levels, ground floor and two upper storeys plus accommodation for roof-level plant. The approved scheme would provide two basement levels each of 1,040m^2 (Gross Internal Floor Area), a ground floor level of 1,120m^2 (including a covered atrium), a first floor level of 1,071m^2, and a second floor level of 782m^2 with roof level provision for plant and equipment. The School would retain floor space of 3,488m^2, whilst a total of 1,430m^2 (Gross External Floor Area) of floor space would be demolished, including the rear courtyard shed (957m^2).

13.3 By contrast, the scheme for which planning permission is now sought is of reduced scale, comprising a single basement level of 492m^2 (Gross Internal Floor Area), a ground floor level of 1,107m^2 (with atrium void above), a first floor level of 970m^2, a second floor level of 738m^2, a third floor level of 300m^2, and roof level provision for plant and equipment (140m^2). The basement would accommodate a plant room, generator room, showers and lockers, whilst the ground and upper storeys would each accommodate dry laboratory, research and write-up spaces. Together, the extension would have a total area of 3,747m^2 whilst the floors that would accommodate dry laboratory, research and write-up spaces would have a combined area of 3,115m^2. The floor area of the proposed extension is some 31.5% lower than

that of the approved scheme. Overall, including the retained School building, there would be a reduction of 17% in floor area relative to the approved scheme.

13.4 Vehicular access for the School would continue to be via the existing vehicular access from Tavistock Place, located to the westerly end of the frontage. This would provide access to two disabled persons' parking spaces and for service and delivery vehicles.

Transport Characteristics of the Proposed Development

13.5 In accordance with current development plan policies (see paragraph 6.10 above), the completed development at Tavistock Place would be car-free. The only car parking that would be permitted on site would be for the use of disabled drivers; two parking spaces, designed to appropriate mobility standards, would be provided within the courtyard.

13.6 It is proposed to provide the same number of cycle parking spaces for both the proposed extension and for the retained existing School building, as were proposed as part of the approved scheme.

13.7 As previously, for the proposed extension, a total of 36 Sheffield type hooped cycle stands would be provided, located as shown on the drawings. Four of these would provide standard, double sided access and the remaining 32 would provide single sided access, resulting in a total of 40 cycle parking spaces. Showers and lockers would be provided within the basement of the proposed extension.

13.8 Again, as previously approved, for the retained School building it is proposed to relocate the 24 spaces currently located within the single storey structure to the rear of the site (which is to be demolished as part of the project) to a room at the eastern end of the ground floor of the existing frontage building, as per the consented scheme. This provision would be in the form of 12 double sided Sheffield type stands.

13.9 Overall provision would therefore be 64 cycle parking spaces, as per the approved scheme.

13.10 The architect's drawings accompanying the planning application show the location of the proposed cycle parking provision for the proposed extension.

13.11 All cycle parking would be readily accessible at ground floor level.

13.12 Section 12 above provides a detailed assessment, based on survey data collected for the study of the approved scheme, of existing trips to and from the site by all modes. A modal split of trips in both the morning peak period, 0800-1000, and over the course of the survey period, 0800 – 1800, are presented.

13.13 It is considered that the modal split of trips to and from the proposed scheme would be the same as that recorded as part of the multi-modal survey undertaken in April 2015, as presented in Table 12.2 for the full period of the survey (0800-1800) and in Table 12.3 for the morning peak period (0800-1000). It is similarly considered reasonable to assume that the pattern of arrivals and departures associated with the extended School would be broadly comparable with those recorded in the survey.

13.14 The Transport Statement submitted in support of the current planning application provides an assessment of the total person trips likely to be generated by the proposed development. Applying the modal split of trips across the survey period overall (Table 12.2) to the number of additional person trips predicted to be generated between 0800 and 1800, gives an indication of the impact of the proposed development on the transport network over the working day as a whole, whilst applying the surveyed modal split presented in Table 12.3 above to the predicted increase in person trips between 0800 and 1000 gives an indication of the impact of the proposed development on the transport network during the morning peak period. The results of this assessment are presented in Table 13.1 below.

13.15 From Table 13.1 below it will be seen that in the morning peak period (0800 – 1000) the number of additional trips arising from the proposed development that are predicted to be undertaken entirely sustainably (on foot or by cycle) would be 47. It is predicted that 15 trips would be by bus and 92 trips would be by rail (the journey completed on foot or by cycle) with 59 by tube and 33 by other rail services, which spread across the public transport network and a two-hour period is considered to represent an insignificant impact. Only one arrival is predicted to be by personal motorised transport (motorcycle).

Mode of Travel (including main secondary mode by distance travelled)	Mode Share (%) 0800 - 1000	Additional Trips by Mode 0800 - 1000			Mode Share (%) 0800 - 1800	Additional Trips by Mode 0800 - 1800		
		A	D	Total		A	D	Total
Walk all the way	12%	16	3	**47**	32.5%	188	158	**476**
Cycle all the way	18%	24	4		12.2%	71	59	
Walk and Tube	38%	50	9	**92**	28.4%	165	138	**484**
Walk and Train	18%	24	4		15.5%	90	75	
Cycle and Rail	3%	4	1		1.5%	9	7.	
Walk and Bus	10%	13	2	**15**	7.7%	45	37	**82**
Walk and Motorcycle	1%	1	0	**1**	0.4%	2	2	**23**
Walk and Taxi	0%	0	0		1.8%	10	9	
Walk and Motor Car	0%	0	0		0.0%	0	0	
TOTAL	**100%**	**133**	**24**	**157**	**100%**	**579**	**487**	**1066**

Table 13.1 Number of Predicted Additional Arrivals and Departures by Mode of Travel for Morning Peak Period (0800 – 1000) and for Overall Survey Period (0800 – 1800) based on Surveyed Modal Split

Notes – A = Arrivals; D = Departures; small discrepancies in totals due to rounding errors

13.16 Taking the working day as a whole, over the ten-hour period between 0800 and 1800 the number of additional trips arising from the proposed development that are predicted to be undertaken entirely sustainably (on foot or by cycle) would be 476. It is predicted that 82 trips would be by bus and 484 trips would be by rail (the journey completed on foot or by cycle) with 303 by tube and 181 by other rail services, which is similarly considered to be a modest increase across the public transport network as a whole. Only 4 trips are predicted to be by personal motorised transport (motorcycle), whilst nineteen trips are predicted to be by taxi, which again would not represent a significant impact on the local highway network.

13.17 Table 12.5 above presents the results of a survey of service and delivery vehicle trips to and from the existing School building at 15-17 Tavistock Place conducted over the course of a week. This demonstrates that a very low number of service vehicle/delivery trips are generated by the existing use on the site during a typical

working week. No trips were recorded on Monday or Thursday and only two vehicle movements on each of the other three days, with three of the six recorded visits undertaken by the School's own vehicle.

13.18 It is the applicant's view that the number of service vehicle/delivery vehicle trips will increase as a result of the present project. The assessment is that vehicle trips could increase to a maximum of around 5 per day and would be largely laboratory related. The applicants have submitted a Delivery and Servicing Plan for the project (as part of the Transport Statement), which shows how the transport impacts associated with servicing and delivery activities would be managed and reduced.

13.19 It is clear that the number of vehicles accessing the site following completion of the project would be low and in particular would be significantly lower than the number generated during the demolition and construction phases of development. There is a natural emphasis, therefore, on ensuring that there are robust protocols and measures in place to adequately manage, control and minimise the potential adverse impacts of construction traffic generated by the project. The Construction Management Plan submitted with the application shows how the applicants intend to manage and control these impacts.

Travel Plan Management

14 Roles and Responsibilities

14.1 The key role in the day-to-day development and implementation of the Travel Plan is that of the Travel Plan Co-ordinator (TPC), whose role would be to oversee the development and implementation of the Travel Plan.

