Figure 4-9 Photographic Record of Route from King's Cross Station to the Site

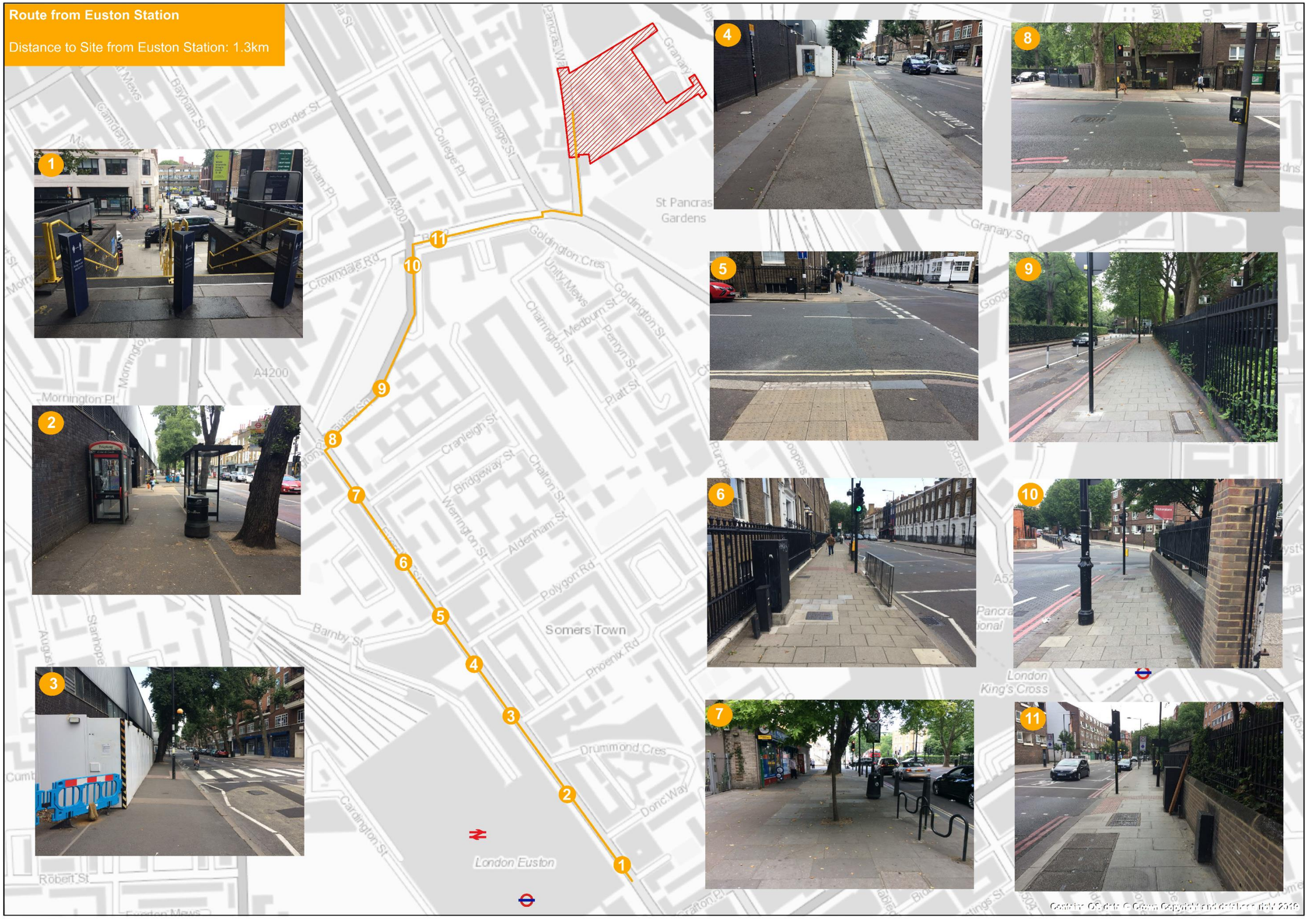
Route from King's Cross Station

4.2.22 Image 6 in Figure 4-9 illustrates the worst section of the journey from King's Cross Station to the Site via Camley Street. This is an image of a narrow footpath on a tight bend with an uncontrolled crossing point. These are considered to be localised issues and it is not anticipated that this will deter people from walking to the Site from King's Cross Station. However, it is acknowledged that there are other issues along this corridor, for example, obstruction by bollards and raised kerbs. The chosen image is reviewed against the Healthy Streets indicators in Table 4-3.

Table 4-3 Image 6 Review Against Healthy Streets Indicators

Healthy Streets Indicators	Observations	Areas for Improvement
Shade and Shelter	The bridge provides shade and shelter	There is little area for improvement.
Places to stop and rest	There are no places to sit at this location.	There is no area for improvement as it is unsuitable for seating as it would obstruct pedestrians.
Not too noisy	The area is not too noisy because people do not have to raise their voices to hold a conversation.	Improvements will be achieved through the approaches outlined in the Mayor's Transport Strategy for London to reduce reliance on private vehicles.
People choose to walk, cycle and use public transport	Footways are provided along the entire route.	There is little area for improvement.
People feel safe	There is street lighting provided along this route.	There is little area for improvement.
Things to see and do	There is little to see and do along this route.	There is opportunity to make the street more visually appealing.
People feel relaxed	The uncontrolled crossing is on a bend and therefore it is difficult to see on-coming vehicles which may cause concerns for pedestrians particular if they have impairments. The footway in image 6 is also narrow providing little separation between pedestrians and vehicles.	The crossing could be moved to ensure pedestrian visibility in both directions or this could be changed into a signalised crossing with a tactile cone.
Clean air	No observations of note.	Improvements will be achieved through the approaches outlined in the Mayor's Transport Strategy for London to reduce reliance on private vehicles. The Proposed Development will not have any car parking (except blue badge provision) and therefore trip generation will be minimised.
Easy to cross	The uncontrolled crossing is on a bend and therefore it is difficult to see on-coming vehicles.	The crossing could be moved to ensure pedestrian visibility in both directions or this could be changed into a signalised crossing with a tactile cone.

Figure 4-10 Photographic Record of Route from Euston Station to the Site



Route from Euston Station

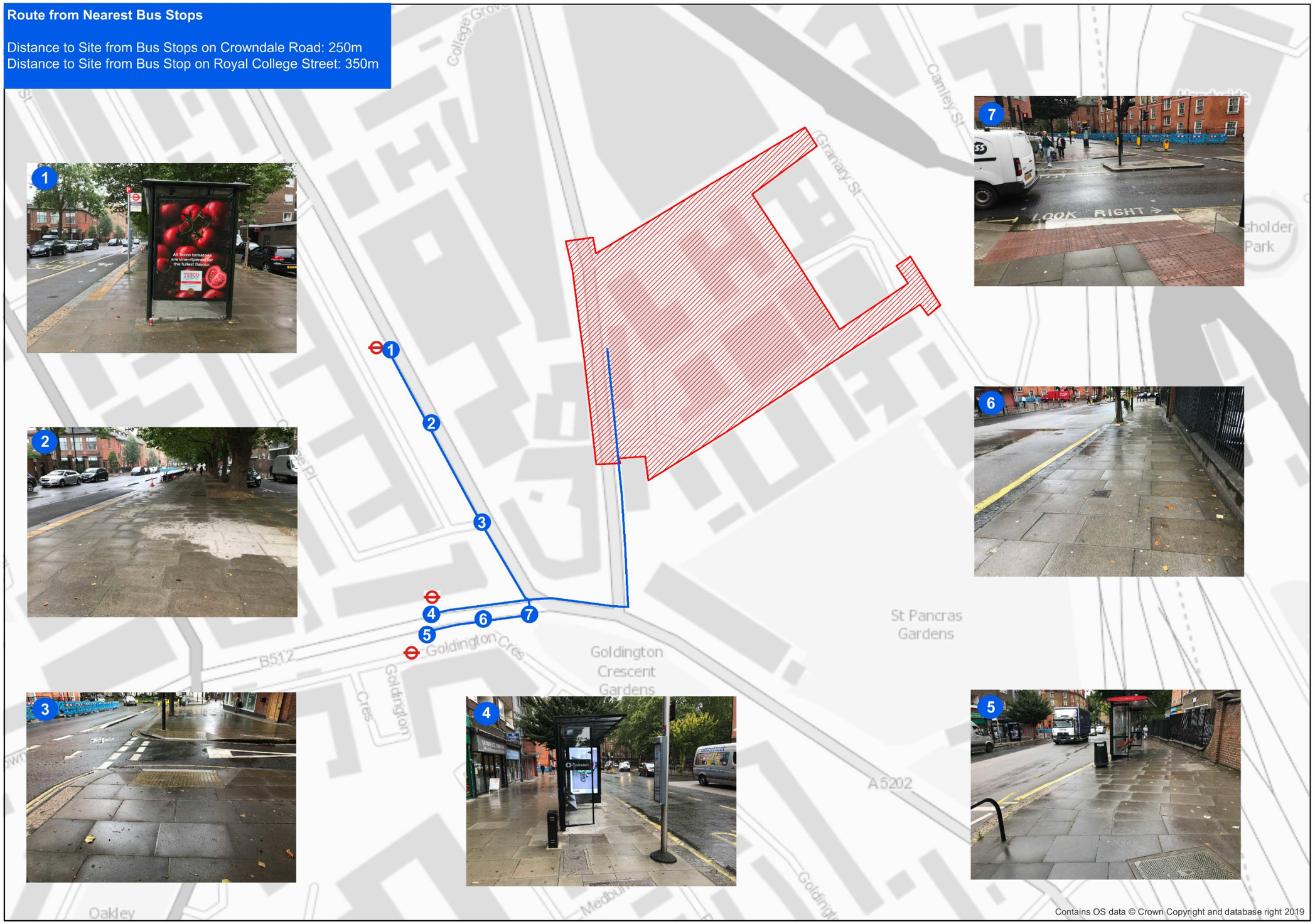
4.2.23 The pedestrian and cycle route from Euston Station to the Site is illustrated in Figure 4-10 and was found to be generally well-maintained. Image 4 is considered to be an image of the worst part of the journey, however it is acknowledged that there are other issues along this corridor, for example stairs and street furniture and trees narrowing the footway. The issues outlined in Table 4-4 are considered to be localised and are not anticipated to deter individuals from walking from Euston Station to the Site.

Table 4-4 Image 4 Review Against Healthy Streets Indicators

Healthy Streets Indicators	Observations	Areas for Improvement
Shade and Shelter	There are tall buildings and trees to provide shade and shelter.	There is little area for improvement.
Places to stop and rest	There are no places to sit at this location.	There is no area for improvement as it is an unsuitable and unattractive people for seating as it would obstruct pedestrians.
Not too noisy	The area is not too noisy because people do not have to raise their voices to hold a conversation.	Improvements will be achieved through the approaches outlined in the Mayor's Transport Strategy for London to reduce reliance on private vehicles.
People choose to walk, cycle and use public transport	Eversholt Street is a 20mph road and the low road speed may encourage individuals to cycle. Bus stops are provided along this route to encourage the use of public transport.	There is little area for improvement.
People feel safe	There is street lighting provided along this route people are regularly passing by providing natural surveillance.	There is little area for improvement.
Things to see and do	There is little to see and do along this route.	There is opportunity to make the street more visually appealing.
People feel relaxed	There is a lack of tactile segregation between loading vehicles and pedestrians which may make individuals with visual impairments nervous. There are pieces of street furniture and trees within the footway along the route which narrow the footway and provide obstacles for pedestrians.	A change in surfacing or raised kerbs could be provided around the loading bay to increase awareness of the loading bay for individuals with visual impairments.
Clean air	There are Santander cycle hire docks and cycle parking present along Eversholt Street which may encourage individuals to cycle for short trips.	Improvements will be achieved through the approaches outlined in the Mayor's Transport Strategy for London to reduce reliance on private vehicles. The Proposed Development will not have any car parking (except blue badge provision) and therefore trip generation will be minimised.

Healthy Streets Indicators	Observations	Areas for Improvement
Easy to cross	There are a mixture of zebra and signalised crossing points along this route providing pedestrians with options of the type of crossing that they would prefer to use.	There is little area for improvement.

Figure 4-11 Photographic Record of Route from the Nearest Bus Stops to the Site



Route for the Nearest Bus Stops

4.2.24 The pedestrian and cycle route from the nearest bus stops to the Site along Royal College Street and Crowndale Road is illustrated in Figure 4-11 and is generally well lit and clean. The footways were suitable for the volume of people walking. The image that reflects the worst part of the journey is image 3 on Royal College Street. This was chosen due to the uncontrolled crossing point which may make individuals with visual impairments feel nervous crossing. The chosen image is reviewed against the Healthy Streets indicators in Table 4-5.

Table 4-5 Image 3 Review Against Healthy Streets Indicators

Healthy Streets Indicators	Observations	Areas for Improvement
Shade and Shelter	There are trees present along Royal College Street which provide shade and shelter.	There is little area for improvement.
Places to stop and rest	There are no places to sit at this location.	There is no area for improvement as it is unsuitable for seating as it would obstruct pedestrians.
Not too noisy	The area is not too noisy because people do not have to raise their voices to hold a conversation.	Improvements will be achieved through the approaches outlined in the Mayor's Transport Strategy for London to reduce reliance on private vehicles.
People choose to walk, cycle and use public transport	This route provides direct access to Cycleway 6 and Santander cycle hire docks are present on Royal College Street which encourages individuals to cycle for short trips. There are bus stops within a short distance and pedestrian crossing points.	There is little area for improvement.
People feel safe	There is street lighting provided along this route and people are regularly passing by providing natural surveillance.	There is little area for improvement.
Things to see and do	There is little to see and do along this route.	There is an opportunity to make the street more visually appealing.
People feel relaxed	The crossing and pavement surfaces are smooth and flat with minimal potential trip hazards. However, individuals for are visually impaired may be nervous about an uncontrolled crossing point. The signalised crossings along Crowndale Road have tactile cones which may help users with impairments feel more relaxed.	There is little area for improvement.

Healthy Streets Indicators	Observations	Areas for Improvement
Clean air	This route provides direct access to Cycleway 6 which encourages individuals to cycle for short trips.	Improvements will be achieved through the approaches outlined in the Mayor's Transport Strategy for London to reduce reliance on private vehicles. The Proposed Development will not have any car parking (except blue badge provision) and therefore trip generation will be minimised.
Easy to cross	There are signalised crossings at busy crossing points with tactile cones present to help individuals who have visual and hearing impairments.	There is little area for improvement.

5. London-Wide Network

5.1 Introduction

5.1.1 This section includes an estimate of the multi-modal trips generated by the Proposed Development, and the potential impact of these trips on the transport networks.

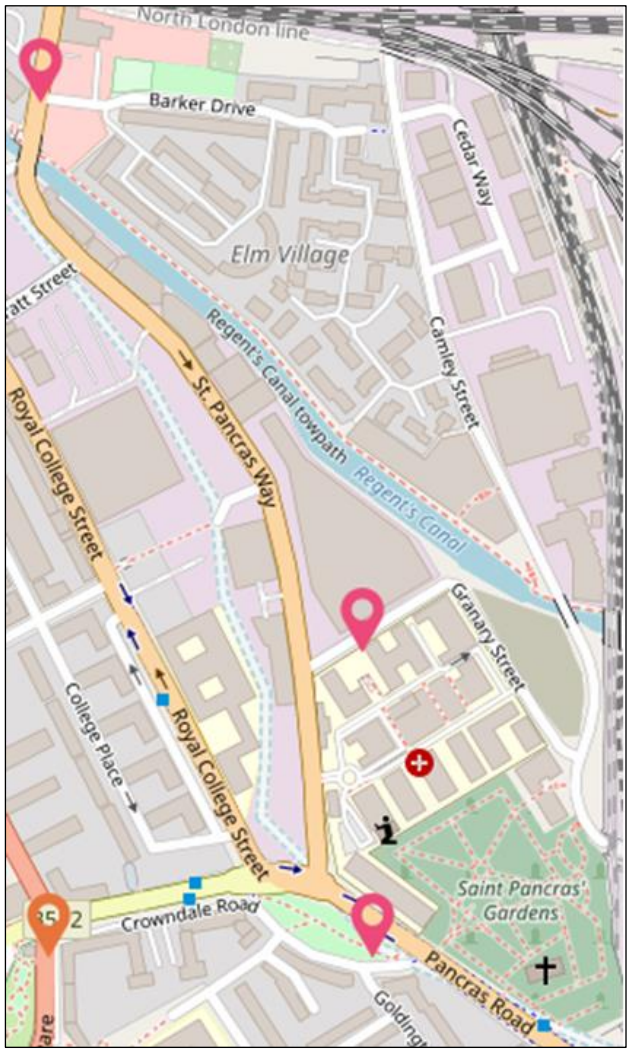
5.2 Existing Traffic Flows

5.2.1 Due to the Covid-19 outbreak and associated restrictions on travel it was not possible to commission new traffic surveys on the local highway network. Therefore, historic Automatic Traffic Count (ATC) data has been obtained for three locations in the vicinity of the Site, as follows:

- St Pancras Way, near the junction with Barker Drive;
- Granary Street, to the east of the junction with St Pancras Way; and
- Pancras Road, to the east of the junction with St Pancras Way.

5.2.2 The data was collected in March 2017 and July 2018, and the locations are shown by the three pink marker points in Figure 5-1.

Figure 5-1 ATC Locations



5.2.3 The data has been factored up using Trip End Model Presentation Program (TEMPro) growth factors, modified using NTEM local factors for urban principal roads in the Camden 019 MLSOA, to provide baseline data for 2020, 2022 (for the assessment of construction traffic flows) and 2026 (the year of opening). The TEMPro factors are shown in Table 5-1.

Table 5-1 TEMPro Growth Factors

Period	Average Daily Flows	Average Weekday Flows
2017 – 2020	1.0426	1.0423
2018 – 2020	1.0280	1.0278
2017 – 2022	1.0709	1.0703
2018 – 2022	1.0560	1.0554
2017 – 2026	1.1186	1.1171
2018 – 2026	1.1030	1.1016

5.2.4 The Annual Average Daily (AADT) baseline traffic flows obtained in this way are presented in Table 5-2, Table 5-3 and Table 5-4.

Table 5-2 Baseline Traffic Flows - 2020

Location	Direction	AADT		
		All vehicles	HGVs	%HGV
St Pancras Way – north of Granary Street	Southbound	6,470	862	13.3%
St Pancras Way – south of Granary Street	Southbound	6,982	920	13.2%
Granary Street – west of service bay	Two-way	2,622	413	15.8%
Granary Street – east of service bay	Two-way	2,622	413	15.8%
Pancras Road – east of St Pancras Way	Two-way	13,883	1,702	12.3%

Table 5-3 Baseline Traffic Flows - 2022

Location	Direction	AADT		
		All vehicles	HGVs	%HGV
St Pancras Way – north of Granary Street	Southbound	6,646	886	13.3%
St Pancras Way – south of Granary Street	Southbound	7,172	945	13.2%
Granary Street – west of service bay	Two-way	2,693	424	15.7%
Granary Street – east of service bay	Two-way	2,693	424	15.7%
Pancras Road – east of St Pancras Way	Two-way	14,259	1,748	12.3%

Table 5-4 Baseline Traffic Flows - 2026

Location	Direction	AADT		
		All vehicles	HGVs	%HGV
St Pancras Way – north of Granary Street	Southbound	6,942	925	13.3%
St Pancras Way – south of Granary Street	Southbound	7,491	987	13.2%
Granary Street – west of service bay	Two-way	2,813	443	15.7%
Granary Street – east of service bay	Two-way	2,813	443	15.7%
Pancras Road – east of St Pancras Way	Two-way	14,895	1,826	12.3%

5.3 Trip Generation – Existing Use

Vehicle Trips

5.3.1 Data was obtained from the St Pancras Hospital security team for vehicle movements recorded over a period of 5 days (Monday to Friday), as shown in Table 5-5. This data was obtained prior to Covid-19 restrictions being introduced, and vehicle movements relate to the whole hospital.

