Richmond upon Thames College

Richmond Education and Enterprise Campus
Transport Assessment

June 2015

TPP
transport planning practice

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1. INTRODUCTION

1.1 The Richmond upon Thames College (RuTC) proposes to demolish the existing buildings on its site and provide a new consolidated purpose built College in the north and western area of the site. The land freed up by the new College will enable the provision of a new secondary education school, a special needs education school, a new sports centre and upgrade of the facilities on the Craneford Way Playing Field, a new 'Tech Hub' operated by Haymarket Media, and an enabling residential development which will help fund the provision of the new education campus which will be referred to as the Richmond Education and Enterprise Campus (REEC).

1.2 The College site's address is Richmond upon Thames College, Egerton Road, Twickenham, Middlesex, TW2 7SJ. The College site is bounded to the north by the A316 Chertsey Road, to the east by Egerton Road and residential houses, to the south by Craneford Way and residential houses and to the west by the Harlequins Football Club, residential apartments and a Nuffield Health gym. Figure 1 shows the site location and local road network.

1.3 The Craneford Way Playing Field is bounded to the north by Craneford Way, the east by the dwelling houses off of Heatham Park, to the south by the River Crane and the west by Marsh Farm Lane.

Background

1.4 RuTC can have up to 3,150 day students enrolled at any one time and 500 people attending night classes across three week nights and on Saturday mornings. The site has an existing planning designation of D1 *Non-residential institution*.

Proposals

1.5 The development proposals are to provide:

- a replacement College offering new and improved facilities for 3,000 day students and 500 people attending night classes across three week nights and on Saturday mornings, with 300 Full Time Equivalent (FTE) staff;
- a secondary school for 750 students aged 11 to 16 with 80 FTE staff, based on 90 staff of which approximately 20% will be part-time;
- a special needs education (SEN) school for 115 students, aged 11 to 16 with 60 FTE staff, based on 80 staff of which approximately 30% will be part-time;
- a Tech Hub for Haymarket Media to provide facilities such as digital labs for new technology and product development, photographic studios, photographic archive, a digital editing suite, listening rooms for its consumer electronics brands and a gallery space, and will also provide a 'media incubator' for new media-based businesses;
- a residential development consisting of a maximum of 180 units made up of a mix of terraced family housing together with flats/maisonettes within larger residential blocks;
- a sports centre to replace the existing College sports facilities and serve the replacement College, the Secondary School and SEN School, and the wider community; and
- an upgrade of the Craneford Way Playing Field by the laying out of a new all-weather surface and the re-alignment of an existing grass pitch to provide improved facilities for the educational facilities and the local community.

2. BASELINE CONDITIONS

2.1 This chapter sets out the baseline conditions of the existing College site.

Land uses

2.2 The existing development land is classed as D1 *Non-residential institution.* The existing site consists of a number of buildings used for the College which amounts to a total GEA of 34,252m^2. The buildings are a mix of old and new assets providing a range of educational facilities.

Access

2.3 The site has five vehicular and pedestrian access points. These are:

- Langhorn Drive access via the A316 Chertsey Road.
- Student car park access via Egerton Road and the A316 Chertsey Road.
- Main College access via Egerton Road and either Court Way or Heathfield North and Heathfield South.
- Secondary College access via Egerton Road and either Court Way or Heathfield North and Heathfield South.
- Cranford Way access via Craneford Way, Egerton Road and either Court Way or Heathfield North and Heathfield South.

Parking

2.4 The College has three car parking areas, two for staff and one for students. The front staff car park accessed from Egerton Road via the residential roads has 66 spaces, the rear staff car park accessed from Craneford Way or Langhorn Drive has 49 spaces and the student car park accessed from Egerton Road via the A316 has 141 spaces. Further staff parking is available on the Harlequins RFC site within its Magenta Car Park, which has 45 spaces.

2.5 The on-site staff parking tends to be fully utilised on a daily basis with access to the staff parking areas controlled by college security.

2.6 A parking stress survey was undertaken throughout the day on Tuesday 14th October 2014 within the Harlequins FC Magenta Car Park and within the college's student car park. The level of parking stress was recorded at 05:00, 09:00,

13:00, 17:00 and 19:00 to assess the variation in use of the parking spaces throughout the day and into the evening. Table 2.1 shows a summary of the parking stress survey for the student & Magenta car parks.

Table 2.1: Parking stress survey summary (student & Magenta car parks)

Time	Harlequins RFC Magenta car park		College student car park	
	No. of spaces 45 / cars parked	Parking stress	No. of spaces 139 / cars parked	Parking stress
05:00	6	13%	0	0%
09:00	38	84%	94	76%
13:00	24	53%	102	82%
17:00	25	56%	42	34%
19:00	3	7%	47	38%
Daily Total	90		285	

2.7 The survey results in the table indicates that the staff car park reaches its highest stress level at 09:00, whereas the student car park reaches its highest stress level at 13:00. Both car parks during the survey had reserve capacity at their busiest times.

2.8 The College has secure and covered cycle parking areas for students which can be accessed from either the Main College Access or the Secondary College Access on Egerton Road. Staff cycle parking is located to the rear of the College and is accessed from Craneford Way.

Delivery and Servicing

2.9 Delivery vehicles for the buildings located at the northern part of the site, access the site from either Egerton Road or Langhorn Drive via the A316 Chertsey Road. Delivery vehicles for the buildings located to the eastern part of the site, access the site via the Main College Access on Egerton Road.

2.10 To the rear (western side) of the site, there is a service yard where deliveries for the rest of the site can be made and where refuse is collected. This service yard is accessed from Craneford Way.

Local area

2.11 The College site is bounded to the north by the A316 Chertsey Road, to the east by Egerton Road and residential houses, to the south by Craneford Way and

residential houses and to the west by the Harlequins Football Club, residential apartments and a Nuffield Health Centre gym.

2.12 The Craneford Way Playing Field is bounded to the north by Craneford Way, the east by the dwelling houses off of Heatham Park, to the south by the River Crane and the west by Marsh Farm Lane.

2.13 The site is located approximately 750m north west of Twickenham Station and 500m south of Twickenham Stadium.

2.14 Twickenham town centre is located to the south of the site and offers a range of shops and amenities typical offered by a small town centre. The nearest doctors surgery is The Green Surgery located approximately 950m south of the site, which is 10 - 12 minute walk based on a walking speed of approximately 80m - 100m per minute and which can be accessed via Marsh Farm Lane. The land use of the local area comprises of mostly residential properties.

3. BASELINE TRANSPORT – ROAD NETWORK

3.1 This chapter sets out the local road network context and the baseline analysis of local junctions providing access to the site.

Local highway network

3.2 Figure 1 shows the site location and local road network. The A316 Chertsey Road, which is part of Transport for London's Road Network (TLRN), is a dual carriageway and runs in northeast-southwest direction along the northern boundary of the site. The road links the site to central London to the east and the M3 Motorway and wider national strategic road network to the west, and has a speed limit of 40mph near the site. Locally, the road is intersected by the B538 Hospital Bridge Road to the west and the B361 Whitton Road to the east with semi signalised roundabout junctions.

3.3 The A316 Chertsey Road, has shared cycle/footways along both sides of the carriageways. There is a signal controlled pedestrian crossing over the A316 near Chudleigh Road and a pedestrian footbridge near Talma Gardens and Langhorn Drive. There are two other pedestrian bridges over the A316 further to the west.

3.4 The site is accessed from two locations off of the A316 Chertsey Road. The first is from Egerton Road into the student car park and the second is from Langhorn Drive which provides access to the northern part of the site and some of the staff parking areas.

3.5 Egerton Road has footways on both sides of the carriageway, street lighting and has a 30mph speed limit. There is a vehicle restriction immediately south of the student car park access which is controlled with a fire access gate. The vehicle restriction is in place to prevent rat-running by vehicles travelling from Whitton Road to Chertsey Road (westbound), thereby avoiding the semi signal controlled roundabout.

3.6 Langhorn Drive is a private road owned by Harlequins FC, which has a speed limit of 20mph and provides access into the site, the rugby stadium, an apartment block and a council vehicle depot. Marsh Farm Lane which runs north-south to the east of Langhorn Drive, is a narrow 1.5m cycle/footpath which has street lighting. Marsh Farm Lane runs between the Chertsey Road and Craneford Way.

3.7 The B361 Whitton Road, which has a speed limit of 30mph, runs in a northwest-southeast direction to the east of the residential area of Heatham and is

connected to the site via the residential roads of roads of Court Way, Heathfield North and Heathfield South. Adjacent to the Court Way/Whitton Road junction is a Zebra crossing. Heathfield North is one-way in a westerly direction and Heathfield South is one-way in an easterly direction. Each of these residential roads provides access to Egerton Road which in turn provides access to Craneford Way.

3.8 The residential roads of Court Way, Heathfield North, Heathfield South, Egerton Road and Craneford Way are accessed via simple priority junctions and have a speed limit of 20mph, supported with speed cushions in the carriageway. Each road has street lighting, footways on both sides of the carriageway, except for Craneford Way which has a footway on its northern side of the carriageway only.

3.9 The site is accessed from two locations off of Egerton Road. The first is via the Main College Access and the second is via the Secondary College Access, both of which provide access to the main staff car parking areas. The site is also accessed from Craneford Way, which provides access to the rear of the College (western side) where the servicing area is located.

3.10 To the south, the B361 Whitton Road joins the A310 London Road via signal controlled junction which has pedestrian signal phases. The A310 London Road provides access to Twickenham Station and Twickenham town centre via the A305 King Street. There is a signalised pedestrian crossing over the A310 London Road directly opposite Twickenham Station.

Traffic flows

3.11 In order to establish the existing traffic flows on local roads, a number of traffic surveys have been undertaken. A fully classified turning count survey was undertaken at the junctions of the A316 Chertsey Road / Langhorn Drive, the A316 Chertsey Road / Egerton Road and the B361 Whitton Road / Court Way on the 9 October 2014. Appendix A contains the 2019 Baseline traffic flow diagrams.

3.12 Traffic growth obtained from the Department for Transport's TEMPro (Trip End Model Presentation Program) has then been applied to the traffic flows recorded during the surveys to lift the baseline traffic year to 2019 (the anticipated year of completion of the whole development) and the future traffic year to 2034 (year of completion plus 15 years). The 2019 AM and PM peak traffic flows for these roads are set out in Table 3.1 and Table 3.2 below.

Table 3.1: 2019 AM peak hour (08:00 – 09:00) vehicle flows

Road	Direction	Flow	Total
A316 Chertsey Road	East	1,681	3,351
	West	1,670	
B531 Whitton Road	North	303	701
	South	398	
Court Way	East	54	116
	West	62	
Langhorn Drive	North	37	100
	South	63	

Table 3.2: 2019 PM peak hour (17:00 – 18:00) vehicle flows

Road	Direction	Flow	Total
A316 Chertsey Road	East	1,716	3,663
	West	1,947	
B531 Whitton Road	North	389	707
	South	319	
Court Way	East	71	113
	West	42	
Langhorn Drive	North	66	110
	South	44	

3.13 As can be seen from Table 3.1 and Table 3.2, the highest vehicle flows occur on the A316 Chertsey Road. Growth for traffic to 2034 represents a 7.65% increase in the AM and a 7.38% increase in the PM.

Personal Injury Accident data

3.14 Collision data has been obtained from Transport for London (TfL) Safety Unit Team for the past three years in the vicinity of the site. Accident data was also obtained outside of Twickenham Station on London Road and on Whitton Road, these are locations where students, residents and visitors are expected to make regular journeys to and from the site. The data indicates that during the analysis period, 43 accidents were recorded with seven serious accidents recorded and the remainder being of slight severity. Two collision hot spots were identified, with 14 collisions recorded at each of the following locations, Chertesy Road/ Whitton Road junction and on London Road outside Twickenham Station.

3.15 Three collisions were recorded on roads which form the site boundary, one slight collision on Egerton Road and two serious collisions on Chertsey Road. A review of the collisions indicates that the contributory factors included aggressive driving, pedestrian failure to judge vehicle path and speed and poor observation of both the pedestrian and the driver. Therefore, the design of the local road network is not deemed to be the cause of the recorded collisions. The full PIA data and a map plot is contained within Appendix B.

Junction capacities

3.16 In order to establish how well the local road junctions which provide access to the College site operate with the baseline assessment year traffic levels and a determine the latent capacity of the junction's, a junction capacity assessment has been undertaken. The junction capacity assessment has been undertaken using Transport Research Laboratory's (TRL) software PICADY and the traffic data obtained from the fully classified turning count survey. Also, a pedestrian crossing count survey was undertaken on 13th January 2015 of the Zebra crossing on Whitton Road adjacent to Court Way.

3.17 In order to allow for daily variation in traffic flows, an 85% Ratio to Flow Capacity (RFC) is generally regarded as the threshold for a junction reaching its operational capacity. Any RFC below 85% is regarded as the junction working within capacity. The traffic growth factor applied to the 2014 traffic flows used in the assessment is slightly higher than that required for 2019 and thus provides a robust assessment in terms of the junction capacity modelling.

3.18 The full results of the junction capacity assessment for the existing situation are contained within Appendix C. A summary of the results are set out in Table 3.3 and Table 3.4.

Table 3.3: 2022 AM peak hour (08:00 – 09:00) junction capacity assessment summary

Junction	Road arm	Ratio of Flow to Capacity (RFC) %	Maximum vehicles queuing
A316 Chertsey Road / Langhorn Drive	Langhorn Drive	30.3%	1
A316 Chertsey Road / Egerton Road	Egerton Road	1.9%	0
B531 Whitton Road / Court Way	Whitton Road southbound	5.9%	0
	Court Way	13.2%	1

Table 3.4: 2022 PM peak hour (17:00 – 18:00) junction capacity assessment summary

Junction	Road arm	Ratio of Flow to Capacity (RFC) %	Maximum vehicles queuing
A316 Chertsey Road / Langhorn Drive	Langhorn Drive	19.7%	1
A316 Chertsey Road / Egerton Road	Egerton Road	3.6%	0
B531 Whitton Road / Court Way	Whitton Road southbound	4.5%	0
	Court Way	18.5%	1

3.19 Table 3.3 and Table 3.4 demonstrate that the junctions assessed have a spare capacity. The A316 Chertsey Road / Langhorn Drive junction has the highest RFC's 30.3% and 19.7% in the AM and PM peak hours respectively. This provides 54.7% and 65.3% spare capacity in the AM and PM peak hours respectively before the threshold of 85% operational capacity is reached.

Junction Queue Lengths

3.20 Queue length surveys were undertaken at local junctions surrounding the site on the 9th October 2014 for one weekday. The junctions surveys were:

- A316 Chertsey Road / Langhorn Drive.
- B361 Whitton Road / Court Way.
- Langhorn Drive / College access / Harlequins access mini-roundabout.

3.21 The results of the surveys showed during the AM peak hour of 08:00 to 09:00, Langhorn Drive had an average queue of 1.17 car lengths, with a maximum queue of 3 car lengths occurring between 08:10 and 08:15. During the PM peak hour of 17:00 to 18:00 Langhorn Drive had again an average queue of 1.17 car lengths, with a maximum queue of 2 car lengths occurring between 17:05 to 17:10, 17:20 to 17:25 and 17:40 to 17:45.

3.22 During the AM peak hour of 08:00 to 09:00, Court Way had an average queue of 1.17 car lengths, with a maximum queue of 2 car lengths occurring between 08:15 and 08:20 and again at 08:55 and 09:00. A maximum queue of 1 car length occurred between 08:50 and 08:55 on Whitton Road whilst waiting to turn into Court Way with an average car length queue across the hour of 0.08.

3.23 During the PM peak hour of 17:00 to 18:00, Court Way had an average queue of 1.42 car lengths, with a maximum queue of 2 car lengths occurring between 17:05 and 17:20, 17:30 and 17:55 and 17:05 and 18:00. A maximum of 1 car length queuing vehicle occurred between 17:10 and 17:20, and again at 17:45 and 17:50, on Whitton Road whilst waiting to turn into Court Way with an average car length queue across the hour of 0.25.

3.24 At the Langhorn Drive / College access / Harlequins access mini-roundabout, maximum queues on all arms during the AM peak hour of 08:00 to 09:00 amounted to one car length. During the PM peak hour of 17:00 to 18:00, a maximum queue of 3 car lengths occurred between 17:20 and 17:25 on the College access arm. The only other queuing on an arm occurred on Harlequins car park access arm with a maximum of 1 car length queue.

3.25 At the Langhorn Drive / College access / Harlequins access mini-roundabout, maximum queues on all arms during the AM peak hour of 08:00 to 09:00 amounted to 1 car length with a maximum queuing average across the hour being 0.17 car lengths. During the PM peak hour of 17:00 to 18:00, a maximum queue of 3 car lengths occurred between 17:20 and 17:25 on the College access arm, with a maximum queuing average across the hour being 0.58 car lengths. The only other queuing on an arm occurred on Harlequins car park access arm with a maximum queue of 1 car length and a maximum queuing average across the hour being 0.42 car lengths.

3.26 Further queue lengths surveys were undertaken over the course of three weekday mornings at three other junctions and a resurvey of the Court Way / Whitton Road junction was undertaken. The surveys took place between the 13th and 15th January 2015. The additional junctions surveyed were:

- A310 London Road / B361 Whitton Road.
- A316 Chertsey Road / B361 Whitton Road.
- B361 Whitton Road / Heathfield South.
- B361 Whitton Road / Court Way.

3.27 The results of the surveys showed that on average over the course of three weekdays during AM peak hour of 08:00 to 09:00, there were queues extending back 10.64 car lengths, with a maximum queue of 14 car lengths. This would

result in a maximum recorded queue length of 81m based on a Passenger Car Unit (PCU) length of 5.75m. The junction of Court Way and Whitton Road is approximately 130m back from the stop line of the A310 London Road / B361 Whitton Road junction and therefore, there would be no queuing vehicles blocking cars from exiting Court Way.

3.28 At the junction of the A316 Chertsey Road / B361 Whitton Road, the surveys showed that on average over the course of three weekdays during AM peak hour of 08:00 to 09:00, there were queues extending back 3.5 car lengths, with a maximum queue of 9 car lengths. The nearest junction is Erncroft Way which is 60m back from the stop line. Therefore, there would be no vehicle blocking issues due to a maximum recorded queue length of 52m.

3.29 At the junction of the B361 Whitton Road / Heathfield South, the surveys showed that on average over the course of three weekdays during AM peak hour of 08:00 to 09:00, there were queues extending back 1.17 car lengths, with a maximum queue of 2 car lengths. The resulting maximum recorded queue length of 11.5m will not cause any significant vehicle access blocking issues.

3.30 The additional survey of the B361 Whitton Road / Court Way junction showed that on average over the course of three weekdays during AM peak hour of 08:00 to 09:00, there were queues extending back 1.39 car lengths, with a maximum queue of 5 car lengths. This would result in a maximum recorded queue length of 29m, which will not cause any significant vehicle access blocking issues.

Summary

3.31 Overall, the queue length surveys demonstrate that the vehicle queues experienced at junctions near to the site are on average low, with maximum queues experienced not having a detrimental effect on either the junction itself, nearby junctions. The average queue lengths observed also approximately align with the average queue lengths generated by the junction capacity assessment which validates the models.

On-street parking controls and usage

3.32 The site is located within the Heatham ('Hm') Controlled Parking Zone (CPZ) which is operational Monday to Saturday between the hours of 09:00 to 18:30. The zone covers the roads of Court Way, Heathfield North, Heathfield South, Egerton Road, Craneford Way and the nearby residential roads of Chudleigh Road,

Russell Road, Palmerston Road, Craneford Close and Heatham Park. All of the on street parking is for resident permit holders only except for 20 pay & display bays on Egerton Road.

3.33 To the east of Whitton Road, the residential roads are covered by the Cole Park ('C') CPZ which is operational Monday to Friday between the hours of 08:30 to 18:30.

3.34 A parking stress survey was undertaken throughout the day on Tuesday 14th October 2014 on local roads within 400m walking distance of the college. The level of parking stress was recorded at 05:00, 09:00, 13:00, 17:00 and 19:00 to assess the variation in use of the parking spaces, throughout the day and into the evening. The 05:00 parking survey represents the overnight situation when most residents are expected to be home.

3.35 The results of the survey show that the residential roads (maximum stress recorded shown in brackets) of Court Way (74%), Heathfield South (85%), Heathfield North (73%), Chudleigh Road (72%), Russell Road (73%), Palmerstone Road (58%), Heatham Park (70%), Craneford Close (77%) Craneford Way (63%) and Egerton Road (40%) do not reach maximum capacity throughout the night or during the day. All of the maximum stress levels were recorded overnight or in the evening which is in keeping with typical residential parking areas as more people are at home during these times. The surveys demonstrated that parking stress levels on these roads drop off during the day to on average 40% to 50%, although Egerton Road has a stress level of approximately 5% to 25% throughout the day, indicating low parking stress.

3.36 To the north, east and west of the 'Hm' CPZ is the Event Zone ('R') CPZ which is operational during events at Twickenham Stadium. The operational times of the CPZ are dependent on the type of event at the stadium. On event days, the operational times and restrictions of CPZ 'R' also apply to CPZ's 'Hm' and 'C'. When there is not an event occurring, there are no parking restrictions in CPZ 'R'.

3.37 The results of the survey show that in CPZ 'R', the residential roads Godfrey Avenue, Alton Gardens, Chase Gardens and Kendrey Gardens have an overnight parking stress of approximately 70% to 80%. During the day time the parking stress reduces to approximately 30% to 70%. This is likely to be due to most residents leaving home to go to work or run errands.

3.38 The residential roads of Talma Gardens, Tayben Avenue and Whitton Road (to the north of the A316) have an overnight parking stress of approximately 50% to 60% which rises to approximately 60% and 100% during the day time. This is likely to be due to people who either work in the local area, people wishing to commute into central London from Twickenham Station or students and staff at the college parking on these roads.

3.39 The residential roads of Chudleigh Road and Palmerstone Road have an overnight parking stress of approximately 80% and 100%. During the day time, the stress reduces to approximately 80% to 90%. Although there is a reduction is the parking stress level, it remains at the 80% to 90% level. This is likely to be due to most residents leaving home to go to work, but parking spaces then being occupied by people who either work in the local area, people wishing to commute into central London from Twickenham Station or students and staff at the college parking on these roads.

3.40 The parking survey also covered Whitton Road to the east of the 'Hm' CPZ. The maximum parking stress recorded was 52% which occurred during the middle of the day and in the evening.

Summary

3.41 The parking stress survey indicates that the majority of local roads within 400m walking distance of the college site do not suffer from a high level of parking stress throughout the day time and that in the evenings and through the night, most roads have spare parking capacity available.