14.2 The TPC would be responsible for overseeing any site specific data collection, information dissemination, marketing and physical works as required for the implementation of the Travel Plan.

14.3 The Travel Plan Co-ordinator would be appointed prior to the opening of the development. The role of the TPC would include the following:

- Overseeing the development and implementation of the Travel Plan
- Liaison with students and staff in respect of Travel Plan issues
- Providing a point of contact with public transport operators, the Borough Council and TfL officers
- Arranging Travel Surveys and other data collection to inform the development of targets and the future monitoring of the Plan
- Collection and distribution of information, including publicity material
- Providing a point of contact for staff and others requiring travel information
- Co-ordination of Travel Plan initiatives
- Communicating, reviewing and updating the Travel Plan

14.4 It is considered that whilst considerable time and effort may be required in the initial stages to implement the Travel Plan, as the plan develops the role of the Travel Plan Co-ordinator, (TPC), would not be a full-time post. However, it is recognised that the person fulfilling this role needs to be of sufficient seniority to demonstrate to the School community the importance that is attached to the success of the Travel Plan. The role of TPC would therefore be allocated to a senior member of staff as an additional responsibility to their normal duties, and a member of or with direct responsibility to the School's Management Team.

Travel Plan Targets, Actions and Measures

15 Travel Plan Targets

15.1 The survey of existing modes of travel to the site indicates zero car usage and this is likely to remain the case for the proposed development, which will have no on-site car parking provision except for disabled visitors. Therefore, measures to promote a mode shift from car to other forms of transport for site staff, students and visitors will have reduced priority.

15.2 The School will, however, ensure that measures to promote walking, cycling and public transport will be adopted and promoted as appropriate.

15.3 The applicants will also ensure that measures to reduce travel for work, for business and study and for visits to the site will be implemented. These will include the promotion of video and voice conferencing and communications throughout the building. Such technologies are a key component of a successful strategy to reduce the need to travel.

15.4 The applicants will ensure that occupants of the proposed development and the retained School building contribute fully to the aims and objectives of the Travel Plan. The TPC will ensure that regular monitoring of travel patterns to the new development and the retained School building is undertaken and that the School community are making appropriate contributions to the success of the Travel Plan.

15.5 Informed by the above analyses, and in particular the results of the travel survey, it is concluded that the focus of this Travel Plan should be:

- To reduce the need to travel;
- To promote walking, cycling and public transport to ensure that current usage of these sustainable modes is maintained; and
- To reduce the number of service and delivery vehicle trips that are undertaken by motor vehicle, especially during the peak hours.

15.6 Given the current modal split of trips to and from the site, which are almost entirely undertaken by sustainable transport modes, it is considered inappropriate to set specific, measurable targets in relation to particular modes. Targets that the plan is designed to achieve are therefore related to the delivery of the necessary infrastructure to support sustainable travel, the continued promotion of sustainable travel modes and initiatives designed to reduce the need to travel, including for service and delivery trips.

15.7 The following targets have therefore been identified:

- **To implement secure cycle parking facilities that would encourage staff, students and visitors to cycle to the School by the time the development is completed (T1);**
- **To implement the shower and locker facilities that would encourage staff, students and visitors to cycle and walk to the School by the time the development is completed (T2);**

- **To appoint a Travel Plan Co-ordinator (TPC) prior to the development opening (T3);**
- **To develop a full package of Travel Plan measures within six months of completion of the development; to maintain the current levels of sustainable transport usage (T4);**
- **To establish links with neighbours operating Travel Plans and to explore the possibilities for working together on Travel Plan initiatives (T5);**
- **To develop, within six months of completion of the development, a strategy to increase video and voice conferencing facilities and promote their use (T6);**
- **To review business travel and promote sustainable travel options within six months of completion of the development (T7);**
- **To promote travel mode choices by ensuring appropriate information is available immediately and offering future personal travel planning on request (T8); and**
- **To review, within a year of completion of the development, procurement procedures and logistics practices, and the sustainability of the School's own vehicles, to ensure that delivery, servicing and School-related transport activities have the minimum possible environmental impact, including during construction and thereafter to achieve a 10% reduction in delivery vehicle trips within three years (T9).**

15.8 It is important that targets can be measured to ensure that they have been achieved. The above targets are therefore defined by means of an outcome and a timescale. Success in meeting a target will therefore be measured by the delivery of the outcome within the stipulated timescale.

16 Travel Plan Actions and Measures

16.1 The actions specific to the School site will be to:

- Appoint a site-specific Travel Plan Co-ordinator prior to completion of the scheme to oversee the development and implementation of the Travel Plan;
- Reduce the need to travel for work by supporting flexible working;

- Exploit as far as possible communications technologies to reduce the need to travel for business or study;
- Provide on-site, secure cycle parking for staff and visitors, with associated locker and shower facilities to promote cycling;
- Develop a web page as a resource for sustainable travel information and include in staff/student induction process;
- Participate in/support Travel Plan initiatives developed and promoted by others, to encourage cycling, walking and other sustainable transport modes;
- Work with suppliers to improve cycle safety training through the FORS scheme (or equivalent) and embed this in contracts;
- Promote the availability of cycle skills training and the 'Camden Try a Bike' scheme, that allows anyone who lives, works or studies in Camden and is new to cycling to borrow a bike, free of charge, for four weeks;
- Commit to the Cycle To Work Guarantee Scheme operated by the Department for Transport, which challenges businesses to become cycle friendly employers by making it easy for staff to cycle to and from work. The scheme requires businesses to facilitate the purchase and maintenance of cycles and equipment. Consideration would be given to the Government's Cycle to Work Scheme and the TPC would negotiate with local cycle retailers with a view to securing discounts on cycle purchases for staff. More information is available at www.cycletoworkguarantee.org.uk;
- Offer personal travel planning on request and promote the use of online Journey Planners;
- Investigate the use of bicycles for 'internal' and local deliveries;
- Ensure, when considering the cost and sustainability of business travel that cannot be avoided, that the use of Car Club vehicles (e.g. Enterprise Car Club which has a location on Marchmont Street just to the south of the school site) is taken into account;
- Work to ensure that, where vehicles are under the direct control of the School, trips are scheduled to take place outside the peak hours;
- Ensure that future procurement of vehicles will take account of fuel efficiency, adopting 'green' technologies where tested and appropriate;
- Improve operational site logistics to achieve a 10% reduction in delivery vehicle trips within three years;

- Continue to monitor staff/student travel behaviour and use the information obtained to focus future initiatives.

Monitoring and Review

17 Monitoring and Review

17.1 The Travel Plan Co-ordinator will develop Key Performance Indicators as appropriate by which, through subsequent monitoring and data collection, the success and effectiveness of the implemented actions will be measured. This may lead to a change of emphasis, with new initiatives implemented and/or existing measures amended or removed.

17.2 The Travel Plan covers a period of three years, but will be reviewed annually by the TPC, with progress in implementing actions and achieving targets monitored and the results reported to the School's Management Team and communicated to the School community through a range of mechanisms to promote the Travel Plan and raise awareness of its aims, objectives, initiatives and events.

17.3 If, as a result of annual reviews, or monitoring of specific initiatives, it is considered that improvements or changes are required, these will be incorporated into the Plan.

17.4 Towards the end of the plan period, a further multi-modal survey should be undertaken to ensure that staff, students and visitors are continuing to travel to and from the site by sustainable modes of travel. The outcome of the survey should inform the development of objectives, targets and actions for the plan going forward. It is also appropriate to review the Site Assessment, to ensure that any new developments in sustainable transport provision are adequately reflected and promoted in the plan.

Action Plan

18 Action Plan

18.1 The Action Plan below summarises the commitments made in this Travel Plan. Progress against the targets identified will be regularly monitored by the Travel Plan Co-ordinator.