Table 5-5 Daily Vehicle Movements at St Pancras Hospital

Vehicle type	Monday	Tuesday	Wednesday	Thursday	Friday	Total	Average
Taxi	34	37	34	24	20	149	30
Ambulance taxi	17	44	28	17	0	106	21
Ambulance	29	20	48	34	37	168	34

Vehicle type	Monday	Tuesday	Wednesday	Thursday	Friday	Total	Average
Couriers	14	23	13	13	11	74	15
Delivery truck	4	5	1	4	0	14	3
Mary Rankin cars	17	18	11	13	17	76	15
Contractors vans	16	6	4	2	9	37	7
Laundry	1	2	1	1	1	6	1
Food delivery	1	0	1	0	4	6	1
Clinical waste collection	1	0	1	1	0	3	1
Police	1	0	3	0	2	6	1
Staff cars	20	20	20	20	20	100	20
TOTAL	**155**	**175**	**165**	**129**	**121**	**745**	**149**

5.3.2 The weekday average is 149 arrivals per day, or 298 two-way trips per day. Although the vehicle type (Car/LGV/HGV) was not recorded, it has been assumed that the 'Delivery truck' and 'Clinical waste collection' vehicles were HGVs, giving an average of four HGV arrivals per day, or eight two-way trips.

5.3.3 At weekends there are no clinics except for a full dialysis unit service on Saturday. Total trip generation at weekends has been estimated by the St Pancras Hospital security team at approximately 150 arrivals, giving a weekly total of 895 arrivals or 1,790 two-way trips.

5.3.4 The Proposed Development will only occupy part of the St Pancras Hospital site, and therefore only a proportion of the trip generation set out above can be offset against the trips generated by the Proposed Development. Construction will require the buildings identified in Table 5-6 to be demolished. Although the entire kitchen building will be demolished only a proportion of the kitchen building is covered by the footprint of the proposed building, and so this has been excluded for the purpose of this calculation.

Table 5-6: Buildings to Be Demolished for the Proposed Development

Building	Floor Area (sqm)
Bloomsbury Day Centre	1,156
Ash House	1,673
Jules Thorn Day Centre	489
Camley Centre	1,836
Post Room /Mortuary	202
Kitchen Building	-
TOTAL	**5,357**

5.3.5 The St Pancras Hospital has a total floor area of 22,955 sqm, and therefore the buildings to be demolished identified above equate to approximately 23% of the total. Assuming trip generation is proportional to floor area, the trips generated by the existing buildings within the Site are as follows:

- Average weekday trip generation: 68 two-way trips, including 2 HGV trips;
- Average daily trip generation: 59 two-way trips, including 2 HGV trips.

5.3.6 The AADT traffic flows have been distributed onto the local network in proportion to the 2020 baseline traffic flows, as shown in Table 5-7.

Table 5-7: St Pancras Hospital Vehicle Trip Generation

Location	Direction	AADT		
		All vehicles	HGVs	%HGV
St Pancras Way – north of Granary Street	Southbound	24	1	2.3%
St Pancras Way – south of Granary Street	Southbound	30	1	2.3%
Granary Street	Two-way	6	0	0%
Pancras Road – east of St Pancras Way	Two-way	16	0	0%

Walking, Cycling and Public Transport Trips

5.3.7 Trip generation by other modes for the existing use has been based on data for St Pancras Hospital obtained from the Trip Rate Information Computer System (TRICS) database. A multi-modal survey at the St Pancras Hospital was undertaken in 2012, and the results are summarised in Table 5-8. Trip rates shown are per 100 sqm floor area.

Table 5-8 St Pancras Hospital – Trip Rates (per 100qm floor area)

Mode	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
	Arrive	Depart	Total	Arrive	Depart	Total
Pedestrian	0.158	0.016	0.174	0.055	0.253	0.308
Bicycle	0.016	0.008	0.024	0.032	0.055	0.087
Rail passengers	0.703	0.103	0.805	0.142	0.995	1.137
Bus passengers	0.276	0.047	0.324	0.063	0.418	0.482
Taxi	0.000	0.000	0.000	0.000	0.000	0.000
Vehicle occupants	0.490	0.197	0.687	0.268	0.221	0.490
All vehicles	0.442	0.182	0.624	0.253	0.182	0.434
Total people	1.642	0.371	2.013	0.561	1.942	2.503

5.3.8 Applying the floor area above (5,357 sqm) to the trip rates in Table 5-8 the trip generation for the existing buildings within the Site to be demolished is provided in Table 5-9. It should be noted that TRICS does not differentiate between staff and patients, with the forecast existing trip generation identified in the table below representing staff and visitors associated with the existing buildings to be demolished.

Table 5-9 St Pancras Hospital – Existing Trip Generation[5]

Mode		AM Peak (08:00-09:00)			PM Peak (17:00-18:00)		
		In	Out	Two-Way	In	Out	Two-Way
Highway	Car Driver	24	10	33	14	10	23
	Car Passenger	3	1	3	1	2	3
	Taxi	0	0	0	0	0	0
	Motorcycle	0	0	0	0	0	0
Public Transport	Rail	17	3	20	4	25	28
	Underground	20	3	23	4	29	33
	Bus	15	3	17	3	22	26
Active Travel	Walk	8	1	9	3	14	16
	Cycle	1	0	1	2	3	5
Other	Other	0	0	0	0	0	0
Total		**88**	**20**	**108**	**30**	**104**	**134**

5.3.9 The table above estimates that the buildings to be demolished at the existing St Pancras Hospital site generate 108 two-way trips in the AM peak hour and 134 two-way trips in the PM peak by all modes.

5.3.10 Active travel (walking and cycling) mode share is 9% and 16% in the AM and PM peaks respectively. Public transport combined mode share is 56% (AM peak) and 65% (PM peak). The buildings to be demolished at the existing St Pancras Hospital site are forecast to generate 33 two-way car trips in the AM peak hour and 23 two-way trips in the PM peak hour.

[5] Due to rounding the two-way movements may not add up to the inbound and outbound movements

5.4 Cumulative Developments

5.4.1 A summary of the cumulative development schemes within the vicinity of the Site is provided in Table 5-10.

Table 5-10 Cumulative Developments

No.	Name	Planning Ref	Description	Status
1	Ugly Brown Building	2017/5497/P	Mixed business (B1), 73 residential units (C3), hotel (C1), gym (d2), flexible retail (A1-A4) and storage space (B8) with associated landscaping.	Granted
2	70-86 Royal College Street	2020/0728/P	Demolition of existing buildings (Class B2); erection of 5 storey building (plus rooftop pavilions/plant and basement) to provide a mixed Class C2/D1 healthcare facility (Sui Generis).	Granted conditional planning permission subject to S106 legal agreement
3	101 Camley street	2018/3682/P	Mixed use building comprising employment floorspace (B1), 121 residential units (C3), pedestrian footbridge with disabled access over regent's canal and associated landscaping and related works to public realm.	Under construction
4	Building P2 King's Cross Central	2018/2628/P	Reserved matters relating to Plot P2 within Development Zone P for the erection of a 12 storey building for office use (Class B1) with flexible retail (A1-A5) and theatre (Sui Generis) uses at ground floor, and public realm works to parts of Handyside Street, Wollstonecraft Street and between the proposed building and the Gasholder Triplets.	Under construction
5	Building S1 Kings Cross Central -	2017/5204/P	Reserved matters relating to Building S1 within Development Zone S for erection of a 12 storey building, plus single level basement, with mixed office (B1), flexible office or leisure (B1 or D2) and retail uses (A1-A4) at ground floor, mixed office (B1) and flexible office or leisure uses (B1 or D2) at 1st & 2nd floor and office (B1) uses at 3rd-12th floor, and associated servicing, cycle parking, plant, and public realm on Handyside Street, Canal Reach and within the tertiary routes of zone S along the northern and eastern side of the building and between S2 and S4.	Under construction

No.	Name	Planning Ref	Description	Status
6	Plot T2-T4 King's Cross Central Canal Reach	2016/3195/P	Reserved matters relating to Plots T2-T4 within Development Zone T for erection of two buildings, T2 (part 9, part 10 storeys) and T3 (part 10, part 12 storeys), for use as offices (Class B1) on upper floors, a primary health care centre in T2 (Class D1) at ground floor and flexible commercial/office/leisure units to ground and first floors (A1-A4/B1/D2) and a fuel cell to the south west corner of T2. Associated cycle and car parking, refuse store, storage and plant areas provided. Public realm works to the western side of Canal Reach.	Under Construction
7	Central Somers Town	2015/2704/P (Amendments approved under 2019/5882/P)	Demolition of existing buildings and the provision of approximately 2,190sq.m replacement school (Use Class D1); approximately 1,765sq.m of community facilities (Use Class D1); approximately 207sq.m of flexible Use Class A1/A2/A3/D1 floorspace and 136 residential units (Use Class C3) over 7 buildings ranging from 3 to 25 storeys in height comprising: • Plot 1: Community uses at ground floor (Use Class D1) (approximately 1,554sq.m) to include a children's nursery and community play facility with 10no. residential units above; • Plot 2: 35 residential units over flexible A1/A2/A3/D1 floorspace at ground level (approximately 137sq.m); • Plot 3: Extension of Grade II listed terrace to provide 3no. dwellings; • Plot 4: Replacement school (Use Class D1) ; • Plot 5: 20no. residential units over a replacement community hall (Use Class D1) (approximately 211sq.m); • Plot 6: 14no. residential units; and • Plot 7: 54no. residential units over flexible A1/A2/A3/D1 floorspace at ground level (approximately 70sq.m). Provision of 11,765 sqm of public open space along with associated highways works and landscaping.	Under Construction

No.	Name	Planning Ref	Description	Status
8	Building S5 King's Cross Central York Way London	2018/4813/P, amended by 2019/3244/P	Reserved matters relating to Plot S5 within Development Zone S for the erection of a 15 storey residential building (Class C3) with flexible retail A1-A5, B1, D1 and D2 uses at ground floor level and associated public realm works. Amendment to reserved matters application 2018/4813/P dated 20/12/2018, namely alterations to the unit mix to increase total number of dwellings from 158 to 163, additional terrace at level 5, 9 additional balconies on west and east cores, alterations to brickwork at ground floor level and increase in on-site cycle parking provision	Under construction
9	Building Q2 King's Cross Central York Way London N1C 4UZ	2016/5580/P	Reserved matters relating to Plot Q2 within Development Zone Q for the erection of a two storey building for use as a sports hall and gym (Class D2) and public realm works to Wilberforce Street and York Way together with amendments to the public realm of the R4 Courtyard.	Under construction
10	Building S5 King's Cross Central York Way London	2016/1530/P Amendments approved under P2018/3844/RMS and P2019/3244/P)	Reserved matters relating to Development Zone W for: Plot W1 for the erection of a 12 to 17 storey building to provide 140 residential units (Use Class C3) and commercial space to ground floor (Use Class A1-A5). Plot W2 for the erection of an 8 storey building to provide 78 residential units (Use Class C3)(including 36 social rented and 23 intermediate) and commercial space to ground floor (Use Class A1-A5). - Basement area to include 363 cycle spaces, 48 car parking spaces, plant, refuse and ancillary uses.	Under construction
11	Agar Grove Estate, Agar Grove	2013/8088/P	Demolition of all existing buildings and structures except Lulworth House and Agar Children's Centre, and erection of new buildings to provide 493 residential units (C3), a community facility, 2 flexible retail shop (A1) or restaurant and café (A3) units, business space (B1(a)), 2 flexible retail shop (A1), business (B1) or non-residential institution (D1) units, refuse and recycling facilities, car and cycle parking facilities, landscaping/amenity space and associated works.	Under construction

No.	Name	Planning Ref	Description	Status
12	Development Zone A – Kings Cross Central	2017/3133/P	Reserved matters in relation to Zone A for erection of 7-11 storey building for use as offices (Class B1) with ancillary staff facilities including a cafe, gym, pool, Multi Use Games Area, events centre and landscaped roof garden; retail at ground floor level (Class A1) and two levels of basement incorporating a loading bay, 4 x accessible parking spaces, mechanical plant; and works to public realm in Battle Bridge Place, King's Boulevard and Goods Way.	Under Construction

5.4.2 The above developments are generally car-free, and therefore the impacts on the highway network are expected to be limited to an increase in delivery and servicing trips.

5.5 Proposed Land Use

5.5.1 The Proposed Development comprises a single building, between seven and ten storeys in height (including Ground Level and Lower Ground Level, as well as plant at Roof Level), as well as provision of public realm at ground level, blue badge parking, and vehicular drop off points along St Pancras Way. The building is arranged around a central atrium and connection space. There is also a roof terrace on the Sixth Floor Level on the south-western corners of the building.

5.5.2 The height of the Proposed Development will be up to 69.15 metres (m) Above Ordnance Datum (AOD) and will have a gross external area (GEA) of approximately 48,851 square metres (sqm) and a gross internal area (GIA) of approximately 46,468 sqm.

5.5.3 The Proposed Development will comprise a mix of uses including clinical, research and education purposes, including accident and emergency (A&E) department, outpatients, operating theatres, research areas, education space, café and retail areas, facilities management, office space and plant space.

5.5.4 A breakdown of the Proposed Development by land use is presented in Table 5-11.

Table 5-11 Area Schedule

Land Use	Gross Internal Area (GIA) (sqm)
Health	19,820
Research	7,925
Education	1,939
Commercial (Retail)	303
Public areas	1,528
FM/ancillary	1,085
Cores/circulation/plant	13,868
TOTAL	**46,468**

5.6 Trip Generation - Proposed Development

5.6.1 This section identifies the forecast building population, mode shares and the trip generation for staff, students, patients and their companions for the Proposed Development.

Vehicle Trips

5.6.2 The survey undertaken at the existing Moorfields at City Road site on Thursday 23rd May 2019 provided the following daily totals summarised in Table 5-12 and Table 5-13f or servicing and drop-off/pick-up activity. The survey results are summarised in Appendix C.

Table 5-12 Moorfields at City Road – Existing Daily Servicing Activity

Activity	Daily Traffic Flows		
	LGVs	HGVs	Total
Servicing	50	11	61

Table 5-13 Moorfields at City Road – Existing Daily drop-off/pick-up activity

Activity	Daily Traffic Flows		
	LGVs	HGVs	Total
NEPT	44	0	44
Car	99	0	99
Taxi/private hire	126	0	126
LGV	5	0	5
Total	**274**	**0**	**274**

5.6.3 The survey undertaken in 2019 covered the period 07:00-19:00. To allow for servicing and drop-off/pick-up activity outside these hours an uplift of 10% has been applied. Little activity was observed before 08:00 or after 18:00 and therefore this is considered robust. Activity at weekends is much lower than on weekdays, and to estimate the average daily flow the following factors have been applied based on patient numbers at weekends (ref section 0) as a proportion of average weekday patient numbers:

- Servicing
  - Saturday 25% of the weekday activity
  - Sunday 10% of the weekday activity
- Drop-off/pick-up
  - Saturday 25% of the weekday activity
  - Sunday 10% of the weekday activity

5.6.4 The average daily vehicle trips generated by the Proposed Development have been distributed onto the local network based on existing traffic flows, as identified in Table 5-14.

Table 5-14 Proposed Development Traffic Flows

Location	Direction	AADT		
		All Vehicles	HGVs	%HGV
St Pancras Way – north of Granary Street	Southbound	227	9	3.9%
St Pancras Way – south of Granary Street	Southbound	270	9	3.3%
Granary Street – west of service bay	Two-way	141	18	12.8%
Granary Street – east of service bay	Two-way	67	4	6.0%
Pancras Road – east of St Pancras Way	Two-way	148	5	3.3%

Building Population – Moorfields at City Road Staff and Patients

5.6.5 A summary of the forecast building population for each hour of the day in 2026 (year of opening) for staff and patients is set out in Table 5-15. This information was provided by Moorfields Eye Hospital NHS Foundation Trust and is an estimate based on Moorfields at City Road staff shifts on one day in February 2020, prior to Covid-19 restrictions being introduced. A compound growth factor has seen applied by Moorfields Eye Hospital NHS Foundation Trust to estimate staff and patient numbers in 2026 (year of opening of the Proposed Development). The patients include outpatients, surgical (including in-patients) and A&E patients. The building occupation identified for patients is based on a weekday average.

Table 5-15 Building Population[6]

Time Period	Staff	Patients	Total
00:00 – 01:00	16	14	31
01:00 – 02:00	16	12	29
02:00 – 03:00	16	11	27
03:00 – 04:00	16	8	25
04:00 – 05:00	16	6	23
05:00 – 06:00	16	6	23
06:00 – 07:00	17	7	24
07:00 – 08:00	97	51	148
08:00 – 09:00	1,003	255	1,258
09:00 – 10:00	1,386	634	2,020
10:00 – 11:00	1,412	871	2,283
11:00 – 12:00	1,420	762	2,181
12:00 – 13:00	1,461	560	2,021
13:00 – 14:00	1,490	705	2,195
14:00 – 15:00	1,461	914	2,375
15:00 – 16:00	1,452	879	2,331
16:00 – 17:00	1,392	570	1,963
17:00 – 18:00	826	312	1,137
18:00 – 19:00	234	175	409
19:00 – 20:00	197	115	312
20:00 – 21:00	164	65	229
21:00 – 22:00	39	35	75
22:00 – 23:00	18	28	47
23:00 – 24:00	16	20	36

[6] The forecast building occupation in 2026 is based on the uplift of 2020 staff and patient numbers which may result in the totals not adding up due to rounding

Moorfields at City Road Patients and Companions

5.6.6 To identify the arrival and departure numbers for patients to and from the Proposed Development during the AM and PM peak hours a first principles approach based on the building occupation data above and the TRICS database has been applied. The TRICS site used is St Pancras Hospital, for which a multi-modal survey was undertaken in 2012. The TRICS data was analysed to determine the ratio of inbound to outbound movements (for all modes) during the AM and PM peak hours, with the results shown in Table 5-16.

Table 5-16 Peak Hour Inbound and Outbound Proportions

Peak Hour	Trip Rate (total people)		Ratio	
	Arrive	Depart	Arrive	Depart
08:00-09:00	1.642	0.371	81.6%	18.4%
17:00-18:00	0.561	1.942	22.4%	77.6%

5.6.7 The building occupation data in Table 5-15 identifies an increase in the number of patients between 07:00-08:00 and 08:00-09:00 of 204 (from 51 to 255). Using the inbound and outbound ratio above for the AM peak, it has been calculated that there would be 264 patient arrivals and 60 departures between 08:00-09:00, a net increase of 204. A similar exercise was used to estimate the arrival and departure numbers for the PM peak, giving 105 arrivals and 363 departures and a net reduction of 258.

5.6.8 Patients at Moorfields at City Road are usually accompanied by one or more companions. Whilst details of the number of companions are not recorded, Moorfields at City Road staff provided the following anecdotal information:

- Adult patients – 80% arrive with one companion, the remaining 20% come unaccompanied (average 0.8 companions per patient);
- Paediatric patients – 50% come with one companion, 20% with two companions and 30% with three or more companions (average 1.8 companions per patient).

5.6.9 Moorfields at City Road also provided the proportion of adult to paediatric patients, as shown in Table 5-17.

Table 5-17 Proportion of Adult and Paediatric Patients

Department	Adult	Paediatric
Outpatients	89%	11%
Surgery	95%	5%
A&E	93%	7%

5.6.10 Based on the data provided by Moorfields at City Road, the proportions of Outpatients, Surgery and A&E patients and the associated numbers of companions per patient are identified in Table 5-18.

Table 5-18 Proportion of Adult and Paediatric Patients

Department	Proportion	Companions - Adult Patients	Companions- Paediatric Patients
Outpatients	88%	0.627	0.174
Surgery	7%	0.053	0.006
A&E	5%	0.037	0.006
Total	**100%**	**0.717**	**0.186**

5.6.11 Combining the adult and paediatric companions gives a total of 0.903 companions per patient overall. To provide some resilience it has been assumed that there will be an average of 1 companion per patient. The estimated numbers of patients and companions is shown in Table 5-19.

Moorfields at City Road Staff

5.6.12 Moorfields at City Road advised that between 08:00-09:00 only a small number of staff complete their shifts and depart (approximately 16), and similarly between 17:00-18:00 very few staff arrive to start a new shift (16). These AM outbound and PM inbound estimates have been used to determine the corresponding AM inbound and PM outbound movements to be consistent with the building population figures shown above in Table 5-15. Between 07:00-08:00 and 08:00-09:00 there is a net increase of 906 staff (from 97 to 1,003) and based on the assumptions above there would be 922 arrivals and 16 departures. Similarly, between 16:00-17:00 and 17:00-18:00 there is a net reduction in staff of 566, equating to 16 arrivals and 582 departures.