4. BASELINE CONDITIONS – PUBLIC TRANSPORT, WALKING AND CYCLING

4.1 This chapter sets out the access to the site using public transport and the walking and cycling routes to them.

Public Transport Accessibility Level (PTAL)

4.2 In order to determine the current accessibility of the site by public transport at a local level, a PTAL assessment has been undertaken. This assessment is widely used by the London Boroughs and is supported by TfL. PTAL is calculated by summing indices for bus, underground and rail to obtain an Index Number. The Index Numbers are compared with a banding regime to obtain a PTAL grade shown in Table 4.1. Walking distance, number of services, frequency of services, walking speed and reliability of service are all parameters in the calculations. The following specified thresholds and assumptions are used in the assessment:

- The average walk speed is assumed as being 4.8km/h (80 metres per minute).
- The maximum walk time for a bus service is an 8 minute walk (640 metres).
- Pedestrians will walk a maximum of 12 minutes (960 metres) to reach a rail or Underground station.

Table 4.1: PTAL grades

Sum of Indices	Grade	Description
0.01 to 2.50	1a	Lowest level of accessibility
2.51 to 5.00	1b	
5.01 to 10	2	Poor accessibility
10.01 to 15	3	Average accessibility
15.01 to 20	4	Greater than average accessibility
20.01 to 25	5	Good accessibility
25.01 to 40	6a	Best level of accessibility
40.01 plus	6b	

4.3 The PTAL value for the site is ranges from 2 to 1b which shows that it has a poor to very poor level of public transport accessibility, with the eastern side of the site being 2 and the western side being 1b. The PTAL calculation has been carried out using the TfL website http://www.webptals.org.uk/.

Bus

4.4 The site is served by four bus routes which include the 267, 281, 481 and the 681. Maps showing the local bus routes are contained within Appendix D.

4.5 The bus routes can be accessed by a number of bus stops which surround the site. Below is a list of the nearest bus stops surrounding the site including the most direct route and distance to the bus stops from the College pedestrian entrances on Egerton Road and the bus routes they are served by:

- Stops 'C' and 'N' on Whitton Road are reached via Egerton Road, Chertsey Road and Chudleigh Road; are 490m away; and are served by 281, 481 and 681.
- Stops 'L' and 'S' on Whitton Road are reached via Egerton Road and Court Way; are 507m away; and are served by 281 and 681.
- Stops 'B' and 'P' on Whitton Road are reached via Egerton Road, Chertsey Road and Tayben Avenue; are 537m away; and are served by 281, 481 and 681.
- Stops 'M' and 'R' on Whitton Road are reached via Egerton Road and Heathfield North; are 545m away; and are served by 281 and 681.
- Stops 'B' and 'C' on London Road are reached via Egerton Road, Court Way and Whitton Road; are 460m away; and are served by 267, 481 and 681.

4.6 Table 4.2 below shows a summary of the bus services serving the site. The AM peak is 08:00 to 09:00, the Inter-peak is 09:00 to 17:00 and the PM peak is 17:00 to 18:00.

Table 4.2: Summary of existing bus services

Bus Route	Direction (towards)	Monday - Friday			Sat	Sun
		AM	Inter-peak	PM		
267	Hammersmith Bus Station	7	6	6	5	4
	Fulwell Rail Station	5	6	6	5	4
281	Hounslow Bus Station	8	8	8	8	5
	Tolworth (Ewell Road)	8	8	7	7	5
481	West Middlesex University Hospital	1	1	1	1	0
	Kingston (Cromwell Road Bus Station)	1	1	1	1	0
Total		30	30	29	27	18

4.7 Table 4.2 shows that the site is served by 30 buses in the morning peak and inter-peak hour and 29 buses in the evening peak hour in both directions. On weekends, the frequency is reduced to 27 buses per hour on Saturday and 18 buses per hour on Sunday.

Rail

4.8 Twickenham Station is located to the south east from the site (a 7 to 9 minute walk). The station and all trains serving it are operated by South West Trains. The

station provides key links to Richmond, Waterloo, Reading, Kingston and Hounslow. Table 4.3 shows the directional frequency in the Monday to Friday AM and PM peak hours.

Table 4.3: Summary of existing rail services

Westbound		Eastbound	
AM Peak	PM Peak	AM Peak	PM Peak
11	10	11	8

Walking

4.9 The surrounding footways are generally satisfactory, with key routes along desire lines being a minimum of 2.0m in width (except on Heathfield North and Heathfield South, where the effective footway width is reduced in places due to part of the on-street parking bays being marked on the footway), with dropped kerbs, tactile paving and street lighting. On the A316 Chertsey Road, there is crash barrier on the central reservation preventing pedestrians from crossing the road. There is a signal controlled pedestrian crossing on Chertsey Road approximately 100m east of the site and a pedestrian footbridge directly north of the site. The residential roads to the east of the site have traffic calming by means of speed cushions located at regular intervals, and there is a fire access gate across Egerton Road which reduces traffic on the residential roads to access only.

4.10 The cycle/footpath referred to as Marsh Farm Lane runs along the western boundary of the site between the junction of the A316 Chertsey Road / Langhorn Drive and Craneford Way. From Craneford Way, the cycle/footpath runs through the Craneford Way Playing Fields, across the railway line via a footbridge and onto Marsh Farm Road. Site visit observations on a number of site visits to the College site and surrounding area indicate that the footpath is underused

4.11 The bus routes on Whitton Road can be accessed via the footbridge or signalised pedestrian crossing on the A316 Chertsey Road. The route has dropped kerbs and tactile paving and has street lighting. The footways leading to Twickenham Station, either via Court Way, Heathfield North or Heathfield South and Whitton Road and London Road have similar characteristics with a Zebra crossing on Whitton Road and signal controlled pedestrian crossings at the junction of Whitton Road / London Road and on London Road.

4.12

Cycling

4.13 Transport for London's 2013 Local Cycling Guide 9 advises on a number of routes recommended by cyclists within the vicinity of the site and cycle routes that have signing or road markings. The site is well connected by cycle routes providing links to locations including; Twickenham Station, Richmond, Isleworth and Teddington. The A316 Chertsey Road has off-road shared cycle/footway routes adjacent to it providing segregation from cyclists and motorists.

Pedestrian and cycle flows

4.14 A survey of the number of people using the footbridge over the A316 Chertsey Road has been undertaken. The surveys show that during the AM peak of 08:00 to 09:00, there are 31 people travelling southbound towards the College site and 28 people travelling northbound away from the College. During the PM peak of 16:00 to 17:00, there are 10 people travelling southbound towards the College site and 22 people travelling northbound away from the College.

4.15 In order to establish the existing pedestrian and cycle flows generated by the College on local routes, a quantitative assessment of pedestrian and cycle movements directly or indirectly accessing the site has been undertaken. The pedestrian and cycle arrival and departure data obtained from the fully classified turning count surveys undertaken on Thursday 9 October 2014 has been used. The peak hours for pedestrians and cyclists is 08:00 to 09:00 and 16:00 to 17:00 to pick up students leaving the site in the afternoon.

4.16 The route taken by pedestrians and cyclists has been based on the location of local public transport nodes in relation to the site. Therefore, any rail trips have been routed towards Twickenham Station to the south east. Bus stops are located to the south east next to Twickenham Station, to the east on Whitton Road and the north on Whitton Road (i.e. north of the A316). Therefore, bus trips have been split evenly to be routed in these three directions. The nearest London Underground Line stations are Hounslow Central and Hounslow East on the Piccadilly Line and are located to the north. Therefore, any Underground trips have been routed to the north. All pedestrian, cycle and other trips have been split evenly to be routed to the north, east, south and west. The total (arrival & departure) pedestrian and cycle flows for the AM and PM peak hours are set out in Table 4.4. Figures 2 and 3 show the distribution of the existing College pedestrian and cycle flows in the AM and PM peak hours.

Table 4.4: Total (arrival & departure) pedestrian & cycle flows AM & PM peak hours

Route	AM 08:00 – 09:00		PM 16:00 – 17:00	
	Pedestrian	Cycle	Pedestrian	Cycle
Langhorn Drive	29	10	11	3
A316 Chertsey Road	241	19	74	10
Egerton Road	778	27	188	16
Heathfield South	182	11	45	5
Court Way	546	13	118	8
Talma Gardens	20	5	7	1

4.17 As can be seen from Table 4.4, Egerton Road and Court Way respectively experience the highest pedestrian and cycle flows.

Taxis

4.18 A taxi rank is located in Twickenham Station car park where taxis are able to pick up and set down passengers.

5. PROPOSED DEVELOPMENT

5.1 This chapter sets out the outline proposals for the redevelopment of the Richmond College site. Parameter plans showing the approximate location and maximum massing of each land use and the access routes to them are contained within Appendix E.

5.2 Each of the proposed development uses is set out in the following seven chapters. The proposed development uses and their associated chapters are set out below.

- Replacement College, Chapter 6.
- Tech Hub, Chapter 7.
- Secondary School, Chapter 8.
- Special Needs School, Chapter 9.
- Residential, Chapter 10.
- Sports Centre, Chapter 11.
- Craneford Way Playing Fields, Chapter 11.

5.3 As a general note, a covenant exists that allows Harlequins FC the right to use the existing College roadway during match events to redirect traffic away from the Stoop car parks if they are full or if drivers are not authorised to park within the Stoop car parks. The proposed new access road between Langhorn Drive and Egerton Road enables this right to be maintained.

5.4 There are three infrastructure improvements being brought forward as part of the proposed development, the signal controlled A316 Chertsey Road / Langhorn Drive junction, the upgrade of the Marsh Farm Lane footpath to a widened shared cycle / footpath and the widening of the site access from the Langhorn Drive mini-roundabout. Two further improvements are to be brought forward by third parties, the upgrade of the shared cycle/footway on both sides of the A316 and the implementation of a shared cycle/footway through Twickenham Rough linking Marsh Farm Lane.

5.5 The A316 Chertsey Road / Langhorn Drive will be upgraded from a simple priority left in / left out junction, to a fully signal controlled left in / left and right out junction. A dedicated pedestrian crossing phase will be provided in the signal phasing to allow pedestrians to cross Chertsey Road and Langhorn Drive. The existing footbridge over the A316 will be retained and used as additional crossing.

The stepped ramp on the southern side of the carriageway will need to be shortened or replaced with a standard stairway due to its landing point being in the location of the start of the proposed at grade crossing facility. The proposed at grade crossing will provide a fully Disability Discrimination Act (DDA) compliant crossing over the A316 at this location. Drawing 30713/AC/038 Rev A shows proposed Chertsey Road / Langhorn Drive signal controlled junction arrangement.

5.6 The A316 Chertsey Road / Langhorn Drive signal controlled junction has been provided to improve all purpose vehicle access arrangements for the replacement College, Tech Hub and the Residential site, plus delivery and servicing access for the Secondary School and the SEN School. The junction is not required as a mitigation measure to improve junction capacity as a result of the REEC development, but is being provided facilitate an appropriate means of access to the Residential site.

5.7 However, the REEC development and surrounding developments will benefit from the implementation of the signal controlled junction with the right turn facility including Harlequins FC, Nuffield Health, the residential block on Langhorn Drive and the council depot.

5.8 The access road between the mini-roundabout and the site will be widened to 6.0m enable all purpose vehicle access. Drawing 30713/AC/035 shows the widened access arrangement.

5.9 The shared cycle / footway along both sides of the A316 Chertsey Road between its junction with Langhorn Drive and the Whitton Road signal controlled roundabout will be upgraded by Transport for London before the proposed development is operational, with the proposed completion date being the Summer of 2016. Pedestrians and cyclists from the north and east will therefore benefit from this upgrade in infrastructure. The improvements form part of a larger cross borough segregated cycle route which will ultimately provide a 12 mile cycle route between Hanworth in Hounslow through to Hyde Park Corner, via Cycle Superhighway 9.

5.10 The Twickenham Rough shared cycle/footpath is to be brought forward by St James Group Limited as part of the former Post Office sorting office site redevelopment. The route will run from London Road through the former sorting office site to Marsh Farm Lane.

6. PROPOSED DEVELOPMENT - REPLACEMENT COLLEGE

Land use & size

6.1 The existing development land is classed as D1 *Non-residential institution*. Therefore, there is no change of use required in terms of the new College.

6.2 The replacement College will have a maximum GEA of 16,000m^2, with the STEM Centre having a maximum GEA of 6,100m^2. The College will have a maximum of up to 3,000 day students and approximately 500 people attending night classes across three week nights and on Saturday mornings. This is consistent with the existing College's operations. There will up to 300 FTE staff.

6.3 The replacement College will continue with the same operational day as the existing College.

Access/egress

Vehicle

6.4 The College's main vehicular access will be from Langhorn Drive. Cars will access the staff and visitor car park via the existing College site access from the mini-roundabout junction with Langhorn Drive.

6.5 A new on-site service road will be constructed to serve the College, Tech Hub and Secondary School for staff and visitor car parking access and for delivery and servicing vehicles access for all of the REEC development uses except the Residential development. This service road will also enable Harlequins FC to redirect traffic away from the Stoop car parks if they are full or if drivers do not have the right to park within the Stoop car parks as per the existing arrangement between RuTC and Harlequins FC.

6.6 Car egress from the College will be via Langhorn Drive via the widened existing College access road. Drawing 30713/AC/035 shows the widened access arrangement.

6.7 Existing travel data from the College's Travel Plan indicates that 2% of students arrive as a passenger with most of these being in the cars of other students. The small remaining number of students which are likely to be dropped-off or picked-up by private car would take place within the College site or on surrounding roads. Given that student parking will not be provided those students driving and their passengers would need to change their travel patterns to suit.

6.8 Occasionally, for events such College trips or sporting events where the College travels to other educational institutions or such institutions visit the replacement College, coaches will be required to access the site. Coaches will access the College site via the mini-roundabout junction with Langhorn Drive, stop in the lay-by to the north of the College or in the delivery and service area to the east of the College. The coaches can then turn around in the delivery and service area, and then egress the site via Langhorn Drive and back onto the A316 Chertsey Road.

Pedestrian & cycle

6.9 Students and staff arriving at the College from the west and north will cross the A316 via the new signal controlled pedestrian crossing (or, if preferred, the existing pedestrian footbridge) and then access the College site via the upgraded Marsh Farm Lane cycle/footpath. There are two other pedestrian bridges over the A316 further to the west. To the east there is a signal controlled pedestrian crossing over the A316 near Chudleigh Road.

6.10 Students and staff arriving at the College from the south will need cross the railway line by via the pedestrian footbridge from Marsh Farm Road and then access the College site via the upgraded Marsh Farm Lane cycle/footpath or via London Road, Whitton Road, Court Way, Egerton Road and Cranford Way and the then via the upgraded Marsh Farm Lane cycle/footpath. During the summer months the proposed Twickenham Rough shared cycle/footpath could be used as a more direct route for pedestrians and cycles from the south or south east.

6.11 Students and staff arriving at the College from the east will do so either via Chertsey Road and the upgraded Marsh Farm Lane cycle/footpath adjacent to Langhorn Drive, or via Court Way, Egerton Road, Craneford Way and the upgraded Marsh Farm Lane cycle/footpath.

Public transport

6.12 As with the current situation the majority of students and staff using public transport to access the College will walk to the site from the north, east and southeast due to the location of the bus stops on Whitton Road to the north and east, and bus stops and Twickenham Station to the southeast on London Road.

6.13 Students and staff travelling to the College via bus from the east, south and west areas, depending on which service they use, are most likely to stop at bus stops 'B' and 'C' on London Road adjacent to Twickenham Station and then walk to the

College via the Twickenham Rough cycle/footpath and the upgraded Marsh Farm Lane cycle/footpath or via Whitton Road, Court Way, Egerton Road Craneford Way and the upgraded Marsh Farm Lane cycle/footpath.

6.14 Students and staff travelling to the College via bus from the north, east and west areas, depending on which service they use, are most likely to stop at bus stops 'B' and 'P' on Whitton Road and then walk to the College via Talma Gardens, over the A316 and then down the upgraded Marsh Farm Lane cycle/footpath which runs adjacent to Langhorn Drive or stop at bus stops 'C' and 'N' on Whitton Road and then walk to the College via Chudleigh Road, cross the A316, then down the upgraded Marsh Farm Lane cycle/footpath.

6.15 Students and staff travelling to the College via train and arriving at Twickenham Station are most likely to walk or cycle to the College via the Twickenham Rough cycle/footpath and the upgraded Marsh Farm Lane cycle/footpath or via London Road, Whitton Road, Court Way, Egerton Road, Craneford Way and the along the upgraded Marsh Farm Lane cycle/footpath. The use of the route via the Twickenham Rough and Marsh Farm Lane for students and staff is likely to be restricted during the winter months due to the dawn and dusk opening and closing times of the route.

Parking

Car

6.16 The College will have 150 car parking spaces. This is consistent with local policy which requires one space per two staff, as there will be 300 FTE College staff. The majority of the parking will be located adjacent to the College access roads although a small College staff car park containing 20 spaces will be located to the south of the sport centre.

6.17 Of the 150 College parking spaces, eight will be for accessible parking, one space for mini-bus parking and eight allocated for visitor parking. There will be no student car parking on the college, except for use of the accessible spaces where required. The applicant will accept a condition on any consent requiring the submission of a management plan for the REEC development parking area prior to occupation of the development. (Also set out in the car park management plan will be the provision of electric charging points if they are required.

Event parking

6.18 Occasionally, the College will hold events such as open days/evenings for prospective students or parents/guardian evenings for existing students etc. In such cases measures and agreements will be put into place through the use of the car park management plan to use the Secondary School and SEN parking spaces. Events will be spread over a series of days or evenings in order to reduce event parking demand and arranged not to coincide with similar events being held at the Secondary School or SEN.

Cycle

6.19 Cycle parking will be provided at a minimum of five spaces per classroom to be consistent with local standards. The cycle parking will be secure and covered, with separate parking areas for staff and student cycle parking.

Delivery & servicing

6.20 Delivery and servicing vehicles will access the site's delivery and servicing area located to the east of the replacement College building via the mini-roundabout junction with Langhorn Drive. The vehicles will turn in the delivery and servicing area and egress via the mini-roundabout junction back onto the A316 Chertsey Road.

6.21 A waste storage area will be located within 10m of the delivery and servicing area enable the efficient collection of general and recycling waste created by the College, Secondary School, SEN and the sports centre.

7. PROPOSED DEVELOPMENT - TECH HUB

Land use & size

7.1 The proposed land use class of the Tech Hub is B1 *Office/Studio/Laboratory/ Research*. The proposed Tech Hub will have a maximum GEA of 1,700m^2 and will be operated by Haymarket Media Group. The Tech Hub will have 20 staff based at the site. The Tech Hub will have a close affiliation with the College.

7.2 The Tech Hub will provide facilities such as digital labs for new technology and product development, photographic studios, photographic archive, a digital editing suite, listening rooms for its consumer electronics brands and a gallery space, and will also provide a 'media incubator' for new media-based businesses.

7.3 The Tech Hub will operate within typical office working periods.

Access/egress

Vehicle

7.4 The Tech Hub's vehicular access and egress will be via the replacement College's main vehicular access from the mini-roundabout junction with Langhorn Drive. Pick up and drop off of staff or visitors by private car or taxi will also use this access road.

7.5 The Tech Hub will typically receive 7.5t or 10.0t heavy goods vehicles two to three times a week and on occasions four times a week, to deliver items to be tested or photographed. If the items are to be photographed and/or tested in one day, the delivery vehicle will wait at the site. If the testing/photography lasts several days, the delivery vehicle will depart and then return on completion. These vehicles will stop and turn around in the Tech Hub's service area and then depart the site via Langhorn Drive back onto the A316 Chertsey Road.

Pedestrian & cycle

7.6 Staff and visitors to the Tech Hub arriving on foot or by bicycle will make use of the pedestrian and cycle infrastructure as described for the College in chapter 6.

Public transport

7.7 Staff and visitors at the Tech Hub arriving by public transport will make use of the services as described for College in chapter 6.

Parking

Car

7.8 The Tech Hub will have ten car parking spaces of one will be allocated for visitor parking and one for accessible parking. As previously mentioned, the applicant will accept a condition on any consent requiring the submission of a management plan for the REEC development parking area prior to occupation of the development.. To be in accordance with the polices set out in the London Plan, 20% of the parking spaces will have electric charging points with a further10% passive spaces for upgrade at a later date should the demand require it.

7.9 The number of car park spaces for the Tech Hub has been determined by the amount required by Haymarket Media who will occupy the Tech Hub. Whilst this provision of car parking spaces is above the standards set out by local parking standards, which require a maximum of one space per 300m^2 of GEA, due to the low public transport accessibility of the site and the relatively low number of parking spaces being provided, the provision is not deemed to be excessive or likely to lead to an impact on the local highway network.

7.10 Also set out in the car park management plan will be the provision of electric charging points if they are required.

7.11 The parking standards also require one lorry parking space per 2500m^2 of GEA. The Tech Hub will have a service area where at least two heavy goods vehicles will be able to park.

Cycle

7.12 Cycle parking will be provided at a minimum of one space per 200m^2 of GEA to be consistent with local standards. The cycle parking will be secure and covered.

Delivery & servicing

7.13 Delivery and servicing vehicles for the Tech Hub will access the site via the mini-roundabout junction with Langhorn Drive, turn around in the Tech Hub's service area and egress the site via Langhorn Drive back onto the A316 Chertsey Road.

7.14 As previously mentioned, the Tech Hub will typically receive 7.5t or 10.0t heavy goods vehicles two to three times a week and on occasions four times a week, to deliver items to be tested or photographed. If the items are to be photographed

and/or tested in one day, the delivery vehicle will wait at the site. If the testing/photography lasts several days, the delivery vehicle will depart and then return on completion.

7.15 Both the delivery and service vehicles will park in the Tech Hub's service area. A waste storage area for the Tech Hub will be located within 10m of the service area to enable the efficient collection of general and recycling waste.

8. PROPOSED DEVELOPMENT - SECONDARY SCHOOL

Land use & size

8.1 The existing development land is classed as D1 *Non-residential institution*. Therefore, there is no change of use required in terms of the Secondary School.

8.2 The school will provide secondary education for 750 students aged 11 to 16 and is expected to operate as a state-funded free school. The school will have 80 FTE staff, based on 90 staff of which approximately 20% will be part-time. The school will have a maximum GEA of 7,000m^2.

8.3 The exact operating times are yet to be decided as the school day will be developed by the school Principal when appointed. However, essentially the school will follow a fairly typical school day with a 08:30 – 09:00 start and a 15:30 – 16:30 finish, with after school clubs running until 17:00 – 17:30.

8.4 Based on the assumptions above, most students will arrive between 08:00 – 09:00 and will depart between 15:30 and 16:30. Staff will arrive from 07:00 onwards with most arriving between 08:00 and 09:00 and will depart from 16:00 onwards.