Action	Date Due	Responsibility	Contributes to Target	Contributes to Objective
GENERAL				
Appoint Senior Member of Staff to act as Travel Plan Co-ordinator	Prior to opening of development	The School	T3, T4	OBJ1, 2, 3, 4
Develop a full package of Travel Plan measures	Within six months of opening	TPC	T4	OBJ1, 2, 3, 4
Establish links with neighbours and others operating Travel Plans and explore the possibilities for working together on Travel Plan initiatives	Within three to six months of opening	TPC	T4, T5	OBJ1, 2, 3, 4
Promote travel mode choices by ensuring appropriate information is available	At opening	TPC	T4, T8	OBJ2
Develop a web page as a resource for sustainable travel information and include in staff/student induction process	Within three months of opening and on-going	TPC	T4, T8	OBJ2
Personalised travel planning with staff on request	Within three months and on-going	TPC	T4, T8	OBJ2
Continue to monitor staff/student travel behaviour and use the information obtained to focus future initiatives	On-going	TPC	T4, T6, T7	OBJ1, 2, 3, 4
WALKING				
Provision of on-site lockers/changing facilities/showers.	Prior to opening of development	Developer	T2, T4	OBJ2
Personalised travel planning with staff on request	Within three months and on-going	TPC	T4, T8	OBJ2
CYCLING				
Provision of 64 number long-stay and short-stay cycle parking spaces	Prior to opening of development	Developer	T1, T4	OBJ2
Provision of on-site lockers/changing facilities/showers	Prior to opening of development	Developer	T2, T4	OBJ2

Action	Date Due	Responsibility	Contributes to Target	Contributes to Objective
Personalised travel planning with staff on request	Within three months and on-going	TPC	T4, T8	OBJ2
Register with the Cycle to Work Scheme	Within three to six months of opening and on-going	TPC	T4, T8	OBJ2, 3
Promote/provide cycle skills training for those new to or returning to cycling	Within three months of opening and continuing	TPC	T4, T8	OBJ2, 3
Promote the 'Camden Try a Bike' scheme for those new to cycling	Within three months of opening and continuing	TPC	T4, T8	OBJ2, 3
Work with suppliers to improve cycle safety training through the FORS scheme (or equivalent) and embed this in contracts	Within six months of opening and on-going	TPC	T4, T8, T9	OBJ2, 3
PUBLIC TRANSPORT				
Gathering and distribution of public transport information, especially bus timetables	At opening and on-going	TPC	T4, T8	OBJ2
Promote the use of online Journey Planners	At opening and on-going	TPC	T4, T8	OBJ2, 3
REDUCING THE NEED TO TRAVEL				
Develop a strategy to increase video and voice conferencing facilities and promote their use	Within six months of opening and continuing	TPC/ The School	T6	OBJ1
Support flexible working where possible	Within six months of opening and continuing	The School	T6	OBJ1
Exploit as far as possible communications technologies to reduce the need to travel for business or study	Within six months of opening and continuing	TPC	T6	OBJ1
CAR PARK MANAGEMENT				
Restrict on-site car parking to disabled persons' parking only	At opening and on-going	The School	T4	OBJ2, 4

Action	Date Due	Responsibility	Contributes to Target	Contributes to Objective
BUSINESS TRAVEL				
Exploit new and emerging technologies wherever possible with the aim of reducing the need to travel for work (e.g. video conferencing) including by visitors to the site	Within six months of opening and continuing	TPC	T6	OBJ1
When considering the cost and sustainability of business travel that cannot be avoided, ensure that the use of Car Club vehicles is taken into account	At opening and on-going	TPC	T4, T8	OBJ2, 3, 4
Review business travel and promote sustainable travel options	Within six months of opening and continuing	TPC	T4, T7	OBJ1, 2, 3, 4
LOGISTICS				
Review procurement procedures and logistics practices, to ensure that delivery, servicing and School-related transport activities have the minimum possible environmental impact	Within 1 year of opening	TPC/The School	T9	OBJ1, 3, 4
Improve logistics and procurement arrangements to achieve a 10% reduction in delivery vehicle trips within three years	Three-year target	TPC/The School	T9	OBJ1, 3, 4
Review the sustainability of the School's own vehicles, and commit to the purchase of fuel-efficient or 'green' vehicles going forward	On-going	TPC/The School	T9	OBJ4
Investigate the use of bicycles for 'internal' and local deliveries	On-going	TPC	T9	OBJ4
Where vehicles are under the direct control of the School, work to ensure that trips are scheduled to take place outside the peak hours	At opening and on-going	TPC/The School	T9	OBJ4
MONITORING				
Produce readily calculable Performance Indicators (PIs) by which to measure effectiveness/take-up of measures	Prior to opening	TPC	T4, T5, T6, T7, T8, T9	OBJ1, 2, 3, 4

Action	Date Due	Responsibility	Contributes to Target	Contributes to Objective
Produce monitoring information using PIs	Annual	TPC	T4, T5, T6, T7, T8, T9	OBJ1, 2, 3, 4
Carry out annual review of effectiveness of the Plan and measures	Years 2 and 3	TPC	T4, T5, T6, T7, T8, T9	OBJ1, 2, 3, 4
Carry out other appropriate surveys to inform monitoring process and development of next and subsequent phases of the Plan	Years 3 and after	TPC	T4, T5, T6, T7, T8, T9	OBJ1, 2, 3, 4

Securing and Funding the Plan

19 Securing the Plan

19.1 This Travel Plan has been prepared to accompany the planning application for the proposed development by the School at its 15-17 Tavistock Place site. It is understood and acknowledged that the provisions of the Travel Plan would be secured through the planning process, should the local planning authority be minded to grant planning approval.

20 Commitment to Funding the Travel Plan

20.1 The implementation of the Travel Plan requires a commitment on the part of the School to the provision of infrastructure, to the allocation of staff time and resources to the management, implementation and monitoring of the plan, and to the promotion, delivery and review of a package of travel plan measures in order to make it a success. All of these facets of the Travel Plan would inevitably have financial implications. The infrastructure that would be provided by the developer as part of implementing the scheme, such as secure cycle parking, shower, changing and locker facilities, are budgeted for as part of the overall project development budget. It is recognised that other aspects of the Travel Plan would also need funding but defining and managing these budgets, such as the provision of the TPC, would need to evolve in the light of operational experience. However, the School acknowledges the need to commit to the implementation and success of the plan, and consequently accepts that the necessary funding needs to be made available.

Contacts

21 Provisional Contact Details

21.1 Prior to identification of the individual who will act as TPC for the development, enquiries concerning this Travel Plan should be directed in the first instance to:

Wilde Carter Clack Limited
49 Romney Street
Westminster
London SW1P 3RF

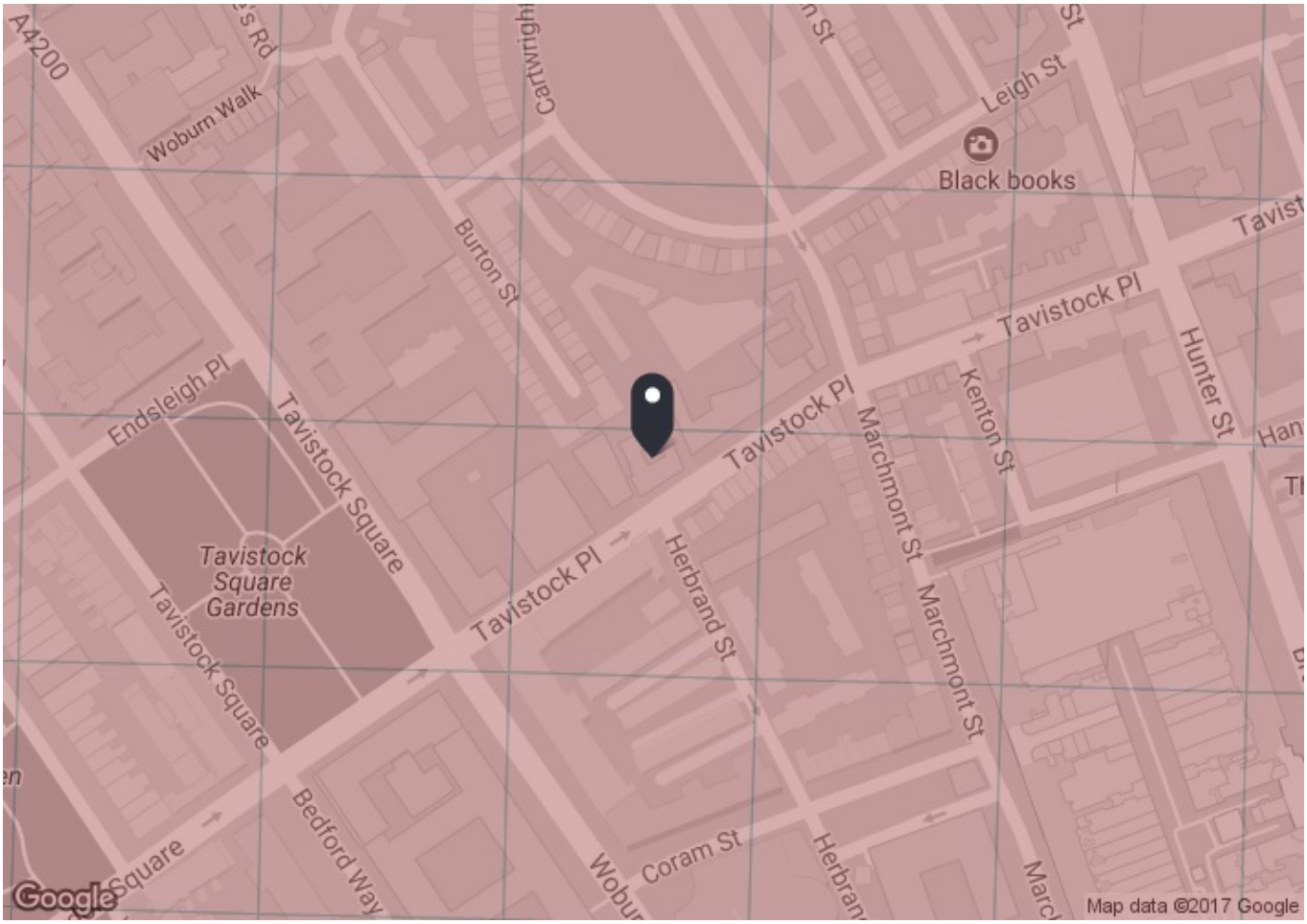
For the attention of Alan Goodare
(agoodare@wildegroup.co.uk)

Wilde Carter Clack Consulting Engineers
October 2017

Appendices

Appendix A
PTAL Assessment Results
for 2011 and 2021

TRANSPORT FOR LONDON



PTAL output for Base Year
6b

15-17 Tavistock Pl
15-17 Tavistock Pl, Kings Cross, London WC1H 9SH, UK
Easting: **530053**, Northing: **182383**