UCL IoO Staff, Patients and Students

5.6.13 A first principles approach was used to estimate AM and PM peak hour arrivals and departures for the UCL IoO element of the Proposed Development, based on information provided by UCL IoO as follows:

- **UCL IoO staff –** UCL IoO advised that approximately 300 staff arrive between 07:30-10:30 (100 per hour), with no distinct peak arrival time. Therefore it has been assumed that of the 300 staff referred to above there would be 100 arrivals between 08:00-09:00. IoO advised that staff leave between 16:00-22:00 (50 per hour), and it has been assumed that of the staff leaving there will be 75 departures between 17:00-18:00;
- **Professional services** – assume no arrivals between 08:00-09:00 (UCL IoO advised that staff generally arrive by 07:00); and 15 departures between 17:00-18:00;
- **Patients** – UCL IoO advised that there are typically 25 patients a day. It has been assumed there will be five arrivals and one departure between 08:00-09:00; and one arrival and five departures between 17:00-18:00; and

- **Students** – UCL IoO advised that a typical class size is 20 students. It has been assumed that a typical class size of 20 arrive between 08:00-09:00 and depart between 17:00-18:00. UCL IoO advised that larger groups of up to 100 students are occasionally hosted but this only occurs six to eight times a year. Due to Covid-19 restrictions UCL is currently holding large scale sessions virtually and this trend is likely to continue, making better use of smaller groups for collaboration and teaching face to face.

Trip Generation – Peak Hours

5.6.14 The forecast peak hour building movements for staff and patients for the Proposed Development in 2026 are identified in Table 5-19.

Table 5-19 Proposed Development Trip Generation (All Persons)

	AM Peak Hour (07:00-08:00)			PM Peak Hour (17:00-18:00)		
	In	Out	Two-Way	In	Out	Two-Way
Moorfields at City Road Staff	922	16	938	16	582	598
Moorfields at City Road Patients	264	60	323	105	363	468
Moorfields at City Road Companions	264	60	323	105	363	468
IoO Staff	100	2	102	2	75	77
IoO Professional Services	0	0	0	0	15	15
IoO Patients	5	1	6	1	5	6
IoO Students	20	0	20	0	20	20
Sub-Total Staff/Students	***1,042***	***18***	***1,060***	***18***	***692***	***710***
Sub-Total Patients/Companions	***532***	***120***	***652***	***211***	***731***	***942***
Total	**1574**	**138**	**1712**	**230**	**1423**	**1652**

Mode Share

5.6.15 Moorfields at City Road and UCL IoO do not have any data on current mode share for staff and patients, and due to Covid-19 restrictions it was not possible to undertake any new surveys. Therefore mode share for staff/students and patients/companions has been estimated based on census journey to work data for the Camden 019 Middle Layer Super Output Area (MLSOA) in which the Site is located. The census data has been manually adjusted to take into consideration the car-free nature of the Proposed Development and also to align with drop-off/pick-up data collected at the existing Moorfields at City Road site in June 2019. The mode share derived in this way has been compared to other recent developments in the local area to provide a sense check.

5.6.16 The forecast mode shares for staff/students and patients/companions are identified in Table 5-20.

Table 5-20 Proposed Development Mode Share – Staff and Patients

Mode		2011 census	Staff/ students	Patients/companions
Highway	Car Driver	14%	0%	0%
	Car Passenger	1%	1%	1%
	Taxi	0%	0%	1%
	Motorcycle	2%	2%	2%
Public Transport	Rail	27%	33%	36%
	Underground	31%	38%	41%
	Bus	12%	14%	15%
Active Travel	Walk	8%	8%	3%
	Cycle	5%	5%	1%
Other	Other	0%	0%	0%
Total		**100%**	**100%**	**100%**

5.6.17 The census data indicates a car driver mode share of 14%. As the Proposed Development will be car-free, except for the provision of three blue badge bays, this has been set to 0% for both staff/students and patients, and the public transport modes (rail, underground and bus) have been increased proportionally. For patients/carers the active mode shares have also been reduced to reflect the nature of the Proposed Development, with public transport modes further increased.

5.6.18 The mode share for staff has been benchmarked against other developments in the local area (Table 5-21), using information submitted in support of their planning applications, including similar 'destination' medical facilities:

- Ugly Brown Building (planning ref: 2017/5497/P) – the staff mode share that was assumed in the Transport Assessment submitted in support of the Ugly Brown Building planning application (*Transformation of the Ugly Brown Building – Transport Assessment;* Caneparo Associates, September 2017). This was based on Census travel to work data, adjusted to account for the proposed car parking provision;
- Eastman Dental Hospital (planning ref: 2019/2879/P) – the mode share that was assumed in the Transport Assessment submitted in support of refurbishment and redevelopment of the Eastman Dental Hospital site at 256 Grays Inn Road to deliver a new world-leading dementia and neurology research centre, as well as additional academic floorspace for UCL; and
- Redevelopment of the former UCL Student Union and Royal Ear Hospital (UCL SU & REH) (planning ref: 2015/1281/P – The Transport Statement (dated March 2015) submitted in support of redevelopment of the former UCL Student Union and Royal Ear Hospital (UCLSU & REH) at 43-49 Huntley Street to accommodate a specialist head and neck facility included the results of travel mode surveys of both staff and patients at the former Royal National Throat, Nose and Ear Hospital (RNTNEH) and the former Eastman Dental Hospital (EDH). The surveys were undertaken in February 2013, and the results were used as the basis for the mode share assumed in the Transport Assessment for the scheme.

Table 5-21 Staff Mode Share – Comparison with Other Developments Nearby

Mode		Oriel	Ugly Brown Building	Eastman Dental Hospital	UCLSU & REH site
Highway	Car Driver	0%	0%	0%	1%
	Car Passenger	1%	1%	0%	0%
	Taxi	0%	<1%	0%	0%
	Motorcycle	2%	1%	0%	1%
Public Transport	Rail	32%	29%	27%	30%
	Underground	38%	38%	41%	42%
	Bus	14%	14%	18%	9%
Active Travel	Walk	8%	9%	8%	11%
	Cycle	5%	7%	6%	6%
Other	Other	0%	0%	0%	0%
Total		**100%**	**100%**	**100%**	**100%**

5.6.19 The table above demonstrates that the staff mode share assumed for the Proposed Development is consistent with that of other similar developments in the vicinity of the Site.

5.6.20 Patient mode share has also been benchmarked against the mode share assumed for the Eastman Dental Hospital and the results of the patient survey for UCLSU & REH, as identified in Table 5-22.

Table 5-22 Patient Mode Share – Comparison with Eastman Dental Hospital

Mode		Oriel	Eastman Dental Hospital	UCLSU & REH site
Highway	Car Driver	0%	10%	4%
	Car Passenger	1%	0%	6%
	Taxi	1%	0%	3%
	Motorcycle	2%	0%	0%
Public Transport	Rail	36%	9%	18%
	Underground	41%	24%	45%
	Bus	15%	18%	21%
Active Travel	Walk	3%	36%	3%
	Cycle	1%	3%	1%
Other	Other	0%	0%	0%
Total		**100%**	**100%**	**100%**

5.6.21 The Eastman Dental Hospital has assumed a relatively high proportion of walking trips, and also includes 10% car mode share. Mode share for other modes is therefore reduced proportionally. For the Proposed Development, the walk mode share of 3% is considered reasonable given the specialist nature of the facility and the wider catchment and is also consistent with the survey results for the UCL SU & REH.

Peak Hour Trip Generation – All Modes

5.6.22 The AM and PM peak hour forecast trip generation for staff, patients and combined are identified in Table 5-23 to Table 5-25.

Table 5-23 Proposed Development Trip Generation – Staff/Students – All Person

Mode		AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)		
		In	Out	Two-Way	In	Out	Two-Way
Highway	Car Driver	0	0	0	0	0	0
	Car Passenger	5	0	5	0	3	4
	Taxi	2	0	2	0	1	1
	Motorcycle	17	0	17	0	11	12
Public Transport	Rail	339	6	345	6	225	231
	Underground	392	7	399	7	261	268
	Bus	144	2	147	3	96	98
Active Travel	Walk	82	1	84	1	55	56
	Cycle	56	1	57	1	37	38
Other	Other	2	0	2	0	1	1
Total		**1,041**	**18**	**1,059**	**18**	**691**	**710**

Table 5-24 Proposed Development Trip Generation – Patients/Companions – All Person

Mode		AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)		
		In	Out	Two-Way	In	Out	Two-Way
Highway	Car Driver	0	0	0	0	0	0
	Car Passenger	5	1	7	2	7	9
	Taxi	7	2	9	3	10	13
	Motorcycle	9	2	10	3	12	15
Public Transport	Rail	189	43	232	75	260	335
	Underground	219	50	269	87	301	388
	Bus	81	18	99	32	111	143
Active Travel	Walk	16	4	20	6	22	28
	Cycle	5	1	7	2	7	9
Other	Other	0	0	0	0	0	0
	Total	**532**	**120**	**652**	**211**	**730**	**941**

Table 5-25 Proposed Development Trip Generation – Combined – All Person

Mode		AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)		
		In	Out	Two-Way	In	Out	Two-Way
Highway	Car Driver	0	0	0	0	0	0
	Car Passenger	11	1	12	2	11	13
	Taxi	10	2	11	3	12	15
	Motorcycle	26	2	28	4	23	27
Public Transport	Rail	528	49	577	81	485	566
	Underground	611	56	667	94	561	655
	Bus	225	21	246	35	207	241
Active Travel	Walk	98	5	103	8	76	84
	Cycle	61	2	64	3	45	48
Other	Other	2	0	2	0	1	1
Total		**1,572**	**138**	**1,710**	**229**	**1,421**	**1,650**

Net Trips

5.6.23 As identified above, the existing buildings on the Site which are to be demolished have trips associated with them. Based on the combined staff and patient forecast trip generation identified in Table 5-25 and the existing trip generation identified in Table 5-9, the net trips associated with the Proposed Development on the Site are identified in Table 5-26.

Table 5-26 Proposed Development Net Trip Generation

Mode		AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)		
		In	Out	Two-Way	In	Out	Two-Way
Highway	Car Driver	-24	-10	-33	-14	-10	-23
	Car Passenger	8	0	8	1	9	10
	Taxi	10	2	11	3	12	15
	Motorcycle	26	2	28	4	23	27
Public Transport	Rail	511	46	557	78	461	538
	Underground	592	53	645	90	533	623
	Bus	210	18	228	31	184	215
Active Travel	Walk	90	4	94	5	63	68
	Cycle	61	2	62	1	42	43
Other	Other	2	0	2	0	1	1
Total		**1,485**	**118**	**1,603**	**200**	**1,318**	**1,517**

5.7 Assessment of Impacts

Overview

5.7.1 This section of the report discusses the likely impact which the forecast trip generation associated with the Proposed Development will have on the local highway, public transport, walking and cycling networks.

5.7.2 To assess the change in trips on the London Underground, London Overground, rail and bus networks, the 2020 timetables (pre Covid-19 pandemic) have been utilised to determine the local frequencies, as identified in Section 3 of this report.

5.7.3 As the Proposed Development is relocating a relatively short distance (circa 3.5km) from the existing Moorfields at City Road site to St Pancras Hospital, it is considered that the trip generation and mode of travel for the Proposed Development will be similar to the existing, and therefore the trips already exist on the transport networks. In terms vehicle and bus trips, due to the relocation of the Moorfields at City Road site and change in local routes/services which are likely to be used, the forecast trips associated with the Proposed Development will be new trips on the highway and bus networks surrounding the St Pancras Hospital Site.

5.7.4 In terms of travel on the London Underground and rail networks, it is considered likely that staff and patients travelling to the existing Moorfields at City Road site by these modes would continue to travel by London Underground and rail to the Site on St Pancras Way. Therefore, consideration has been given to the redistribution of London Underground and rail trips.

Highway

5.7.5 The net change in traffic due to the Proposed Development being complete and operational is obtained by subtracting the existing flows at St Pancras Hospital set out in Table 5-7 from the Proposed Development daily flows shown in Table 5-14. The results are presented in Table 5-27.

Table 5-27 Proposed Development Net Change in Traffic Flows

Location	Direction	AADT		
		All Vehicles	HGVs	%HGV
St Pancras Way – north of Granary Street	Southbound	203	8	3.9%
St Pancras Way – south of Granary Street	Southbound	240	8	3.3%
Granary Street – west of service bay	Two-way	135	18	13.3%
Granary Street – east of service bay	Two-way	61	4	6.6%
Pancras Road – east of St Pancras Way	Two-way	131	4	3.1%

5.7.6 The impact of the net change in traffic flows due to the Proposed Development is shown in Table 5-28.

Table 5-28 Proposed Development Impact on Local Highway Network – 2026 Traffic Flows

Location	Direction	Baseline		Base + Dev		Impact			
		All Veh	HGV	All veh	HGV	All Veh	%	HGV	%
St Pancras Way – north of Granary St	Southbound	6,942	925	7,145	934	203	2.9%	8	0.9%
St Pancras Way – south of Granary St	Southbound	7,491	987	7,731	996	240	3.2%	8	0.8%
Granary Street – west of service bay	Two-way	2,813	442	2,948	460	135	4.8%	18	4.1%
Granary Street – east of service bay	Two-way	2,813	442	2,874	447	61	2.2%	4	0.9%
Pancras Road – east of St Pancras Way	Two-way	14,895	1,826	15,026	1,831	131	0.9%	4	0.2%

5.7.7 The Proposed Development is forecast to increase traffic on St Pancras Way by between 2.9%-3.2% in 2026. On the section of Granary Street between the junction with St Pancras Way and the proposed servicing bay for the Proposed Development there will be an increase in traffic of 4.8%, and to the east of the servicing bay the increase will be 2.2%. It is considered that this level of change would not have a material impact on the operation of the local highway network.

Bus

5.7.8 For the forecast bus trip generation, it has been assumed that the staff and patients accessing the Proposed Development would transfer their bus trips associated with the existing location on City Road onto the local bus services which are a short distance from the St Pancras Hospital Site. Therefore, the forecast bus trips associated with the Proposed Development are assumed to be new trips on the local bus network.

5.7.9 As identified previously in Section 3 of this report, there are various bus services within a short walk of the Site. Based on these bus service frequencies and the forecast net change in bus trips (Table 5-26), the impact of the Proposed Development on the local bus services is identified in Table 5-29, which summarises the change in number of bus passengers per service during the AM and PM peak hours. The distribution of bus passenger trips has been assessed based on the number of services in each peak hour on each route.

Table 5-29 Proposed Development Additional Bus Trips per Route per Peak Hour[7]

Bus Stop	Stop	Route	AM Peak Hour (08:00-09:00)			PM Peak Hour (17:00-18:00)		
			In	Out	Two-Way	In	Out	Two-Way
Royal College Street Crowndale Road	U	46	9	1	10	1	9	10
		214	11	1	12	1	9	10
Royal College Street Crowndale Road	N	214	11	1	12	1	9	10
Royal College Street Crowndale Road	P	46	11	1	12	2	11	12
Eversholt Street (Mornington Crescent Station)	F	168	15	1	16	2	14	16
		253	17	2	18	3	16	18
	G	168	15	1	16	2	14	16
		253	17	2	18	3	16	18
Hurdwick Place (Mornington Crescent Station)	A	24	11	1	12	2	11	12
		27	15	1	16	2	14	16
		29	19	2	20	3	18	20
		134	15	1	16	2	14	16
	C	24	11	1	12	2	11	12
		27	13	1	14	2	12	14
		29	19	2	20	3	18	20
		134	15	1	16	2	14	16

5.7.10 Table 5-29 identifies that between 9-19 additional inbound passengers are forecast per bus route within the AM peak hour and 9-19 outbound passengers in the PM peak hour. In addition, between one to two outbound bus passengers are forecast per bus route in the AM peak hour and two to four inbound bus passengers per bus route in the PM peak hour. This is an increase of approximately two bus passengers per bus in the AM and PM peak hours. Therefore, based on the forecast increase of one to two persons per bus it is not considered the Proposed Development would have a material impact on local bus services.

Rail

5.7.11 It is considered reasonable to assume that staff and patients accessing the existing Moorfields at City Road site would continue to use rail and the London Underground as their chosen method of travel to access the Site due to the relatively short distance between the two sites in respect of the local London Underground and rail networks.

[7] Due to rounding the two-way movements may not add up to the inbound and outbound movements

5.7.12 As identified in Section 3 of this report, Kings Cross Station and St Pancras Station are located close to the Site. Based on the rail service frequencies identified and the forecast net change in rail trips identified in Table 5-26, the forecast increase in rail passengers trips for Kings Cross Station and St Pancras Station are identified in Table 5-30. The forecast increase in rail trips has been distributed evenly across the rail services within the AM and PM peak hour.

Table 5-30 Proposed Development Forecast Rail Trips per Station and Service

	Station	Line	AM Peak Hour			PM Peak Hour		
			Inbound	Outbound	Two-Way	Inbound	Outbound	Two-Way
Rail	Kings Cross		72	7	78	12	67	79
	St Pancras		251	23	274	41	236	277
	Euston		98	9	108	11	80	91
London Overground	Camden Road	Stratford	40	4	44	7	42	49
		Clapham Junction	22	2	24	4	21	25
		Richmond	22	2	24	4	21	25
	Euston	Watford	22	2	24	3	17	20
Total Forecast Rail Trips			**528**	**49**	**577**	**81**	**485**	**566**
Average trips per service			**4**	**0**	**5**	**1**	**4**	**5**

5.7.13 Table 5-30 identifies 72 inbound passengers at Kings Cross and 251 at St Pancras Station with a total of 322 inbound movements across the two stations within the AM peak hour. In the PM Peak hour 67 outbound trips are forecast at Kings Cross and 236 at St Pancras Station and 304 across the two stations.

5.7.14 Based on the frequency of rail services in the AM and PM peak hours it is forecast there would be four inbound trips per train in the AM peak hour. In the PM peak hour one inbound and four outbound trips per train are forecast.

5.7.15 Therefore, considering the low number of forecast trips per train within the AM and PM peak hours and considering the rail trips are existing on the rail network it is not considered the Proposed Development would have a material impact on the local rail network.

London Underground

5.7.16 As identified in Section 3, the Site is a short distance from the London Underground at Kings Cross St Pancras Station, Mornington Crescent and Euston Station.

5.7.17 It is assumed that staff and patients who currently travel to the existing Moorfields at City Road site would continue to use the London Underground to access the Proposed Development on St Pancras Way. Therefore, consideration has been given to the likely redistribution of London Underground trips.

5.7.18 Table 5-31 identifies the forecast trip generation on the London Underground per service within the AM and PM peak hours. This is based on the forecast London Underground trip generation identified in Table 5-25 (combined staff and patients) for the Proposed Development and the frequencies identified in Table 5-31.

Table 5-31 Proposed Development Forecast London Underground Trips per Station and Service

Station	Line	Direction	AM Peak Hour			PM Peak Hour		
			Inbound	Outbound	Two-Way	Inbound	Outbound	Two-Way
Mornington Crescent	Northern	Northbound	29	3	31	5	28	33
		Southbound	33	3	36	5	29	34
Kings Cross St Pancras	Northern	Northbound	31	3	34	5	29	34
		Southbound	33	3	36	5	28	33
	Hammersmith & City	Eastbound	10	1	10	2	10	11
		Westbound	7	1	7	1	7	9
	Circle	Eastbound	26	2	28	4	23	27
		Westbound	25	2	27	4	24	28
	Piccadilly	Eastbound	31	3	34	5	29	34
		Westbound	33	3	36	5	29	34
	Metropolitan	Northbound	18	2	19	3	17	20
		Southbound	16	2	18	3	17	20
	Victoria	Northbound	49	5	54	7	44	51
		Southbound	49	5	54	7	44	51
Euston	Northern*	Northbound	60	6	65	10	57	67
		Southbound	65	6	71	10	57	67
	Victoria	Northbound	49	5	54	7	44	51
		Southbound	49	5	54	7	44	51
Total			**611**	**56**	**667**	**94**	**561**	**655**

5.7.19 At Kings Cross St Pancras Station, 327 inbound and 357 two-way trips within the AM peak hour are forecast, and 302 outbound and 353 two-way trips in the PM peak hour.