Access/egress

Vehicle

8.5 The school will be accessed and egressed by cars from Egerton Road via the A316 Chertsey Road. However, if cars wish to travel east on the A316, they will exit the site via Langhorn Drive and turn right at the proposed signal controlled junction. The school car park access from Egerton Road will be in approximately the same location as the existing College student car park access. In order to align with the school car park access road, the site access will require some minor alignment adjustments. Drawing 30713/AC/040 shows the Secondary School car park access arrangement.

8.6 All delivery and servicing vehicles to the Secondary School will access the site from Langhorn Drive via the mini-roundabout turn in the delivery and servicing area and egress the site via Langhorn Drive.

8.7 A small proportion of the pupils are expected to be dropped-off / picked-up from the school. Based on studies of other nearby schools (Orleans Park School, Grey Court School and Twickenham Academy), approximately 12% of pupils

arrive/depart by car. Such drop-off and pick-up trips are expected to occur on Egerton Road via the A316 or Egerton Road via the residential roads to the south. The proportions arriving from the two sides of Egerton Road will be dependent on where driver is coming from and or going to, however for assessment purposes it has been assumed that approximately one third of these trips will arrive on Egerton Road via the A316 and the other two thirds will arrive on Egerton Road from the residential roads of Heathfield North, Heathfield South, and Court Way.

8.8 It has been assumed that 75% of the student drop off and pick up light vehicle trips via the residential roads will use Court Way, with the remaining 25% using Heathfield North and Heathfield South.

8.9 As with the College, the pupils at the Secondary School will occasionally embark on school trips or partake in sporting events where teams from the school travel to other schools or teams from other schools visit. In such cases, coaches will be required to access the site. Coaches will access the College site via the mini-roundabout junction with Langhorn Drive, stop in the lay-by to the north of the College or in the delivery and service area to the east of the College. The coaches can then turn around in the delivery and service area, and then egress the site via Langhorn Drive and back onto the A316 Chertsey Road.

Pedestrian & cycle

8.10 Staff, pupils and visitors to the school will make use of the pedestrian and cycle infrastructure as described for College in chapter 6. However, the use of the upgraded Marsh Farm Lane adjacent to the site is less likely to be used and instead Egerton Road would be used.

Public transport

8.11 Staff, pupils and visitors to the school will make use of the public transport services as described for College in chapter 6. However, the use of the upgraded Marsh Farm Lane adjacent to the site is less likely to be used and instead Egerton Road would be used.

Car

8.12 The school will have 40 car parking spaces. This is consistent with local policy which requires one space per two staff, as there will be 80 FTE school staff. The

parking will be located near to the school and will be accessed either from Egerton Way via A316 Chertsey Road or via Langhorn Drive.

Of the 40 school parking spaces, two parking spaces will be allocated for visitors and two will be for accessible parking, plus one space for mini-bus parking. The applicant will accept a condition on any consent requiring the submission of a management plan for the REEC development parking area prior to occupation of the development. Also set out in the car park management plan will be the provision of electric charging points if they are required. As the school is for 11 to 16 year olds, there is no requirement for student car parking on the site.

Event parking

8.13 Occasionally, the school will hold events such as open days/evenings for prospective students or parents/guardian evenings for existing students etc. In such cases measures and agreements will be put into place through the use of the car park management plan to use the College and SEN parking spaces. Events will be spread over a series of days or evenings in order to reduce event parking demand and arranged not to coincide with similar events being held at the College or SEN.

Cycle

8.14 Cycle parking will be provided at a minimum of five spaces per classroom to be consistent with local standards. The cycle parking will be secure and covered, with separate parking areas for staff and student cycle parking.

Delivery & Servicing

8.15 All delivery and servicing vehicles will access the site's delivery and servicing area located to the east of the replacement College building via the mini-roundabout junction with Langhorn Drive. The vehicles will turn in the delivery and servicing area and egress via the mini-roundabout junction back onto the A316 Chertsey Road.

8.16 A waste storage area will also be located within 10m of the delivery and servicing area enable the efficient collection of general and recycling waste created by the College, Secondary School, SEN and the sports centre.

9. PROPOSED DEVELOPMENT - SPECIAL EDUCATIONAL NEEDS SCHOOL

Land use & size

9.1 The existing development land is classed as D1 *Non-residential institution*. Therefore, there is no change of use required in terms of the Special Educational Needs (SEN) School.

9.2 The SEN School will provide special needs education for 115 students, aged 11 to 16. The school will have 60 FTE staff, based on 80 staff of which approximately 30% will be part-time. The school will have a maximum GEA of 4,000m^2.

9.3 The SEN School will operate 09:00 to 15:00 with students arriving between 08:00 to 09:00 and leaving between 15:00 to 16:00. Staff will arrive any time after 07:00, although most will arrive between 08:00 and 09:00, and will depart from 16:00, with most departing between 17:00 and 18:00.

Access/egress

Vehicle

9.4 The SEN School will be accessed by cars and school mini-buses via an access located approximately in the location of the existing College's main site access on Egerton Road. Drawing 30713/AC/041 shows the SEN School car park access arrangement which includes minor changes to its position. Pedestrians and cyclists will also access the SEN School from this access. The drawing also shows that the existing College's secondary access will be removed and the footway reinstated. A further benefit to this footway reinstatement is the provision of a further four pay & display on-street parking bays.

9.5 It has been assumed that 75% of the light vehicle traffic will access the site via Court Way, with the remaining 25% using Heathfield North and Heathfield South.

Pedestrian & cycle

9.6 Staff and visitors to the school arriving on foot or by bicycle will make use of the pedestrian and cycle infrastructure as described for College in chapter 6, although the use of the upgraded Marsh Farm Lane adjacent to the site is less likely to be used and instead Egerton Road would be used. Most, if not all students of the school will arrive either by school mini-bus, private car or taxi.

Public transport

9.7 Staff and visitors to the school who arrive by public transport will make use of the services as described for College in chapter 6, although the use of the upgraded Marsh Farm Lane adjacent to the site is less likely to be used and instead Egerton Road would be used.

Parking

Car

9.8 The SEN School will have 30 car parking spaces. This is consistent with local policy which requires one space per two staff, as there will be 60 FTE SEN staff. The staff parking will be located adjacent to the school and will be accessed and egressed from Egerton Road and the residential roads of Heathfield North, Heathfield South, and Court Way.

9.9 Of the 30 parking spaces, two will be for accessible parking and the total will include a provision for visitors. In additional to car parking there will be one space for mini-bus parking. As previously mentioned, the applicant will accept a condition on any consent requiring the submission of a management plan for the REEC development parking area prior to occupation of the development Also set out in the car park management plan will be the provision of electric charging points if they are required. There is be no requirement for student car parking on the site.

9.10 Students arriving by school transport must be kept securely on site. Therefore, the school will have a secure school entrance/approach area. Mini-buses will enter the area, the gates are then locked and then students can alight the vehicles without there being a risk of them venturing off-site. Similarly, when students leave at the end of the school day, the gates are kept locked whilst students board the mini-buses, after which the vehicles are locked and then the secure school entrance/approach area gates are unlocked to enable the vehicles to leave.

Event parking

9.11 Occasionally, the SEN School will hold events such as open days/evenings for prospective students or parents/guardian evenings for existing students etc. In such cases the secure school entrance/approach area will be used for car parking. Use of the Secondary School and College car parking may also be required to be

used. In such cases measures and agreements will be put into place through the use of the car park management plan to use the College and Secondary School parking spaces. Events will be spread over a series of days or evenings in order to reduce event parking demand and arranged not to coincide with similar events being held at the College or Secondary School.

Cycle

9.12 Cycle parking will be provided at a minimum of five spaces per classroom to be consistent with local standards. The cycle parking will be secure and covered, with separate parking areas for staff and student cycle parking.

Delivery & Servicing

9.13 Generally delivery and servicing vehicles will access the site's servicing area located to the east of the replacement College building via the Langhorn Drive, although some vehicle will access the school directly from its access on Egerton Road.

9.14 A waste storage area will also be located within 10m of the delivery and servicing area enable the efficient collection of general and recycling waste created by the College, Secondary School, SEN School and the Sports Centre.

10. PROPOSED DEVELOPMENT - RESIDENTIAL

Land use & size

10.1 The proposed land use will be C3 Residential and will consist of a maximum of 180 units made up of a mix of family housing together with flats/maisonettes within larger residential blocks.

Access/egress

Vehicular

10.2 Vehicular access into the Residential site will be via the Langhorn Drive mini-roundabout, and along an access route adjacent to the upgraded Marsh Farm Lane cycle/footpath and the STEM and the Sports Centre.

Pedestrian & cycle

10.3 Residents and visitors to the proposed homes arriving on foot or by bicycle will make use of the pedestrian and cycle infrastructure as described for College in chapter 6. Gates with key pad entry will enable access for residents onto Egerton Road.

Public transport

10.4 Residents and visitors to the proposed homes who arrive by public transport will make use of the services as described for College in chapter 6. Gates with key pad entry will enable access for residents onto Egerton Road.

Parking

Car and Cycle

10.5 Based on a land use class of C3 *Standard Residential* the parking standards set out in Table 10.1 are required.

Table 10.1: Residential parking standards

Unit Type	1 – 2 bedrooms	3 bedrooms	4+ bedrooms
Car parking	1 space per unit	For one unit, 2 spaces. For two or more units 1 allocated space plus sufficient unallocated spaces to provide a total of 1.5 spaces overall per unit.	2 spaces per unit
Cycle parking	1 space per unit	1 space per unit	2 spaces per unit

10.6 Sufficient cycle parking will be provided to meet the parking standard. The dwelling houses will provide cycle parking within the demise of each dwelling (typically in garages or garden sheds) and the apartments will have dedicated cycle stores with secure and covered parking facilities.

10.7 Car parking spaces will be provided in accordance with LB Richmond's parking standards and the provisions of the Design Code submitted as part of the application To be in accordance with the polices set out in the London Plan, 20% of the parking spaces will have electric charging points with a further 20% passive spaces for upgrade at a later date should the demand require it.

Delivery & Servicing

10.8 All deliveries and refuse collection for the residential houses and apartments will take place from within the new Residential site.

10.9 The waste storage arrangements for the residential units will be in line with LBRuT's guidance.

11. PROPOSED DEVELOPMENT - SPORTS CENTRE

Land use

11.1 The Sports Centre will replace the existing College sports facilities and will serve the replacement College, the Secondary School, the SEN School, and the wider community. The Sports Centre will comprise 3,900m^2 and will be located to the south of the STEM. Although the Sports Centre will be part of the educational uses the land use class will be designated as D2 *Assembly and Leisure*.

11.2 The proposed Sports Centre will continue to offer similar services to the community as the current one on the College site, but using either new or improved facilities and equipment. The existing Sports Centre has a full gym with cardiovascular equipment, single station resistance equipment and free weights. There is also hall which can be hired for parties, discos, plays and seminars etc.

11.3 The operational times of the Sports Centre for use by the public will be from 16:30 to 22:00 Monday to Friday and 09:00 17:00 on weekends. During holiday periods, it will be open from 09:00 to 22:00 Monday to Friday and 09:00 17:00 on weekends. The Sports Centre will be closed on bank holidays.

Access/egress

Vehicle

11.4 Access and egress for vehicles will be from the Langhorn Drive mini-roundabout access.

Pedestrian & cycle and public transport

11.5 Pedestrian, cycle and public transport users will arrive at the Sports Centre using the same walking routes and public transport nodes as for the College described in and earlier chapter 6.

Parking

Car

11.6 The Sports Centre will be available for the wider community use outside of the operational hours for the educational uses. Therefore, the wider community will only be able to use the Sports Centre during the weekday evenings and on weekends. Car parking for the Sports Centre will be accommodated within the 150

College parking spaces at times when the parking demand from the College staff will be low.

Cycle

11.7 By making the same assumptions for cycle parking as for car parking and assuming the centre to have a maximum of ten staff and 100 peak period visitors, the Sports Centre would require 18 cycle parking spaces.

Delivery & Servicing

11.8 Delivery and servicing vehicles will access the site's delivery and servicing area located to the east of the replacement College building via the mini-roundabout junction with Langhorn Drive. The vehicles will turn in the delivery and servicing area and egress via the mini-roundabout junction back onto the A316 Chertsey Road. Some deliveries will take place along side the Sport Centre entrance.

11.9 A waste storage area will also be located within 10m of the delivery and servicing area enable the efficient collection of general and recycling waste created by the College, Secondary School, SEN School and the Sports Centre.

12. PROPOSED DEVELOPMENT - CRANEFORD WAY PLAYING FIELD

Land use

12.1 The Craneford Way Playing Field will be upgraded by the laying out of a new all-weather surface and the re-alignment of an existing grass pitch to provide improved facilities for the replacement College, schools and the local community. The proposals include a rugby pitch and a football pitch. Users of the playing fields will be able to make us of the changing and toilet facilities in the Sports Centre.

12.2 The playing fields will be used by the educational uses of the proposed development throughout the day Monday to Friday and by the community and local teams during the evenings Monday to Friday and weekends. The use of Sports Centre and playing fields by the community are expected to be managed by the same organisation.

Access/egress

Vehicles

12.3 Access to the pitches for maintenance vehicles and emergency vehicles will be from Craneford Way via the two existing gated access points. Vehicles are most likely to access the Craneford Way via Court Way as this provides the most direct route.

Pedestrian & cycle and public transport

12.4 Pedestrian, cycle and public transport users will arrive at the Sports Centre using the same walking routes and public transport nodes as for the College described in chapter 6.

Parking

Car

12.5 For visiting teams to the educational uses, most teams will travel to the venue in a mini-bus or a coach and will park within the College site(e.g. in the servicing area after dropping of passenger in the College piazza area, with visiting staff and students also walking to the playing fields. Any parents/guardians wishing to watch the fixtures can park in the existing 20 pay & display parking spaces on Egerton Road for a maximum of four hours (four additional spaces are being provided as a result of the removal of one of the College accesses).

12.6 The playing fields will also be for community use and will therefore be used in the evenings and at weekends by local people and teams. In the evenings and on Saturdays, cars can be parked anywhere on Cranford Way or Egerton Road after 18:30.

12.7 Throughout the day on Saturday, the CPZ is operational between 09:00 – 18:30. Therefore, cars would either need to utilise the pay & display parking spaces on Egerton Road or park within the College site.

12.8 There are no parking restrictions on Sunday on Craneford Way or Egerton Road. Cars can either utilise the pay & display parking spaces on Egerton Road, park on the single yellow lines where feasible or within the marked on-street parking bays.

12.9 The Sports Centre and playing fields will be managed by one group and the information provided to users of the facilities when bookings are made will advise on the availability of parking within the College site. The parking facilities are convenient to the Sports Centre where changing rooms and showers are provided which will encourage their as an alternative to parking on-street.

Cycle

12.10 There are no specific cycle parking standards for playing fields. However, to accommodate users and spectators at the playing fields a suitable provision of Sheffield type stands will be agreed with LBRuT as part of the detailed application.

13. EXISTING TRIP GENERATION AND TRAVEL MODE SPLIT

13.1 This chapter sets out the existing trip generation of the College for all modes.

Methodology

13.2 The trip generation for the existing College has been calculated using traffic and pedestrian flow arrival and departure data which were obtained from surveys undertaken at the College access points by an independent survey company which were commissioned by TPP.

13.3 CCTV cameras were mounted at the College access points on Langhorn Drive, the three accesses on Egerton Road including the student car park access, the main College access and the secondary College access, and the access on Craneford Way. Vehicle and pedestrian arrivals and departures were enumerated between 07:00 and 10:00 in the morning and between 16:00 and 19:00 in the evening.

13.4 Although cyclists and motorcyclists were surveyed as part of the vehicle surveys, their inclusion is added to the *'all modes'* data and therefore the vehicle flows only represent cars and larger vehicles i.e. lights and heavies.

13.5 The survey data shows there is a total of 124 light vehicle arrivals and departures at the College via the staff driver only accesses, and 83 light vehicle arrivals and departures at the College via the student car park access between 07:00 and 10:00. However, the surveys did not pick staff parking on the Harlequins site and therefore the staff driver number of 124 has been uplifted by a factor of 1.5 to account for this.

13.6 The existing College Travel Plan dated 20th August 2010 has been used to determine the travel mode split of the College. As the pedestrian and cycle surveys could not definitively distinguish between staff and students, the known quantity of light vehicles recorded using staff only access points into the College has been used as reference point to determine the staff - student split.

13.7 The existing College Travel Plan states that 43.5% of staff use private car to travel to the College. Therefore, 43.5% is equal to the 188 staff vehicles and the remaining 56.5% is equal to 244 for all other staff modes. The surveys also recorded 64 pedestrians arriving and departing the staff only access at Craneford Way between 07:00 and 10:00. Therefore, this brings the total staff trip generation for the College to 496 arrivals and departures between 07:00 and 10:00.

13.8 It is known that there are 83 light vehicle arrivals and departures at the College via the student car park access between 07:00 and 10:00 and there are a total of 1674 pedestrian arrivals and departures at all the College accesses between 07:00 and 10:00. Therefore, the total number of student arrivals and departures at the College between 07:00 and 10:00 is 1674 minus 244 and 64, which is equal to 1366 students.

13.9 The survey data shows there is a total of 53 pedal cycle arrivals and departures at the College via all of the access points, except Craneford Way which is staff only, between 07:00 and 10:00. A total of 14 pedal cycle arrivals and departures use the Craneford Way access. In order to calculate the staff and student split for cycles, the 19% mode share for staff cycles set out the existing Travel Plan has been multiplied by the calculated staff total of 496. Similarly, the 5% mode share for student cycles set out the existing Travel Plan has been multiplied by the calculated student total of 1366. The result of each multiplication has been divided by the sum of the results to return a pro-rata percentage value of staff / student mode split. The 14 pedal cycle arrivals at Craneford Way have then been added to the staff cycle quantity.

13.10 The survey data shows there is a total of 5 motorcycle arrivals and departures at the College via the staff driver only accesses, and 3 motorcycle arrivals and departures at the College via the student car park access between 07:00 and 10:00.

13.11 For all other modes for which survey data was not obtained, the travel mode splits from the existing College Travel Plan have been used. However, as car, cycle, motorcycle is known, the other modes have been split pro-rata based on the existing Travel Plan percentages. For the PM peak period of 16:00 to 19:00, the same trip generation and travel mode split calculation methodology has been used as that for the AM period of 07:00 to 10:00.

13.12 In order to distribute the trip generation across the three hours of the AM and PM peaks, the arrival and departure rates obtained from the vehicle and pedestrian surveys have been used.

Results

Vehicles

13.13 Table 13.1 shows the total vehicle arrivals and departures for the existing College site in the AM peak period.

Table 13.1: Existing College vehicle trip generation in the AM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	64	1	65	3	3	6	67	4	71
08:00 - 09:00	121	0	121	14	1	15	135	1	136
09:00 - 10:00	52	4	56	17	3	20	69	7	76

13.14 Table 13.1 shows that what is generally considered as the AM peak hour of 08:00 to 09:00, there are 121 vehicles arriving and 15 vehicles departing, giving a total of 136 vehicle movements to and from the College.

13.15 Table 13.2 shows the total vehicle arrivals and departures for the College site in the PM peak period.

Table 13.2: Existing College vehicle trip generation in the PM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	28	0	28	82	1	83	110	1	111
17:00 - 18:00	11	1	12	89	1	90	100	2	102
18:00 - 19:00	16	0	16	40	0	40	56	0	56

13.16 Table 13.2 shows that what is generally considered as the PM peak hour of 17:00 to 18:00, there are 12 vehicles arriving and 90 vehicles departing, giving a total of 102 vehicle movements to and from the College.

All modes

13.17 Table 13.3 shows the staff all mode arrivals and departures for the College site during the AM period of 07:00 to 10:00.

Table 13.3: Existing College staff AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	2	1	3	58	4	62	32	5	37	**103**
Cycle	4	1	5	31	2	33	5	2	7	**45**
Underground	0	0	0	0	0	0	0	0	0	**0**
Rail	3	2	5	77	5	82	42	7	49	**136**
Bike/Rail	0	0	0	0	0	0	0	0	0	**0**
Bus	0	0	0	8	1	9	5	1	6	**15**
Car Share (Driver)	6	0	6	9	0	9	3	1	4	**19**
Car Share (Pass)	2	0	2	3	0	3	1	0	1	**6**
Car Driver (Alone)	47	3	50	72	7	79	22	12	34	**163**
Motorcycle	2	0	2	3	0	3	0	0	0	**5**
Other	1	0	1	2	0	2	1	0	1	**4**
Total	**67**	**7**	**74**	**263**	**19**	**282**	**111**	**28**	**139**	**496**

13.18 Table 13.3 shows that what is generally considered as the AM peak hour of 08:00 to 09:00, there are a total of 282 staff arriving and departing across all modes of transport.

13.19 Table 13.4 shows the student all mode arrivals and departures for the College site during the AM period of 07:00 to 10:00.

Table 13.4: Existing College student AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	2	1	3	49	3	52	27	4	31	86
Cycle	3	0	3	14	1	15	3	1	4	22
Underground	1	1	2	24	2	26	13	2	15	43
Rail	10	7	17	308	22	330	170	28	198	544
Bike/Rail	0	0	0	8	1	9	4	1	5	14
Bus	11	7	18	316	22	338	174	28	202	558
Car Share (Driver)	0	0	0	8	1	9	4	1	5	14
Car Share (Pass)	1	0	1	15	1	16	8	1	9	27
Car Driver (Alone)	1	1	2	23	2	25	13	2	15	41
Motorcycle	0	0	0	2	0	2	1	0	1	3
Other	0	0	0	8	1	9	4	1	5	14
Total	**29**	**17**	**46**	**775**	**56**	**831**	**421**	**69**	**490**	**1,366**

13.20 Table 13.4 shows that in the AM peak hour of 08:00 to 09:00, there are a total of 831 students arriving and departing across all modes of transport.

13.21 Table 13.5 shows the staff and student all mode arrivals and departures for the College site during the AM period of 07:00 to 10:00.

Table 13.5: Existing College staff and student AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	4	2	6	107	7	114	59	9	68	**188**
Cycle	7	1	8	45	3	48	8	3	11	**67**
Underground	1	1	2	24	2	26	13	2	15	**43**
Rail	13	9	22	385	27	412	212	35	247	**681**
Bike/Rail	0	0	0	8	1	9	4	1	5	**14**
Bus	11	7	18	324	23	347	179	29	208	**573**
Car Share (Driver)	6	0	6	17	1	18	7	2	9	**33**
Car Share (Pass)	3	0	3	18	1	19	9	1	10	**32**
Car Driver (Alone)	48	4	52	95	9	104	35	14	49	**205**
Motorcycle	2	0	2	5	0	5	1	0	1	**8**
Other	1	0	1	10	1	11	5	1	6	**18**
Total	**96**	**24**	**120**	**1,038**	**75**	**1,113**	**532**	**97**	**629**	**1,862**
HGVs	1	2	3	0	1	1	3	2	5	9
Site Total	**97**	**26**	**123**	**1,038**	**76**	**1,114**	**535**	**99**	**634**	**1,871**

13.22 Table 13.5 shows that in the AM peak hour of 08:00 to 09:00, there are a total of 1,113 staff and students arriving and departing across all modes of transport, with a total site trip generation of 1,114.