Grid Cell: 89899

Report generated: 21/09/2017

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

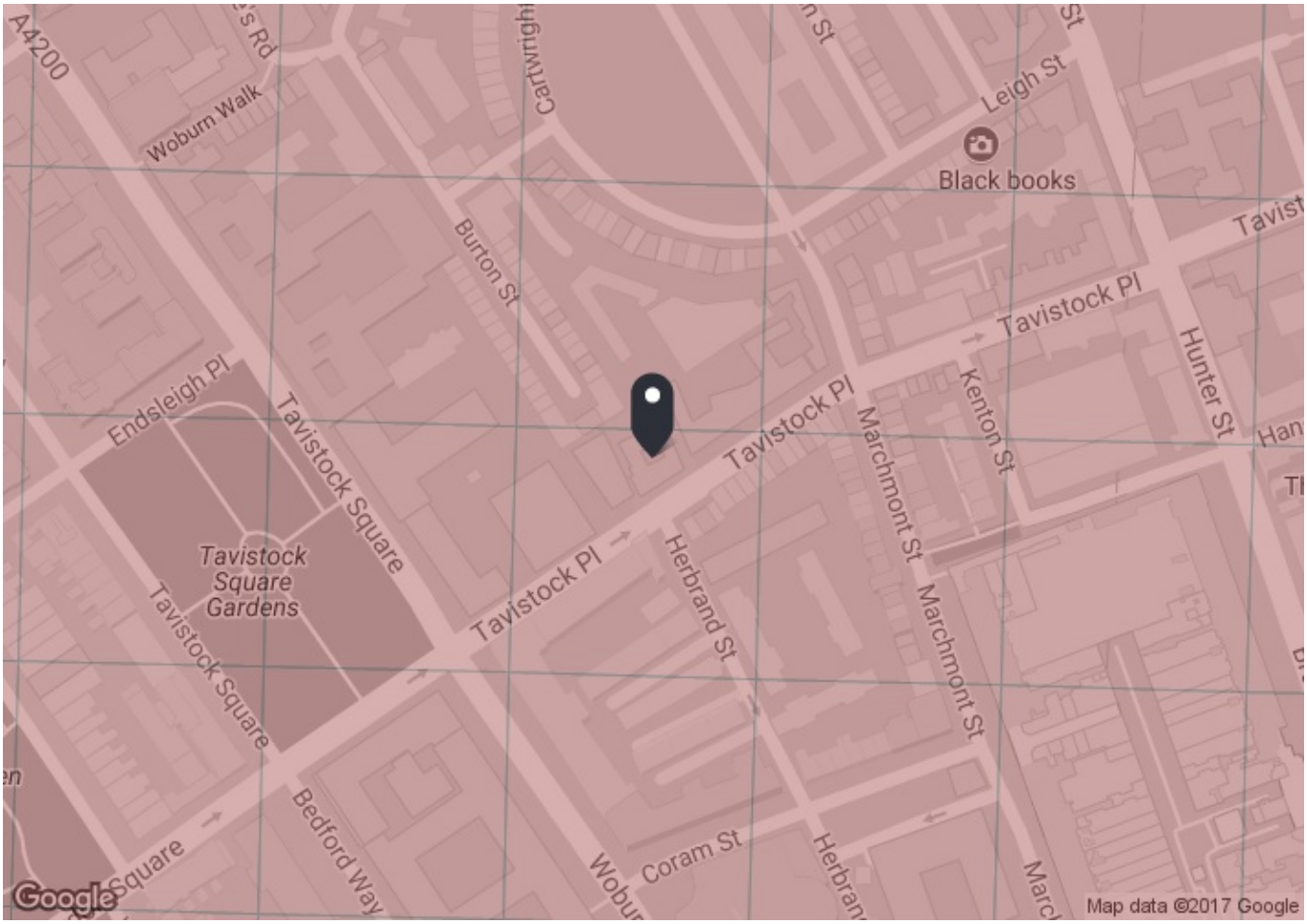
Calculation data

Mode	Stop	Route	Distance (metres)	Frequency(vph)	Walk Time (mins)	SWT (mins)	TAT (mins)	EDF	Weight	AI
Bus	GOWER ST TORRINGTON PL	24	571.62	10	7.15	5	12.15	2.47	0.5	1.24
Bus	GOWER ST TORRINGTON PL	134	571.62	12	7.15	4.5	11.65	2.58	0.5	1.29
Bus	GOWER ST TORRINGTON PL	29	571.62	15	7.15	4	11.15	2.69	0.5	1.35
Bus	GOWER ST TORRINGTON PL	14	571.62	13	7.15	4.31	11.45	2.62	0.5	1.31
Bus	EUSTON BUS STATION	253	614.14	12	7.68	4.5	12.18	2.46	0.5	1.23
Bus	EUSTON STATION EUSTON RD	18	567.21	17	7.09	3.76	10.85	2.76	0.5	1.38
Bus	TAVISTOCK SQUARE	59	139.36	10	1.74	5	6.74	4.45	1	4.45
Bus	TAVISTOCK SQUARE	91	139.36	9	1.74	5.33	7.08	4.24	0.5	2.12
Bus	TAVISTOCK SQUARE	68	139.36	9	1.74	5.33	7.08	4.24	0.5	2.12
Bus	TAVISTOCK SQUARE	168	139.36	9	1.74	5.33	7.08	4.24	0.5	2.12
Bus	EUSTON R BRITISH LIBRARY	10	464.48	4.5	5.81	8.67	14.47	2.07	0.5	1.04
Bus	EUSTON R BRITISH LIBRARY	390	464.48	8	5.81	5.75	11.56	2.6	0.5	1.3
Bus	EUSTON R BRITISH LIBRARY	30	464.48	7.5	5.81	6	11.81	2.54	0.5	1.27
Bus	EUSTON R BRITISH LIBRARY	73	464.48	18	5.81	3.67	9.47	3.17	0.5	1.58
Bus	EUSTON R BRITISH LIBRARY	476	464.48	7.5	5.81	6	11.81	2.54	0.5	1.27
Bus	EUSTON R BRITISH LIBRARY	205	464.48	8	5.81	5.75	11.56	2.6	0.5	1.3
Bus	RUSSELL SQUARE STH SIDE	X68	583.1	4	7.29	9.5	16.79	1.79	0.5	0.89
Bus	RUSSELL SQ NTH/WOBURN PL	98	347.85	9	4.35	5.33	9.68	3.1	0.5	1.55
Bus	RUSSELL SQ NTH/WOBURN PL	188	347.85	8	4.35	5.75	10.1	2.97	0.5	1.49
Rail	St Pancras	'BEDFDM-SVNOAKS 1E62'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-BROMLYS 1E83'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-ORPNGTN 1L60'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-SUTTON 1O13'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-KENTHOS 1S85'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-BRGHTN 1T11'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-BRGHTN 1T15'	693.01	0.67	8.66	45.53	54.19	0.55	0.5	0.28
Rail	St Pancras	'BRGHTN-BEDFDM 1T83'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-SUTTON 1V23'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-SUTTON 1V82'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BRGHTN-BEDFDM 1W06'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BRGHTN-BEDFDM 1W81'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-BRGHTN 1W84'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-BRGHTN 1W86'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'STALBCY-SVNOAKS 2E11'	693.01	1	8.66	30.75	39.41	0.76	0.5	0.38
Rail	St Pancras	'BEDFDM-SVNOAKS 2E19'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'LUTON-SVNOAKS 2E21'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'STALBCY-SVNOAKS 2E95'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SUTTON-LUTON 2O00'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SUTTON-BEDFDM 2O04'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SUTTON-STALBCY 2O06'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SUTTON-LUTON 2O10'	693.01	1	8.66	30.75	39.41	0.76	0.5	0.38
Rail	St Pancras	'LUTON-SUTTON 2O17'	693.01	0.67	8.66	45.53	54.19	0.55	0.5	0.28
Rail	St Pancras	'STALBCY-SUTTON 2O21'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'STALBCY-SUTTON 2O29'	693.01	0.67	8.66	45.53	54.19	0.55	0.5	0.28
Rail	St Pancras	'LUTON-BCKNHMJ 2S91'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'STALBCY-BROMLYS 2S93'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BRGHTN-BEDFDM 2T02'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BRGHTN-BEDFDM 2T04'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-BRGHTN 2T15'	693.01	1	8.66	30.75	39.41	0.76	0.5	0.38
Rail	St Pancras	'BEDFDM-BRGHTN 2T25'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BRGHTN-LUTON 2T99'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SUTTON-STALBCY 2V02'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SUTTON-STALBCY 2V08'	693.01	0.67	8.66	45.53	54.19	0.55	0.5	0.28
Rail	St Pancras	'BEDFDM-SUTTON 2V15'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SUTTON-BEDFDM 2V16'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'LUTON-SUTTON 2V19'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SUTTON-KNTSHTN 2V20'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'STALBCY-SUTTON 2V27'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15

Mode	Stop	Route	Distance (metres)	Frequency(vph)	Walk Time (mins)	SWT (mins)	TAT (mins)	EDF	Weight	AI
Rail	St Pancras	'LUTON-SUTTON 2V31'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BRGHTN-BEDFDM 2W08'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BRGHTN-BEDFDM 2W12'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BRGHTN-BEDFDM 2W16'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'ASHFKY-BEDFDM 1E61'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'ASHFKY-BEDFDM 1E63'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'RCHT-BEDFDM 1E67'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SVNOAKS-BEDFDM 1E69'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BROMLYS-BEDFDM 1E82'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BCKNHMJ-BEDFDM 1G65'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'KENTHOS-BEDFDM 1G71'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'ORPNGTN-STALBCY 2D93'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'ORPNGTN-LUTON 2D95'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SVNOAKS-STALBCY 2E59'	693.01	0.67	8.66	45.53	54.19	0.55	0.5	0.28
Rail	St Pancras	'SVNOAKS-LUTON 2E61'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SVNOAKS-WHMPSTM 2E63'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SVNOAKS-KNTSHTN 2E65'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'SVNOAKS-KNTSHTN 2E67'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BROMLYS-LUTON 2E93'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'ORPNGTN-LUTON 2L59'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'ORPNGTN-KNTSHTN 2L65'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-ELPHNAC 1J87'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'BEDFDM-ELPHNAC 1J88'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'STPANCI-FAVRSHM 1F08'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'BRSR-STPANCI 1F13'	693.01	0.67	8.66	45.53	54.19	0.55	0.5	0.28
Rail	St Pancras	'FAVRSHM-STPANCI 1F17'	693.01	1	8.66	30.75	39.41	0.76	0.5	0.38
Rail	St Pancras	'EBSFLTI-STPANCI 1F85'	693.01	1.33	8.66	23.31	31.97	0.94	0.5	0.47
Rail	St Pancras	'STPANCI-MARGATE 1J08'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'STPANCI-DOVERP 1J10'	693.01	1	8.66	30.75	39.41	0.76	0.5	0.38
Rail	St Pancras	'RAMSGTE-STPANCI 1J11'	693.01	0.67	8.66	45.53	54.19	0.55	0.5	0.28
Rail	St Pancras	'STPANCI-MARGATE 1J12'	693.01	0.67	8.66	45.53	54.19	0.55	0.5	0.28
Rail	St Pancras	'MARGATE-STPANCI 1J13'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'MARGATE-STPANCI 1J17'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'DOVERP-STPANCI 1J19'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'MARGATE-STPANCI 1J21'	693.01	0.33	8.66	91.66	100.32	0.3	0.5	0.15
Rail	St Pancras	'MSTONEW-STPANCI 1T91'	693.01	1	8.66	30.75	39.41	0.76	0.5	0.38
Rail	King's Cross	'CAMBDGE-KNGX 1C82'	813.1	0.33	10.16	91.66	101.82	0.29	0.5	0.15
Rail	King's Cross	'ROYSTON-KNGX 1R50'	813.1	0.33	10.16	91.66	101.82	0.29	0.5	0.15
Rail	King's Cross	'ROYSTON-KNGX 1R51'	813.1	0.67	10.16	45.53	55.69	0.54	0.5	0.27
Rail	King's Cross	'CAMBDGE-KNGX 2C91'	813.1	0.33	10.16	91.66	101.82	0.29	0.5	0.15
Rail	King's Cross	'HITCHIN-KNGX 2R94'	813.1	0.33	10.16	91.66	101.82	0.29	0.5	0.15
LUL	King's Cross	'Oakwood-RayLane'	813.1	0.33	10.16	91.66	101.82	0.29	0.5	0.15
Rail	King's Cross	'KNGX-CAMBDGE 1C33'	716.66	0.67	8.96	45.53	54.48	0.55	0.5	0.28
Rail	King's Cross	'KNGX-CAMBDGE 1C35'	716.66	0.33	8.96	91.66	100.62	0.3	0.5	0.15
Rail	King's Cross	'KNGX-PBRO 1P11'	716.66	1	8.96	30.75	39.71	0.76	0.5	0.38
Rail	King's Cross	'PBRO-KNGX 1P62'	716.66	1.33	8.96	23.31	32.26	0.93	0.5	0.46
Rail	King's Cross	'KNGX-CAMBDGE 2C03'	716.66	1	8.96	30.75	39.71	0.76	0.5	0.38
Rail	King's Cross	'CAMBDGE-KNGX 2C92'	716.66	0.67	8.96	45.53	54.48	0.55	0.5	0.28
Rail	King's Cross	'KNGX-PBRO 2P04'	716.66	1	8.96	30.75	39.71	0.76	0.5	0.38
Rail	King's Cross	'PBRO-KNGX 2P90'	716.66	0.33	8.96	91.66	100.62	0.3	0.5	0.15
Rail	King's Cross	'LTCE-KNGX 2R07'	716.66	0.67	8.96	45.53	54.48	0.55	0.5	0.28
Rail	King's Cross	'WLWYNGC-KNGX 2Y13'	716.66	0.67	8.96	45.53	54.48	0.55	0.5	0.28
LUL	King's Cross	'Hammersmith-Edgware'	716.66	6	8.96	5.75	14.71	2.04	0.5	1.02
LUL	King's Cross	'Barking-Hammersmith'	716.66	6.34	8.96	5.48	14.44	2.08	0.5	1.04
LUL	King's Cross	'Hammersmith-Plaistow'	716.66	1	8.96	30.75	39.71	0.76	0.5	0.38
LUL	King's Cross	'Amer-AldgateFast'	716.66	1	8.96	30.75	39.71	0.76	0.5	0.38
LUL	King's Cross	'Ches-AldgateFast'	716.66	2	8.96	15.75	24.71	1.21	0.5	0.61
LUL	King's Cross	'Uxbridge-AldSlow'	716.66	5.33	8.96	6.38	15.34	1.96	0.5	0.98