5.7.20 Euston Station is forecast to have 223 inbound trips and 244 two-way trips in the AM peak hour. In the PM peak hour 202 outbound trips and 236 two-way trips are forecast.

5.7.21 At Mornington Crescent Station 61 inbound trips and 67 two-way trips in the AM peak hour and 57 outbound and 67 two-way trips in the PM peak hour associated with Proposed Development are forecast.

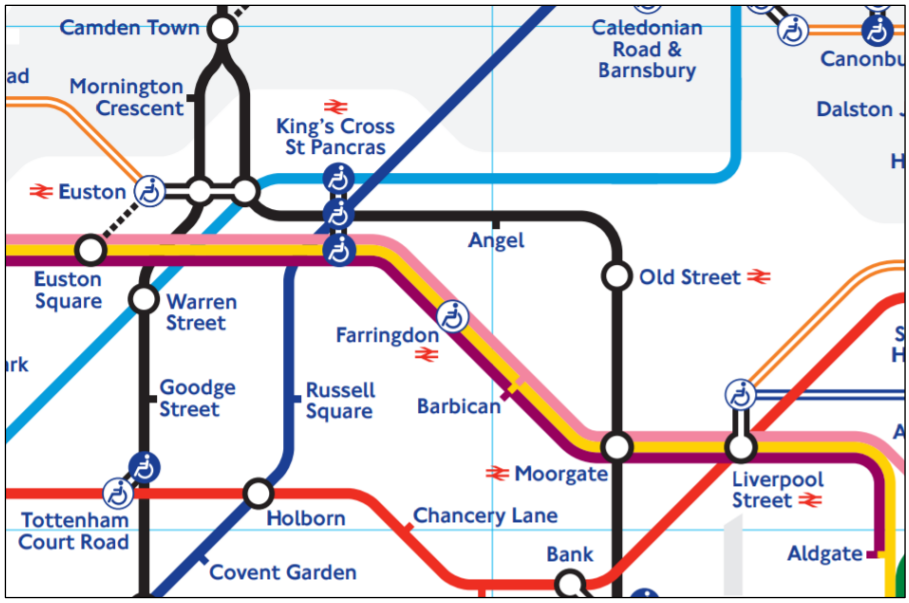
5.7.22 The table above identifies that due to the high number of London Underground services available in both the AM and PM peak hours that the Proposed

Development is forecast to generate one inbound trip per service in the AM peak hour and one outbound trip per service in the PM peak hour.

5.7.23 As previously discussed, it is considered that the forecast London Underground trips are already on the network. Therefore, these are not additional trips and the relocation to the St Pancras Hospital Site will result in redistribution of these trips once the Proposed Development is complete and operational.

5.7.24 An extract of the local London Underground network is shown in Figure 5-2.

Figure 5-2 London Underground Map Extract



Source: TfL

5.7.25 It is expected the staff and patients currently travelling to the existing Moorfields at City Road site northbound on the Northern Line via Old Street Station would continue their journey to Kings Cross St Pancras in the AM peak hour. Staff and patients currently travelling southbound on the Northern Line to Old Street Station will alight at Kings Cross St Pancras Station.

5.7.26 In addition to the redistribution of trips on the Northern Line, existing trips made to Old Street on the Hammersmith & City (pink), Circle (yellow) and Metropolitan (magenta) Lines, with changes at Moorgate or Kings Cross St Pancras, will no longer have to change. Trips currently made from Moorgate to Old Street on the Northern Line will redistribute onto these three lines between Moorgate and Kings Cross St Pancras.

5.7.27 Considering the redistribution of London Underground trips, overall it is considered that the Proposed Development would result in a reduction in southbound trips in the AM peak hour and a reduction in northbound trips in the PM peak hour made on the Northern Line between Kings Cross St Pancras and Old Street.

5.7.28 As discussed above, the Proposed Development would result in a re-distribution of existing London Underground trips and therefore would not have a material impact on the overall operation of the London Underground network.

5.8 Design Solutions / Mitigation

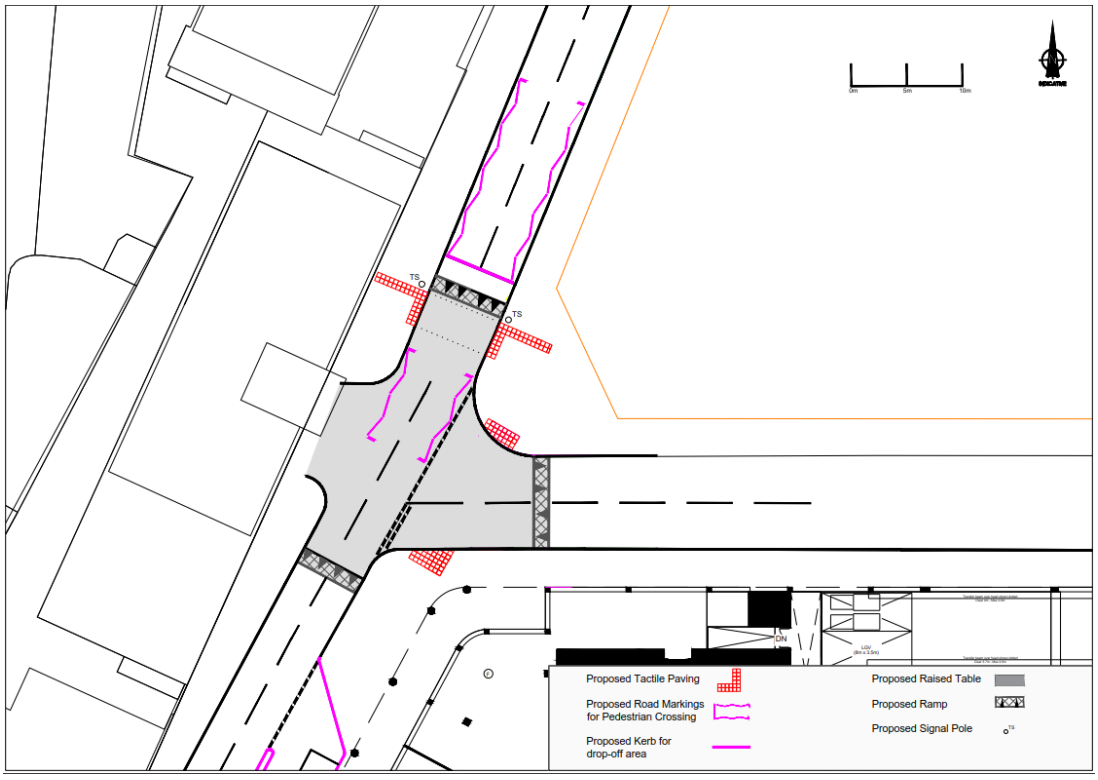
Traffic Calming on St Pancras Way

5.8.1 A raised table incorporating a new signal-controlled pedestrian crossing to replace the existing Zebra crossing on St Pancras Way is proposed at the junction with Granary Street as part of the Proposed Development. The raised table would also incorporate the access into the Travis Perkins yard on the western side of St Pancras Way.

5.8.2 A raised table in this location will reduce vehicle speeds on the approach to the junction and the proposed drop-off area serving the Proposed Development. The existing Zebra crossing would be replaced by a signal-controlled crossing incorporating the appropriate tactile paving. A signalised junction would provide an audible signal to aid people with visual impairments, providing a much safer crossing than the existing Zebra crossing which has no audible signal.

5.8.3 The layout of the proposed raised table is shown below in Figure 5-3.

Figure 5-3 St Pancras Way Traffic Calming Proposals



Last Half Mile Study

5.8.4 Oriel has commissioned Buro Happold to provide support and accessibility leadership for the 'Last Half Mile' project. This study relates to the journey and user experience between the public transport links and vehicular drop-off to the entrance to the proposed building.

5.8.5 The study focusses on the accessibility needs of patients and visitors with a range of disabilities and conditions, and in particular the challenges faced by people with a range of visual impairments, from the point of arrival by public transport to entering the proposed building.

5.8.6 A programme of engagement with stakeholders is planned and will explore a range of solutions which is likely to include, but not be limited to the following:

- Reducing or eliminating identified hazards on existing and proposed pedestrian routes;
- Integrated wayfinding and signage, physical wayfinding nodes and technological solutions, connectivity and links;
- Assisted travel systems by TfL;
- Potential introduction of a dedicated accessible shuttle service or bus route;
- Management solutions once the building is operational such as meet and greet arrangements, clear travel guidance, and communication of the support options available.

5.8.7 The Last Half Mile study is presented in Appendix A.

6. Additional Borough Analysis

6.1.1 During pre-application discussions LBC Highways requested that a Stage 1 Road Safety Audit (RSA) should be undertaken, incorporating all proposed changes to the highway including the St Pancras Way/Granary Street junction, loading bay access on Granary Street, drop-off/pick-up facility on St Pancras Way and the shared surface access on St Pancras Way to the south of the Proposed Development.

6.1.2 The Stage 1 RSA and the associated Designers' Response document is provided in Appendix B. No significant issues with the proposals were identified, and several of the recommended changes have been incorporated into the scheme.

7. Construction

7.1 Programme

7.1.1 Construction of the Proposed Development is estimated to take approximately three years and five months. Details of the anticipated construction programme are included in the Outline Construction Management Plan which is submitted in support of the planning application. The key dates and durations in the construction programme are summarised in Table 7-1.

Table 7-1 Construction Programme

Activity	Start Date	End Date	Duration
Site set up / mobilisation	01/02/22	22/04/22	12 weeks
Asbestos surveys	11/03/22	07/04/22	20 days
Asbestos removal works	08/04/22	12/05/22	25 days
Soft strip works	13/05/22	23/06/22	30 days
Scaffold installation	10/06/22	07/07/22	20 days
Demolition works (to ground level)	16/05/22	13/10/22	150 days
Slabs/basement/foundation removal	29/07/22	13/10/22	55 days
Enabling works	26/08/22	02/03/23	135 days
Basement and LG	17/02/23	23/11/23	200 days
Ground floor	29/09/23	23/11/23	40 days
Superstructure to L12	27/10/23	23/05/24	150 days
Roof	10/05/24	18/07/24	10 weeks
Internal basement plant rooms	02/02/24	16/01/25	50 weeks
Façade Level 2 to Roof	23/02/24	22/08/24	26 weeks
Stick system Level 0 to L1	09/08/24	17/10/24	10 weeks
BMUs/Roof Plant	28/06/24	14/11/24	20 weeks
Risers	28/06/24	23/01/25	30 weeks
Upper floor platforms	19/07/24	13/02/25	30 weeks
Internal floor fit out	19/04/24	17/04/25	52 weeks
Lifts	19/04/24	03/04/25	50 weeks
Ground floor fit out	08/11/24	08/05/25	26 weeks
Commissioning	06/12/24	03/07/25	30 weeks
Final handover	27/06/25	03/07/25	1 weeks
Project completion	04/07/25	04/07/25	1 day

7.2 Material Quantities

7.2.1 Material quantities have been estimated for each phase of the demolition and construction works as summarised in Table 7-2.

Table 7-2 Construction Phase – Estimated Quantities

Activity	Units	Quantity	Notes
Demolition	m^3	44,000	Estimated from the building areas multiplied by height
Earthworks	m^3	38,100	
Construction	m^3	196,000	Estimated from Stage 3 floor area (Gross External Area) multiplied by storey heights

7.3 Construction Traffic

7.3.1 Construction phase traffic flows for the Proposed Development have been estimated based on the following assumptions:

- Five and a half working days per week;
- Materials volume to building volume ratio of 50%;
- Average material density of 1.8 tonne (t) per m^3;
- Average load per vehicle for building material removal and deliveries of 10t; and
- Average payload for removal of excavated material of 20t.

7.3.2 The estimated vehicle movements for each phase of the demolition and construction works are outlined in Table 7-3 based on the construction programme set out in Table 7-1.

Demolition Phase

7.3.3 Removal of building material related to the demolition phase is anticipated to take place over a period of 33 weeks (182 days). Based on the assumptions above, this equates to an average of 22 loads per day.

Earthworks Phase

7.3.4 Removal of spoil generated during excavation works is anticipated to take place over a period of 31 weeks (170.5 days). Based on the assumptions above this equates to an average of 20 loads per day.

Construction Phase

7.3.5 The construction phase is anticipated to take approximately 115 weeks. Based on the assumptions above the average number of loads per days will be 28.

Peak Construction Traffic

7.3.6 As shown above, the construction phase is estimated to generate the highest average daily number of HGV movements at 28 per day. To allow for daily variations in vehicle movements an uplift of 35% has been applied to represent peak daily movements, and an additional 10% of LGV movements has been assumed to represent other deliveries. Based on these assumptions, peak

construction traffic is estimated to be 41 trips per day, comprising 38 HGV trips and 3 LGV trips.

7.4 Construction Traffic Impacts

7.4.1 The impact of the peak construction traffic on the local highway network is shown in Table 7-3.

Table 7-3 Proposed Development Impact on Local Highway Network – 2022 Traffic Flows

Location	Direction	Baseline		Base + Dev		Impact			
		All Veh	HGV	All Veh	HGV	All Veh	%	HGV	%
St Pancras Way – north of Granary St	Southbound	6,646	886	6,678	916	32	0.5%	29	3.3%
St Pancras Way – south of Granary St	Southbound	7,172	945	7,204	975	32	0.4%	29	3.1%
Granary Street – west of service bay	Two-way	2,693	424	2,693	424	0	0%	0	4.1%
Granary Street – east of service bay	Two-way	2,693	424	2,693	424	0	0%	0	0.9%
Pancras Road – east of St Pancras Way	Two-way	14,259	1,748	14,284	1,770	24	0.2%	22	0.2%

7.4.2 The construction phase will result in an increase of approximately 0.5%, and a 3.3% increase in HGV traffic on St Pancras Way. The proposed routing of construction traffic to and from the Site means there will be no impact on Granary Street.

7.5 Construction Logistics Plan

7.5.1 An Outline Construction Logistics Plan (CLP) has been prepared and sets out the measures that will be implemented to manage the vehicle activity during the construction phase and to minimise the impact of construction on the local community and transport networks. The Outline CLP has been prepared as a standalone document and is submitted as part of the planning application.

8. Conclusion

8.1.1 The key transport impacts arising from the Proposed Development and how these have been addressed are summarised in Table 8-1.

Table 8-1 Summary of Key Impacts

Category	Key Transport Impacts / Issues	Solutions / Mechanisms
Site and Surroundings	Access by car	No parking is proposed with the exception of 3 blue badge bays. However, a drop-off/pick-up facility is proposed on St Pancras Way to provide convenient access for patients who choose to travel by car. The drop-off area will be managed by staff from Moorfields to escort patients into the building. Patients and visitors will be provided with information on local car parks. Additional informal drop-off/pick-up space will also be available on Granary Street.
	Access by public transport	The Site is well located for access to public transport, with a PTAL rating of 6b. A separate 'Last Half Mile' study is being undertaken to establish what measures will be introduced to improve links between the local bus, London Underground and National Rail hubs (see Appendix A).
	Pedestrian access	Pedestrian routes to local transport hubs are generally of a good standard and have adequate crossing facilities for most users. The 'Last Half Mile' study will identify specific measures to improve these links for people with visual and other impairments (see Appendix A). The Proposed Development and the emerging scheme for the wider St Pancras Hospital site are being designed to enhance public access through the area and complement the proposals for the redevelopment of the Ugly Brown Building and the proposed new canal crossing between the 101 and 103 Camley Street developments.
	Cycle access	The site is well located for access to the local cycle networks and cycle docking stations. There is a cycle lane to the north of the Site on St Pancras Way and it is understood that LBC intends to extend this to the junction with Pancras Road. The proposed drop-off facility on St Pancras Way has been designed to accommodate a cycle lane on St Pancras way in the future.
	Servicing	A dedicated servicing bay is proposed on Granary Street. Use of the service area will be managed to ensure efficient operation with deliveries required to pre-book arrival slots as far as is practicable. Some spare capacity has been included to allow unscheduled deliveries to be accommodated and to provide some resilience. No servicing or deliveries will take place on street, with the exception of occasional oil deliveries for the emergency generators which will take place within the entrance to the servicing area. Oil deliveries will therefore be arranged outside normal working hours to minimise disruption to other servicing activity.
	Blue badge parking	Although the Proposed Development will be car free, three blue badge bays will be provided off-street for use by staff.
Active Travel Zone	Collision data	The PIA analysis did not identify a particular safety concern or trend on the local highway network.
	Routes to public transport nodes	The ATZ assessment did not identify any particular areas of concern on the routes to local bus stops and stations. The 'Last Half Mile' study will identify specific measures to improve these routes for people with visual and other impairments (see Appendix A).

Category	Key Transport Impacts / Issues	Solutions / Mechanisms
London-Wide Network	Local highway network	The Proposed Development is forecast to increase traffic flows on St Pancras Way by approximately 3% when operational. The additional traffic is related to patients arriving by car and being dropped off and picked up from the proposed drop-off area on St Pancras Way. The 'Last Half Mile' study will identify measures to improve links to public transport hubs for people with visual and other impairments, to encourage the use of public transport over private car and taxi (see Appendix A). The effectiveness of these measures will be monitored through the Travel Plan.
	Pedestrians	The 'Last Half Mile' study will identify specific measures to improve pedestrian links between the Site and local bus stops and stations for people with visual and other impairments (see Appendix A).
	Cycling	An increase of 64 cycle trips is forecast in the AM peak, and 45 in the PM peak. The proposed drop-off facility on St Pancras Way has been designed to accommodate a cycle lane on St Pancras Way in the future, and this would complete the link between the Proposed Development and the existing cycle network.
	Public transport - bus	An increase of approximately two bus passengers per local bus service is forecast in the AM and PM peak hour. It is not considered the Proposed Development would have a material impact on the operation of local bus services.
	Public transport – National Rail	It is forecast there would be four inbound and one outbound trips per service within the AM peak hour, and one inbound and four outbound trips per service in the PM peak hour. It is not considered the Proposed Development would have a material impact on the operation local rail network.
	Public transport – London Underground	It is forecast that there would be no net increase in the number of trips made by London Underground, and that the impact of the Proposed Development would be limited to re-distribution of existing trips on the Northern Line to the Hammersmith & City, Circle, Piccadilly, Metropolitan and Victoria Lines. The main impact would be additional trips on the Northern Line between City Road and St Pancras in the AM peak, with a reduction in the opposite direction, and the reverse in the PM peak, with an increase between St Pancras and City Road and a reduction between City Road and St Pancras.
Construction	Impact on local community	A detailed CMP will be submitted to LBC for approval prior to the start of construction. This will set out the measures to be taken to minimise the impact of demolition and construction on the local community and ensure a safe environment, within and around the Site.
	Vehicle routeing	The detailed CMP will identify construction vehicle routes in line with the London Lorry Control Scheme (LLCS), and measures to ensure these routes are adhered to. It is envisaged that all construction traffic will access the site via St Pancras Way.
	Hours of operation	It is anticipated that works will be undertaken from 8am-6pm on Monday to Friday, 8am to 1pm on Saturday, with no work on Sundays and Bank Holidays. Working outside these hours will not be permitted without prior written consent from LBC.

8.1.2 The Site benefits from access to a diverse range of public transport facilities within a short walk of the Site and enjoys a PTAL rating of 6b representing the highest level of accessibility. TfL cycle networks are also accessible from the Site, and LBC has proposals to construct a new cycle lane on St Pancras Way which will provide a direct connection from the Site to the local cycle network.

8.1.3 The Proposed Development is therefore extremely well placed to allow people travelling to and from the Site to make active travel choices and to enable ease of access via a range of public transport options. The Site's central London location also means that there are a host of facilities and services available within a short distance for staff and patients.