13.23 Table 13.6 shows the staff all mode arrivals and departures for the College site during the PM period of 16:00 to 19:00.

Table 13.6: Existing College staff PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	10	55	65	8	25	33	5	12	17	**114**
Cycle	1	17	18	1	9	10	1	7	8	**36**
Underground	0	0	0	0	0	0	0	0	0	**0**
Rail	13	72	85	10	33	43	7	15	22	**150**
Bike/Rail	0	0	0	0	0	0	0	0	0	**0**
Bus	1	8	9	1	4	5	1	2	2	**16**
Car Share (Driver)	1	7	8	1	8	9	1	4	5	**22**
Car Share (Pass)	0	2	2	0	3	3	0	1	1	**6**
Car Driver (Alone)	13	57	70	5	72	77	7	31	38	**185**
Motorcycle	0	1	1	0	5	5	0	0	0	**6**
Other	0	2	2	0	1	1	0	0	1	**4**
Total	**39**	**221**	**260**	**26**	**159**	**186**	**22**	**72**	**94**	**539**

13.24 Table 13.6 shows that what is generally considered as the PM peak hour of 17:00 to 18:00, there are a total of 186 staff arriving and departing across all modes of transport.

13.25 Table 13.7 shows the student all mode arrivals and departures for the College site during the PM period of 16:00 to 19:00.

Table 13.7: Existing College student PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	1	3	3	0	1	2	0	1	1	**6**
Cycle	0	1	1	0	0	0	0	0	0	**1**
Underground	0	1	2	0	1	1	0	0	0	**3**
Rail	3	18	22	3	8	11	2	4	6	**38**
Bike/Rail	0	0	1	0	0	0	0	0	0	**1**
Bus	3	19	22	3	9	11	2	4	6	**39**
Car Share (Driver)	2	3	5	0	1	1	1	1	2	**8**
Car Share (Pass)	5	5	10	2	2	4	3	1	4	**18**
Car Driver (Alone)	7	8	15	3	3	6	4	2	6	**27**
Motorcycle	0	0	0	1	1	2	0	0	0	**2**
Other	0	0	1	0	0	0	0	0	0	**1**
Total	**21**	**59**	**81**	**12**	**26**	**38**	**12**	**13**	**25**	**144**

13.26 Table 13.7 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 38 students arriving and departing across all modes of transport.

13.27 Table 13.8 shows the staff and student all mode arrivals and departures for the College site during the AM period of 07:00 to 10:00.

Table 13.8: Existing College staff and student PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	10	58	68	8	26	34	5	12	18	**120**
Cycle	1	18	19	1	9	10	1	7	8	**37**
Underground	0	1	2	0	1	1	0	0	0	**3**
Rail	16	91	107	13	41	54	8	19	28	**188**
Bike/Rail	0	0	1	0	0	0	0	0	0	**1**
Bus	5	27	31	4	12	16	2	6	8	**55**
Car Share (Driver)	3	10	13	1	9	10	2	5	7	**30**
Car Share (Pass)	5	7	12	2	5	7	3	2	5	**24**
Car Driver (Alone)	20	65	85	8	75	83	11	33	44	**212**
Motorcycle	0	1	1	1	6	7	0	0	0	**8**
Other	0	2	3	0	1	1	0	1	1	**5**
Total	**61**	**280**	**341**	**38**	**185**	**224**	**34**	**85**	**119**	**683**
HGVs	0	1	1	1	1	2	0	0	0	**3**
Site Total	**61**	**281**	**342**	**39**	**186**	**226**	**34**	**85**	**119**	**686**

13.28 Table 13.8 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 224 staff and students arriving and departing across all modes of transport, with a total site trip generation of 226.

Mode split

13.29 The travel mode split has been calculated for the existing College from the travel mode share of staff and students set out in the existing College Travel Plan dated 20th August 2010.

13.30 The percentage mode share of car, cycle and motorcycle has been calculated from the survey data and the three hour AM and PM peak period total trips. The remaining percentage value has then been split pro-rata across the other modes using the existing Travel Plan percentage mode split values for reference. The calculated mode splits for the existing College are set out in Table 13.9.

Table 13.9: Existing College travel mode split

Mode	07:00 – 10:00		16:00 – 19:00	
	Staff	**Students**	**Staff**	**Students**
Walk	20.8%	6.3%	21.1%	4.2%
Cycle	9.1%	1.6%	6.7%	0.7%
Underground	0.0%	3.1%	0.0%	2.1%
Rail	27.5%	39.8%	27.9%	26.3%
Bike/Rail	0.00%	1.1%	0.0%	0.7%
Bus	2.3%	40.9%	3.0%	27.3%
Car Share (Driver)	3.8%	1.0%	4.1%	5.6%
Car Share (Pass)	1.2%	2.0%	1.1%	12.5%
Car Driver (Alone)	32.9%	3.0%	34.3%	18.8%
Motorcycle	1.0%	0.2%	1.1%	1.4%
Other	0.7%	1.1%	0.8%	0.7%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

13.31 As can be seen from Table 13.9, private car is the highest mode share for staff, with rail and walking being the next highest mode share. Bus and rail make up the highest mode share for students in the AM peak period, with private car being the highest mode share in the PM peak period.

14. PROPOSED TRIP GENERATION AND TRAVEL MODE SPLIT

Replacement College

Trip generation

14.1 The methodology to calculate the trip generation for the Replacement College is the same as that used for the existing College as explained in Chapter 13. However, as the student car park will be removed for the Replacement College and students will not be able to drive to College, the student car trips have been shifted pro-rata to other transport modes.

Vehicles

14.2 Table 14.1 shows the total vehicle arrivals and departures for the Replacement College site in the AM peak period.

Table 14.1: Replacement College vehicle trip generation in the AM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	54	1	55	3	2	5	57	3	60
08:00 - 09:00	83	0	83	8	1	9	91	1	92
09:00 - 10:00	26	3	29	14	2	16	40	5	45

14.3 Table 14.1 shows that what is generally considered as the AM peak hour of 08:00 to 09:00, there are 83 vehicles arriving and 9 vehicles departing, giving a total of 92 vehicle movements to and from the College.

14.4 Table 14.2 shows the total vehicle arrivals and departures for the College site in the PM peak period.

Table 14.2: Replacement College vehicle trip generation in the PM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	14	0	14	66	1	67	80	1	81
17:00 - 18:00	6	1	7	83	1	84	89	2	91
18:00 - 19:00	8	0	8	36	0	36	44	0	44

14.5 Table 14.2 shows that what is generally considered as the PM peak hour of 17:00 to 18:00, there are 7 vehicles arriving and 84 vehicles departing, giving a total of 91 vehicle movements to and from the College.

All modes

14.6 Table 14.3 shows the staff all mode arrivals and departures for the Replacement College site during the AM period of 07:00 to 10:00.

Table 14.3: Replacement College staff AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	2	1	3	58	4	62	32	5	37	**103**
Cycle	4	1	5	31	2	33	5	2	7	**45**
Underground	0	0	0	0	0	0	0	0	0	**0**
Rail	3	2	5	77	5	82	42	7	49	**136**
Bike/Rail	0	0	0	0	0	0	0	0	0	**0**
Bus	0	0	0	8	1	9	5	1	6	**15**
Car Share (Driver)	6	0	6	9	0	9	3	1	4	**19**
Car Share (Pass)	2	0	2	3	0	3	1	0	1	**6**
Car Driver (Alone)	47	3	50	72	7	79	22	12	34	**163**
Motorcycle	2	0	2	3	0	3	0	0	0	**5**
Other	1	0	1	2	0	2	1	0	1	**4**
Total	**67**	**7**	**74**	**263**	**19**	**282**	**111**	**28**	**139**	**496**

14.7 Table 14.3 shows that what is generally considered as the AM peak hour of 08:00 to 09:00, there are a total of 282 staff arriving and departing across all modes of transport. This demonstrates there is no change in the number of staff trips generated by the College for the proposed development.

14.8 Table 14.4 shows the student all mode arrivals and departures for the Replacement College site during the AM period of 07:00 to 10:00.

Table 14.4: Replacement College student AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	2	1	3	52	4	56	28	5	33	**91**
Cycle	3	0	3	14	1	15	3	1	4	**22**
Underground	1	1	2	27	2	29	15	2	17	**47**
Rail	11	8	19	328	23	351	181	30	211	**579**
Bike/Rail	0	0	0	8	1	9	5	1	6	**15**
Bus	11	8	19	336	24	360	185	30	215	**594**
Car Share (Driver)	0	0	0	0	0	0	0	0	0	**0**
Car Share (Pass)	0	0	0	0	0	0	0	0	0	**0**
Car Driver (Alone)	0	0	0	0	0	0	0	0	0	**0**
Motorcycle	0	0	0	2	0	2	1	0	1	**3**
Other	0	0	0	8	1	9	5	1	6	**15**
Total	**28**	**18**	**46**	**775**	**56**	**831**	**423**	**70**	**493**	**1,366**

14.9 Table 14.4 shows that in the AM peak hour of 08:00 to 09:00, there are a total of 831 students arriving and departing across all modes of transport. This

demonstrates there is no change in the number of student trips generated by the College for the proposed development. However, it should be noted by there are no student car driver trips as these have been shifted pro-rata to other modes.

14.10 Table 14.5 shows the staff and student all mode arrivals and departures for the Replacement College site during the AM period of 07:00 to 10:00.

Table 14.5: Replacement College staff and student AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	4	2	6	110	8	118	60	10	70	**194**
Cycle	7	1	8	45	3	48	8	3	11	**67**
Underground	1	1	2	27	2	29	15	2	17	**48**
Rail	14	10	24	405	28	433	223	37	260	**717**
Bike/Rail	0	0	0	8	1	9	5	1	6	**15**
Bus	11	8	19	344	25	369	190	31	221	**609**
Car Share (Driver)	6	0	6	9	0	9	3	1	4	**19**
Car Share (Pass)	2	0	2	3	0	3	1	0	1	**6**
Car Driver (Alone)	47	3	50	72	7	79	22	12	34	**163**
Motorcycle	2	0	2	5	0	5	1	0	1	**8**
Other	1	0	1	10	1	11	6	1	7	**19**
Total	**95**	**25**	**120**	**1,038**	**75**	**1,113**	**534**	**98**	**632**	**1,865**
HGVs	1	2	3	0	1	1	3	2	5	**9**
Site Total	**96**	**27**	**123**	**1,038**	**76**	**1,114**	**537**	**100**	**637**	**1,874**

14.11 Table 14.5 shows that in the AM peak hour of 08:00 to 09:00, there are a total of 1,113 staff and students arriving and departing across all modes of transport, with a total site trip generation of 1,114.

14.12 The total period of 07:00 to 10:00 has an increase of three trips, however, this is the result of minor rounding issues when shifting student car trips to other modes and there will be no actual increase in the level of trip generation caused by the Replacement College. Again, this demonstrates there is no change in the number of staff and student trips generated by the College for the proposed development. However, it should be noted by that car driver trips have been reduced as a result of the removal of the student car park.

14.13 Table 14.6 shows the staff all mode arrivals and departures for the College site during the PM period of 16:00 to 19:00.

Table 14.6: Replacement College staff PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	10	55	65	8	25	33	5	12	17	**114**
Cycle	1	17	18	1	9	10	1	7	8	**36**
Underground	0	0	0	0	0	0	0	0	0	**0**
Rail	13	72	85	10	33	43	7	15	22	**150**
Bike/Rail	0	0	0	0	0	0	0	0	0	**0**
Bus	1	8	9	1	4	5	1	2	2	**16**
Car Share (Driver)	1	7	8	1	8	9	1	4	5	**22**
Car Share (Pass)	0	2	2	0	3	3	0	1	1	**6**
Car Driver (Alone)	13	57	70	5	72	77	7	31	38	**185**
Motorcycle	0	1	1	0	5	5	0	0	0	**6**
Other	0	2	2	0	1	1	0	0	1	**4**
Total	**39**	**221**	**260**	**26**	**159**	**186**	**22**	**72**	**94**	**539**

14.14 Table 14.6 shows that what is generally considered as the PM peak hour of 17:00 to 18:00, there are a total of 186 staff arriving and departing across all modes of transport. This demonstrates there is no change in the number of staff trips generated by the College for the proposed development.

14.15 Table 14.7 shows the student all mode arrivals and departures for the College site during the PM period of 16:00 to 19:00.

Table 14.7: Replacement College student PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	1	5	6	1	2	3	0	1	1	**10**
Cycle	0	1	1	0	0	0	0	0	0	**1**
Underground	0	2	3	0	1	1	0	1	1	**5**
Rail	5	29	34	4	13	17	3	6	9	**60**
Bike/Rail	0	1	1	0	0	1	0	0	0	**2**
Bus	5	30	35	4	14	18	3	6	9	**62**
Car Share (Driver)	0	0	0	0	0	0	0	0	0	**0**
Car Share (Pass)	0	0	0	0	0	0	0	0	0	**0**
Car Driver (Alone)	0	0	0	0	0	0	0	0	0	**0**
Motorcycle	0	0	0	1	1	2	0	0	0	**2**
Other	0	1	1	0	0	1	0	0	0	**2**
Total	**12**	**69**	**81**	**11**	**32**	**42**	**6**	**14**	**21**	**144**

14.16 Table 14.7 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 42 students arriving and departing across all modes of transport. This shows an increase of four trips within the peak hour, however, this is a result of minor rounding issues when shifting student car trips to other modes and there will be no actual increase in the level of trip generation caused by the Replacement College.

14.17 The total period of 16:00 to 19:00 remains as the same as the existing College with 144 trips. This demonstrates there is no change in the number of student trips generated by the College for the proposed development. However, it should be noted by there are no student car driver trips as these have been shifted pro-rata to other modes.

14.18 Table 14.8 shows the staff and student all mode arrivals and departures for the Replacement College site during the PM period of 16:00 to 19:00.

Table 14.8: Replacement College staff and student PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	11	60	70	8	27	36	6	13	18	**124**
Cycle	1	18	19	1	9	10	1	7	8	**37**
Underground	0	2	3	0	1	1	0	1	1	**5**
Rail	18	101	119	14	46	60	9	21	31	**210**
Bike/Rail	0	1	1	0	0	1	0	0	0	**2**
Bus	7	38	44	5	17	22	4	8	11	**78**
Car Share (Driver)	1	7	8	1	8	9	1	4	5	**22**
Car Share (Pass)	0	2	2	0	3	3	0	1	1	**6**
Car Driver (Alone)	13	57	70	5	72	77	7	31	38	**185**
Motorcycle	0	1	1	1	6	7	0	0	0	**8**
Other	1	3	3	0	1	2	0	1	1	**6**
Total	**51**	**290**	**341**	**37**	**191**	**228**	**28**	**86**	**114**	**683**
HGVs	0	1	1	1	1	2	0	0	0	**3**
Site Total	**51**	**291**	**342**	**38**	**192**	**230**	**28**	**86**	**114**	**686**

14.19 Table 14.8 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 228 staff and students arriving and departing across all modes of transport, with a total site trip generation of 230. This shows an increase of four trips within the peak hour compared to the existing College, however, this is a result of minor rounding issues when shifting student car trips to other modes and there will be no actual increase in the level of trip generation caused by the Replacement College.

14.20 The total period of 16:00 to 19:00 remains as the same as the existing College with 686 trips. This demonstrates there is no change in the number of student trips generated by the College for the proposed development. However, it should be noted by there are no student car driver trips as these have been shifted pro-rata to other modes.

Mode split

14.21 As with the existing College travel mode split, the travel mode split for the Replacement College has been calculated from the travel mode share of staff and students set out in the existing College Travel Plan dated 20th August 2010.

14.22 The percentage mode share of car, cycle and motorcycle has been calculated from the survey data and the three hour AM and PM peak period total trips. The remaining percentage value has then been split pro-rata across the other modes using the existing Travel Plan percentage mode split values for reference. The calculated mode splits for the existing College are set out in Table 14.9.

Table 14.9: Replacement College travel mode split

Mode	07:00 – 10:00		16:00 – 19:00	
	Staff	Students	Staff	Students
Walk	20.8%	6.7%	21.1%	6.7%
Cycle	9.1%	1.6%	6.7%	0.7%
Underground	0.0%	3.4%	0.0%	3.3%
Rail	27.5%	42.4%	27.9%	42.3%
Bike/Rail	0.0%	1.1%	0.0%	1.1%
Bus	3.0%	43.5%	3.0%	43.4%
Car Share (Driver)	3.8%	0.0%	4.1%	0.0%
Car Share (Pass)	1.2%	0.0%	1.1%	0.0%
Car Driver (Alone)	32.9%	0.0%	34.3%	0.0%
Motorcycle	1.0%	0.2%	1.1%	1.4%
Other	0.7%	1.1%	0.8%	1.1%
Total	100.0%	100.0%	100.0%	100.0%

14.23 As can be seen from Table 14.9 private car is the highest mode share for staff, with rail and walking being the next highest mode share. With the student car park removed from the Replacement College, the highest student mode share is bus and rail.

Tech Hub

Trip generation

14.24 The trip generation for the Tech Hub has been based on a first principles approach using the total number of staff for the Tech Hub, 20, and using trip distribution obtained from TRICS (Trip Rate Information Computer System).

14.25 TRICS is the UK and Ireland's national system of trip generation analysis, containing approximately 7,000 transport surveys at over 110 types of development. TRICS was founded and is owned by six County Councils in the

south of England, collectively the TRICS Consortium. However, its annual collection programme covers the whole of the UK and Ireland.

14.26 The comparator site chosen from TRICS for the Tech Hub were based on identifying a site that had large laboratory areas with a low number of employees. Appendix F contains the TRICS data for the Tech Hub. The site chosen was the only site within TRICS which provided a suitable comparator. Other parameters included:

- employment use class B1,
- Greater London and the south east for regions and areas;
- weekday surveys; and
- suburban areas.

14.27 The Tech Hub will have ten car parking spaces. Therefore, it has been assumed that ten of the 20 staff will drive to the site with the remaining staff travelling by other more sustainable modes. It has been assumed that 40% of the staff will arrive during what is generally regarded as the AM peak hour of 08:00 to 09:00 with 30% arriving in the hour before and 30% arriving in the hour after. It has been assumed that no staff will depart during the AM peak period. Similarly, in the PM peak period, 40% of the staff will depart the site during what is generally regarded as the PM peak hour of 17:00 to 18:00 with 30% departing in the hour before and 30% departing in the hour after. It has been assumed that no staff will arrive during the PM peak period.

Vehicles

14.28 Table 14.10 shows the total vehicle arrivals and departures for the Tech Hub in the AM peak period.

Table 14.10: Tech Hub vehicle trip generation in the AM peak

	ARRIVALS			**DEPARTURES**			**TOTAL**		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	3	0	3	0	0	0	3	0	3
08:00 - 09:00	4	1	5	0	1	1	4	2	6
09:00 - 10:00	3	0	3	0	0	0	3	0	3

14.29 Table 14.10 shows that what is generally considered as the AM peak hour of 08:00 to 09:00, there are 5 vehicles arriving and 1 vehicle departing, giving a total of 6 vehicle movements to and from the Tech Hub.

14.30 Table 14.11 shows the total vehicle arrivals and departures for the Tech Hub in the PM peak period.

Table 14.11: Tech Hub vehicle trip generation in the PM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	0	0	0	2	0	2	2	0	2
17:00 - 18:00	0	0	0	4	0	4	4	0	4
18:00 - 19:00	0	0	0	2	0	2	2	0	2

14.31 Table 14.11 shows that what is generally considered as the PM peak hour of 17:00 to 18:00, there are 0 vehicles arriving and 4 vehicles departing, giving a total of 4 vehicle movements to and from the Tech Hub.

All modes

14.32 Table 14.12 shows the all mode arrivals and departures for the Tech Hub site during the AM period of 07:00 to 10:00.

Table 14.12: Tech Hub AM peak all mode trip generation

Mode	**07:00 – 08:00**			**08:00 – 09:00**			**09:00 – 10:00**			**07:00 – 10:00**
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Total**
Walk	1	0	1	1	0	1	1	0	1	3
Cycle	0	0	0	1	0	1	0	0	0	1
Underground	0	0	0	0	0	0	0	0	0	0
Rail	1	0	1	1	0	1	1	0	1	3
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	1	0	1	1	0	1	1	0	1	3
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	0	0	0	0	0	0	0	0	0
Car Driver	3	0	3	4	0	4	3	0	3	10
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**6**	**0**	**6**	**8**	**0**	**8**	**6**	**0**	**6**	**20**
HGVs	0	0	0	1	1	2	0	0	0	2
Total	**6**	**0**	**6**	**9**	**1**	**10**	**6**	**0**	**6**	**22**

14.33 Table 14.12 shows that in the AM peak hour of 08:00 to 09:00, there are a total of 10 person trips arriving and departing across all modes of transport.

14.34 Table 14.13 shows the all mode arrivals and departures for the Tech Hub site during the PM period of 16:00 to 19:00.

Table 14.13: Tech Hub PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	0	1	1	0	1	1	0	1	1	3
Cycle	0	1	1	0	1	1	0	1	1	2
Underground	0	0	0	0	0	0	0	0	0	1
Rail	0	1	1	0	1	1	0	1	1	3
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	0	1	1	0	1	1	0	1	1	2
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	0	0	0	0	0	0	0	0	1
Car Driver	0	2	2	0	4	4	0	2	2	8
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**0**	**6**	**6**	**0**	**8**	**8**	**0**	**6**	**6**	**20**
HGVs	0	0	0	0	0	0	0	0	0	0
Total	**0**	**6**	**6**	**0**	**8**	**8**	**0**	**6**	**6**	**20**

14.35 Table 14.13 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 8 person trips arriving and departing across all modes of transport.

Mode split

14.36 As ten of the staff will travel to the Tech Hub by private car, the travel mode split for the remaining ten staff has been based on 2001 Census data *Method of travel to Work – Daytime Population* for the ward of St Margaret's and North Twickenham. The travel mode split for the Tech Hub is set out in Table 14.14.

Table 14.14: Tech Hub travel mode split

Mode	07:00 – 10:00	16:00 – 19:00
Walk	12.0%	14.4%
Cycle	8.2%	9.9%
Underground	2.9%	3.5%
Rail	10.8%	13.0%
Bike / Rail	0.0%	0.0%
Bus	9.2%	11.1%
Taxi	0.2%	0.3%
Car Share	4.0%	4.8%
Car Driver	50.0%	40.0%
Motorcycle	1.8%	2.2%
Other	0.7%	0.8%
Total	**100.0%**	**100.0%**

14.37 As can be seen from Table 14.14 private car is the highest mode share, with walking and rail being the next highest mode share.