Mode	Stop	Route	Distance (metres)	Frequency(vph)	Walk Time (mins)	SWT (mins)	TAT (mins)	EDF	Weight	AI
LUL	King's Cross	'Watford-AldSfast'	716.66	3.67	8.96	8.92	17.88	1.68	0.5	0.84
LUL	King's Cross	'Aldg-WatfordSlow'	716.66	3.67	8.96	8.92	17.88	1.68	0.5	0.84
LUL	King's Cross	'Ald-HarrowHill'	716.66	1.33	8.96	23.31	32.26	0.93	0.5	0.46
LUL	King's Cross	'Edgware-Morden'	716.66	9	8.96	4.08	13.04	2.3	0.5	1.15
LUL	King's Cross	'Morden-HighBarnet'	716.66	14.67	8.96	2.79	11.75	2.55	0.5	1.28
LUL	King's Cross	'Morden-MillHillE'	716.66	4	8.96	8.25	17.21	1.74	0.5	0.87
Rail	Kings Cross St Pancras	'CAMBDGE-KNGX 2C54'	820.78	0.67	10.26	45.53	55.79	0.54	0.5	0.27
Rail	Kings Cross St Pancras	'WLWYNGC-KNGX 2Y04'	820.78	0.33	10.26	91.66	101.92	0.29	0.5	0.15
LUL	Kings Cross St Pancras	'ArnosGrove-RayLane'	820.78	0.33	10.26	91.66	101.92	0.29	0.5	0.15
LUL	Goodge Street	'Morden-Edgware'	837.74	4.67	10.47	7.17	17.65	1.7	0.5	0.85
LUL	Goodge Street	'HighBarnet-Kenningt'	837.74	5.33	10.47	6.38	16.85	1.78	0.5	0.89
LUL	Goodge Street	'MillHillE-Kenningt'	837.74	1.67	10.47	18.71	29.19	1.03	0.5	0.51
Rail	Euston	'BLTCHLY-EUSTON 2B04'	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'WATFDJ-EUSTON 2J06'	698.32	0.67	8.73	45.53	54.26	0.55	0.5	0.28
Rail	Euston	'EUSTON-MKNSCEN 2K21'	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'EUSTON-TRING 2T11'	698.32	0.67	8.73	45.53	54.26	0.55	0.5	0.28
Rail	Euston	'EUSTON-TRING 2T19'	698.32	1.33	8.73	23.31	32.04	0.94	0.5	0.47
Rail	Euston	'MKNSCEN-EUSTON 2W01'	698.32	0.67	8.73	45.53	54.26	0.55	0.5	0.28
Rail	Euston	'TRING-EUSTON 2W02'	698.32	1	8.73	30.75	39.48	0.76	0.5	0.38
Rail	Euston	'TRING-EUSTON 2W26'	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'BLTCHLY-EUSTON 2W57'	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'RUGBY-EUSTON 2W59'	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'TRING-EUSTON 2W63'	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'MKNSCEN-EUSTON 2W93'	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'WATFJDC-EUSTON 2C06'	698.32	2.67	8.73	11.99	20.71	1.45	0.5	0.72
Rail	Euston	'EUSTON-WATFJDC 2D86'	698.32	3	8.73	10.75	19.48	1.54	1	1.54
LUL	Euston	'HighBarnet-Morden'	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
LUL	Euston	'Kennington-Edgware'	698.32	14.67	8.73	2.79	11.52	2.6	0.5	1.3
LUL	Euston	'MillHill-Morden'	698.32	1.67	8.73	18.71	27.44	1.09	0.5	0.55
LUL	Euston	'Brixton-WalthamstowC'	698.32	15.67	8.73	2.66	11.39	2.63	0.5	1.32
LUL	Euston	'SevenSisters-Brixton'	698.32	11.67	8.73	3.32	12.05	2.49	0.5	1.24
LUL	Russel Square	'Cockfosters-LHRT4LT'	328.41	4.67	4.11	7.17	11.28	2.66	0.5	1.33
LUL	Russel Square	'RayLane-Cockfosters'	328.41	3.67	4.11	8.92	13.03	2.3	0.5	1.15
LUL	Russel Square	'LHRT4LT-ArnosGrove'	328.41	4.67	4.11	7.17	11.28	2.66	0.5	1.33
LUL	Russel Square	'ArnosGrove-Nthfields'	328.41	3	4.11	10.75	14.86	2.02	0.5	1.01
LUL	Russel Square	'Nthfields-Cockfoster'	328.41	1	4.11	30.75	34.86	0.86	0.5	0.43
LUL	Russel Square	'LHRT5-Cockfosters'	328.41	6	4.11	5.75	9.86	3.04	1	3.04
LUL	Russel Square	'Uxbridge-Cockfosters'	328.41	3.67	4.11	8.92	13.03	2.3	0.5	1.15
LUL	Russel Square	'Ruislip-Cockfosters'	328.41	2.33	4.11	13.63	17.73	1.69	0.5	0.85
LUL	Russel Square	'ArnosGrove-Uxbridge'	328.41	1	4.11	30.75	34.86	0.86	0.5	0.43
LUL	Russel Square	'Oakwood-Uxbridge'	328.41	0.33	4.11	91.66	95.76	0.31	0.5	0.16
LUL	Russel Square	'Oakwood-Ruislip'	328.41	0.33	4.11	91.66	95.76	0.31	0.5	0.16
									Total Grid Cell AI:	**82.05**

TRANSPORT FOR LONDON



PTAL output for 2021 (Forecast)
6b

15-17 Tavistock Pl
15-17 Tavistock Pl, Kings Cross, London WC1H 9SH, UK
Easting: **530053**, Northing: **182383**