8.1.4 The Proposed Development and the emerging scheme for the wider St Pancras Hospital site are being designed to enhance public access through the area and complement the proposals for the redevelopment of the Ugly Brown Building and the proposed new canal crossing between the 101 and 103 Camley Street developments. New public spaces will be created, and planting will contribute to greening of the street environment, which is identified as a key priority in the emerging Canalside to Camley Street Draft SPD.

8.1.5 Active frontages are provided throughout the development, creating natural surveillance around the building. Exterior lighting aims to create attractive, accessible urban spaces that welcome visitors to the building and activate the area at night. More active overlooking of the street at different times of the day is also identified as a key priority in the emerging Canalside to Camley Street Draft SPD.

8.1.6 In keeping with encouraging staff, students and patients and visitors to the Site to use active modes of transport, the level of cycle parking provision has been made in accessible locations in accordance with the draft new London Plan requirements and car parking is limited to three spaces reserved for blue badge holders.

8.1.7 Delivery and servicing facilities have been a key consideration in the development of the scheme. Considerable effort has been spent ensuring that the servicing and delivery strategy is appropriately integrated into the scheme, accommodating appropriate numbers and types of service vehicle. All servicing and delivery activity will take place off-street within the servicing area on Granary Street and will therefore be segregated from the public realm.

8.1.8 A raised table incorporating a new signal-controlled pedestrian crossing to replace the existing Zebra crossing on St Pancras Way is proposed at the junction with Granary Street as part of the Proposed Development. This will reduce vehicle speeds on the approach to the junction and the proposed drop-off area. The existing Zebra crossing would be replaced by a signal-controlled crossing incorporating the appropriate tactile paving, to provide an audible signal to aid people with visual impairments.

8.1.9 The impact of the Proposed Development has been considered in the context of Healthy Streets indicators and has not been found to have any significant adverse impacts and the trip generation impacts have been shown to be capable of being accommodated on the transport networks without adverse impact.

8.1.10 Accordingly, it is concluded that the Proposed Development maximises the opportunities of the Site's central London location without adverse transport impacts and that the planning application for the Proposed Development should not be refused on transport grounds.

9. References

Ref. 1. Transport for London (June 2019), Healthy Streets Transport Assessment Guidance. Accessed September 2020. https://tfl.gov.uk/info-for/urban-planning-and-construction/transport-assessment-guide/transport-assessments

Ref. 2. https://tfl.gov.uk/corporate/about-tfl/how-we-work/planning-for-the-future/healthy-streets
Accessed September 2020.

Ref. 3. https://tfl.gov.uk/corporate/safety-and-security/road-safety/vision-zero-for-london
Accessed September 2020.

Ref. 4. Mayor's Transport Strategy (2018). Accessed September 2020. https://www.london.gov.uk/what-we-do/transport/our-vision-transport/mayors-transport-strategy-2018

Ref. 5. London Borough of Camden (March 2019). Camden Planning Guidance: Transport. Accessed September 2020. https://www.camden.gov.uk/documents/20142/4823269/Transport+CPG+March+2019.pdf/6755f92a-5059-b1df-9c12-ffc02366c581

Ref. 6. Transport for London, Travel in London Reports. Accessed September 2020. https://tfl.gov.uk/corporate/publications-and-reports/travel-in-london-reports

Ref. 7. Transport for London (2017). Transport Classification of Londoners. Accessed September 2020. http://content.tfl.gov.uk/transport-classification-of-londoners-presenting-the-segments.pdf#:~:text=The%20Transport%20Classification%20of%20Londoners%20%28TCoL%29%20is%20a,make%2C%20and%20the%20motivations%20for%20making%20those%20decisions

Ref. 8. Greater London Authority (2019); The Intend to Publish London Plan. Accessed September 2020. https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/intend-publish-london-plan-2019

Ref. 9. London Borough of Camden (July 2020), Canalside to Camley Street Draft Supplementary Planning Document. Accessed September 2020. https://www.camden.gov.uk/documents/20142/0/200713_Camley+Street+Draft+SPD+%285%29.pdf/8083775a-3944-2966-4355-96b3200a2e71?t=1594991824440

Ref. 10. London Borough of Camden (2017); Camden Local Plan. Accessed September 2020. https://www.camden.gov.uk/documents/20142/4820180/Local+Plan.pdf/ce6e992a-91f9-3a60-720c-70290fab78a6

Ref. 11. Greater London Authority (2016) The Spatial Development Strategy for London (Consolidated With Alterations Since 2011).

Appendix A - The Last Half Mile Study

BURO HAPPOLD

Annex to the Transport Assessment

Project Oriel Centre for advancing eye health
Subject The Last Half Mile
Project no 0046801
Date 15 October 2020

Revision	Description	Issued by	Date	Approved (signature)
02	Annex for the Transport Assessment by Aecom	JAHewitt	15.10.20	

Contents

1 Introduction

Buro Happold has been engaged by the Oriel partners, (Moorfields Eye Hospital NHS Foundation Trust, Moorfields Eye Charity, and UCL Institute of Ophthalmology) for client-side support as their accessibility lead on stakeholder engagement for the "last half mile" project. The "last half mile" initiative refers specifically to the journey and user experience between the public transport links or vehicular drop and entry to the new Oriel centre for advancing eye health.

This work is being carried out by Buro Happold's inclusive design team and is focused on the accessibility needs of many patients and visitors with a range of disabilities and age-related conditions, and especially the challenges for people with a range of visual impairments from the point of arrival by public transport to entering the Oriel centre itself. Many patients have some residual vision with varying degrees of independence on a day-to-day basis, often coupled with age-related impairments to hearing and mobility. The objective of the Last Half Mile project is, therefore, to ensure that independence and equality of service is maximised as far as practicable on the various routes and travel mode options.

This work builds on earlier stakeholder engagement by the project team, including transport reviews by the Design Team led by Aecom and their assessment against the Transport for London (TfL) Healthy Streets for London index, and earlier feedback arising from the 2019 Moorfields NHS service public consultation. The Buro Happold reviews and engagement will build upon this early work and dovetail and support other stakeholder initiatives by the Oriel team and the London Communications Agency in accessible communication with disabled and older people, and people with visual impairments.

The proposed location on the Kings Cross hospital site offers excellent connectivity with public transport links from many parts of the country which is very helpful to patients travelling from outside London and achieves an excellent PTAL rating. However, from an accessibility perspective, this increased connectivity also provides multiple potential pedestrian routes for the last part of the journey, some of which are quite complex, and many will be too complicated or long for some people to walk. This makes the provision of clear guidance, wayfinding aids and additional accessible forms of localised transport essential.

2 Stakeholder engagement

A critical component of Buro Happold's role is leading on an inclusive and accessible consultative engagement process with patients, staff and partner organisations which will incorporate a co-design approach to encourage participative development of potential solutions.

Building users will include many people with sight conditions, from people with no residual vision, to people who are partially sighted in one or both eyes. With older age profile of most patients, there is a high likelihood of other disabilities such as impaired mobility, dexterity, or hearing, cognitive impairment or difference, as well as a broad spectrum of users with different neuro profiles including people with autism.

When arranging stakeholder events, significant regard has been given to the COVID-19 Pandemic and the associated higher risk for many stakeholders due to their age and health profiles. Some of the physical conditions which affect many older users, such as diabetes or respiratory conditions, significantly increase vulnerability to the disease.

People will arrive by a variety of travel modes, for example:

- Overground rail
- Underground rail
- Bus
- Private vehicle/car
- Taxi
- Cycle

People may be pedestrians, within which there will be a variety of abilities, including wheelchair users, people with buggies and users of mobility aids and mobility scooters.

In many cases, a combination of at least two modes of travel will be required to reach the site. There is no intended public parking on the site so the review has looked at nearby public car parks that may potentially be used.

As part of the upcoming engagement programme for the last half mile, stakeholders will be invited to provide input and explore and validate suggestions for addressing accessibility challenges and easing connectivity for various transport modes e.g. rail, bus, taxi, and cycle routes.

The range to be explored is likely to include, but is not restricted to, the following areas:

1. Reducing or eliminating identified hazards on existing and proposed pedestrian routes
2. Integrated wayfinding and signage, physical wayfinding nodes and technological solutions, connectivity, and links.
3. Information within the stations and assisted travel systems (ATS) by TfL
4. Potential introduction of a dedicated accessible shuttle service or bus route.
5. Management solutions once the building is operational such as meet and greet arrangements, clear travel guidance, and communication of the support options available.

Figure 2-1 – Elements of an Inclusive Journey

2.1 Reducing hazards

During the Summer of 2020, Buro Happold undertook accessibility reviews of all routes from nearby overground and underground rail services, two bus routes and local public car parks to establish the challenges that may need to be addressed. The reviews are informed by an experienced inclusive design team, with several members having over twenty years' experience each in the field of access and inclusion and, for the last two years, representing the Macular Society on the British Standards Institute committee for accessible and inclusive environments. All members have wide experience on inclusive public realm, including direct work experience in planning for two London boroughs, as well as building control and people movement. The reviews undertaken have considered policy, legislation, regulations, and standards. During the reviews, consideration of Oriel's

duties as a public sector organisation under the Equality Act 2010 has been made as well as due regard to accessibility related content in a number of policy and guidance documents, including:

- The London Plan and Intend to Publish London Plan
- GLA supplementary guidance: Accessible London (2014)
- London Borough of Camden Walking Accessibility Action plan 2019
- London Borough of Camden Streetscape Design Manual
- TfL's Design Standards for Walking and Streetscape
- TfL's Planning for Walking Toolkit
- British Standard BS8300-1: 2018 – Design of an accessible and inclusive built environment, External environment
- The London Cycling Design Standards - Transport for London
- Inclusive Mobility - A Guide to Best Practice on Access to the Pedestrian and Transport Infrastructure – Department for Transport
- Manual for the Streets – Department for Transport
- Inclusive Streets – Guide dogs for the Blind Association
- Guidance on the use of Tactile Paving Surfaces (DfT, Guide Dogs, RNIB, 1999)

Routes from the following rail connections were reviewed:

1. Kings Cross/St Pancras
2. Euston
3. Mornington Crescent
4. Camden Town
5. Camden Road

We look forward to discussing our detailed findings with London Borough of Camden soon and to furthering our discussions with TfL. In the meantime, the findings of these pan-disability accessibility surveys are already informing our exploratory discussions with both Oriel's stakeholder advisory groups and individual patients with sight loss. Our discussions are broad ranging and encompass all the following features and their contribution to achieving accessible and inclusive routes to the centre:

- Clarity of the routes
- Surface finishes
- Kerbs and crossings
- Positioning and alignment of street furniture
- Seating and rest points
- Wayfinding including signage and orientation cues

- Developing technologies
- Transition to wayfinding within the Centre

2.2 Integrated Wayfinding

Oriel has an ambition to provide a comprehensive and robust wayfinding strategy and the partners are committed to the use of evolving technology. Buro Happold has undertaken some initial research into wayfinding technology currently available and stakeholders will be consulted about the use of technology of various types plus other assistive measures.

There is no single solution that will meet a diverse range of needs. For example, in addition to different types of Apps linked to the built environment, there are also support apps whereby the camera on a smartphone can be utilised by someone remotely to give a live audio explanation of the surrounding environment. Although this type of service (AIRA being one example) will be warmly welcomed by some visually impaired people, it cannot be the only solution as not everyone has a smart phone or is willing to use it publicly for fear of theft. We therefore envisage a range of technological solutions being explored and developed.

Established signage and information systems will also be considered and discussed, including the Borough's planned continued roll out of the legible London totems. Consideration will also be given to how tactile surfaces may be used, both in the traditional manner at crossing points, but also potentially to introduce a tactile equivalent of the current visual green line which is used by many between Old Street station and the current eye hospital. Exploring such innovation is likely to be important to enable people to easily navigate a more complex array of routes to the site.

2.3 Assisted Transport Systems

It is understand that TfL has reviewed and are improving the Assisted Transport Systems (ATS) for disabled and older people, which include TfL's Dial-a-Ride and the Taxicard scheme which is operated by London Councils and TfL's travel mentoring service and intend to find solutions that will easily integrate with this. The "Roadmap4 London" initiative hopes to establish a world-leading service provision by 2021 with much easier access and a single integrated service. The five key objectives of the ATS are given below and are well aligned to the objectives of the last half mile work:

1. Safe and reliable journeys
2. Convenience
3. Flexibility and choice
4. Integration
5. Innovation

The timetable for this work will be some way forward by the time the new Oriel Centre is opened, as can be seen from implementation plan extracted below from the Mayor's Transport Strategy 2018, (please see the link for a larger image).

Regular liaison throughout the development and up to building opening will ensure that Oriel's proposed solutions remain aligned with the Mayor's Transport Strategy, Transport for London plans, and the London Borough of Camden's policy developments during this period.

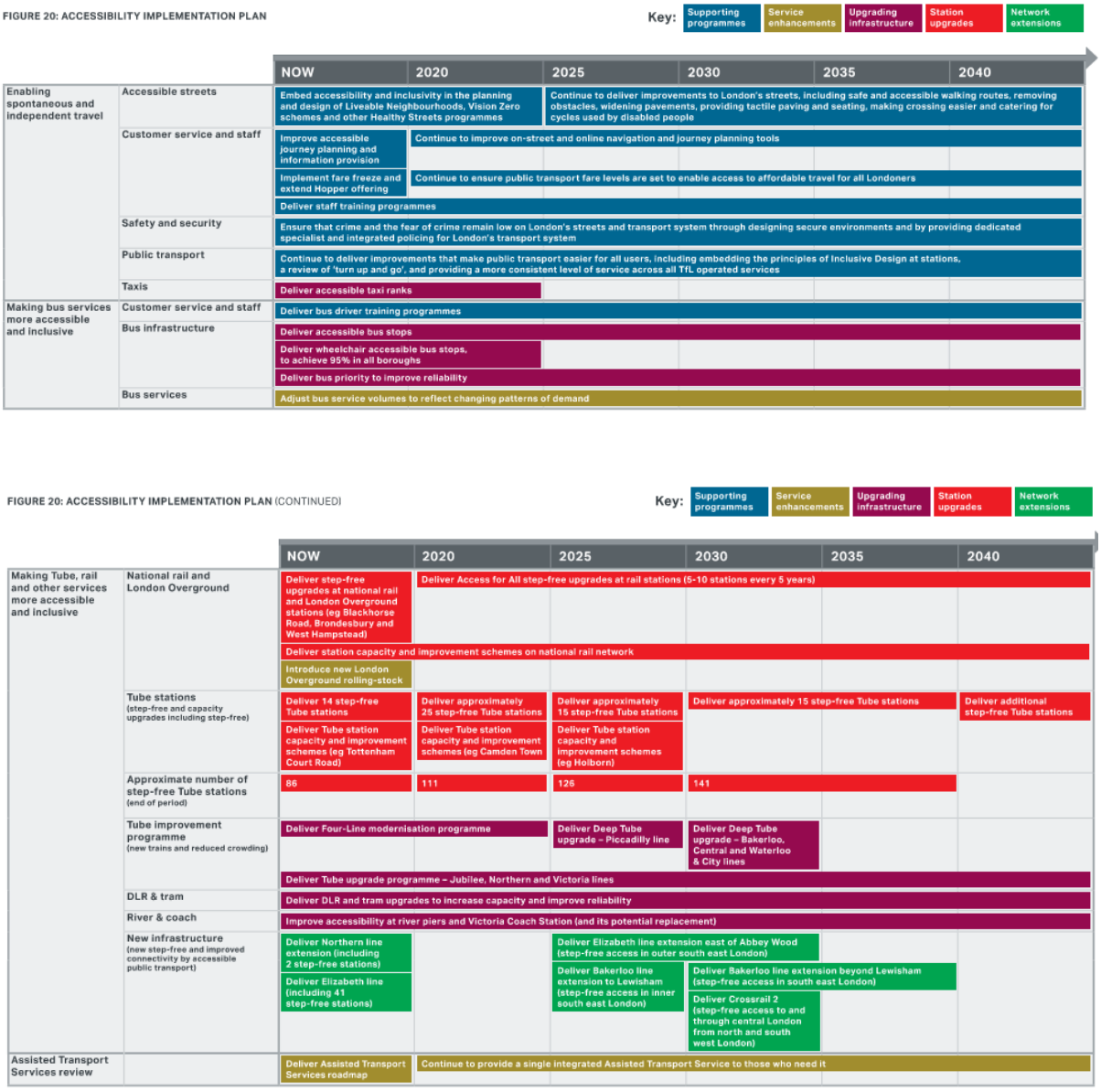


Figure 2-2 – Mayor's Transport Strategy – Accessibility Implementation Plan

https://www.london.gov.uk/what-we-do/transport/our-vision-transport/mayors-transport-strategy-2018

2.4 Bus or Shuttle Service Options

There is currently no existing bus route serving the proposed site adequately for many people with visual or mobility impairments (due to complexity and/or distance) so, in partnership with TfL, consideration will be given to whether any existing bus routes and stops can be extended and/or diverted.

Buro Happold's inclusive design team have also started to explore options for a private shuttle bus service which might achieve door to door transport from the stations within a one-way ring route that would enable people to alight and board at the same location. Initial discussions suggest that such a service would be possible without imposing any parking or storage of buses out of hours in or near the site.

2.5 Management Arrangements

The Friends of Moorfields charity provides an excellent volunteer service to support patients during this visit to Moorfields, as well as providing extensive information regarding specific eye conditions and care, community support groups, and research. This service will continue in the new centre.

The effective on-site management of arrivals and departures forms an essential part of the customer journey for a safe and comfortable door to door experience. We will therefore be looking at all potential elements of meet and greet, escorting to and from vehicles and management of drop off and pick up as an integral part of the Access Plan.

3 Programme for Stakeholder Engagement

A stakeholder engagement plan has been developed and provides for a wide range of stakeholder events with patients, staff, and partner organisations such as sight loss charities. This consultation process commenced with one-to-one discussions with key individual patients in the summer alongside some group discussions and will continue throughout the Autumn, beyond the planning submission to London Borough of Camden. Due to the COVID-19 pandemic, both opportunities and the desire for travel have been curtailed, but the virtual options used have been very successful. It is intended to run face to face events in key locations as soon as healthy and safety risk assessments have been approved, bearing in mind the increased vulnerability of the patient profile and due diligence around protecting them from unnecessary risk of infection.

The longstanding Oriel Advisory Group membership has been refreshed and this invaluable group will continue to meet throughout the development period. This group is for service users (primarily patients, ex-patients, and carers) and provides an excellent resource of people with lived experience of sight loss, who are able to contribute invaluable reviews and ideas.

A new advisory group has also been established partner organisations such as leading local and national sight loss charities. This gives Oriel extended reach to individuals with a wide range of visual impairments across the country, some of whom will inevitably be future patients for the new Oriel facility.

There are a number of existing staff groups including some specifically representing strands of protected characteristics under the Equality Act. Engagement is ongoing with these groups regarding various elements of design, including the solutions for the last half mile.

The COVID-19 Pandemic has made some customary avenues for engagement difficult, but every effort will be made to introduce face-to-face events as soon as it is practicable and safe to do so. The calendar for stakeholder events is being actively developed by Buro Happold, LCA, and the Oriel Partners. Some events will be focused on the last half mile, many others are project wide.

London Borough of Camden is always welcome at public events, as observers to any advisory group meeting, or specific engagement around the last half mile can easily be arranged. The following table shows our recent and planned stakeholder events to explore the "last half mile" experience:

Date	Stakeholder Type
11th August	Oriel Advisory Group (Patients)
18th August	Public Event
24th August	Public Event
3rd September	Seeability
5th October	Moorability (Moorfields Staff network)
5th October	London Vision
6th October	Oriel Partners Advisory Group (new)
6th October	Oriel Advisory Group (Patients)
13th October	TfL
22nd October	RNIB
29th October	Royal Society for Blind Children
2nd November	Macular Society
Date tbc	Blind Parents Group
Date tbc	Bucks Vision
Date tbc	Young Persons Forum for Richard Desmond's Children's Eye Centre (RDCEC) Moorfields
Date tbc	Action on Hearing Loss
Date tbc	New College Worcester (national residential school and college for young people who are blind or vision impaired)
Date tbc	Visionary
December	Oriel Partners Advisory Group
December	Oriel Advisory Group (Patients)

4 Next Steps

This document is intended to demonstrate the level of commitment to ensuring that the last half mile is very carefully considered in consultation and collaboration with stakeholders.