Secondary School

Trip generation

14.38 The Secondary School trip generation has been calculated using trip rates obtained from the TRICS database and the 750 students. Appendix G contains the TRICS data for the Secondary School. The comparator sites chosen from TRICS were based on the trip rate selection parameters of:

- education, land use class D1;
- Greater London and the south east for regions and areas;
- between 610 and 1200 students;
- weekday surveys; and
- suburban areas and edge of town.

14.39 The staff vehicle trips have been based on the provision of 40 parking spaces. Therefore, all other car trips are drop off and pick trips of students. Adjustments to the vehicle trip generation to account for the arrival and departure of parents or guardians dropping off and picking students has been made.

Vehicles

14.40 The staff vehicles will arrive and depart the site via Egerton Road from the A316 Chertsey Road. Table 14.15 shows the staff vehicle arrivals and departures for the Secondary School site in the AM peak period.

Table 14.15: Secondary School staff vehicle trips in the AM peak

	ARRIVALS			**DEPARTURES**			**TOTAL**		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	5	0	5	0	0	0	5	0	5
08:00 - 09:00	30	0	30	0	0	0	30	0	30
09:00 - 10:00	5	0	5	0	0	0	5	0	5

14.41 Table 14.15 shows that what is generally considered as the AM peak hour of 08:00 to 09:00, there are 30 vehicles arriving and 0 vehicles departing, giving a total of 30 vehicle movements to and from the Secondary School by staff.

14.42 Table 14.16 shows the staff vehicle arrivals and departures for the Secondary School site in the PM peak period.

Table 14.16: Secondary School staff vehicle trips in the PM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	0	0	0	20	0	20	20	0	20
17:00 - 18:00	0	0	0	5	0	5	5	0	5
18:00 - 19:00	0	0	0	5	0	5	5	0	5

14.43 Table 14.16 shows that what is generally considered as the PM peak hour of 17:00 to 18:00, there are 0 vehicles arriving and 5 vehicle departing, giving a total of 5 vehicle movements to and from the Secondary School by staff.

14.44 One third of the school students will be dropped off and picked up at the site via Egerton Road from the A316 Chertsey Road. Table 14.17 shows these student vehicle arrivals and departures trips for the AM peak period.

Table 14.17: Secondary School student vehicle trips in the AM peak via the A316 and Egerton Road

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	4	0	4	1	0	1	5	0	5
08:00 - 09:00	12	0	12	9	0	9	21	0	21
09:00 - 10:00	3	0	3	3	0	3	6	0	6

14.45 Table 14.17 shows that in the AM peak hour of 08:00 to 09:00, there are 12 vehicles arriving and 9 vehicles departing, giving a total of 21 student vehicle movements to and from the Secondary School by students on Egerton Road via the A316.

14.46 Table 14.18 shows the A316 Chertsey Road / Egerton Road student drop off and pick up vehicle trips in the PM peak period.

Table 14.18 Secondary School student vehicle trips in the PM peak via the A316 and Egerton Road

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	3	0	3	9	0	9	12	0	12
17:00 - 18:00	1	0	1	3	0	3	4	0	4
18:00 - 19:00	2	0	2	2	0	2	4	0	4

14.47 Table 14.18 shows that in the PM peak hour of 17:00 to 18:00, there is 1 vehicle arriving and 3 vehicles departing, giving a total of 4 vehicle movements to and from the Secondary School by students on Egerton Road via the A316.

14.48 Two thirds of the school students will arrive and depart the site via Egerton Road from the residential roads of Court Way and / or Heathfield North and Heathfield

South. Table 14.19 shows these student vehicle drop off and pick up trips for the AM peak period.

Table 14.19: Secondary School student vehicle trips in the AM peak via residential roads

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	8	0	8	3	0	3	11	0	11
08:00 - 09:00	25	0	25	19	0	19	44	0	44
09:00 - 10:00	6	0	6	5	0	5	11	0	11

14.49 Table 14.19 shows that in the AM peak hour of 08:00 to 09:00, there are 25 vehicles arriving and 19 vehicles departing, giving a total of 44 student vehicle movements to and from the Secondary School via residential roads.

14.50 Table 14.20 shows the residential road access to Egerton Road for student vehicle arrivals and departures in the PM peak period.

Table 14.20: Secondary School student vehicle trips in the PM peak via residential roads

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	5	0	5	18	0	18	23	0	23
17:00 - 18:00	3	0	3	7	0	7	10	0	10
18:00 - 19:00	3	0	3	3	0	3	6	0	6

14.51 Table 14.20 shows that in the PM peak hour of 17:00 to 18:00, there are 3 vehicles arriving and 7 vehicles departing, giving a total of 10 vehicle movements to and from the Secondary School by students via residential roads.

14.52 The total vehicle trip generation for the Secondary School is shown in Table 14.21 and Table 14.22 for the AM and PM peak period respectively.

Table 14.21: Secondary School total vehicle trip generation AM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	17	0	17	4	0	4	21	0	21
08:00 - 09:00	67	1	68	28	1	29	95	2	97
09:00 - 10:00	14	0	14	8	0	8	22	0	22

Table 14.22: Secondary School total vehicle trip generation PM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	8	0	8	50	0	50	58	0	58
17:00 - 18:00	4	0	4	15	0	15	19	0	19
18:00 - 19:00	5	0	5	10	0	10	15	0	15

All modes

14.53 Table 14.23 shows the staff all mode arrivals and departures for the Secondary School site during the AM period of 07:00 to 10:00.

Table 14.23: Secondary School staff AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	0	0	0	5	1	6	1	0	1	7
Cycle	0	0	0	8	1	9	1	1	2	11
Underground	0	0	0	0	0	0	0	0	0	0
Rail	1	1	2	9	2	11	1	1	2	15
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	0	0	0	3	0	3	0	0	0	3
School Bus	0	0	0	0	0	0	0	0	0	0
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	0	0	2	0	2	0	0	0	2
Car Driver	5	0	5	30	0	30	5	0	5	40
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**6**	**1**	**7**	**57**	**4**	**61**	**8**	**2**	**10**	**78**

14.54 Table 14.23 shows that inthe AM peak hour of 08:00 to 09:00, there are a total of 61 staff arriving and departing across all modes of transport.

14.55 Table 14.24 shows the student all mode arrivals and departures for the Secondary School site during the AM period of 07:00 to 10:00.

Table 14.24: Secondary School student AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	18	1	19	218	3	221	27	4	31	271
Cycle	4	0	4	53	0	53	7	1	8	65
Underground	0	0	0	0	0	0	0	0	0	0
Rail	1	0	1	7	0	7	1	0	1	9
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	18	0	18	214	3	217	28	4	32	267
School Bus	1	0	1	7	0	7	1	0	1	9
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	0	0	3	0	3	0	0	0	3
Car Driver	12	4	16	37	28	65	9	8	17	98
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**54**	**5**	**59**	**539**	**34**	**573**	**72**	**17**	**89**	**722**

14.56 Table 14.24 shows that in the AM peak hour of 08:00 to 09:00, there are a total of 573 students arriving and departing across all modes of transport.

14.57 Table 14.25 shows the staff and student all mode arrivals and departures for the Secondary School site during the AM period of 07:00 to 10:00.

Table 14.25: Secondary School staff & student AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	18	1	19	223	4	227	28	4	32	278
Cycle	4	0	4	61	1	62	8	2	10	76
Underground	0	0	0	0	0	0	0	0	0	0
Rail	2	1	3	16	2	18	2	1	3	24
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	18	0	18	217	3	220	28	4	32	270
School Bus	1	0	1	7	0	7	1	0	1	9
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	0	0	5	0	5	0	0	0	5
Car Driver	17	4	21	67	28	95	14	8	22	138
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**60**	**6**	**66**	**596**	**38**	**634**	**80**	**19**	**99**	**800**
HGVs	0	0	0	1	1	2	0	0	0	2
Site Total	**60**	**6**	**66**	**597**	**39**	**636**	**80**	**19**	**99**	**802**

14.58 Table 14.25 shows that in the AM peak hour of 08:00 to 09:00, there are a total of 634 staff and students arriving and departing across all modes of transport, with a total site trip generation of 636.

14.59 Table 14.26 shows the staff all mode arrivals and departures for the Secondary School site during the PM period of 16:00 to 19:00.

Table 14.26: Secondary School staff PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	0	1	1	0	0	0	0	0	0	1
Cycle	1	2	3	0	1	1	0	0	0	4
Underground	0	0	0	0	0	0	0	0	0	0
Rail	1	3	4	1	1	2	1	1	2	8
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	0	1	1	0	0	0	0	0	0	1
School Bus	0	0	0	0	0	0	0	0	0	0
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	1	1	0	0	0	0	0	0	1
Car Driver	0	20	20	0	5	5	0	5	5	30
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**2**	**28**	**30**	**1**	**7**	**8**	**1**	**6**	**7**	**45**

14.60 Table 14.26 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 8 staff arriving and departing across all modes of transport.

14.61 Table 14.27 shows the student all mode arrivals and departures for the Secondary School site during the PM period of 16:00 to 19:00.

Table 14.27: Secondary School student PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	6	31	37	2	10	12	2	4	6	55
Cycle	1	7	8	0	2	2	1	1	2	12
Underground	0	0	0	0	0	0	0	0	0	0
Rail	0	1	1	0	0	0	0	0	0	1
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	6	31	37	2	10	12	2	4	6	55
School Bus	0	1	1	0	0	0	0	0	0	1
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	0	0	0	0	0	0	0	0	0
Car Driver	8	27	35	4	10	14	5	5	10	59
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**21**	**98**	**119**	**8**	**32**	**40**	**10**	**14**	**24**	**183**

14.62 Table 14.27 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 40 students arriving and departing across all modes of transport.

14.63 Table 14.28 shows the staff and student all mode arrivals and departures for the Secondary School site during the PM period of 16:00 to 19:00.

Table 14.28: Secondary School staff & student PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	6	32	38	2	10	12	2	4	6	56
Cycle	2	9	11	0	3	3	1	1	2	16
Underground	0	0	0	0	0	0	0	0	0	0
Rail	1	4	5	1	1	2	1	1	2	9
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	6	32	38	2	10	12	2	4	6	56
School Bus	0	1	1	0	0	0	0	0	0	1
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	1	1	0	0	0	0	0	0	1
Car Driver	8	47	55	4	15	19	5	10	15	89
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**23**	**126**	**149**	**9**	**39**	**48**	**11**	**20**	**31**	**228**
HGVs	0	0	0	0	0	0	0	0	0	0
Site Total	**23**	**126**	**149**	**9**	**39**	**48**	**11**	**20**	**31**	**228**

14.64 Table 14.28 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 48 staff and students arriving and departing across all modes of transport, with a total site trip generation also being 48.

Mode split

14.65 The mode split calculation of the Secondary School has been based on the combined mode split data obtained from the Travel Plan's of local schools. These are Orleans Park School, Grey Court School and Twickenham Academy. The calculated mode splits for the existing College are set out in Table 14.29.

Table 14.29: Secondary School travel mode split

Mode	07:00 – 10:00		16:00 – 19:00	
	Staff	**Students**	**Staff**	**Students**
Walk	9.8%	38.6%	2.2%	30.0%
Cycle	14.8%	9.3%	8.9%	5.0%
Underground	0.0%	0.0%	0.0%	0.0%
Rail	18.0%	1.2%	17.8%	0.0%
Bike / Rail	0.0%	0.0%	0.0%	0.0%
Bus	4.9%	37.9%	2.2%	30.0%
School Bus	0.0%	1.2%	0.0%	0.0%
Taxi	0.0%	0.0%	0.0%	0.0%
Car Share	3.3%	0.5%	2.2%	0.0%
Car Driver	49.2%	11.3%	66.7%	35.0%
Motorcycle	0.0%	0.0%	0.0%	0.0%
Other	0.0%	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

14.66 As can be seen from Table 14.29 private car is the highest mode share for staff, with rail, cycling and walking being the next highest mode share in the AM period. In the PM period for staff, again car is the highest mode share, with rail and cycling being the next highest.

14.67 For students, walking and bus are the highest mode shares, with car and cycling being the next highest in the AM period. In the PM period for students, car is the highest mode share, with walking and bus being a similar share.

Special Educational Needs School

Trip generation

14.68 As there are no suitable comparator sites within TRICS for the type of development for which the SEN School will be, the trip generation for the school has been calculated using the travel mode split data obtained from a 'Hands Up' survey at the existing Clarendon School undertaken on 4 March 2015. Appendix H

contains the 'Hands Up' survey. This data has been uplifted pro-rata based on the proposed 115 students and 60 staff. This methodology and the assumptions below have been agreed with the proposed operators of the SEN School.

14.69 It has been assumed that 50% of the staff arrives between 08:00-09:00 with 25% arriving in the hour before and after. Similarly, it has been assumed that 50% of staff will depart between 17:00-18:00 with 25% departing in the hour before and after.

14.70 Assumptions for students are that all car trips are drop off and pick up and that the school provides transport for a large proportion of its pupils in the form of minibuses, with a capacity to seat 17 passengers. It has been assumed that 100% of students arrive between 08:00-09:00. Similarly, it has been assumed that 75% of students will depart between 15:00-16:00 with 25% departing in the hour after.

14.71 The school transport minibuses will depart the site in the morning between 07:00 – 08:00 and arrive back at the school between 08:00 – 09:00. In the afternoon, 75% of the school minibuses will depart the site with pupils on board with 25% departing in the hour after. The minibuses will arrive back at the school the following hours respectively.

Vehicles

14.72 Table 14.30 shows the staff vehicle arrivals and departures for the SEN site in the AM peak period.

Table 14.30: Staff SEN School vehicle trip generation in the AM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	8	0	8	0	0	0	8	0	8
08:00 - 09:00	15	0	15	0	0	0	15	0	15
09:00 - 10:00	7	0	7	0	0	0	7	0	7

14.73 Table 14.30 shows that what is generally considered as the AM peak hour of 08:00 to 09:00, there are 15 vehicles arriving and 0 vehicles departing, giving a total of 15 vehicle movements to and from the SEN School by staff.

14.74 Table 14.31 shows the staff vehicle arrivals and departures for the SEN School site in the PM peak period.

Table 14.31: Staff SEN School vehicle trip generation in the PM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	0	0	0	7	0	7	7	0	7
17:00 - 18:00	0	0	0	15	0	15	15	0	15
18:00 - 19:00	0	0	0	8	0	8	8	0	8

14.75 Table 14.31 shows that what is generally considered as the PM peak hour of 17:00 to 18:00, there are 0 vehicles arriving and 15 vehicle departing, giving a total of 15 vehicle movements to and from the SEN by staff.

14.76 Table 14.32 shows the student vehicle arrivals and departures trips for the AM peak period. Under the 'Other' heading are the school mini-bus trips.

Table 14.32: Student SEN School vehicle trip generation in the AM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	0	0	0	0	5	5	0	5	5
08:00 - 09:00	10	5	15	10	0	10	20	5	25
09:00 - 10:00	0	0	0	0	0	0	0	0	0

14.77 Table 14.32 shows that in the AM peak hour of 08:00 to 09:00, there are 15 vehicles arriving and 10 vehicles departing, giving a total of 25 student vehicle movements to and from the SEN School.

14.78 Table 14.33 shows the student drop off and pick up vehicle trips in the PM peak period. Again under the 'Other' heading are the school mini-bus trips.

Table 14.33: Student SEN vehicle trip generation in the PM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	3	4	7	3	1	4	6	5	11
17:00 - 18:00	0	1	1	0	0	0	0	1	1
18:00 - 19:00	0	0	0	0	0	0	0	0	0

14.79 Table 14.33 shows that in the PM peak hour of 17:00 to 18:00, there is 1 vehicle arriving and 0 vehicles departing, giving a total of 1 vehicle movements to and from the SEN School by students.

14.80 The total vehicle trip generation for the SEN School is shown in Table 14.34 and Table 14.35 for the AM and PM peak period respectively.

Table 14.34: SEN total vehicle trip generation AM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	8	0	8	5	0	5	13	0	13
08:00 - 09:00	30	0	30	10	0	10	40	0	40
09:00 - 10:00	7	1	8	0	1	1	7	2	9

Table 14.35 SEN total vehicle trip generation PM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	7	0	7	11	0	11	18	0	18
17:00 - 18:00	1	0	1	15	0	15	16	0	16
18:00 - 19:00	0	0	0	8	0	8	8	0	8

All modes

14.81 Table 14.36 shows the staff all mode arrivals and departures for the SEN School site during the AM period of 07:00 to 10:00.

Table 14.36: SEN School staff AM peak all mode trip generation

Mode	**07:00 – 08:00**			**08:00 – 09:00**			**09:00 – 10:00**			**07:00 – 10:00**
	Arr	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Arr**	**Dep**	**Total**	**Total**
Walk	2	0	2	4	0	4	2	0	2	8
Cycle	2	0	2	4	0	4	2	0	2	8
Underground	0	0	0	0	0	0	0	0	0	0
Rail	0	0	0	1	0	1	1	0	1	2
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	2	0	2	4	0	4	2	0	2	8
School Bus	0	0	0	0	0	0	0	0	0	0
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	1	0	1	2	0	2	1	0	1	4
Car	8	0	8	15	0	15	7	0	7	30
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**15**	**0**	**15**	**30**	**0**	**30**	**15**	**0**	**15**	**60**

14.82 Table 14.36 shows that what is generally considered as the AM peak hour of 08:00 to 09:00, there are a total of 30 staff arriving and departing across all modes of transport.

14.83 Table 14.37 shows the student all mode arrivals and departures for the SEN School site during the AM period of 07:00 to 10:00.

Table 14.37: SEN School student AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	0	0	0	12	0	12	0	0	0	12
Cycle	0	0	0	1	0	1	0	0	0	1
Underground	0	0	0	0	0	0	0	0	0	0
Rail	0	0	0	0	0	0	0	0	0	0
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	0	0	0	12	0	12	0	0	0	12
School Bus	0	0	0	80	0	80	0	0	0	80
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	0	0	0	0	0	0	0	0	0
Car	0	0	0	10	10	20	0	0	0	20
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**115**	**10**	**125**	**0**	**0**	**0**	**125**

14.84 Table 14.37 shows that in the AM peak hour of 08:00 to 09:00, there are a total of 125 students arriving and departing across all modes of transport.

14.85 Table 14.38 shows the staff and student all mode arrivals and departures for the SEN School site during the AM period of 07:00 to 10:00.

Table 14.38: SEN School staff and student AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	2	0	2	16	0	16	2	0	2	20
Cycle	2	0	2	5	0	5	2	0	2	9
Underground	0	0	0	0	0	0	0	0	0	0
Rail	0	0	0	1	0	1	1	0	1	2
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	2	0	2	16	0	16	2	0	2	20
School Bus	0	0	0	80	0	80	0	0	0	80
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	1	0	1	2	0	2	1	0	1	4
Car	8	0	8	25	10	35	7	0	7	50
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**15**	**0**	**15**	**145**	**10**	**155**	**15**	**0**	**15**	**185**
HGVs	0	0	0	0	0	0	1	1	2	2
Total	**15**	**0**	**15**	**145**	**10**	**155**	**16**	**1**	**17**	**187**

14.86 Table 14.38 shows that in the AM peak hour of 08:00 to 09:00, there are a total of 155 staff and students arriving and departing across all modes of transport, with a total site trip generation of 155.

14.87 Table 14.39 shows the staff all mode arrivals and departures for the SEN School site during the PM period of 16:00 to 19:00.

Table 14.39: SEN School staff PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	0	2	2	0	4	4	0	2	2	8
Cycle	0	2	2	0	4	4	0	2	2	8
Underground	0	0	0	0	0	0	0	0	0	0
Rail	0	1	1	0	1	1	0	0	0	2
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	0	2	2	0	4	4	0	2	2	8
School Bus	0	0	0	0	0	0	0	0	0	0
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	1	1	0	2	2	0	1	1	4
Car	0	7	7	0	15	15	0	8	8	30
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**0**	**15**	**15**	**0**	**30**	**30**	**0**	**15**	**15**	**60**

14.88 Table 14.39 shows that inthe PM peak hour of 17:00 to 18:00, there are a total of 30 staff arriving and departing across all modes of transport.

14.89 Table 14.40 shows the student all mode arrivals and departures for the SEN site during the PM period of 16:00 to 19:00.

Table 14.40: SEN School student PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	0	3	3	0	0	0	0	0	0	3
Cycle	0	0	0	0	0	0	0	0	0	0
Underground	0	0	0	0	0	0	0	0	0	0
Rail	0	0	0	0	0	0	0	0	0	0
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	0	3	3	0	0	0	0	0	0	3
School Bus	0	20	20	0	0	0	0	0	0	20
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	0	0	0	0	0	0	0	0	0
Car	3	3	6	0	0	0	0	0	0	6
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**3**	**29**	**32**	**0**	**0**	**0**	**0**	**0**	**0**	**32**

14.90 Table 14.40 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 0 students arriving and departing across all modes of transport. However, in the hour before, there are a total of 32 students arriving and departing across all modes of transport

14.91 Table 14.41 shows the staff and student all mode arrivals and departures for the SEN site during the PM period of 16:00 to 19:00.

Table 14.41: SEN school staff and student PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	0	5	5	0	4	4	0	2	2	11
Cycle	0	2	2	0	4	4	0	2	2	8
Underground	0	0	0	0	0	0	0	0	0	0
Rail	0	1	1	0	1	1	0	0	0	2
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	0	5	5	0	4	4	0	2	2	11
School Bus	0	20	20	0	0	0	0	0	0	20
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	1	1	0	2	2	0	1	1	4
Car	3	10	13	0	15	15	0	8	8	36
Motorcycle	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
Total	**3**	**44**	**47**	**0**	**30**	**30**	**0**	**15**	**15**	**92**
HGVs	0	0	0	0	0	0	0	0	0	0
Total	**3**	**44**	**47**	**0**	**30**	**30**	**0**	**15**	**15**	**92**

14.92 Table 14.41 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 30 staff and students arriving and departing across all modes of transport, with a total site trip generation also being 30.

Mode split

14.93 The mode split of the SEN School has been based on the 'Hands Up' survey at the existing Clarendon School. The calculated mode splits for the existing SEN School are set out in Table 14.42.

Table 14.42: SEN School travel mode split

Mode	07:00 – 10:00		16:00 – 19:00	
	Staff	Students	Staff	Students
Walk	12.5%	10.0%	12.5%	10.0%
Cycle	12.5%	1.0%	12.5%	1.0%
Underground	0.0%	0.0%	0.0%	0.0%
Rail	3.6%	0.0%	3.6%	0.0%
Bike / Rail	0.0%	0.0%	0.0%	0.0%
Bus	12.5%	10.0%	12.5%	10.0%
School Bus	0.0%	71.0%	0.0%	71.0%
Taxi	0.0%	0.0%	0.0%	0.0%
Car Share	7.1%	0.0%	7.1%	0.0%
Car	51.8%	9.0%	51.8%	9.0%
Motorcycle	0.0%	0.0%	0.0%	0.0%
Other	0.0%	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

14.94 As can be seen from Table 14.42 private car is the highest mode share for staff, with cycling, walking and bus being the next highest mode share in the AM and PM peak period.