Grid Cell: 89899

Report generated: 21/09/2017

This information is produced using forecasting tools and is subject to uncertainty

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	GOWER ST TORRINGTON PL	24	571.62	10.35	7.15	4.9	12.04	2.49	0.5	1.25
Bus	GOWER ST TORRINGTON PL	134	571.62	12.42	7.15	4.42	11.56	2.59	0.5	1.3
Bus	GOWER ST TORRINGTON PL	29	571.62	15.52	7.15	3.93	11.08	2.71	0.5	1.35
Bus	GOWER ST TORRINGTON PL	14	571.62	13.46	7.15	4.23	11.37	2.64	0.5	1.32
Bus	EUSTON BUS STATION	253	614.14	12.42	7.68	4.42	12.09	2.48	0.5	1.24
Bus	EUSTON STATION EUSTON RD	18	567.21	17.6	7.09	3.71	10.8	2.78	0.5	1.39
Bus	TAVISTOCK SQUARE	59	139.36	10.35	1.74	4.9	6.64	4.52	1	4.52
Bus	TAVISTOCK SQUARE	91	139.36	9.32	1.74	5.22	6.96	4.31	0.5	2.15
Bus	TAVISTOCK SQUARE	68	139.36	9.32	1.74	5.22	6.96	4.31	0.5	2.15
Bus	TAVISTOCK SQUARE	168	139.36	9.32	1.74	5.22	6.96	4.31	0.5	2.15
Bus	EUSTON R BRITISH LIBRARY	10	464.48	4.66	5.81	8.44	14.25	2.11	0.5	1.05
Bus	EUSTON R BRITISH LIBRARY	390	464.48	8.28	5.81	5.62	11.43	2.62	0.5	1.31
Bus	EUSTON R BRITISH LIBRARY	30	464.48	7.76	5.81	5.86	11.67	2.57	0.5	1.29
Bus	EUSTON R BRITISH LIBRARY	73	464.48	18.63	5.81	3.61	9.42	3.19	0.5	1.59
Bus	EUSTON R BRITISH LIBRARY	476	464.48	7.76	5.81	5.86	11.67	2.57	0.5	1.29
Bus	EUSTON R BRITISH LIBRARY	205	464.48	8.28	5.81	5.62	11.43	2.62	0.5	1.31
Bus	RUSSELL SQUARE STH SIDE	X68	583.1	4.14	7.29	9.25	16.54	1.81	0.5	0.91
Bus	RUSSELL SQ NTH/WOBURN PL	98	347.85	9.32	4.35	5.22	9.57	3.14	0.5	1.57
Bus	RUSSELL SQ NTH/WOBURN PL	188	347.85	8.28	4.35	5.62	9.97	3.01	0.5	1.5
Rail	St Pancras	'WELWYNGC-TATNHMC E13'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'TATNHMC-WELWYNGC S73'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'PBRO-THBDGS E19/20'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'THBDGS-PBRO S61/62'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'HORSHAM-CAMBDGE S63/'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'CAMBDGE-HORSHAM E21/'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'MSTONEE-CAMBDGE K81/'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'CAMBDGE-MSTONEE E23/'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'BEDFDM-ORPNGTN M7/8'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'ORPNGTN-BEDFDM K41/4'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'BEDFDM-EGRNSTD M9/10'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'EGRNSTD-BEDFDM S79/8'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'BEDFDM-BRGHTN M11'	693.01	1	8.66	30.75	39.41	0.76	0.5	0.38
Rail	St Pancras	'BRGHTN-BEDFDM S57'	693.01	1	8.66	30.75	39.41	0.76	0.5	0.38
Rail	St Pancras	'BEDFDM-BRGHTN M12'	693.01	1	8.66	30.75	39.41	0.76	0.5	0.38
Rail	St Pancras	'BRGHTN-BEDFDM S58'	693.01	1	8.66	30.75	39.41	0.76	0.5	0.38
Rail	St Pancras	'BEDFDM-BRGHTN M13/14'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'BRGHTN-BEDFDM S59/60'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'LUTON-DARTFD M15/16'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'DARTFD-LUTON K1/2'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'STALBCY-CATERHAM M19'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'CATERHAM-STALBCY S71'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'LUTON-SUTTON'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'SUTTON-LUTON'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'STALBCY-SUTTON'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'SUTTON-STALBCY'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'RAMSGTE-STPANCI K57/'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'STPANCI-RAMSGTE K57/'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'EBSFLTI-STPANCI K59/'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'MSTONEW-STPANCI K61/'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'BRSR-STPANCI K63/64'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	St Pancras	'STPANCI-BRSR K63/64'	693.01	2	8.66	15.75	24.41	1.23	0.5	0.61
Rail	King's Cross	'WLWYNGC-KNGX'	716.66	2	8.96	15.75	24.71	1.21	0.5	0.61
LUL	King's Cross	'Edgware-Hammersmith'	716.66	8	8.96	4.5	13.46	2.23	0.5	1.11
LUL	King's Cross	'Hammersmith-Edgware'	716.66	8	8.96	4.5	13.46	2.23	0.5	1.11
LUL	King's Cross	'Barking-Hammersmith'	716.66	8	8.96	4.5	13.46	2.23	0.5	1.11
LUL	King's Cross	'Hammersmith-Barking'	716.66	8	8.96	4.5	13.46	2.23	0.5	1.11
LUL	King's Cross	'AMRSHM-ALDGT F'	716.66	2	8.96	15.75	24.71	1.21	0.5	0.61
LUL	King's Cross	'AMRSHM-ALDGT SF'	716.66	2	8.96	15.75	24.71	1.21	0.5	0.61