Ultimately, the stakeholder engagement on the last half mile will lead to robust recommendations that can be considered by the Oriel partners and their Design Team to inform the Accessibility Plan for the site. This will be further developed in discussion and agreement with wider stakeholders including Camden and Islington NHS Foundation Trust and their potential development partner, Kings Cross Central Limited Partnership (KCCLP) for the site wide landscaping strategy and London Borough of Camden and TfL for the routes beyond the site boundary.

Appendix B - Road Safety Audit and associated Designers' Response

Oriel

Stage 1 Road Safety Audit

Moorfields Eye Hospital NHS Foundation Trust
UCL Institute of Ophthalmology
Moorfields Eye Charity

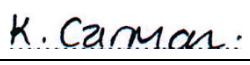
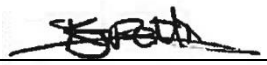
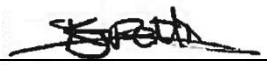
Project Number: 60588325

MAYOR OF LONDON

Transport for London

Moorfields Eye Hospital NHS
Foundation Trust

Quality information

Prepared by	Checked by	Approved by
		
Kathryn Carman Engineer, AECOM	Kimberley Pettingill Principal Transport Planner, AECOM	Kimberley Pettingill Principal Transport Planner, AECOM

Revision History

Revision	Revision date	Details	Authorised	Name	Position
-	03/09/20	Final	KJP	Kimberley Pettingill	Principal Transport Planner

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Contents

1 INTRODUCTION

1.1 COMMISSION

This report results from a Stage 1 Road Safety Audit (RSA) carried out for the carriageway alterations associated with the proposed Oriel development which includes the relocation of Moorfields at City Road & UCL Institute of Ophthalmology to a new site at St Pancras Hospital, in the London Borough of Camden.

The Audit was undertaken by AECOM's Road Safety Audit Team in accordance with the Instruction to Proceed and the brief received from the AECOM St. Albans office on 14th August 2020. The Audit took place during August and September 2020 and comprised an examination of the documents provided as listed in Appendix A, plus a visit to the site of the proposed scheme.

The visit to the site of the proposed scheme was made on the 19th August 2020 between the hours of 10:15 and 11:30. During the site visit the weather was raining and the road surface was wet.

1.2 TERMS OF REFERENCE

The Terms of Reference of this Audit are as described in TfL Procedure SQA-0170 dated May 2014. The Audit Team has examined and reported only on the road safety implications of the scheme as presented and how it impacts on all road users and has not examined or verified the compliance of the designs to any other criteria. However, to clearly explain a safety problem or the recommendation to resolve a problem the Audit Team may, on occasion, have referred to a design standard without touching on technical audit. An absence of comments relating to specific road users / modes in Section 3 of this report does not imply that they have not been considered; instead the Audit Team feels they are not adversely affected by the proposed changes.

This Safety Audit is not intended to identify pre-existing hazards which remain unchanged due to the proposals; hence they will not be raised in Section 3 of this report as they fall outside the remit of Road Safety Audit in general as specified in the procedure SQA-0170 dated May 2014. Safety issues identified during the Audit and site visit that are considered to be outside the Terms of Reference, but which the Audit Team wishes to draw to the attention of the Client Organisation, are set out in Section 4 of this report.

Nothing in this Audit should be regarded as a direct instruction to include or remove a measure from within the scheme. Responsibility for designing the scheme lies with the Designer and as such the Audit Team accepts no design responsibility for any changes made to the scheme as a result of this Audit.

In accordance with TfL Procedure SQA-0170 dated May 2014, this Audit has a maximum shelf life of 2 years. If the scheme does not progress to the next stage in its development within this period, then the scheme should be re-audited.

Unless general to the scheme, all comments and recommendations are referenced to the detailed design drawings and the locations have been indicated on the plan located in Appendix B.

It is the responsibility of the Design Organisation to complete the Designer's Response section of this Audit report. Where applicable and necessary it is the

responsibility of the Client Organisation to complete the Client comment section of this Audit report. Signatures from both the Design Organisation and Client Organisation must be added within Section 5 of this Audit report. A copy of which must be returned to the Audit Team.

1.3 MAIN PARTIES TO THE AUDIT

Client Organisation	Moorfields Eye Hospital NHS Foundation Trust UCL Institute of Ophthalmology Moorfields Eye Charity
Client contact details:	Kieran McDaid
k.mcdaid@nhs.net	
Design Organisation	AECOM Limited
Design contact details:	Sean O'Connell
	sean.oconnell@aecom.com
Audit Team	AECOM Limited
Audit Team Leader CoC	Kimberley Pettingill BSc (Hons) MCIHT MSoRSA
Audit Team Member	Kathryn Carman MEng (Hons) GMICE MSoRSA

1.4 PURPOSE OF THE SCHEME

The proposals that form the scope of this audit include measures associated with the relocation of Moorfields at City Road & UCL Institute of Ophthalmology to a new site at St Pancras Hospital.

The elements of the scheme that form the scope of this audit are as follows:

- A raised table at the junction of the A5202 St Pancras Way/ Granary Street with kerb line/ lining amendments to suit accommodate the narrower St Pancras Way carriageway and inset drop-off/ pick-up facility (see below).
- A signalised crossing on the A5202 St Pancras Way, located to the north of Granary Street.
- An uncontrolled crossing on Granary Street, at the junction with the A5202 St Pancras Way.
- The provision of an inset ambulance (non-emergency) and taxi drop-off/ pick-up bay to the east of the A5202 St Pancras Way carriageway, with a 0.75m central reservation between the drop-off bay and the main St Pancras Way carriageway. The A5202 St Pancras Way will be reduced to 5.5m in width to facilitate the proposed drop-off/ pick-up bay.
- The footway along the eastern side of the A5202 St Pancras Way will continue behind the proposed drop-off bay.
- The existing site access onto St Pancras Way, to the south of the proposed drop-off/ pick-up bay, is to be retained as a shared surface route, providing access for

servicing vehicles and to blue badge parking bays. It is understood that access will be controlled via bollards or similar.

- An access to a delivery/ servicing area, providing four servicing bays, from Granary Street on the northern boundary of the site.

Further details of the proposals for the scheme which forms the scope of this audit are shown on drawings held in Appendix A.

The A5202 St Pancras Way, in the vicinity of the scheme, is a 20mph one-way two-lane carriageway, it runs north to south along the western side of the Site. There are single yellow lines between Granary Street and Pancras Road. Seven on-street parking bays are located to the north of the St Pancras Way / Granary Street junction with restrictions Monday to Friday between 0830 and 1730 and a maximum stay of two hours. There are pedestrian footways in place along both sides of the carriageway along the length of the scheme and the A5202 St Pancras Way is street lit.

Granary Street, in the vicinity of the scheme, is a 20mph single carriageway road, that provides a single running lane eastbound and westbound along the northern side of the development site. There are single yellow lines along the entire carriageway except for five on-street parking bays located near the junction to Camley Street on the eastern side of the road. The on-street parking is pay and display, Monday to Friday, between 0830 - 1830 with a maximum stay of four hours. There are pedestrian footways in place along both sides of the carriageway and Granary Street is street lit.

Residential streets surrounding the development site are within a Controlled Parking Zone (CA – G/F), with parking restricted to permit holders only Monday to Friday from 8:30am to 6:30pm. The scheme is located outside the current Congestion Charge Zone/Ultra Low Emissions Zone (ULEZ). However, the intended extension of the ULEZ zone will cover the whole of Camden from October 2021, requiring drivers of certain vehicles to pay a daily fee to drive to the Site.

1.5 SPECIAL CONSIDERATIONS

None.

2 ITEMS RAISED IN PREVIOUS ROAD SAFETY AUDITS

The Audit Team is not aware that any other Audits have previously been carried out on the proposals.

3 ITEMS RAISED AT THIS STAGE 1 ROAD SAFETY AUDIT

This section should be read in conjunction with Section 1 of this report.

3.1 GENERAL

3.1.1 PROBLEM

Location: St Pancras Way.

Summary: Unclear if all vehicles will be able to safely negotiate the scheme.

Given the reduced carriageway width of approximately 5.5m on St Pancras Way due to the proposed drop-off/ pick-up bay, it is unclear whether all road users will be able to safely negotiate the proposed scheme without overrunning the kerblines or colliding with other road users. This is of specific concern on St Pancras Way and at the St Pancras Way/ Granary Street junction when vehicles are emerging from the various accesses that are located on the western side of St Pancras Way. This concern is further exacerbated by the on-street parking that is currently along the western side of St Pancras Way, between Granary Street and Pancras Road (see also Problem/ Recommendation 3.10).

RECOMMENDATION

It is recommended that swept path analysis is undertaken to ensure all required vehicles can safely access/ egress all access and junctions with the narrowed section of St Pancras Way.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.2 JUNCTIONS

3.2.1 PROBLEM

Location: Delivery/ Servicing yard access junction on Granary Street.

Summary: Obscured junction visibility splays may result in collisions between road users.

A vehicle access in association with the delivery and servicing yard will be provided on Granary Street, approximately 50m northeast of the junction with St Pancras Way. However, it is unclear if the existing boundary wall and trees/ vegetation located along the south-eastern side of Granary Street will be retained. If retained, the boundary wall and the existing trees/ vegetation along Granary Street will block the junction visibility splay to the northeast and southwest for drivers emerging from the proposed delivery and servicing yard. If adequate junction visibility splays are not provided or are blocked, this may result in collisions between emerging vehicles and mainline traffic.

RECOMMENDATION

It is recommended that the existing boundary wall and trees are removed such that they do not block visibility splays for the delivery and servicing access; as the design progresses it should be ensured that all junction visibility splays remain clear of obstruction.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.2.2 PROBLEM

Location: Southern development access junction on St Pancras Way.

Summary: Limited detail provided with regards to proposed junction/ access, insufficient provision may result in collisions occurring

Limited details of the southern development access on St Pancras Way have been provided to the audit team for review, and it is therefore unclear if all vehicles will safely be able to negotiate the junction and how the scheme proposals will impact users both along St Pancras Way and emerging from the development site. The audit team cannot therefore comment on the southern development access junction proposals with regards to road safety.

RECOMMENDATION

It is recommended that swept path analysis is undertaken to ensure that all required vehicles can safely negotiate the junction, and details of the proposed junction/ access type and proposed crossing provisions are provided to the audit team for review.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.2.3 PROBLEM

Location: Southern development access junction on St Pancras Way.

Summary: Vehicles using drop-off/ pick-up layby will be in junction visibility splay; may result in collisions occurring at the access

From the plans provided, it appears that vehicles using the pick-up/ drop off facility on St Pancras Way will block the visibility splay to the right for those exiting the southern access. Blocked/ obscured visibility splays may result in collisions occurring between emerging and mainline traffic.

RECOMMENDATION

It is recommended that the layby is amended to ensure that adequate and suitable junction visibility splay can be achieved.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.3 TRAFFIC SIGNALS

3.3.1 PROBLEM

Location: Signal-controlled crossing on St Pancras Way, north of Granary Street.

Summary: Potential poor visibility of stop line due to raised table may result in collisions between crossing users and road users.

The stop line for the signal-controlled crossing on St Pancras Way, located to the north of Granary Street, is proposed to the north of the proposed raised table. The location of the stop line in close proximity to the start of the raised table may lead to the stop line being inconspicuous to approaching southbound drivers and may result drivers continuing past the stop line and colliding with crossing users.

RECOMMENDATION

It is recommended that the start of the raised table and the stop line for the signal-controlled crossing are relocated further away from one another.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.4 PEDESTRIANS

No comments.

3.5 PEDESTRIAN CROSSING FACILITIES

3.5.1 PROBLEM

Location: Signal-controlled crossing on St Pancras Way, north of Granary Street.

Summary: Arrangement of crossing facilities on the western side of St Pancras Way may result in collisions between crossing users and road users.

The arrangement of the signal-controlled crossing tactile paving layout and the location of the signals and push button unit on the western side of St Pancras Way is not applicable for a one-way road. The arrangement of the crossing facilities at this location may result in visually impaired crossing users becoming confused, being unable to find the push button unit and stepping out into the carriageway where they may be struck by passing vehicles.

RECOMMENDATION

It is recommended that the arrangement of the tactile paving and the location of the signals and push button unit at this location are amended to suit a one-way road (i.e. tactile paving stem and signals/ push button unit should face oncoming traffic).

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.5.2 PROBLEM

Location: St Pancras Way, North of Granary Street.

Summary: Length of tactile paving stem may result in visually impaired users struggling to negotiate the crossing.

The length of the tactile paving stem located on the eastern side of St Pancras Way does not extend to the back of the footway, or for a distance of 5m. This may result in visually impaired struggling to locate the crossing or struggling to negotiate the crossing safely.

RECOMMENDATION

It is recommended that the tactile paving stem is extended to the back of the footway or to a distance 5m from the crossing.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.5.3 PROBLEM

Location: Southern development access junction on St Pancras Way.

Summary: Absence of tactile paving may result in collisions between pedestrians and road users.

There is an existing uncontrolled pedestrian crossing across the proposed southern development access, and it is unclear from the information provided if this crossing will be retained as part of the scheme. If adequate crossing facilities, inclusive of dropped kerbs and tactile paving, are not provided at this location, this may lead to pedestrians attempting to cross the access junction when drivers are not anticipating them to do so and/ or visually impaired pedestrians struggling to negotiate the scheme, resulting in collisions between pedestrians and road users.

RECOMMENDATION

It is recommended that adequate crossing facilities are provided on either side of the southern access junction, inclusive of dropped kerbs and tactile paving.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.6 REFUGES

No comments.

3.7 CYCLE FACILITIES

No comments.

3.8 MOTORCYCLE ISSUES

No comments.

3.9 BUS FACILITIES

No comments.

3.10 LOADING / PARKING

3.10.1 PROBLEM

Location: St Pancras Way.

Summary: On-street parking on reduced width carriageway may result in side-swipe collisions occurring and driver frustration

As part of the scheme proposals, the width of the carriageway will be reduced to approximately 5.5m on St Pancras Way. Whilst on site, it was noted that on-street parking currently occurs along the western side of St Pancras Way, to the south of Granary Street. The on-street parking, combined with a reduced carriageway width at this location, will not leave adequate carriageway space for two lanes of traffic resulting in one lane being blocked and larger vehicles struggling to safely negotiate St Pancras Way. This may result in side-swipe collisions occurring or collisions occurring due to driver frustration. This is of particular concern given that St Pancras Way appears to be well used by cyclists who may become ‘squeezed’ along this section resulting in collisions/ injury.

RECOMMENDATION

It is recommended that parking restrictions along St Pancras Way, between Granary Street and Pancras Road, are implemented/ enforced to prevent parking at this location and ensure all road users can safely negotiate St Pancras Way.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

End of list of problems identified and recommendations offered in this Stage 1 Road Safety Audit

4 ISSUES IDENTIFIED DURING THE STAGE 1 ROAD SAFETY AUDIT THAT ARE OUTSIDE THE TERMS OF REFERENCE

Safety issues identified during the audit and site inspection that are considered to be outside the Terms of Reference, but which the Audit Team wishes to draw to the attention of the Client Organisation, are set out in this section. It is to be understood that, in raising these issues, the Audit Team in no way warrants that a full review of the highway environment has been undertaken beyond that necessary to undertake the Audit as commissioned.

ISSUE

Location: East of proposed delivery/ servicing access junction on Granary Street.

Reason considered to be outside the Terms of Reference: Considered to be outside the scope of the audit.

From the information provided, there may be a designated taxi/ private care drop-off/ pick-up provision to be located on the southern side of Granary Street, to the east of the proposed delivery/ servicing access junction however from the plans provided it is unclear exactly where this will be positioned. If this designated drop-off/ pick-up area is implemented, it should be ensured that this provision is located a sufficient distance away from the proposed delivery/ servicing access junction, such that parked/ waiting vehicles do not encroach into or block the visibility splays for the delivery/ servicing access junction. If adequate junction visibility splays are not provided or are blocked, this may result in collisions between emerging vehicles and mainline traffic. It should also be ensured that it is located a sufficient distance away from the sharp bend to the east, to ensure that users of the drop-off/ pick-up facility have adequate visibility to vehicles travelling around the bend.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

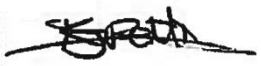
5 SIGNATURES AND SIGN-OFF

5.1 AUDIT TEAM STATEMENT

We certify that we have examined the drawings and documents listed (and contained) in **Appendix A** to this Safety Audit report. The Road Safety Audit has been carried out in accordance with TfL Procedure SQA-0170 dated May 2014, with the sole purpose of identifying any feature that could be removed or modified in order to improve the safety of the measures. The problems identified have been noted in this report together with associated suggestions for safety improvements that we recommend should be studied for implementation.

No one on the Audit Team has been involved with the design of the measures.

AUDIT TEAM LEADER:

Name: Kimberley Pettingill Signed: 

BSc (Hons) MCIHT MSoRSA CoC

Position: Principal Transport Planner Date: 3rd September 2020

Organisation: AECOM

Address: AECOM, Saxon House, 27 Duke Street, Chelmsford, Essex

Contact: kimberley.pettingill@aecom.com

AUDIT TEAM MEMBER:

Name: Kathryn Carman Signed: K. Carman.

MEng (Hons) GMICE MSoRSA

Position: Principal Consultant Date: 3rd September 2020

Organisation: AECOM

Address: AECOM, Saxon House, 27 Duke Street, Chelmsford, Essex

Contact: kathryn.carman@aecom.com

5.2 DESIGN TEAM STATEMENT

In accordance with SQA-0170 dated May 2014, I certify that I have reviewed the items raised in this Stage 1 Safety Audit report. I have given due consideration to each issue raised and have stated my proposed course of action for each in this report. I seek the Client Organisation's endorsement of my proposals.

Name: Sean O'Connell

Position: Principal Transport Planner

Organisation: AECOM St Albans

Signed: **Dated:**

5.3 CLIENT ORGANISATION STATEMENT

I accept these proposals by the Design Organisation.