14.95 For students, the school bus is the highest mode share, with normal bus and car being the next highest in the AM and PM peak period.

Residential

Trip generation

14.96 The proposed Residential development will have a maximum of 180 units, consisting of a mix of houses and apartments. However, for robust assessment, the trip generation calculation has been based on 200 units.

14.97 The Residential trip generation has been calculated using trip rates obtained from the TRICS database. Appendix I contains the TRICS data for the Residential development. The comparator sites chosen from TRICS were based on the trip rate selection parameters of:

- residential use class C3, mixed private houses (flats and houses);
- Greater London and the south east for regions and areas;
- range of units between 50 and 300;
- weekday surveys; and
- suburban areas.

Vehicles

14.98 Table 14.43 shows the total vehicle arrivals and departures for the Residential site in the AM peak period.

Table 14.43: Residential vehicle trip generation in the AM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	13	2	15	35	0	35	48	2	50
08:00 - 09:00	26	1	27	34	2	36	60	3	63
09:00 - 10:00	23	1	24	26	2	28	49	3	52

14.99 Table 14.43 shows that what is generally considered as the AM peak hour of 08:00 to 09:00, there are 27 vehicles arriving and 36 vehicles departing, giving a total of 63 vehicle movements to and from the Residential site.

14.100 Table 14.44 shows the total vehicle arrivals and departures for the Residential site in the PM peak period.

Table 14.44: Residential vehicle trip generation in the PM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	37	1	38	25	1	26	62	2	64
17:00 - 18:00	43	0	43	20	0	20	63	0	63
18:00 - 19:00	33	0	33	21	0	21	54	0	54

14.101 Table 14.44 shows that what is generally considered as the PM peak hour of 17:00 to 18:00, there are 43 vehicles arriving and 20 vehicles departing, giving a total of 63 vehicle movements to and from the Residential site.

All modes

14.102 Table 14.45 shows the all mode arrivals and departures for the Residential site during the AM period of 07:00 to 10:00.

Table 14.45: Residential AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	2	4	6	2	10	12	3	4	7	25
Cycle	1	3	4	2	8	10	2	3	5	19
Underground	2	4	6	2	10	12	3	4	7	25
Rail	8	16	24	9	42	51	12	16	28	103
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	1	2	3	1	5	6	1	2	3	12
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	0	0	0	1	1	0	0	0	1
Car Driver	13	35	48	26	34	60	23	26	49	157
Motorcycle	0	1	1	0	2	2	0	1	1	4
Other	0	0	0	0	1	1	0	0	0	1
Total	**27**	**65**	**92**	**42**	**113**	**155**	**44**	**56**	**100**	**347**
HGVs	2	0	2	1	2	3	1	2	3	8
Site Total	**29**	**65**	**94**	**43**	**115**	**158**	**45**	**58**	**103**	**355**

14.103Table 14.45 shows that in the AM peak hour of 08:00 to 09:00, there are a total of 155 person trips arriving and departing across all modes of transport.

14.104Table 14.13 shows the all mode arrivals and departures for the Residential site during the PM period of 16:00 to 19:00.

Table 14.46: Residential PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	5	3	8	4	1	5	5	2	7	20
Cycle	4	2	6	3	0	3	4	1	5	14
Underground	4	4	8	4	1	5	5	3	8	21
Rail	19	11	30	17	3	20	21	7	28	78
Bike / Rail	0	0	0	0	0	0	0	0	0	0
Bus	2	1	3	2	0	2	2	1	3	8
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	1	0	1	1	0	1	1	0	1	3
Car Driver	37	25	62	43	20	63	33	21	54	179
Motorcycle	1	0	1	1	0	1	1	0	1	3
Other	0	0	0	0	0	0	0	0	0	0
Total	**73**	**46**	**119**	**75**	**25**	**100**	**72**	**35**	**107**	**326**
HGVs	1	1	2	0	0	0	0	0	0	2
Site Total	**74**	**47**	**121**	**75**	**25**	**100**	**72**	**35**	**107**	**328**

14.105Table 14.46 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 100 person trips arriving and departing across all modes of transport.

Mode split

14.106The mode split of the Residential site has been based on 2011 Census data *Method of Travel to Work* for the ward of St Margaret's and North Twickenham. The travel mode split for the Tech Hub is set out in Table 14.47.

Table 14.47: Tech Hub travel mode split

Mode	07:00 – 10:00	16:00 – 19:00
Walk	7.2%	6.1%
Cycle	5.5%	4.3%
Underground	7.2%	6.4%
Rail	29.7%	23.9%
Bike / Rail	0.0%	0.0%
Bus	3.5%	2.5%
Taxi	0.0%	0.0%
Car Share	0.3%	0.9%
Car Driver	45.2%	54.9%
Motorcycle	1.2%	0.9%
Other	0.3%	0.0%
Total	**100.0%**	**100.0%**

14.107As can be seen from Table 14.47 private car is the highest mode share, with rail being the next highest mode share.

Sports Centre and Craneford Way Sports Pitches

Trip generation and mode split

14.108The existing Sports Centre trip generation was picked up in the existing College surveys. The use of the proposed Sports Centre will be similar to the current Sports Centre and therefore the proposed Sports Centre trip generation and mode split is included as part of the Replacement College trip generation and mode split.

14.109The existing Craneford Way Playing Field has one 11-a-side and two 7-a-side football pitched marked out, plus hard standing for four tennis courts and two netball courts. The proposals include the provision of a grass football pitch and an all-weather surface marked out as a rugby pitch. Therefore, trip generation and mode split of the proposed Craneford Way Playing Field is likely to be similar to the existing uses.

14.110It should be noted that any current all mode trip generation of the existing Craneford Way Playing Field by the existing College users will have been picked up by the surveys and will be included as part of the Replacement College's trip generation assessment.

Total Development

Trip generation

14.111The predicted total trip generation consists of the Replacement College (including the Sports Centre and Craneford Way Playing Field), Tech Hub, Secondary School, SEN School and the Residential site.

Vehicles

14.112Table 14.48 shows the vehicle arrivals and departures for the whole of the REEC site in the AM peak period.

Table 14.48: Whole REEC development vehicle trip generation in the AM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	95	3	98	47	2	49	142	5	147
08:00 - 09:00	210	3	213	80	5	85	290	8	298
09:00 - 10:00	73	5	78	48	5	53	121	10	131

14.113Table 14.48 shows that what is generally considered as the AM peak hour of 08:00 to 09:00, there are 213 vehicles arriving and 85 vehicles departing, giving a total of 298 vehicle movements to and from the whole of the REEC site.

14.114Table 14.49 shows the vehicle arrivals and departures for the whole of the REEC site in the PM peak period.

Table 14.49: Whole REEC development vehicle trip generation in the PM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	66	1	67	154	2	156	220	3	223
17:00 - 18:00	54	1	55	137	1	138	191	2	193
18:00 - 19:00	46	0	46	77	0	77	123	0	123

14.115Table 14.49 shows that what is generally considered as the PM peak hour of 17:00 to 18:00, there are 55 vehicles arriving and 138 vehicles departing, giving a total of 193 vehicle movements to and from the whole of the REEC site.

All modes

14.116Table 14.50 shows the all mode arrivals and departures for the whole of the REEC site during the AM period of 07:00 to 10:00.

Table 14.50: Whole REEC development AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	27	7	34	352	22	374	94	18	112	520
Cycle	14	4	18	114	12	126	20	8	28	172
Underground	3	5	8	29	12	41	18	6	24	73
Rail	25	27	52	432	72	504	239	54	293	849
Bike/Rail	0	0	0	8	1	9	5	1	6	15
Bus	33	10	43	579	33	612	222	37	259	914
School Bus	1	0	1	87	0	87	1	0	1	89
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	3	0	3	10	1	11	2	0	2	16
Car Driver	94	42	136	203	79	282	72	47	119	537
Motorcycle	2	1	3	5	2	7	1	1	2	12
Other	1	0	1	10	2	12	6	1	7	20
Total	**203**	**96**	**299**	**1,829**	**236**	**2,065**	**680**	**173**	**853**	**3,217**
HGVs	3	2	5	3	5	8	5	5	10	23
Site Total	**206**	**98**	**304**	**1,832**	**241**	**2,073**	**685**	**178**	**863**	**3,240**

14.117 Table 14.50 shows that in the AM peak hour of 08:00 to 09:00, there are a total of 2,073 person trips arriving and departing across all modes of transport for whole of the REEC site. It should be noted that 8 of these trips are by HGVs which are likely to be delivering goods or collecting refuse from the site.

14.118 Table 14.51 shows the all mode arrivals and departures for the whole of the REEC site during the PM period of 16:00 to 19:00.

Table 14.51: Whole REEC development PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	22	101	122	14	43	58	13	22	34	214
Cycle	7	32	39	4	17	21	6	12	18	77
Underground	4	7	11	4	2	7	5	4	9	27
Rail	38	118	155	32	52	84	31	30	62	301
Bike/Rail	0	1	1	0	0	1	0	0	0	2
Bus	15	76	91	9	32	41	8	16	23	155
School Bus	0	21	21	0	0	0	0	0	0	21
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	1	4	5	1	5	6	1	2	3	15
Car Driver	62	148	210	53	134	187	46	76	122	519
Motorcycle	1	1	2	2	6	8	1	0	1	11
Other	1	3	3	0	1	2	0	1	1	6
Total	**150**	**511**	**661**	**121**	**294**	**415**	**111**	**162**	**273**	**1,349**
HGVs	1	2	3	1	1	2	0	0	0	5
Site Total	**151**	**513**	**664**	**122**	**295**	**417**	**111**	**162**	**273**	**1,354**

14.119 Table 14.46 shows that in the PM peak hour of 17:00 to 18:00, there are a total of 417 person trips arriving and departing across all modes of transport for whole of the REEC site. Again, it should be noted that 2 of these trips are by HGVs which are likely to be delivering goods or collecting refuse from the site.

Mode split

14.120 The predicted mode split for the whole of the REEC development site has been calculated from the all mode trip generation. The predicted travel mode split for the whole of the REEC site is set out in Table 14.52

Table 14.52: Whole REEC development travel mode split

Mode	07:00 – 10:00	16:00 – 19:00
Walk	16.2%	15.9%
Cycle	5.3%	5.7%
Underground	2.3%	2.0%
Rail	26.4%	22.3%
Bike/Rail	0.5%	0.1%
Bus	28.4%	11.5%
School Bus	2.8%	1.6%
Taxi	0.0%	0.0%
Car Share	0.5%	1.1%
Car Driver	16.7%	38.5%
Motorcycle	0.4%	0.8%
Other	0.6%	0.5%
Total	**100.1%**	**100.1%**

14.121 As can be seen from Table 14.52, bus and rail have the highest mode share, with private car and then walking being the next highest. The high use of bus and rail is as result of the all educational uses of the REEC site, but the main contributor to bus trips is the Secondary School.

14.122 In the PM peak period private car is the highest mode share, with rail and then walking being the next highest mode share. The car mode share is highest as a result of the Residential site with people returning home from work or heading out for the evening, but also because a large proportion of the secondary school trips made by bus take place before 16:00 and so are not included in the PM peak period.

Summary

14.123 As previously stated, the predicted total trip generation of the REEC development site consists of the Replacement College (including the Sports Centre and Craneford Way Playing Field), Tech Hub, Secondary School, SEN School and the

Residential site. However, the existing College trips need to be removed from the total site trip generation to assess the actual uplift in trip generation by the proposed REEC development. The net impact assessment is shown in Chapter 15.

15. NET IMPACT TRIP GENERATION AND TRAVEL MODE SPLIT

Trip generation

15.1 The existing College trip generation has been taken away from the predicted total REEC development site trip generation to establish the actual increase or decrease in person and vehicle trip generation.

Vehicles

15.2 Table 15.1 shows the vehicle arrivals and departures for the whole of the REEC site in the AM peak period.

Table 15.1: Net vehicle trip generation in the AM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
07:00 - 08:00	31	2	33	44	-1	43	75	1	76
08:00 - 09:00	89	3	92	66	4	70	155	7	162
09:00 - 10:00	21	1	22	31	2	33	52	3	55

15.3 Table 15.1 shows that what is generally considered as the AM peak hour of 08:00 to 09:00, there are an extra 92 vehicles arriving and extra 70 vehicles departing, giving a total of an extra 162 vehicle movements to and from the whole of the REEC site.

15.4 Table 15.2 shows the vehicle arrivals and departures for the whole of the REEC site in the PM peak period.

Table 15.2: Net vehicle trip generation in the PM peak

	ARRIVALS			DEPARTURES			TOTAL		
Time	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total	Cars/vans	HGVs	Total
16:00 - 17:00	38	1	39	72	1	73	110	2	112
17:00 - 18:00	43	0	43	48	0	48	91	0	91
18:00 - 19:00	30	0	30	37	0	37	67	0	67

15.5 Table 15.2 shows that what is generally considered as the PM peak hour of 17:00 to 18:00, there are an extra 43 vehicles arriving and an extra 48 vehicles departing, giving a total of an extra 91 vehicle movements to and from the whole of the REEC site.

All modes

15.6 Table 15.3 shows the all mode arrivals and departures for the whole of the REEC site during the AM period of 07:00 to 10:00.

Table 15.3: Net AM peak all mode trip generation

Mode	07:00 – 08:00			08:00 – 09:00			09:00 – 10:00			07:00 – 10:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	23	5	28	245	15	260	35	9	44	332
Cycle	7	3	10	69	9	78	12	5	17	105
Underground	2	4	6	5	10	15	5	4	9	30
Rail	12	18	30	47	45	92	27	19	46	168
Bike/Rail	0	0	0	0	0	0	1	0	1	1
Bus	22	3	25	255	10	265	43	8	51	341
School Bus	1	0	1	87	0	87	1	0	1	89
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	0	0	0	-8	0	-8	-7	-1	-8	-16
Car Driver	40	38	78	91	69	160	30	31	61	299
Motorcycle	0	1	1	0	2	2	0	1	1	4
Other	0	0	0	0	1	1	1	0	1	2
Total	**107**	**72**	**179**	**791**	**161**	**952**	**148**	**76**	**224**	**1,355**
HGVs	2	0	2	3	4	7	2	3	5	14
Site Total	**109**	**72**	**181**	**794**	**165**	**959**	**150**	**79**	**229**	**1,369**

15.7 Table 15.3 shows that in the AM peak hour of 08:00 to 09:00, there are a total of an extra 959 person trips arriving and departing across all modes of transport for whole of the REEC site. It should be noted that 7 of these trips are by HGVs which are likely to be delivering goods or collecting refuse from the site.

15.8 Table 14.51 shows the all mode arrivals and departures for the whole of the REEC site during the PM period of 16:00 to 19:00.

Table 15.4: Net PM peak all mode trip generation

Mode	16:00 – 17:00			17:00 – 18:00			18:00 – 19:00			16:00 – 19:00
	Arr	Dep	Total	Arr	Dep	Total	Arr	Dep	Total	Total
Walk	11	43	54	6	17	23	7	9	16	94
Cycle	6	14	20	3	8	11	5	5	10	40
Underground	4	5	9	4	2	6	5	3	9	24
Rail	22	27	49	19	11	30	23	11	34	113
Bike/Rail	0	0	1	0	0	0	0	0	0	1
Bus	10	50	60	6	20	25	5	10	15	100
School Bus	0	21	21	0	0	0	0	0	0	21
Taxi	0	0	0	0	0	0	0	0	0	0
Car Share	-4	-3	-7	-1	0	-1	-2	0	-2	-9
Car Driver	39	73	112	44	50	94	33	38	71	277
Motorcycle	1	0	1	1	0	1	1	0	1	3
Other	0	1	1	0	0	0	0	0	0	1
Total	**90**	**231**	**320**	**83**	**108**	**191**	**77**	**77**	**154**	**666**
HGVs	1	1	2	0	0	0	0	0	0	2
Site Total	**91**	**232**	**322**	**83**	**108**	**191**	**77**	**77**	**154**	**668**

15.9 Table 15.4 shows that in the PM peak hour of 17:00 to 18:00, there are a total of an extra 191 person trips arriving and departing across all modes of transport for whole of the REEC site..

Mode split

15.10 The predicted net mode split for the whole of the REEC development site has been calculated from the all mode net trip generation. The predicted net travel mode split for the whole of the REEC site is set out in Table 15.5

Table 15.5: Net travel mode split

Mode	07:00 – 10:00	16:00 – 19:00
Walk	24.5%	14.1%
Cycle	7.8%	6.0%
Underground	2.2%	3.6%
Rail	12.4%	17.0%
Bike/Rail	0.1%	0.2%
Bus	25.2%	15.1%
School Bus	6.6%	3.2%
Taxi	0.0%	0.0%
Car Share	-1.2%	-1.4%
Car Driver	22.1%	41.6%
Motorcycle	0.3%	0.5%
Other	0.1%	0.2%
Total	**100.1%**	**100.1%**

15.11 As can be seen from Table 15.5, bus, walking and car have the highest mode share, with rail being the next highest. The high use of bus and walking is likely to be a result of the all educational uses of the REEC site, but the main contributor to bus trips is the Secondary School.

15.12 In the PM peak period private car is the highest mode share, with rail, bus, and then walking being the next highest mode share. The car mode share is likely to be as a result of the Residential site with people returning home from work or heading out for the evening, but also because a large proportion of the secondary school trips made by bus take place before 16:00 and so are not included in the PM peak period.

Summary

15.13 Overall the highest increase in trip generation in the AM period is on the bus network with 341 extra total trips. This is a result of the educational uses of the site, but is mainly due to the Secondary School because the College bus trips are already on the network. The impacts on the bus network which is set out in Chapter19.

15.14 Walking, private car and rail use have the next highest increases in trip generation in the AM period, with 332, 299 and 168 extra total trips respectively. The impacts of which are set out in Chapters 21, 17 and 20 respectively.

15.15 In the PM peak period private car use has the greatest increase in trip generation, with rail bus and walking being the next highest. The impacts of this are set out in the following chapters.

16. CONSTRUCTION

16.1 A Construction Management Plan (CMP), Construction Logistics Plan (CMP) and Construction Environmental Management Plan (CEMP) have been prepared and for this outline planning application and set out further details on construction vehicles and construction traffic management.

Construction generated trips

16.2 The CLP states that the site will receive 24 construction HGVs a day, which results in a total of 12 arrivals and 12 departures. Based on a typical ten hour working day i.e. 08:00 to 18:00, this could result in an average of between one and two vehicles an hour. Therefore, it has been assumed that there will be two construction vehicles arriving at the site and two construction vehicles departing the site in the AM peak hour of 08:00 to 09:00 and one construction vehicles arriving at the site and one construction vehicles departing the site in the PM peak hour of 17:00 to 18:00.

16.3 There will also be 9 minibus arrivals and 9 minibus departures throughout the day for the contractors. Therefore, it has been assumed that three minibuses will arrive in the AM peak hour of 08:00 to 09:00 and three minibuses will depart in the PM peak hour of 17:00 to 18:00.

16.4 There will be 150 contractors on site. Therefore, it has been assumed that 50 will arrive each hour throughout the AM peak period and 50 will depart each hour throughout the PM peak period.

Construction routes

16.5 Langhorn Drive will be used as the main construction vehicle access and egress, with some limited access and egress via the northern end of Egerton Road from what is currently the student car park.

16.6 For the development of the Craneford Way Playing Field, construction traffic will cross Craneford Way from the existing College access in order to access the field. No construction vehicles will use the residential roads of Court Way, Heathfield North, Heathfield South and Egerton Road to the south of the fire access gate. All construction vehicles will as far as reasonably possible use the A316 Chertsey Road as the main strategic route to the site.

Impacts on pedestrian routes / footways

16.7 Given the low number of construction vehicles anticipated, the principal route to the site via Langhorn Drive and the A316, and the control measures set out within the CLP, CMP and CEMP which would be implemented, the likely effects of construction traffic on pedestrian movement and capacity will be negligible. Details on the management of walkways, closures and routing would be agreed with LBRuT through the CEMP.

17. IMPACTS – ROAD NETWORK

Traffic Levels

17.1 The AM and PM peak hour vehicle traffic flows for the year 2019 plus the REEC development are set out in Table 17.1 and Table 17.2. Appendix J contains the traffic flow diagrams.

Table 17.1: 2019 + Development AM peak hour (08:00 – 09:00) vehicle flows

Road	Total Flow	% increase from 2019 Baseline
A316 Chertsey Road	3,595	7.3
B361 Whitton Road	778	11.0
Court Way	156	34.5
Langhorn Drive	264	164.0

Table 17.2: 2019 + Development PM peak hour (17:00 – 18:00) vehicle flows

Road	Total Flow	% increase from 2019 Baseline
A316 Chertsey Road	3,832	4.6
B361 Whitton Road	751	6.2
Court Way	117	3.5
Langhorn Drive	267	142.7

17.2 The AM and PM peak hour vehicle traffic flows for 2034 plus the REEC development are set out in Table 17.3 and Table 17.4. Appendix J contains the traffic flow diagrams.

Table 17.3: 2034 + Development AM peak hour (08:00 – 09:00) vehicle flows

Road	Total Flow	% increase from 2034 Baseline
A316 Chertsey Road	3,853	6.8
B361 Whitton Road	831	10.2
Court Way	165	32
Langhorn Drive	273	152.7

Table 17.4: 2034 + Development PM peak hour (17:00 – 18:00) vehicle flows

Road	Total Flow	% increase from 2034 Baseline
A316 Chertsey Road	4,070	3.5
B361 Whitton Road	803	5.76
Court Way	119	-2.5
Langhorn Drive	287	142.4

17.3 Due to the existing traffic flows on the A316 Chertsey Road and the B361 Whitton Road, the subsequent predicted traffic flows in the AM and PM peak hours as a result of the proposed REEC development in the 2019 + Development and 2034 + Development scenarios in practical terms would be modest.

17.4 The increase in traffic on the Langhorn Drive in the AM and PM peak hours for the 2019 + Development scenario is 164.0% and 142.7 respectively. Paragraph 32.4 Environmental Capacities of Links and Areas set out in IHT's Transport In The Urban Environment states:

'…the environmental capacity for an access road or local distributor lies, typically, in the range of 300-600 vehicles per hour…'

17.5 The flow of 264 vehicles on Langhorn Drive will be 36 vehicles less than the lower end of the environmental capacity bracket set out in the IHT document and 336 less than the higher end of the bracket.