Mode	Stop	Route	Distance (metres)	Frequency(vph)	Walk Time (mins)	SWT (mins)	TAT (mins)	EDF	Weight	AI
LUL	King's Cross	'ALDGT-AMRSHM S '	716.66	4	8.96	8.25	17.21	1.74	0.5	0.87
LUL	King's Cross	'CHSHM-ALDGT F '	716.66	2	8.96	15.75	24.71	1.21	0.5	0.61
LUL	King's Cross	'ALDGT-CHSHM S '	716.66	2	8.96	15.75	24.71	1.21	0.5	0.61
LUL	King's Cross	'UXBRDG-ALDGT SF '	716.66	2	8.96	15.75	24.71	1.21	0.5	0.61
LUL	King's Cross	'ALDGT-UXBRDG S '	716.66	6	8.96	5.75	14.71	2.04	0.5	1.02
LUL	King's Cross	'WATFDJ-ALDGT S '	716.66	4	8.96	8.25	17.21	1.74	0.5	0.87
Rail	Euston	'TRING-EUSTON '	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'BLTCHLY-EUSTON '	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'TRING-EUSTON '	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'MKNSCEN-EUSTON '	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'EUSTON-TRING '	698.32	1.33	8.73	23.31	32.04	0.94	0.5	0.47
Rail	Euston	'TRING-EUSTON '	698.32	1	8.73	30.75	39.48	0.76	0.5	0.38
Rail	Euston	'EUSTON-MKNSCEN '	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'MKNSCEN-EUSTON '	698.32	0.67	8.73	45.53	54.26	0.55	0.5	0.28
Rail	Euston	'EUSTON-TRING '	698.32	0.67	8.73	45.53	54.26	0.55	0.5	0.28
Rail	Euston	'BLTCHLY-EUSTON '	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'WATFDJ-EUSTON '	698.32	0.67	8.73	45.53	54.26	0.55	0.5	0.28
Rail	Euston	'NMPTN-EUSTON '	698.32	0.33	8.73	91.66	100.39	0.3	0.5	0.15
Rail	Euston	'WATFJDC-EUSTON '	698.32	3	8.73	10.75	19.48	1.54	0.5	0.77
Rail	Euston	'EUSTON-WATFJDC '	698.32	3	8.73	10.75	19.48	1.54	1	1.54
LUL	Euston	'Edgware-Morden '	698.32	15	8.73	2.75	11.48	2.61	0.5	1.31
LUL	Euston	'MillHill-Morden '	698.32	5	8.73	6.75	15.48	1.94	0.5	0.97
LUL	Euston	'Morden-HighBarnet '	698.32	25.97	8.73	1.91	10.63	2.82	0.5	1.41
LUL	Euston	'Kennington-Edgware '	698.32	30	8.73	1.75	10.48	2.86	0.5	1.43
LUL	Euston	'HighBarnet-Kenn '	698.32	15	8.73	2.75	11.48	2.61	0.5	1.31
LUL	Euston	'WalthamstowC-Brixton'	698.32	35.29	8.73	1.6	10.33	2.9	0.5	1.45
LUL	Russel Square	'Cockfosters-LHRT4LT '	328.41	4.67	4.11	7.17	11.28	2.66	0.5	1.33
LUL	Russel Square	'RayLane-Cockfosters '	328.41	3.67	4.11	8.92	13.03	2.3	0.5	1.15
LUL	Russel Square	'LHRT4LT-ArnosGrove '	328.41	4.67	4.11	7.17	11.28	2.66	0.5	1.33
LUL	Russel Square	'ArnosGrove-RayLane '	328.41	0.33	4.11	91.66	95.76	0.31	0.5	0.16
LUL	Russel Square	'ArnosGrove-Nthfields'	328.41	3	4.11	10.75	14.86	2.02	0.5	1.01
LUL	Russel Square	'Oakwood-RayLane '	328.41	0.33	4.11	91.66	95.76	0.31	0.5	0.16
LUL	Russel Square	'Nthfields-Cockfoster'	328.41	1	4.11	30.75	34.86	0.86	0.5	0.43
LUL	Russel Square	'LHRT5-Cockfosters '	328.41	6	4.11	5.75	9.86	3.04	1	3.04
LUL	Russel Square	'Uxbridge-Cockfosters'	328.41	3.67	4.11	8.92	13.03	2.3	0.5	1.15
LUL	Russel Square	'Ruislip-Cockfosters '	328.41	2.33	4.11	13.63	17.73	1.69	0.5	0.85
LUL	Russel Square	'ArnosGrove-Uxbridge '	328.41	1	4.11	30.75	34.86	0.86	0.5	0.43
LUL	Russel Square	'Oakwood-Uxbridge '	328.41	0.33	4.11	91.66	95.76	0.31	0.5	0.16
LUL	Russel Square	'Oakwood-Ruislip '	328.41	0.33	4.11	91.66	95.76	0.31	0.5	0.16
									Total Grid Cell AI:	**84.4**

Appendix B

Euston Station Bus Station Route Map

Buses from Euston

Route finder

Bus route	Towards	Bus stops
10 24hr Daily	Hammersmith	M N
	King's Cross	C K L
18	Sudbury	F H P
30	Hackney Wick	D
	Marble Arch	H P
59	King's Cross	C K L
	Streatham Hill	E M N
68	West Norwood	E M N
73	Oxford Circus	H P
	Stoke Newington	D
91	Crouch End	C K L
	Trafalgar Square	M N
168	Hampstead Heath	A K L
	Old Kent Road	B M N
205	Bow Church	D
	Paddington	H P
253	Hackney	A G
390 24hr Daily	Archway	C
	Notting Hill Gate	H P
476	Northumberland Park	D

Route finder

Bus route	Towards	Bus stops
748	Hemel Hempstead Monday-Friday evening peak	CH

Key

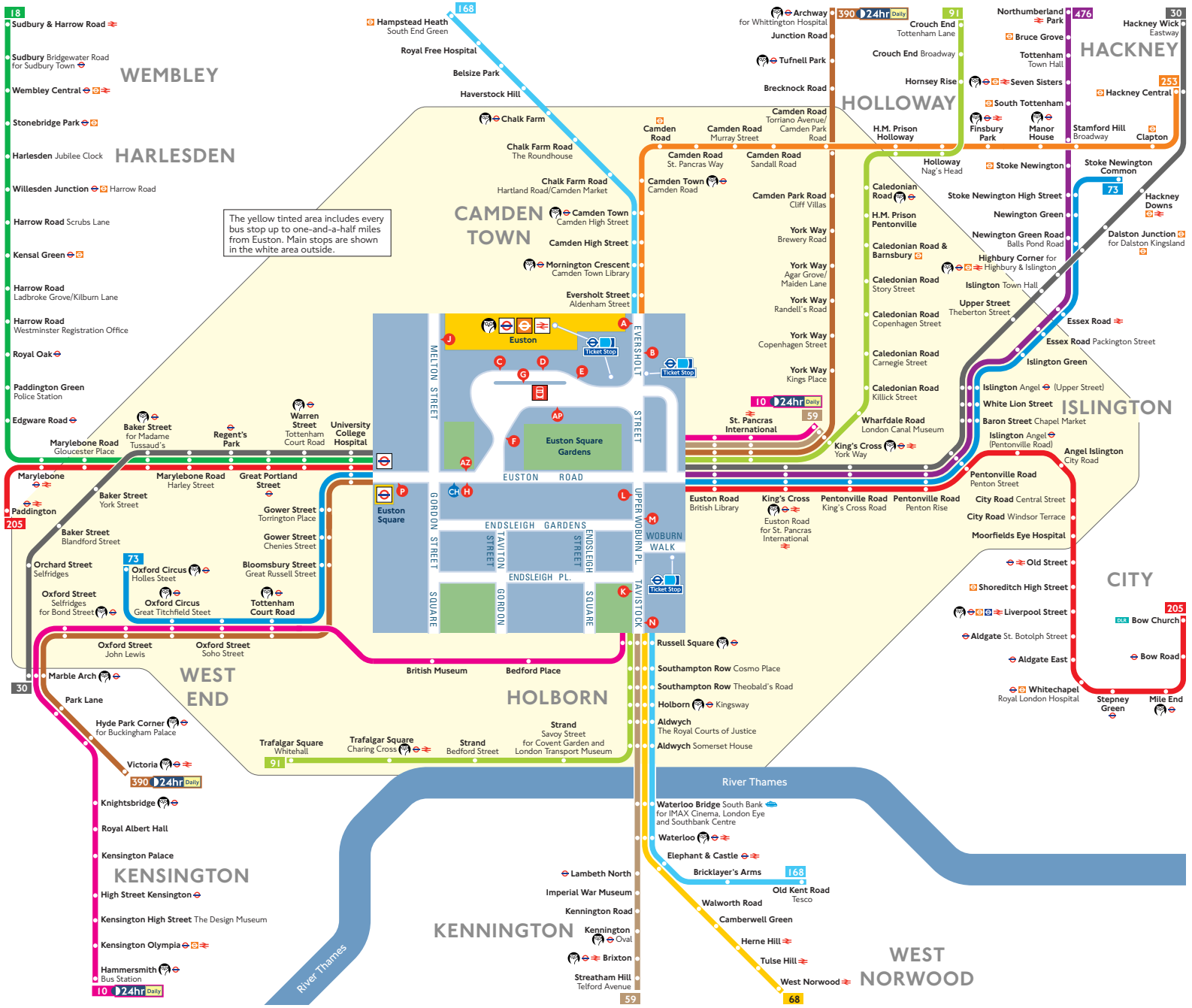
- Connections with London Underground
- Connections with London Overground
- Connections with National Rail
- Connections with Docklands Light Railway
- Connections with river boats
- Tube station with 24-hour service Friday and Saturday nights

Ways to pay

Use your contactless debit or credit card. It's the same fare as Oyster and there is no need to top up.

Top up your Oyster pay as you go credit or buy Travelcards and bus & tram passes at around 4,000 shops across London.

Sign up for an online account to top up online and see your travel history and spending



Information correct from 17 June 2017