Name: Kieran McDaid

Position: Director of Capital Estates and Major Projects

Organisation: Moorfields Eye Hospital NHS Foundation Trust

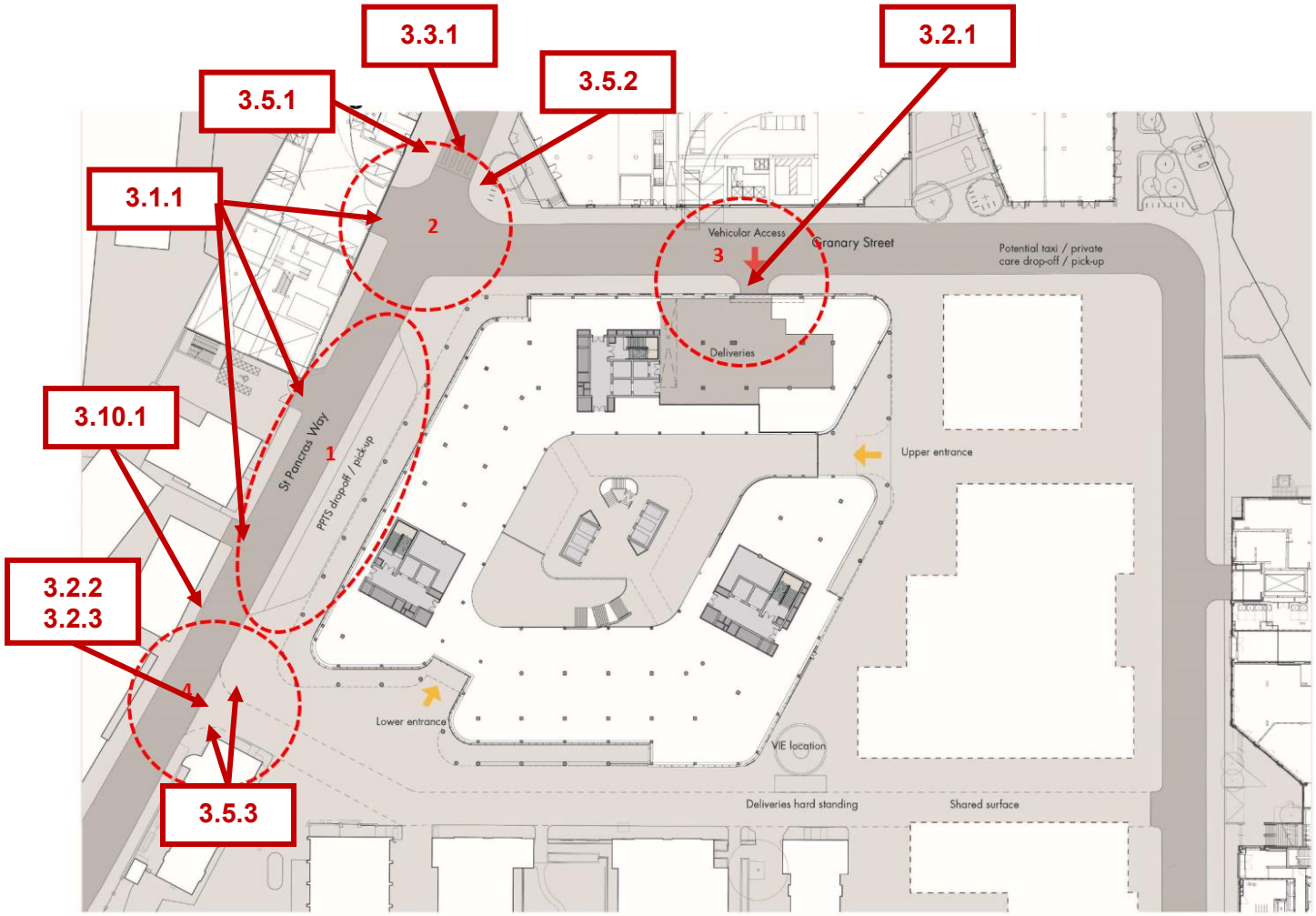
Signed: **Dated:**

Appendix A Documents Forming the Audit Brief

Drawing Number	Drawing Title
-	Ambulance and taxi drop off bay - Option 1 Variation 4
004	Pedestrian Crossing Option B
004	RSA Site Plan
-	Transport Assessment Scoping Note
-	ATC analysis
-	TA ATZ chapter

Documents	Details (where appropriate)
☒ Safety Audit Brief	Dated 12/08/2020. Received 14/08/2020
☒ Site Location Plan	
☐ Traffic signal details	
☐ TfL signal safety checklist	
☐ Departures from standard	
☐ Previous Road Safety Audits	
☐ Previous Designer Responses	
☐ Collision data	
☐ Collision plot	
☐ Traffic flow / modelling data	
☐ Pedestrian flow / modelling data	
☐ Speed survey data	
☐ Other documents	TASR dated 28/07/2020

Appendix B Location of Problems



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Stage 1 Road Safety Audit: Designers' Response

Moorfields Eye Hospital NHS Foundation Trust
UCL Institute of Ophthalmology
Moorfields Eye Charity

Project Number: 60588325

Quality information

Prepared by	Checked by	Approved by
Chis Callaway Senior Transport Planner	Sean O'Connell Principal	Ralph Stapleton Associate Director

Revision History

Revision	Revision date	Details	Authorised	Name	Position
v1	25/09/2020	Issued for comments	SOC	Sean O'Connell	Principal
v2	06/10/2020	Updated based on comments	SOC	Sean O'Connell	Principal

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Table of Contents

1. Introduction

1.1 Overview

1.1.1 This report has been prepared to address comments from a Stage 1 Road Safety Audit (RSA) that was carried out for the carriageway alterations associated with the planning application for a new facility that would allow the existing Moorfields at City Road and University College London (UCL) Institute of Ophthalmology (IoO) services to relocate from the existing site on City Road into a single building at the existing St. Pancras Hospital site (hereafter referred to as the 'Proposed Development'). The Proposed Development is known as 'Oriel' and will be located between St. Pancras Way and Granary Street, within the north-west part of the existing St. Pancras Hospital site in the London Borough of Camden (LBC) (hereafter referred to as the 'Site').

1.1.2 The Stage 1 RSA highlights a number of issues, or 'problems', together with recommendations to resolve each issue. This report sets out the designers' response to the issues raised and the Design Team Statement.

1.1.3 The Audit was undertaken by AECOM's Road Safety Audit Team in accordance with the Instruction to Proceed and the brief received from the AECOM St. Albans office on 14th August 2020. The Audit took place during August and September 2020 and comprised an examination of the documents provided as listed in Appendix A in the Stage 1 RSA report, and a Site visit to the location of the proposed scheme. The visit to the site was made on the 19th August 2020 between the hours of 10:15 and 11:30. During the site visit the weather was raining and the road surface was wet.

1.1.4 The members of the RSA team are identified below:

- Audit Team Leader: Kimberley Pettingill BSc (Hons) MCIHT MSoRSA CoC
- Audit Team Member: Kathryn Carman MEng (Hons) GMICE MSoRSA

1.2 Proposed Scheme

1.2.1 The elements of the proposed scheme that form the scope of the Stage 1 RSA and designers' response are as follows:

- A proposed raised table at the A5202 St Pancras Way/ Granary Street junction. This includes a new signalised pedestrian crossing on St Pancras Way located to the north of Granary Street, replacing the existing Zebra crossing;
- An uncontrolled crossing on Granary Street, at the junction with the A5202 St Pancras Way, including tactile paving;
- Kerb line amendments to accommodate narrowing of St Pancras Way carriageway adjacent to the proposed inset drop-off/ pick-up facility;
- The provision of an inset Non-emergency Patient Transport (NEPT) and car/taxi drop-off/ pick-up bay to the east of the A5202 St Pancras Way carriageway, with a 0.75m central reservation between the drop-off bay and the main St Pancras Way carriageway. The A5202 St Pancras Way will be reduced to 5.5m in width to facilitate the proposed drop-off/ pick-up bay;
- The footway along the eastern side of the A5202 St Pancras Way will continue behind the proposed drop-off bay;
- The existing site access onto St Pancras Way, to the south of the proposed drop-off/ pick-up bay, is to be retained as a shared surface route, providing access for servicing vehicles and to blue badge parking bays. It is understood that access will be controlled via bollards or similar;
- An access to a delivery/ servicing area, providing four servicing bays, from Granary Street on the northern boundary of the site.

2. Items Resulting from Stage 1 RSA

2.1 Overview

2.1.1 This section of the report identifies the description and recommendation for each problem identified in the Stage 1 RSA and the designer's response.

2.2 General

Problem 3.1.1

- Location: St Pancras Way.
- Summary: Unclear if all vehicles will be able to safely negotiate the scheme.

2.2.1 Given the reduced carriageway width of approximately 5.5m on St Pancras Way due to the proposed drop-off/ pick-up bay, it is unclear whether all road users will be able to safely negotiate the proposed scheme without overrunning the kerblines or colliding with other road users. This is of specific concern on St Pancras Way and at the St Pancras Way/ Granary Street junction when vehicles are emerging from the various accesses that are located on the western side of St Pancras Way. This concern is further exacerbated by the on-street parking that is currently along the western side of St Pancras Way, between Granary Street and Pancras Road (see also Problem/ Recommendation 3.10.1).

Recommendation

2.2.2 It is recommended that swept path analysis is undertaken to ensure all required vehicles can safely access/ egress all access and junctions with the narrowed section of St Pancras Way.

Designers' Response

2.2.3 The proposed reduced carriageway width along St Pancras Way is for approximately 60m between the entry and egress of the proposed drop-off/pick-up bay.

2.2.4 Swept path analysis has been undertaken for the entry and egress of the proposed drop-off/pick-up bay which demonstrates a 7.5t panel van, which was used to represent the NEPT vehicle, can enter and egress the drop-off/pick-up bay without encroaching into the adjacent lane.

2.2.5 Regarding other accesses along St Pancras Way, the proposed drop-off/pick-up bay will be opposite two accesses on the western carriageway of St Pancras Way. Therefore, the recommendation is noted and will be addressed at the detailed design stage.

2.3 Junctions

Problem 3.2.1

- **Location:** Delivery/ Servicing yard access junction on Granary Street.
- **Summary:** Obscured junction visibility splays may result in collisions between road users.

2.3.1 A vehicle access in association with the delivery and servicing yard will be provided on Granary Street, approximately 50m northeast of the junction with St Pancras Way. However, it is unclear if the existing boundary wall and trees/ vegetation located along the south-eastern side of Granary Street will be retained. If retained, the boundary wall and the existing trees/ vegetation along Granary Street will block the junction visibility splay to the northeast and southwest for drivers emerging from the proposed delivery and servicing yard. If adequate junction visibility splays are not provided or are blocked, this may result in collisions between emerging vehicles and mainline traffic.

Recommendation

2.3.2 It is recommended that the existing boundary wall and trees are removed such that they do not block visibility splays for the delivery and servicing access; as the design progresses it should be ensured that all junction visibility splays remain clear of obstruction.

Designers' Response

2.3.3 The existing wall and trees/vegetation are to be removed with no obstructions to be within the appropriate visibility splays.

Problem 3.2.2

- **Location:** Southern development access junction on St Pancras Way.
- **Summary:** Limited detail provided with regards to proposed junction/ access, insufficient provision may result in collisions occurring.

2.3.4 Limited details of the southern development access on St Pancras Way have been provided to the audit team for review, and it is therefore unclear if all vehicles will safely be able to negotiate the junction and how the scheme proposals will impact users both along St Pancras Way and emerging from the development site. The audit team cannot therefore comment on the southern development access junction proposals with regards to road safety.

Recommendation

2.3.5 It is recommended that swept path analysis is undertaken to ensure that all required vehicles can safely negotiate the junction, and details of the proposed junction/ access type and proposed crossing provisions are provided to the audit team for review. See also Problem 3.5.3.

Designers' Response

2.3.6 The recommendation is noted and will be addressed at the detailed design stage. The access route is intended to be a shared surface, with vehicle access restricted to occasional servicing vehicles and blue badge holders only. It will be one way from west to east, and route for the vehicles will be 4m wide.

Problem 3.2.3

- **Location:** Southern development access junction on St Pancras Way.
- **Summary:** Vehicles using drop-off/ pick-up layby will be in junction visibility splay; may result in collisions occurring at the access.

2.3.7 From the plans provided, it appears that vehicles using the pick-up/ drop off facility on St Pancras Way will block the visibility splay to the right for those exiting the southern access. Blocked/ obscured visibility splays may result in collisions occurring between emerging and mainline traffic.

Recommendation

2.3.8 It is recommended that the layby is amended to ensure that adequate and suitable junction visibility splay can be achieved.

Designers' Response

2.3.9 The route running east-west to the south of the development is intended to be a shared surface, with vehicle access restricted to occasional servicing vehicles and blue badge holders only. Access will be restricted by lockable bollards. Vehicles will travel one way west to east. This would remove the requirement for visibility splays for egress from the southern access road onto St Pancras Way.

2.4 Traffic Signals

Problem 3.3.1

- **Location:** Signal-controlled crossing on St Pancras Way, north of Granary Street.
- **Summary:** Potential poor visibility of stop line due to raised table may result in collisions between crossing users and road users.

2.4.1 The stop line for the signal-controlled crossing on St Pancras Way, located to the north of Granary Street, is proposed to the north of the proposed raised table. The location of the stop line in close proximity to the start of the raised table may lead to the stop line being inconspicuous to approaching southbound drivers and may result drivers continuing past the stop line and colliding with crossing users.

Recommendation

2.4.2 It is recommended that the start of the raised table and the stop line for the signal-controlled crossing are relocated further away from one another.

Designers' Response

2.4.3 The stopline has been relocated further away from the raised table, with a distance of 2m between the stopline and the beginning of the ramp onto the raised table.

2.5 Pedestrian Crossing Facilities

Problem 3.5.1

- **Location:** Signal-controlled crossing on St Pancras Way, north of Granary Street.
- **Summary:** Arrangement of crossing facilities on the western side of St Pancras Way may result in collisions between crossing users and road users.

2.5.1 The arrangement of the signal-controlled crossing tactile paving layout and the location of the signals and push button unit on the western side of St Pancras Way is not applicable for a one-way road. The arrangement of the crossing facilities at this location may result in visually impaired crossing users becoming confused, being unable to find the push button unit and stepping out into the carriageway where they may be struck by passing vehicles.

Recommendation

2.5.2 It is recommended that the arrangement of the tactile paving and the location of the signals and push button unit at this location are amended to suit a one-way road (i.e. tactile paving stem and signals/ push button unit should face oncoming traffic).

Designers' Response

2.5.3 The tactile paving and the location of the signals and push button unit on the western St Pancras Way carriageway at the proposed signalised pedestrian crossing have been updated as recommended.

Problem 3.5.2

- **Location:** St Pancras Way, North of Granary Street.
- **Summary:** Length of tactile paving stem may result in visually impaired users struggling to negotiate the crossing.

2.5.4 The length of the tactile paving stem located on the eastern side of St Pancras Way does not extend to the back of the footway, or for a distance of 5m. This may result in visually impaired struggling to locate the crossing or struggling to negotiate the crossing safely.

Recommendation

2.5.5 It is recommended that the tactile paving stem is extended to the back of the footway or to a distance 5m from the crossing.

Designers' Response

2.5.6 The tactile paving stem has been extended to a distance of 5m as recommended.

Problem 3.5.3

- **Location:** Southern development access junction on St Pancras Way.
- **Summary:** Absence of tactile paving may result in collisions between pedestrians and road users.

2.5.7 There is an existing uncontrolled pedestrian crossing across the proposed southern development access, and it is unclear from the information provided if this crossing will be retained as part of the scheme. If adequate crossing facilities, inclusive of dropped kerbs and tactile paving, are not provided at this location, this may lead to pedestrians attempting to cross the access junction when drivers are not anticipating them to do so and/ or visually impaired pedestrians struggling to negotiate the scheme, resulting in collisions between pedestrians and road users. See also Problem 3.2.2.

Recommendation

2.5.8 It is recommended that adequate crossing facilities are provided on either side of the southern access junction, inclusive of dropped kerbs and tactile paving.

Designers' Response

2.5.9 The recommendation is noted and will be addressed as part of the detailed design stage. It should be noted that access will be controlled by lockable bollards and vehicle movements will be minimal, restricted to blue badge holders (3 bays) and occasional servicing vehicles.

2.6 Loading / Parking

Problem 3.10.1

- **Location:** St Pancras Way.
- **Summary:** On-street parking on reduced width carriageway may result in side-swipe collisions occurring and driver frustration

2.6.1 As part of the scheme proposals, the width of the carriageway will be reduced to approximately 5.5m on St Pancras Way. Whilst on site, it was noted that on-street parking currently occurs along the western side of St Pancras Way, to the south of Granary Street. The on-street parking, combined with a reduced carriageway width at this location, will not leave adequate carriageway space for two lanes of traffic resulting in one lane being blocked and larger vehicles struggling to safely negotiate St Pancras Way. This may result in side-swipe collisions occurring or collisions occurring due to driver frustration. This is of particular concern given that St Pancras Way appears to be well used by cyclists who may become 'squeezed' along this section resulting in collisions/ injury.

Recommendation

2.6.2 It is recommended that parking restrictions along St Pancras Way, between Granary Street and Pancras Road, are implemented/ enforced to prevent parking at this location and ensure all road users can safely negotiate St Pancras Way.

Designers' Response

2.6.3 The recommendation is noted and will be addressed as part of the detailed design stage which will consider potential changes to waiting and parking restrictions along the section of St Pancras Way adjacent to the pick-up/drop-off bay.

3. Issues identified during Stage 1 RSA Outside the Terms of Reference

3.1 Overview

3.1.1 Safety issues identified during the audit and site inspection that are considered to be outside the Terms of Reference, but which the Audit Team wishes to draw to the attention of the Client Organisation, are set out in this section. It is to be understood that, in raising these issues, the Audit Team in no way warrants that a full review of the highway environment has been undertaken beyond that necessary to undertake the Audit as commissioned.

3.2 Issue

- **Location:** East of proposed delivery/ servicing access junction on Granary Street.
- **Reason considered to be outside the Terms of Reference:** Considered to be outside the scope of the audit.

3.2.1 From the information provided, there may be a designated taxi/ private care drop-off/ pick-up provision to be located on the southern side of Granary Street, to the east of the proposed delivery/ servicing access junction however from the plans provided it is unclear exactly where this will be positioned. If this designated drop-off/ pick-up area is implemented, it should be ensured that this provision is located a sufficient distance away from the proposed delivery/ servicing access junction, such that parked/ waiting vehicles do not encroach into or block the visibility splays for the delivery/ servicing access junction. If adequate junction visibility splays are not provided or are blocked, this may result in collisions between emerging vehicles and mainline traffic. It should also be ensured that it is located a sufficient distance away from the sharp bend to the east, to ensure that users of the drop-off/ pick-up facility have adequate visibility to vehicles travelling around the bend.

Designers' Response

3.2.2 The scheme design has now been developed further and no formal taxi drop-off/pick-up facility is to be provided on Granary Street.

4. Design Team Statement

4.1.1 We certify that we have reviewed the comments raised from the Safety Audit Report and provided comments for safety improvements.

Design Team Leader

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Position:	Principal	Date: 13/10/2020
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Appendix C – Moorfields Eye Hospital Survey Results

Moorfields Eye Hospital Survey Results

Discipline
Transportation

Project name
Moorfields Eye Hospital

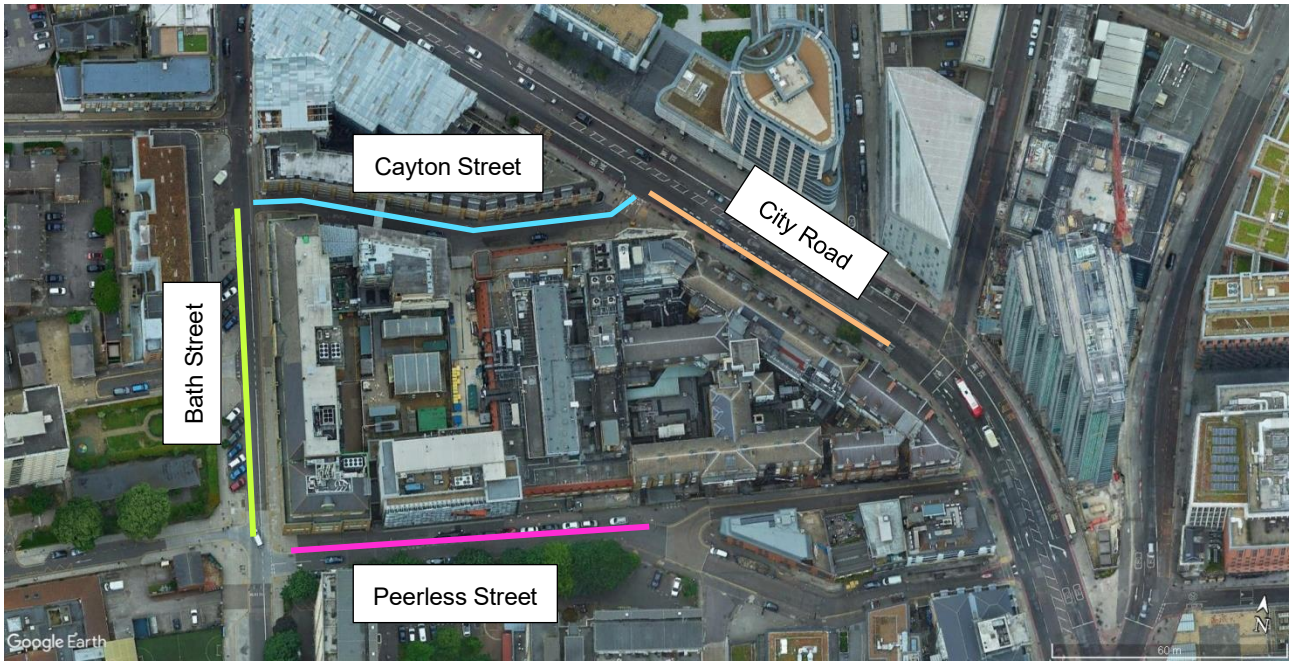
1. Introduction

AECOM undertook a survey at the Moorfields Eye Hospital at City Road and the University College of London Institute of Ophthalmology (UCL IoO) to quantify the existing levels of drop-off / pick-up activity and servicing vehicle volumes. The survey was carried out from 07:00 to 19:00 on Thursday 23rd May 2019. The weather for the duration of the survey was dry, sunny and warm.