17.6 The 2019 Baseline flows on Langhorn Drive are relatively low and therefore, although the percentage increase between the flows is high, in practical terms because the 2019 Baseline flows are so low the effect will be not be as excessive as the percentage figure portrays and in practice will have a negligible impact on the capacity of the road.

17.7 The increase in traffic flow on Court Way in the AM peak hour is a result of the SEN School traffic and two thirds of the Secondary School student drop off and pick up trips. It should be noted that no HGV movements associated with the whole REEC development site use the residential roads of Court Way, Heathfield North, Heathfield South, Egerton Road and Craneford Way to access the site. All HGV access to the site will be via Langhorn Drive.

17.8 It should also be noted that there is a decrease in traffic on Court Way in the PM peak hour as a result of the proposed REEC development due to the removal of the existing College trips, but also because most of the trips associated with pupils leaving the Secondary School and the SEN School take place before the PM peak hour.

17.9 Overall, the increase (and decrease during the PM peak hour in the case of Court Way) in traffic on the local roads used to access the site is not deemed to be excessive and well within the effective capacity of the road links. The flows on Court Way and Langhorn Drive are also well below the thresholds set out in the IHT document for the environmental capacity of residential roads in order to maintain their local access status and environment.

Junction Analysis

17.10 In order to establish how well the local road junctions will continue to provide access to the proposed REEC development site and the existing surrounding residential and commercial uses, junction capacity assessments have been undertaken.

17.11 The junction capacity assessments for the A316 Chertsey Road / Egerton Road and the B361 Whitton Road / Court Way simple priority junctions have been undertaken using PICADY. In order to allow for daily variation in traffic flows, an 85% RFC is generally regarded as the threshold for a junction reaching its operational capacity. Any RFC below 85% is regarded as the junction working within capacity.

17.12 The junction capacity assessment for the A316 Chertsey Road / Langhorn Drive signal controlled junction has been undertaken using LinSig 3. In order to allow for daily variation in traffic flows, a 90% RFC is generally regarded as the threshold for a junction reaching its operational capacity. Any RFC below 90% is regarded as the junction working within capacity. The Langhorn Drive traffic flow distribution for left and right turn movements has been based on an interview survey undertaken on Langhorn Drive on 17th March 2015.

17.13 A summary of the proposed development on the assessed junctions is set out in Table 17.5 and Table 17.6 for the 2019 + Development scenario and in Table 17.7 and Table 17.8 for the 2034 + Development scenario. It should be noted for the A316 Chertsey Road / Langhorn Drive signal controlled junction, the vehicle queue figure on is spread over two lanes on all arms. The full results of the junction capacity assessment for the existing situation are contained within Appendix K.

Table 17.5: Summary of junction capacity assessment for 2019 + Development AM peak hour (08:00 – 09:00) vehicle flows

Junction	Road arm	Ratio of Flow to Capacity (RFC) %	Average vehicles queuing
A316 Chertsey Road / Langhorn Drive	Langhorn Drive	43.1%	3
	A316 Chertsey Road – East	68.0%	28
	A316 Chertsey Road – West	71.8%	34
A316 Chertsey Road / Egerton Road	Egerton Road	3.5%	0
B361 Whitton Road / Court Way	Whitton Road (north)	6.1%	0
	Court Way	16.5	1

Table 17.6: Summary of junction capacity assessment for 2019 + Development PM peak hour (17:00 – 18:00) vehicle flows

Junction	Road arm	Ratio of Flow to Capacity (RFC) %	Average vehicles queuing
A316 Chertsey Road / Langhorn Drive	Langhorn Drive	63.2%	6
	A316 Chertsey Road – East	74.7%	36
	A316 Chertsey Road – West	68.5%	31
A316 Chertsey Road / Egerton Road	Egerton Road	1.9%	0
B361 Whitton Road / Court Way	Whitton Road (north)	2.3%	0
	Court Way	20.7%	1

Table 17.7: Summary of junction capacity assessment for 2034 + Development AM peak hour (08:00 – 09:00) vehicle flows

Junction	Road arm	Ratio of Flow to Capacity (RFC) %	Average vehicles queuing
A316 Chertsey Road / Langhorn Drive	Langhorn Drive	43.7%	3
	A316 Chertsey Road – East	72.3%	32
	A316 Chertsey Road – West	76.9%	39
A316 Chertsey Road / Egerton Road	Egerton Road	3.7%	0
B361 Whitton Road / Court Way	Whitton Road (north)	6.2%	0
	Court Way	18.3%	1

Table 17.8: Summary of junction capacity assessment for 2034 + Development PM peak hour (17:00 – 18:00) vehicle flows

Junction	Road arm	Ratio of Flow to Capacity (RFC) %	Average vehicles queuing
A316 Chertsey Road / Langhorn Drive	Langhorn Drive	63.2%	6
	A316 Chertsey Road – East	79.3%	42
	A316 Chertsey Road – West	73.2%	35
A316 Chertsey Road / Egerton Road	Egerton Road	2.0%	0
B361 Whitton Road / Court Way	Whitton Road (north)	6.4%	0
	Court Way	22.2%	1

17.14 The junction capacity assessment demonstrates that during the AM and PM peak hours all junctions operate within capacity and the average queue lengths reach one vehicle.

A316 Chertsey Road / Langhorn Drive

17.15 The Langhorn Drive arm of the Langhorn Drive / A316 Chertsey Road signal controlled junction has 46.9% and 26.8% spare capacity in the AM and PM peak hours respectively before the threshold of 90% operational capacity is reached for the 2019 plus development scenario. In the 2034 plus development scenario, the same arm has 46.3% and 26.8% spare capacity in the AM and PM peak hours respectively.

17.16 The A316 Chertsey Road – East arm of the Langhorn Drive / A316 Chertsey Road junction has 22.0% and 15.3% spare capacity in the AM and PM peak hours. In

the 2034 plus development scenario, the same arm has 17.7% and 10.7% spare capacity in the AM and PM peak hours respectively.

17.17 The A316 Chertsey Road – West arm of the Langhorn Drive / A316 Chertsey Road junction has 18.2% and 21.5% spare capacity in the AM and PM peak hours. In the 2034 plus development scenario, the same arm has 13.1% and 16.8% spare capacity in the AM and PM peak hours respectively.

A316 Chertsey Road / Egerton Road

17.18 The Egerton Road arm of the Egerton Road / A316 Chertsey Road junction has 81.5% and 83.1% spare capacity in the AM and PM peak hours respectively for the 2019 plus development scenario. In the 2034 plus development scenario, the same arm has 81.3% and 83.0% spare capacity in the AM and PM peak hours respectively.

B361 Whitton Road / Court Way

17.19 The Court Way arm of the B361 Whitton Road / Court Way junction has 68.5% and 64.3% spare capacity in the AM and PM peak hours respectively for the 2019 plus development scenario. In the 2034 plus development scenario, the same arm has 66.7% and 62.8% spare capacity in the AM and PM peak hours respectively.

17.20 The northern arm of Whitton Road (right turn into Court Way) on the B361 Whitton Road / Court Way junction has 78.9% and 82.7% spare capacity in the AM and PM peak hours respectively for the 2019 plus development scenario. In the 2034 plus development scenario, the same arm has 78.8% and 78.6% spare capacity in the AM and PM peak hours respectively. This arm also experiences an increase in vehicle queues from zero vehicles to one vehicle.

Summary

17.21 The junction capacity assessment demonstrates that whilst the original latent capacity at each of the existing simple priority junctions assessed is reduced as a result of the REEC development in the AM peak hour, the junctions still have a significant quantity of latent capacity. The vehicle queues do not increase except on one arm, Whitton Road (north), where the queue length increases from zero to one.

17.22 The junction capacity assessment also demonstrates that the proposed signal controlled junction of Langhorn Drive / A316 Chertsey Road operates within capacity. As this is a new junction arrangement, all effects of the junction are new. The new junction will incorporate a 'right-turn out' lane for Langhorn Drive. This lane will avoid the need for vehicles wanting to head eastbound on the A316 Chertsey Road having to turn left and complete a 3.7Km round trip to get to the same point. Further benefits include the release of capacity at the A316 Chertsey Road / B358 Hospital Bridge Road signal controlled roundabout by the removal of eastbound traffic needing to U-turn at the roundabout.

17.23 The new junction also retains a dedicated left turn lane to Langhorn Drive in order to provide stacking capacity and traffic management for Harlequins FC when events are on at The Stoop.

17.24 Overall, the proposed development will have a negligible effect on the operational capacity of the junctions which link the site to the local highway network.

Construction Traffic

17.25 The junction capacity assessment undertaken for the 2019 + Development scenario, demonstrates that during the AM and PM peak hours all junctions operate within capacity. The AM and PM peak hours for the 2019 + Development + Cumulative + Construction Traffic for the phase 3 development minus the Phase 2 Residential development scenario, is 21 and 22 vehicles respectively lower than 2019 + Development scenario. Therefore, the 2019 + Development + Cumulative + Construction Traffic for the phase 3 development minus the Phase 2 Residential development scenario will have a negligible effect on the operational capacity of the junctions which link the site to the local highway network.

18. IMPACTS – PARKING

18.1 As previously mentioned, the site is located within the Heatham ('Hm') CPZ which is operational Monday to Saturday between the hours of 09:00 to 18:30. To the east of Whitton Road, the residential roads are covered by the Cole Park ('C') CPZ which is operational Monday to Friday between the hours of 08:30 to 18:30.

18.2 To the north, east and west of the 'Hm' CPZ is the Event Zone ('R') CPZ which is operational during events at Twickenham Stadium. The operational times of the CPZ are dependent on the type of event at the stadium. On event days, the operational times and restrictions of CPZ 'R' also apply to CPZ's 'Hm' and 'C'. When there is not an event occurring, there are no parking restrictions in CPZ 'R'.

18.3 A parking stress survey was undertaken throughout the night and day on Tuesday 14th October 2014 on local roads within 400m walking distance of the college demonstrates that these roads not suffer from a high level of parking stress throughout the day time and that in the evenings and through the night, most roads have spare parking capacity available.

18.4 The Heatham and Cole Park CPZ's are self-managing in that their restrictions prevent unauthorised persons parking their vehicles in the zones during the times of its operation. However, the Event Zone CPZ is only operational during events at Twickenham Stadium and therefore, on-street parking is available for anyone outside of the restrictions.

18.5 The Secondary School and SEN School will not require parking for students. However, due to the removal of the College student car park, students may opt to park on local roads instead. There are 1,442 on-street spaces on the roads within 400 metres of the site on roads to the north side of A316 between 09:00 and 19:00, of which the parking survey showed there 966 cars parked in the spaces during the same times, resulting in a parking stress of 67%. The student car park has 141 spaces. Therefore, adding the student cars to the 966 cars results in a parking stress of 77%. This results in a 10% increase in stress which would have negligible impact on the parking capacity in the study area where daytime restrictions do not apply. However, it is acknowledged that any students parking on Whitton Road, Palmerstone Road and Chudleigh Road, which are nearest to the College, could potentially create a problem.

18.6 As part of the development proposals, the client is proposing to offer a Section 106 contribution to fund a study to establish whether residents would like the

operation times of CPZ 'R' to the north of the site to be extended from the existing operation times. If the residents deem the extension of the CPZ operation times to be required, sufficient funds commuted through the Section 106 will be used to implement the extended operation times including infrastructure such as signing.

18.7 The Tech Hub is providing four more parking spaces than the amount set by the local parking standards. However, due to the low public transport accessibility of the site and the relatively low number of parking spaces being provided for the Tech Hub, the provision is not deemed to be excessive or likely to lead to an impact on the local highway network. Indeed the extra parking provision for the Tech Hub will prevent overflow parking on local roads, keeping all parking associated with the proposed development on the REEC site.

18.8 As the remaining uses of the REEC development site are providing parking spaces to the parking standards set by LBRuT, sufficient parking will be available within the REEC site and therefore, parking associated with the REEC development will not spill out onto local roads.

18.9 Drawing 30713/AC/041 shows the SEN School car park access arrangement. The drawing also shows infrastructure improvements on Egerton Road where the footway across the existing College's secondary access will be reinstated enabling provision of a further four pay & display on-street parking bays. These extra spaces will be an added benefit for visitors to the REEC development, particularly for the users of the Craneford Way Playing Field, and the local residents on the Heatham Estate.

Summary

18.10 As a result of infrastructure improvements associated with the development, four extra pay & display parking spaces will be provided on Egerton Road.

18.11 Whilst students attending the Replacement College will be of an age where they can drive to the REEC site, the removal of student parking on the site coupled with measures set out in the College Travel Plan will discourage the use of private car to travel to the site by students and encourage them to use more sustainable means of transport such as bus, rail and cycling. If the local residents wish the Event Zone CPZ restrictions to be extended, funds will be made available for their implementation and this will further deter the use of private car by College students.

18.12 Overall, the level of parking provision on the REEC development site and the potential measures set out in the site wide Framework Travel Plan, plus the amount of latent parking capacity on local roads, the proposed development will not have a detrimental impact on local street parking provision.

19. IMPACTS – BUS

New demand by direction

19.1 The site is served by three bus routes within a short walk from the site which provides 30 bus services in the AM peak of 08:00 – 09:00 and the 29 bus services in the PM peak of 17:00 – 18:00. A typical London bus has on average 70 seats. Therefore, in the AM peak hour there are 2,100 seats available on local buses. The proposed development will have a net increase in bus passengers of 265 in the AM peak hour, this accounts for 12.6% of the bus seats. If standing room is taken into account, the effect is reduced.

19.2 The site is served by 29 bus services in the PM peak hour. Therefore, in the PM peak hour there are 2,030 seats available on local buses. The proposed development will have a net increase in bus passengers of 25 in the PM peak hour, this accounts for 1.2% of the bus seats. If standing room is taken into account, again the effect is decreased further.

19.3 The majority of the 265 proposed increase in bus trips in the AM peak period, 83%, will be a result of the Secondary School and are likely to be relatively short bus journeys. The Secondary School is a Free School with funding from the Education Funding Agency (EFA). Discussions are ongoing with TfL to develop bus service frequency improvements to accommodate the additional demand on the bus network which equates to 3 to 4 additional bus loads in the AM peak hour period.

Summary

19.4 The frequency improvements to accommodate the additional demand on the bus network in the AM peak hour period will bring the impact on bus capacity to be negligible.

20. IMPACTS – RAIL

Route capacity

20.1 Twickenham Station is served by 22 rail services in the AM peak of 08:00 – 09:00 and the 18 in the PM peak of 17:00 – 18:00.

Train capacity

20.2 The type of rolling stock serving Twickenham Station has on average 256 seats. Therefore, in the AM peak hour there are on average 5,632 seats on the trains. The proposed development will have a net increase in rail passengers of 92 in the AM peak hour, which accounts for 1.6% of the seats on the train. This results in a negligible effect. If standing room is taken into account, the percentage decreases further.

20.3 In the PM peak hour there are on average 4,608 seats on the trains. The proposed development will have a net increase in rail passengers of 31 in the PM peak hour, this accounts for 0.7% of the seats on the trains. This results in a negligible effect. If standing room is taken into account, again the percentage decreases further.

20.4 It should also be noted that in September 2014 South West Trains announced the £210 million commuter train order for Siemens to build 150 carriages for Waterloo suburban routes. The announcement said that over 24,000 extra peak-time seats will be provided when infrastructure improvements have been completed in 2018. The longer trains will complement the lengthening of many platforms including Platforms 1 to 4 at Waterloo allowing longer trains to use them. On the other side of Waterloo, the three mothballed former Eurostar platforms, Nos. 21 to 23 are also expected to be brought back into use in the future.

Station capacity

20.5 Twickenham Station has received 1.6 million pounds in funding from the Greater London Authority (GLA) for station improvements. Funding will go towards replacing the dilapidated events footbridge connecting the platforms with a new structure and the repair of the main footbridge.

20.6 The works will also include the widening of Platform 2 to 3.0m, new linings added to the existing platform canopies and the provision of platform canopies towards the London end of the station. Further works include the resurfacing of the platforms and new edge copers, stair lifts added to the existing staircases, replacement platform buildings and a general paint and refurbishment of the

whole station. Works are due to be complete by July 2015 in time for the 2015 Rugby World. Therefore, all of the improvements will have been made by the time the REEC development is operational in 2019.

Summary

20.7 The extra 24,000 extra peak-time seats will be provided after rail infrastructure improvements have been completed in 2018. Therefore, by the time the REEC development is operational in 2019 the increased train capacity will be in place.

20.8 The improvements to Twickenham Station currently being undertaken will improve station capacity and access, and will generally improve the environment for users of the station. These will have been completed by the time the REEC development is operational in 2019. Further afield, improvements to London Waterloo Station will improve travel for users of the REEC site and local residents traveling in and out of London.

20.9 Overall, improvements to Twickenham Station, London Waterloo and the increase in seating capacity on the South West Trains network will result in the REEC development having an indiscernible impact on the local rail network.

21. IMPACTS – WALKING & CYCLING

Footway capacity

The Pedestrian flows

21.1 In order to establish the pedestrian and cycle flows generated by the proposed REEC development on local routes, a quantitative assessment of pedestrian and cycle movements directly or indirectly accessing the site has been undertaken. The route taken by pedestrians and cyclists has been based on the methodology set out in Chapter 4 and the quantities taken from the predicted trip generation assessment. The Marsh Farm Lane cycle/footpath and the Twickenham Rough cycle/footpath will provide a high quality desirable pedestrian and cycle route to Twickenham Station, the bus stops near it and to Twickenham town centre for users of the Replacement College, Tech Hub and Residential site. Therefore, it has been assumed that 50% of the pedestrian and cycle trips from these uses will use this route.

21.2 The pedestrian trips include the walking journeys made to use public transport services. Figures 4 and 5 shows the distribution of the proposed REEC development pedestrian and cycle flows in the AM and PM peak hours. Figures 6 and 7 show the net increase / decrease distribution for the AM and PM peak hours respectively. The weekday AM and PM peak pedestrian and cycle flows net effect are set out in Table 21.1.

Table 21.1 Proposed development total (arrival and departure) pedestrian and cycle flows AM and PM peak hours

Route	AM 08:00 – 09:00				PM 16:00 – 17:00			
	Pedestrian increase	% diff	Cycle increase	% diff	Pedestrian increase	% diff	Cycle increase	% diff
Marsh Farm Lane (adjacent to the site northbound)	+204	703%	+18	180%	+57	518%	+9	300%
Marsh Farm Lane (adjacent to the site southbound)	+785	N/A	+25	N/A	+212	N/A	+11	N/A
A316 Chertsey Road	+68	28%	+45	236%	+17	23%	+10	100%
Egerton Road	-78	-10%	+62	214%	-13	-7%	+7	39%
Heathfield South	+62	34%	+11	100%	+9	20%	+2	40%
Court Way	-44	-8%	+16	123%	+21	18%	0	0%
Talma Gardens	+169	845%	+4	80%	+36	514%	+3	300%

21.3 The proposed development will introduce a net increase of 579 walking trips in the AM peak hour which results in a 59% increase of pedestrian trips on local routes. In the PM peak hour, there will be an increase of 181 walking trips on local routes which results in a 74% increase.

21.4 The calculated percentage increase is so high on links such as Marsh Farm Lane (northbound) and Talma Gardens because of the relatively low existing walking trips on these links.

21.5 There will be an increase of 81 cycle trips in the AM peak hour which results in a 169% increase of cycle trips on local routes. In the PM peak hour, there will be an increase of 18 cycle trips on local routes which results in a 75% increase. As with the walking trips, the calculated percentage increase in cycle trips is so high on links such as Marsh Farm Lane (northbound) and Talma Gardens because of the relatively low existing cycling trips.

21.6 The percentage increase in trips along Marsh Farm Lane (southbound) has been labelled N/A as a definite figure is difficult to quantify as the existing trips are from observations only. Marsh Farm Lane (southbound) would experience the highest increase in walking trips of all the routes. However, the route is located

away from any sensitive areas such as local dwellings (except where it runs adjacent to the side of 150 Craneford Way). Due to the proposed widening of this route from 1.5m to a 3.0m shared cycle/footpath and impacts of the pedestrian flows on this link would be negligible.

Available footway width

21.7 The surrounding footways are generally satisfactory, with key routes along desire lines being a minimum of 2.0m in width (except on Heathfield North and Heathfield South, where the effective footway width may be reduced due to part of the on-street parking bays being marked on the footway), with dropped kerbs, tactile paving and street lighting.

21.8 The Marsh Farm Lane footpath which runs from the A316 Chertsey Road adjacent to the western boundary of the REEC site to Craneford Way and then along the western boundary of Craneford Way Playing Field, over the River Crane to the railway footbridge will be widened and resurfaced to create a 3.0m wide shared cycle/footpath as part of the REEC proposals. Where the route from the north reaches Craneford Way, the existing College vehicle access bell mouth will be removed and the footway reinstated. Drawing 30713/AC/042 shows the arrangement.

21.9 Also being brought forward is the Twickenham Rough cycle/footpath will run from London Road through the former sorting office site to link with Marsh Farm Lane near the Twickenham Rifle & Pistol Club building. The route will also be 3.0m wide and is to be brought forward by St James Group Limited as part of the former Post Office sorting office site redevelopment.

21.10 The Marsh Farm Lane cycle/footpath and the Twickenham Rough cycle/footpath will provide a high quality desirable pedestrian and cycle route to Twickenham Station, the bus stops near it and to Twickenham town centre for users of the Replacement College, Tech Hub and Residential site. It should also be noted that the upgrade of Marsh Farm Lane will not only benefit the users of the REEC development, but also the wider community. Indeed pedestrian flows along Court Way in the AM peak hour will reduce due to the implementation of the new route.

21.11 The proposed new A316 Chertsey Road / Langhorn Drive signal controlled junction will provide at grade pedestrian crossings over the A316 and Langhorn Drive. The crossings will have a dedicated pedestrian phase within the signal timing. This will improve the desire line to bus stops on Whitton Road and London Underground

stations to the north of the REEC development site. It will also improve the pedestrian crossing capacity over the A316, easing any pressure on the nearby footbridge and the pedestrian crossing near Chudleigh Road.

21.12 An upgrade of the existing shared cycle/footway on both sides of the A316 Chertsey Road between its junction with Langhorn Drive and the Whitton Road signal controlled roundabout will be implemented by TfL before the proposed development is operational. The works consist of upgrading the route to a segregated cycle / footway and improvements to the toucan crossing on the A316 near Chudleigh Road to improve access for the 2015 Rugby World Cup. Pedestrians and cyclists from the REEC development and the wider community will therefore benefit from this upgrade in infrastructure. The improvements form part of a larger cross borough segregated cycle route which will ultimately provide a 12 mile cycle route between Hanworth in Hounslow through to Hyde Park Corner, via Cycle Superhighway 9.