It should be noted that this survey is very much a spot survey to provide initial data for the purposes of informing early stages of scheme development. Longer duration surveys would be required to capture daily variation at the two buildings and confirm trends indicated by this survey.

Figure 1.1 shows the site within the context of the local road network.

Figure 1.1: Road Locations

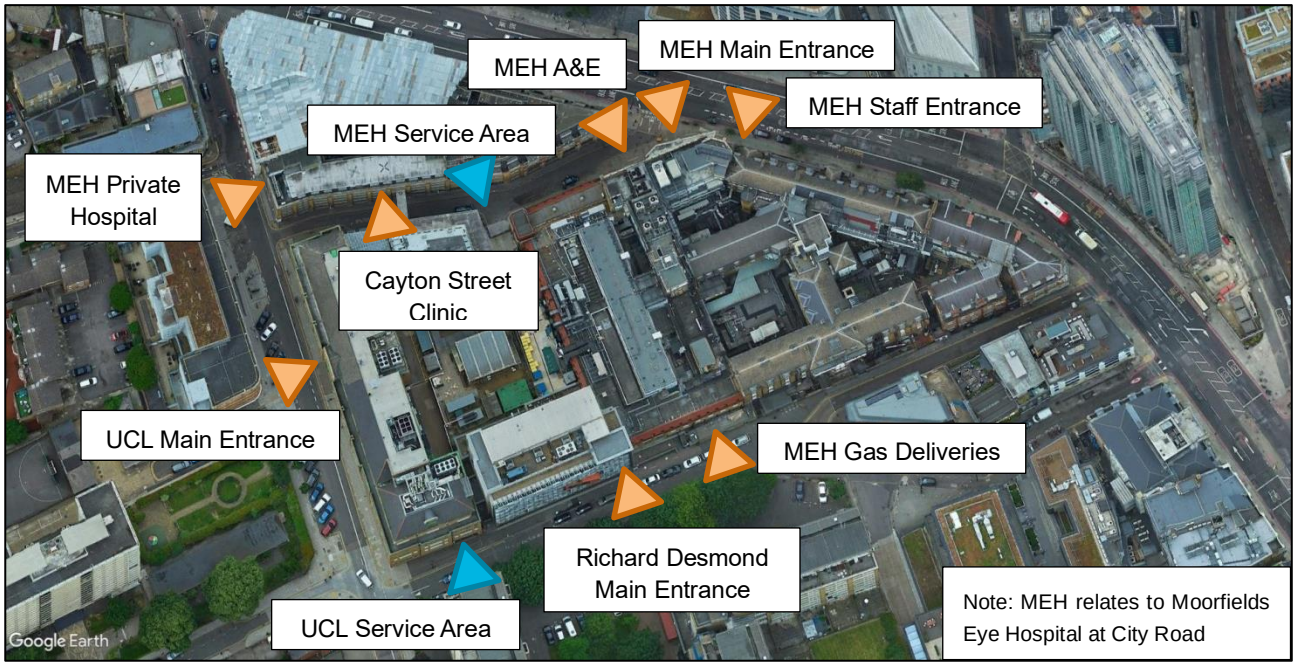


The survey was undertaken on the streets around the perimeter of the block to cover the servicing and delivery points and to capture drop-off / pick-up activity. These streets were:

- Cayton Street;
- City Road;
- Peerless Street; and
- Bath Street.

The building and service entrances are highlighted in Figure 1.2 below. Only vehicles that delivered goods or people to and/or from these entrances were recorded.

Figure 1.2: Building and Service Entrances



2. General Observations

The vehicular gates to the Moorfields Eye Hospital at City Road service area were closed for the duration of the survey, therefore no vehicles entered the service area. However, deliveries were received in the service area via a pedestrian side gate.

On the day of the survey little refuse collection activity was noted and the number of deliveries to UCL IoO was low.

The majority of deliveries observed were made from vehicles on Cayton Street, which was generally congested throughout the day due to competition for space with ambulances, taxis and car drop-offs/pick-ups.

The dwell time of some ambulances was very long, and they appeared to be effectively parked between jobs, restricting space available for active deliveries/drop-offs. This included ambulances parked on double red lines on City Road.

3. Servicing Activity

The survey indicates that Moorfields Eye Hospital at City Road and UCL IoO received approximately 61 service vehicles between 07:00 and 19:00 on the day of the survey.

Where it was clear to the surveyor what was being delivered notes were made, however this should not be considered extensive as the purpose of many deliveries could not be ascertained from observation. Four food and drink deliveries, one linen delivery, one gas delivery, one refuse collection, two Royal Mail vehicles and 19 couriers were observed. The remaining servicing activity could not be identified. It was also observed that eight servicing vehicles parked in restricted locations including on double yellow lines and in a cycle lane.

The average dwell time across all vehicle types was approximately 21 minutes. Furthermore, based on the partial registration plates recorded, four vehicles did return trips to the site within the course of the survey period, and one 8m rigid vehicle made three trips to the Moorfields Eye Hospital at City Road service area.

Table 3.1 outlines the servicing vehicle types, the average and maximum amount of time each vehicle type was parked at the location.

Table 3.1: Servicing Vehicle Type and Average Dwell Time

Vehicle Type	Count	Average Dwell Time	Maximum Dwell Time
Motorcycle / scooter	2	00:06:30	00:11:00
LGV	48	00:18:59	01:21:00
HGV	11	00:29:49	01:01:00
Total	**61**	**00:20:50**	

Figure 3.1 indicates that 77% of the servicing activity for Moorfields Eye Hospital at City Road and UCL IoO was undertaken by LGVs, with an average dwell time of 19 minutes. The HGV results include a bottled gas (BOC) delivery which was delivered using an 8m rigid vehicle and took approximately 1 hour. The linen delivery to Moorfields Eye Hospital at City Road service area was undertaken using a LGV and took over 1 hour and 20 minutes, this delivery had the greatest dwell time of any recorded during the survey.

Over the 12 hour period, 61 service vehicles were recorded, this equates to approximately five vehicles per hour. Therefore, the average amount of servicing time per hour of activity is approximately 1 hour and 47 minutes. This would equate to approximately two service bays worth of activity.

The arrival and departure times were recorded for the servicing vehicles. Figure 3.1 identifies the arrival and departure profile for servicing vehicles associated with the site.

Figure 3.1: Servicing Arrival and Departure Profile

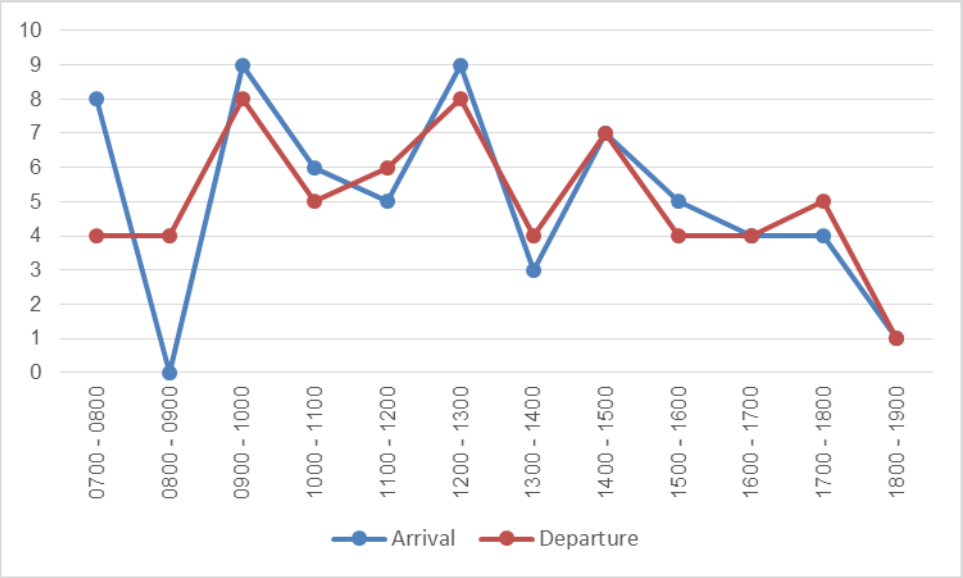


Figure 3.1 indicates that the peak arrival and departure time for servicing vehicles was 09:00 to 10:00 and 12:00 to 13:00 with nine vehicles arriving and eight vehicles departing in this hour. Therefore, with a maximum of nine service vehicles arriving within an hour and an average dwell time of 20 minutes of 50 seconds, this results in approximately 3 hours and 8 minutes of servicing activity per hour which equates to a minimum of three servicing bays.

Figure 3.2 below highlights the accumulation of servicing vehicles between 07:00 and 19:00.

Figure 3.2: Servicing Accumulation

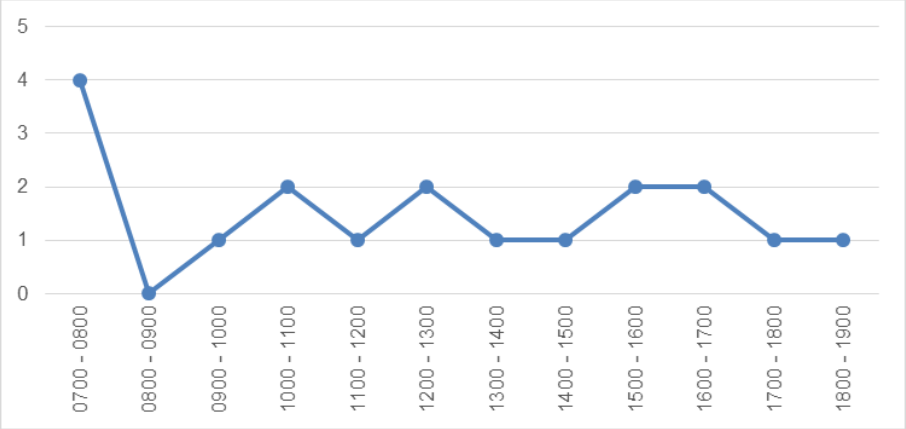


Table 3.2 highlights the number of servicing vehicles that used each of the surrounding streets.

Table 3.2: Location of Servicing Activity

Location	Servicing Vehicles
Bath Street	7
Cayton Street	43
City Road	5
Galway Street	2
Peerless Street	4
Total	**61**

Table 3.2 indicates that 69% of the servicing vehicles used Cayton Street. 29 of the 43 (67%) servicing vehicles that used Cayton Street were associated with the Moorfields Eye Hospital at City Road service area. For the duration of the survey the Moorfields Eye Hospital at City Road service area was closed, it is assumed that some of these vehicles would use the service area when it is open instead of parking on-street.

Table 3.3 outlines which buildings the servicing activity was associated with (which building the goods were delivered to / collected from).

Table 3.3: Servicing Activity Building Origin / Destination

Building Entered	Servicing Vehicles
Moorfields Eye Hospital at City Road gas deliveries	1
Moorfields Eye Hospital at City Road main entrance	17
Moorfields Eye Hospital at City Road Private	2
Moorfields Eye Hospital at City Road service area	29
Moorfields Eye Hospital at City Road staff entrance	1
UCL main entrance	8
UCL service entrance	3
Total	**61**

Table 3.3 indicates that approximately 48% of the servicing vehicles were associated with the Moorfields Eye Hospital at City Road service area and 28% were associated with the main entrance of Moorfields Eye Hospital at City Road. Furthermore, 82% of the activity was for the Moorfields Eye Hospital at City Road and 18% for UCL IoO.

4. Drop-off and Pick-up Activity

The survey results indicate that of the 356 trips associated with Moorfields Eye Hospital at City Road and UCL IoO, 276 (78%) are drop-off or pick-up trips. 155 (56%) of these trips were drop-offs, 111 (41%) were pick-ups and nine (2%) vehicles dropped-off and picked-up in the same trip. 23 of the drop-offs and 16 of the pick-ups were made by private ambulances and five private ambulances dropped-off and picked-up in the same trip, this equates to approximately two drop-offs and one pick-up made by private ambulances per hour.

Table 4.1 outlines the different types of vehicles undertaking drop-off and pick-up activity at the site and the average dwell time per vehicle type.

Table 4.1: Vehicle Type and Average Dwell Time

Vehicle Type	Count	Average Dwell Time	Maximum Dwell Time
Ambulance	44	00:41:48	03:52:00
Car	99	00:07:46	05:29:00
Taxi / Private Hire	126	00:08:12	03:47:00
LGV	5	00:26:24	01:48:00
Total	**274**		

Table 4.1 indicates that 46% of the drop-off and pick-up activity is undertaken by taxis / private hire vehicles, 36% by cars and 16% by ambulances. This equates to approximately 23 vehicles per hour (11 taxis, eight cars and four ambulances) dropping-off or picking-up. The average dwell time for drop-off and pick-up trips across all vehicle types is 17 minutes. The maximum dwell time observed for the duration of the survey was 5 hours and 29 minutes by a car which was parked in a disabled bay and received a parking ticket. The greatest dwell time observed for an ambulance was just over 3 hours and 50 minutes and the purpose of the trip was to pick-up a patient. It was observed that a number of vehicles exiting Cayton Street to City Road had to mount the pavement to manoeuvre around the parked ambulances. The taxi / private hire trip that had the greatest dwell time dropped-off at the private Moorfields Eye Hospital at City Road entrance and then waited to pick-up. Furthermore, 31 vehicles made at least one return trip to the site during the 12 hours.

The arrival and departure profile for drop-off and pick-up trips is outlined in Figure 4.1.

Figure 4.1: Drop-off & Pick-up Arrival and Departure Profile

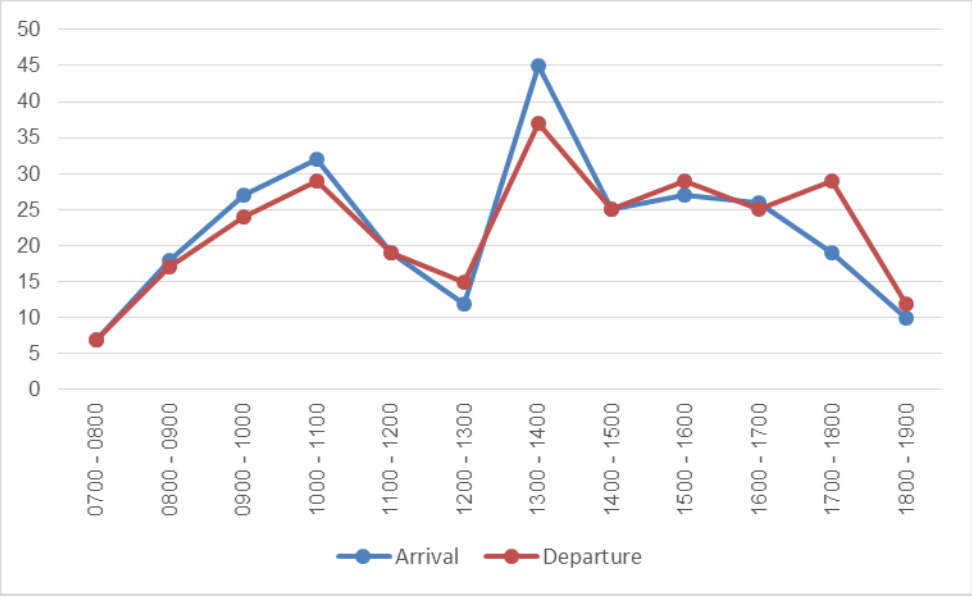
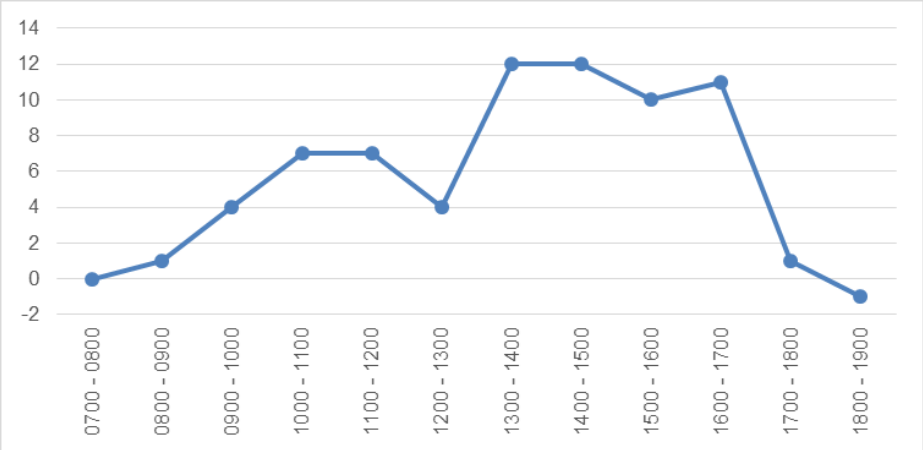


Figure 4.1 indicates that the peak drop-off and pick-up time is 1300 and 1400 with 17% of the activity occurring in this hour. 45 vehicles arriving and 37 departing in an hour equates to approximately eight vehicles every 10 minutes with six vehicles leaving in this time period.

Considering the arrival and departure time of vehicles that have performed drop-offs or pick-ups, Figure 4.2 illustrates the vehicle accumulation profile.

Figure 4.2: Drop-off & Pick-up Accumulation



The location of the drop-off / pick-up activity is identified in Table 4.2.

Table 4.2: Location of Drop-off and Pick-up Activity

Location	Vehicles
Bath Street	7
Cayton Street	102
City Road	156
Peerless Street	10
Total	**275**

Table 4.2 indicates that 56% of the drop-off / pick-up activity occurred on City Road and 38% on Cayton Street during the survey period. It was observed that nine of the vehicles parked in restricted areas, including on double red or yellow lines and in a bus or cycle lane. One ambulance parked on double red lines for 3 hours.

The building origin / destination for the passengers of the vehicles is outlined in Table 4.3.

Table 4.3: Drop-off and Pick-up Building Origin / Destination

Building Entered	Vehicles
Moorfields Eye Hospital at City Road A&E	1
Moorfields Eye Hospital at City Road Cayton Clinic	6
Moorfields Eye Hospital at City Road main entrance	235
Moorfields Eye Hospital at City Road Private	10
Moorfields Eye Hospital at City Road service area	1
Moorfields Eye Hospital at City Road staff entrance	4
Richard Desmond Centre	10
UCL main entrance	2
Total	**269**

Table 4.3 indicates that 88% of the drop-off / pick-up trips were associated with the Moorfields Eye Hospital at City Road main entrance. The building origin / destination was unable to be identified for seven of the trips.

The remaining five trips that were recorded to be associated with the site parked on one of the surrounding roads, this included two bicycles, two cars and one ambulance. The bicycles were parked in the bike stands on City Road, one car parked on Cayton Street (fire visitor to the hospital) and one car parked on Peerless Street within a parking bay. The ambulance was parked before the survey started and stayed parked until approximately 18:00 when it left.

5. Implications for the Proposed Development

This survey was a spot survey on one day and so longer duration surveys and other data sources are required to confirm daily variation in vehicle movements.

This survey captures the existing operation of the existing buildings, this will be different to the operation of Proposed Development, but will provide a starting point for design development considerations.

Key points from this survey are that:

- The peak number of deliveries equates to a requirement for three delivery bays, based on average dwell times observed. In reality, bearing in mind that the service area would also need to accommodate maintenance vehicles this would equate to four bays.
- Refuse and recycling trips did not occur during the survey. However, as the waste strategy could be very different at Proposed Development (in terms of numbers and types of waste streams and how these are dealt with), this needs to be considered further;
- Non-emergency patient transfer vehicles were observed to wait/park between jobs outside the hospital, occupying drop-off/pick-up space. In defining the mode of operation of future drop-off/pick-up facilities, consideration should be given to whether these vehicles could park elsewhere either on or off-site, to avoid 'overdesigning' the drop-off to accommodate the parked vehicles. It should be noted that 7-8 ambulances were observed concurrently outside the hospital for long periods, however the maximum number of active ambulance drop-offs/pick-ups in an hour was 9. This would theoretically equate to a need for only 1 bay if the dwell time was reduced to 5 minutes (although in reality 2-3 bays is likely to be more appropriate).

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