Station capacity

21.13 As mentioned in Chapter 20, Twickenham Station has received 1.6 million pounds in funding for station improvements. Funding will improve capacity of the station by the replacement of the dilapidated events bridge and repair of the main football, plus the widening of Platform 2. The lengthening of platform canopies will also enable fuller use of the platform length in adverse weather, preventing crowding of the platforms at the western end.

22. CUMULATIVE IMPACTS

Local additional development impacts

22.1 The committed developments of Twickenham Rail Station and the Former Royal Mail Sorting Office in Twickenham have been considered as part of the cumulative assessment.

Construction vehicles

22.2 Given that there is an uncertainty over when the Twickenham Rail Station development would come forward, the methods of construction which would be employed, the management measures that would be adopted at each site or the periods of peak construction, it is difficult to accurately predict cumulative assessment of construction activities, particularly where the most vehicle intensive construction operations are of short duration and of temporary nature.

22.3 The Royal Mail site is under construction. Site clearance has been completed with spoil and waste removed, and the development scheme is well under construction. Given that the initial works often result in the greatest volume of construction traffic, it is anticipated that any remaining construction traffic for the site during the construction of the proposed development will be minimal and the cumulative effects negligible.

22.4 It is anticipated that each cumulative development site would be required to develop their own CEMP and CLP, and therefore agree vehicular numbers and vehicular routes with LBRuT and TfL. It is therefore considered that on this basis and subject to the implementation of best practice construction traffic management measures, the residual cumulative effects on all modes of transport would be negligible and that the cumulative increase would leave sufficient capacity on the local roads, particularly in respect of the strategic high capacity A316 which will be used by the development's construction traffic.

Traffic Levels

22.5 The AM and PM peak hour vehicle traffic flows for the year 2019 plus the REEC development plus cumulative developments are set out in Table 22.1 and Table 22.2. Appendix L contains the traffic flow diagrams.

Table 22.1: 2019 + Development + Cumulative AM peak hour (08:00 – 09:00) vehicle flows

Road	Total Flow	% increase from 2019 Baseline
A316 Chertsey Road	3,601	7.5%
B361 Whitton Road	795	13.6
Court Way	156	34.5%
Langhorn Drive	264	164

Table 22.2: 2019 + Development + Cumulative PM peak hour (17:00 – 18:00) vehicle flows

Road	Total Flow	% increase from 2019 Baseline
A316 Chertsey Road	3,839	4.8%
B361 Whitton Road	773	9.3%
Court Way	117	3.5%
Langhorn Drive	267	142.7%

22.6 The AM and PM peak hour vehicle traffic flows for 2034 plus the REEC development are set out in Table 22.3 and Table 22.4. Appendix L contains the traffic flow diagrams.

Table 22.3: 2034 + Development + Cumulative AM peak hour (08:00 – 09:00) vehicle flows

Road	Total Flow	% increase from 2034 Baseline
A316 Chertsey Road	3,858	7.0%
B361 Whitton Road	849	12.5%
Court Way	165	32%
Langhorn Drive	273	152.8%

Table 22.4: 2034 + Development + Cumulative PM peak hour (17:00 – 18:00) vehicle flows

Road	Total Flow	% increase from 2034 Baseline
A316 Chertsey Road	4,077	3.6%
B361 Whitton Road	825	8.7%
Court Way	119	-2.5%
Langhorn Drive	287	142.4%

Summary

22.7 Overall, the increases in traffic flows on all of the road links assessed will not have a significant impact on the operational capacity of the road links.

Junction Analysis

22.8 In order to establish how well the local road junctions will continue to provide access to the proposed REEC development site and the existing surrounding residential and commercial uses with cumulative traffic on the local road network, a junction capacity assessment has been undertaken.

22.9 A summary of the proposed development on the assessed junctions is set out in Table 22.5 and Table 22.6 for the 2019 + Development + Cumulative scenario, and in Table 22.7 and Table 22.8 for the future 2034 + Development + Cumulative.

22.10 It should be noted for the A316 Chertsey Road / Langhorn Drive signal controlled junction, the vehicle queue figure on is spread over two lanes on all arms. The full results of the junction capacity assessment for the proposed development plus cumulative developments are contained within Appendix M.

Table 22.5: Summary of junction capacity assessment for 2019 + Development + Cumulative AM peak hour (08:00 – 09:00) vehicle flows

Junction	Road arm	Ratio of Flow to Capacity (RFC) %	Average vehicles queuing
A316 Chertsey Road / Langhorn Drive	Langhorn Drive	43.1	3
	A316 Chertsey Road – East	68.1	28
	A316 Chertsey Road – West	71.8	34
A316 Chertsey Road / Egerton Road	Egerton Road	3.5%	0
B361 Whitton Road / Court Way	Whitton Road (north)	6.2%	0
	Court Way	16.9%	1

Table 22.6: Summary of junction capacity assessment for 2019 + Development + Cumulative PM peak hour (17:00 – 18:00) vehicle flows

Junction	Road arm	Ratio of Flow to Capacity (RFC) %	Average vehicles queuing
A316 Chertsey Road / Langhorn Drive	Langhorn Drive	63.2%	6
	A316 Chertsey Road – East	74.8%	36
	A316 Chertsey Road – West	68.7%	31
A316 Chertsey Road / Egerton Road	Egerton Road	1.9%	0
B361 Whitton Road / Court Way	Whitton Road (north)	3.9%	0
	Court Way	18.8%	1

Table 22.7: Summary of junction capacity assessment for 2034 + Development + Cumulative AM peak hour (08:00 – 09:00) vehicle flows

Junction	Road arm	Ratio of Flow to Capacity (RFC) %	Average vehicles queuing
A316 Chertsey Road / Langhorn Drive	Langhorn Drive	43.7%	3
	A316 Chertsey Road – East	72.4%	32
	A316 Chertsey Road – West	77.0%	40
A316 Chertsey Road / Egerton Road	Egerton Road	3.7%	0
B361 Whitton Road / Court Way	Whitton Road (north)	6.2%	0
	Court Way	18.5	1

Table 22.8: Summary of junction capacity assessment for 2034 + Development + Cumulative PM peak hour (17:00 – 18:00) vehicle flows

Junction	Road arm	Ratio of Flow to Capacity (RFC) %	Average vehicles queuing
A316 Chertsey Road / Langhorn Drive	Langhorn Drive	63.2%	7
	A316 Chertsey Road – East	79.7%	42
	A316 Chertsey Road – West	73.4	36
A316 Chertsey Road / Egerton Road	Egerton Road	2.0%	0
B361 Whitton Road / Court Way	Whitton Road (north)	3.1%	0
	Court Way	20.0%	1

A316 Chertsey Road / Langhorn Drive

22.11 The Langhorn Drive arm of the Langhorn Drive / A316 Chertsey Road signal controlled junction has 46.9% and 26.8% spare capacity in the AM and PM peak hours respectively before the threshold of 90% operational capacity is reached for the 2019 + Development + Cumulative scenario. In the 2034 + Development + Cumulative scenario, the same arm has 46.3% and 26.8% spare capacity in the AM and PM peak hours respectively.

22.12 In the 2019 + Development + Cumulative scenario, the A316 Chertsey Road – East arm of the Langhorn Drive / A316 Chertsey Road junction has 21.9% and 15.2% spare capacity in the AM and PM peak hours. In the 2034 + Development + Cumulative scenario, the same arm has 17.6% and 10.3% spare capacity in the AM and PM peak hours respectively.

22.13 In the 2019 + Development + Cumulative scenario, the A316 Chertsey Road – West arm of the Langhorn Drive / A316 Chertsey Road junction has 18.2% and 21.3% spare capacity in the AM and PM peak hours. In the 2034 + Development + Cumulative scenario, the same arm has 13.0% and 16.6% spare capacity in the AM and PM peak hours respectively.

A316 Chertsey Road / Egerton Road

22.14 In the 2019 + Development + Cumulative scenario, the Egerton Road arm of the Egerton Road / A316 Chertsey Road junction has 81.5% and83.1% spare capacity in the AM and PM peak hours respectively for the 2019 plus development

scenario. In the 2034 + Development + Cumulative scenario, the same arm has 81.3% and 83.0% spare capacity in the AM and PM peak hours respectively.

B361 Whitton Road / Court Way

22.15 The Court Way arm of the B361 Whitton Road / Court Way junction has 68.1% and 66.2% spare capacity in the AM and PM peak hours respectively for the 2019 + Development + Cumulative scenario. In the 2034 + Development + Cumulative scenario, the same arm has 66.5% and 65.0% spare capacity in the AM and PM peak hours respectively.

22.16 The northern arm of Whitton Road (right turn into Court Way) on the B361 Whitton Road / Court Way junction has 78.8% and 81.1% spare capacity in the AM and PM peak hours respectively for the 2019 + Development + Cumulative scenario. In the 2034 plus development scenario, the same arm has 78.8% and 81.9% spare capacity in the AM and PM peak hours respectively. This arm also experiences an increase in vehicle queues from zero vehicles to one vehicle.

Summary

22.17 The junction capacity assessment demonstrates that whilst the original latent capacity at each of the existing simple priority junctions assessed is reduced as a result of the REEC development plus cumulative developments in the AM peak hour, the junctions still have a significant quantity of latent capacity. The vehicle queues do not increase except on one arm, Whitton Road (north), where the queue length increases from zero to one.

22.18 Therefore, the proposed development and cumulative developments will have a indiscernible impact on the operational capacity of the junctions which link the site to the local highway network.

Pedestrian

22.19 Each cumulative development would generate their individual number of pedestrian trips, but as with the REEC development, be required to deliver schemes that enable easy pedestrian movement, do not restrict capacity, provide high environmental and design quality and improved public realm.

22.20 These would translate as mitigation measures and when considered collectively, would be expected to result in a negligible effect on pedestrian movement, capacity.

Cycling

22.21 Each cumulative development would generate their individual number of cycling trips, but similar to the REEC development, be required to deliver schemes of high environmental and design quality, improved public realm and sufficient cycle parking space provided for staff, students, employees, residents and visitors.

22.22 These would translate as mitigation measures and when considered collectively is expected to result in Negligible effects on cycling capacity.

Bus Services

22.23 As part of current Transport for London guidance, proposed developments are required to provide the likely bus trip generation associated with their sites together with an associated trip purpose and distribution analysis. TfL subsequently undertake their own capacity analysis based on their current and proposed level of services. It is therefore not necessary to predict the level of cumulative impact on bus services as each development will mitigate their trips. Furthermore, the additional demand of the committed developments on bus services would be mitigated directly by each cumulative scheme through bus service enhancements secured as contributions towards services and frequencies.

23. MITIGATION

Road network improvements

23.1 Whilst not required for mitigation purposes, the proposed A316 Chertsey Road / Langhorn Drive signal controlled junction will implement a number of improvements to the local highway network and surrounding residential estates. The junction avoids vehicles having to complete a 3.7Km round trip to same point on the A316 when wishing to travel eastbound. This in turn will release capacity at the A316 Chertsey Road / B358 Hospital Bridge Road signal controlled roundabout.

Bus network improvements

23.2 Discussions are ongoing with TfL to develop bus service frequency improvements to accommodate the additional demand on the bus network which equates to 3 to 4 additional bus loads in the AM peak hour period.

Rail network improvements

23.3 Improvements being brought forward by the GLA funded upgrade of Twickenham Station and improvements further afield to London Waterloo Station will improve travel for users of the REEC site and local residents traveling in and out of London. Also, the extra 24,000 extra peak-time seats being brought forward by South West Trains will mitigate the additional demand generated by the REEC development. Improvements to rail infrastructure, capacity and rolling stock will be completed by the time the REEC development is operational in 2019.

Walking & cycling network improvements

23.4 The Marsh Farm Lane cycle/footpath and the Twickenham Rough cycle/footpath will provide a high quality desirable pedestrian and cycle route to Twickenham Station, the bus stops near it and to Twickenham town centre for users of the Replacement College, Tech Hub and Residential site, and the wider community. The route will help to reduce the pedestrian and cycle demand on local residential roads such as Court Way and Craneford Way.

23.5 The proposed new A316 Chertsey Road / Langhorn Drive signal controlled junction will provide at grade pedestrian crossings over the A316 and Langhorn Drive. The crossings will have a dedicated pedestrian phase within the signal timing. This will improve the desire line to bus stops on Whitton Road and London Underground stations to the north of the REEC development site. It will also improve the

pedestrian crossing capacity over the A316, easing any pressure on the nearby footbridge and the pedestrian crossing near Chudleigh Road.

23.6 The upgrade of the existing shared cycle/footway on both sides of the A316 Chertsey Road between its junction with Langhorn Drive and the Whitton Road will improve access for pedestrians and cyclists from the REEC development and the wider community. The improvements form part of a larger cross borough segregated cycle route which will ultimately provide a 12 mile cycle route between Hanworth in Hounslow through to Hyde Park Corner, via Cycle Superhighway 9.

23.7 The improvements to the pedestrian and cycle infrastructure brought about by the proposed development and third parties will help to encourage users of the REEC development and the wider community to use more sustainable modes of travel to access the site and local area.

Travel Plan

23.8 A Framework Travel Plan setting out potential measures and targets for the site has been prepared and submitted as part of the outline planning application. The Framework Travel Plan is contained within Appendix N. The measures in the Travel Plan will encourage the use of more sustainable modes of transport to reduce the reliance on private car use.

23.9 As each use of the proposed REEC development is completed and operational, each use will prepare their own full Travel Plans using the Framework Travel Plan as a guide.

Delivery & Servicing

23.10 All delivery and servicing vehicles will access the REEC development site via Langhorn Drive and will not use the residential roads of the Heatham Estate. The educational uses and Sports Centre have a shared delivery and servicing yard, and the Tech Hub has its own delivery and servicing area.

23.11 As part of the detailed planning application, a Delivery and Servicing Management Plan will be prepared. Measures within the plan could include:

- Use of vehicle booking systems.
- Methods to inform suppliers of delivery location e.g. maps.
- Scheduling deliveries outside of peak hours.
- Maximising out of hours deliveries.
- Use of supply chain operations

- Review and plan delivery, servicing and collection frequencies to reduce trips.
- Waste management and how different waste streams will be handled and collected.
- Co-operative working with other site uses' suppliers.
- Policy to promote more sustainable deliveries by couriers.
- Use of operators who can demonstrate best practice such as those within the FORS or equivalent scheme.

24. POLICY CONTEXT

24.1 This chapter summarises the national, regional and local transport policies relevant to the development proposals. The main policy documents in this regard are:

- National Planning Policy Framework (March 2012).
- The London Plan, Further Alterations to the London Plan (FALP), March 2015
- LBRuT, Local Plan, Core Strategy (April 2009).
- LBRuT, Local Plan, Development Management Plan (November 2011).
- LBRuT Planning Brief Richmond upon Thames College (December 2008).
- LBRuT Twickenham Area Action Plan (July 2013).

National Policy

National Planning Policy Framework (March 2012)

24.2 The National Planning Policy Framework (NPPF) was published on the 27th March 2012 and focuses on a presumption in favour of sustainable development. One of the core planning principles relates to actively managing patterns of growth to make the fullest possible use of public transport, walking and cycling and focusing significant development in locations which are or can be made sustainable.

24.3 Developments should be located and designed where practical to:

- Accommodate the efficient delivery of goods and supplies.
- Give priority to pedestrian and cycle movements, and have access to high quality public transport facilities.
- Create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians.
- Incorporate facilities for charging plug-in and other ultra-low emission vehicles.
- Consider the needs of people with disabilities by all modes of transport.

Regional policy

The London Plan, Further Alterations to the London Plan (FALP), March 2015

24.4 On 10 March 2015, the Mayor published (i.e. adopted) the Further Alterations to the London Plan (FALP). From this date, the FALP are operative as formal alterations to the London Plan (the Mayor's spatial development strategy) and form part of the development plan for Greater London.

24.5 The London Plan sets out the spatial development strategy for London, and provides the London wide context within which individual Boroughs set their local planning policies. A key objective of the London Plan is to improve London's accessibility, which amongst other issues, includes tackling traffic congestion. An issue that assists closer integration between transport and spatial development is encouraging patterns and forms of development that reduce the need to travel – especially by car.

24.6 With regard to parking, The Mayor, in conjunction with the boroughs, seeks to ensure that on-site parking at new developments is kept to a minimum. Maximum parking standards are set, which can be reduced in areas of good public transport accessibility, and, in the most accessible locations, can lead to car–free developments.

24.7 Policies 6.9 and 6.10 aim to increase cycling and walking in London, in particular, to achieve a 5% modal share by 2026 for cycling. New developments should therefore provide secure and accessible cycle parking facilities and ensure there is a high quality pedestrian environment and street space.

Local Policy

24.8 The Local Plan (formerly known as the Local Development Framework) sets out the priorities for the development of the borough and will be used for making decisions on planning applications.

LBRuT Core Strategy (April 2009)

24.9 This document sets out the Strategic Planning Framework for the Borough over the next 15 years, it considers other plans and strategies and is the delivery mechanism for the spatial elements of the community. This document outlines the council's transport objectives and policies.

24.10 The following transport policies set out in core policy CP5 – Sustainable Travel which are associated with this development are set out below.

- Policy 5.C – Cycling and Walking. Prioritise the needs of pedestrians and cyclists in the design of new developments including links to existing networks and requiring the provision of adequate cycle parking.

- Policy 5.F – Car Parking and Travel. Provide car share facilities and car clubs in appropriate new developments and encourage the use of low emission vehicles in order to reduce congestion and pollution.

- Policy 5.G – Sustainable Travel. Encourage major employers and schools to develop Green Travel Plans and require these where appropriate with planning applications and require all major developments to submit a Transport Assessment based on TfL's Best Practice Guidance.

Development Management Plan (November 2011)

24.11 The Development Management Plan (DMP) includes the detailed policies which will be used when new developments are considered. The DMP takes forward the strategic objectives in the Core Strategy and is consistent with National and Regional Policies.

24.12 5.4 Transport and Parking – this chapter takes forward CP5 in the Core Strategy as well as complementing LBRuT Implementation Plan. The relevant policies are set out below.

24.13 Policy DM TP 1 – Higher trip generating developments will only be permitted in areas which are, or at the time of implementation are, easily accessible by transport other than the private car, and well located with respect to local services.

24.14 Policy DM TP 2 – The impact of new developments on the transport network will be assessed against other plan policies and transport standards. All planning applications for major developments should be accompanied by a Transport Assessment. Matters to be included are set out in DfT/ TfL guidance.

24.15 Policy DM TP 3 – New developments will be expected to create or improve links with the local and wider transport networks, including links to cycle and

pedestrian networks. All new developments must be designed to improve accessibility including:

- Maximise permeability, with safe, convenient accessible and appropriate road, cycle and pedestrian routes within and in the immediate vicinity of the scheme, as well as accessible walking and cycling links to the wider transport network including to public transport node and key land uses, taking account the need to connect people to jobs, to town centres and to schools.

24.16 Policy DM TP 6 – New developments and schemes improve the safety and security of the pedestrian environment where appropriate.

24.17 Policy DM TP 7 – To maintain and improve conditions for cyclists, the council will ensure that new developments do not adversely impact on the cycling network or cyclists and provide appropriate cycle access and sufficient, secure cycle parking facilities.

24.18 Policy DM TP 8 – Developers may provide fewer car parking spaces if they can show that there would be no adverse impact on amenity, street scene, road safety or emergency access. In general it is expected that in low PTAL areas (1-4) the standards should be met, but in higher PTAL areas (5-6) provision at a lower level may be appropriate in exceptional circumstances. Additionally electronic charging points are welcomed where there is demand.

24.19 Vehicle and cycle parking standards are set out in Table 24.1

Table 24.1: Parking standards

Land Use	Vehicle Parking Space Required (All floor space referred to is gross)		Cycle parking standard
	Controlled parking zones	**The remainder of the Borough**	
Schools D1	1 space per 2 staff, Arrangements must also be made for adequate setting down areas and visitor parking spaces. Adequate facilities for the setting down of coaches shall also be considered	1 space per 2 staff	5 spaces per classroom depending on the nature of the school
Residential C3	1-2 bedrooms 1 spaces	1-2 bedrooms 1 spaces	1 space
	3 bedrooms For 1 unit, 2 spaces; for two or more units 1 allocated space plus sufficient unallocated spaces to provide a total of 1.5 spaces overall per unit.	3 bedrooms For 1 unit, 2 spaces; for two or more units 1 allocated space plus sufficient unallocated spaces to provide a total of 1.5 spaces overall per unit.	1 space
	4+ bedrooms 2 spaces	4+ bedrooms 2 spaces (negotiable)	2 spaces
B1	1 space per 300sqm Plus 1 lorry parking space per 250sqm (minimum 1 per unit)	Within 400m of a rail station, 1 space per 200sqm. Elsewhere 1 per 100sqm plus 1 lorry parking space per 2500sqm (minimum 1 per unit)	1 per 200sqm

Planning Brief Richmond upon Thames (December 2008)

24.20 There are a number of key access and movement principles which the redevelopment will be based on. As stated in the document these are:

(i) The primary access for vehicular to traffic to the College should continue to be off the A316;

(ii) The primary pedestrian access, where the majority of pedestrian visitors should arrive, is from the Eastern boundary (via Twickenham Station), secondary access for pedestrians and cyclists should be provided around the site as visitors arrive from all directions; and

(iii) Any residential development on the site should be accessed off Egerton Road to separate College and residential traffic (subject to size of residential development).

24.21 A full Transport Assessment will take account of projected levels and patterns of traffic movements and car parking requirements as a result of the development.

24.22 Car parking provision within the redevelopment scheme is an important consideration. Car parking should be provided on site and integrated into the design of the campus and sports facilities.

24.23 A Transport Assessment will set out a reduction in the existing car parking provision in conjunction with the Green Travel Plan. Any residential development should seek to reduce car usage and include limited car parking provision.

Twickenham Area Action Plan (July 2013)

24.24 The Twickenham Area Action Plan places great focus on improving walking routes to create an accessible pedestrian environment. In turn this will encourage residents to make greater use of facilities within the town centre and so reduce their need to travel.

24.25 New developments should provide sufficient parking to avoid adverse impact on on-street parking, in line with the parking standards set out in the Development Management Plan DM TP8.

24.26 Any new developments should have adequate, convenient and safe servicing arrangements in line with the Council's SPD on Transport Standards. Further, servicing hours will be controlled where necessary for safety or amenity reasons.

Summary

24.27 In order to encourage walking and cycling, the proposed development will comply with the cycle parking standards set out by LBRuT. As part of the proposed development, Marsh Farm Lane will be widened and improved along its whole length to provide a quality shared cycle/footpath and the approved River Crane cycle/footpath will link Marsh Farm Lane to Twickenham Station.

24.28 Vehicle parking standards set out by LBRuT will be accorded with and travel by sustainable modes will be encouraged through the measures set out in the Green Travel Plan which will be developed for the site.

25. SUMMARY AND CONCLUSION

Summary

25.1 The RuTC proposes to demolish the existing buildings on its site and provide a new consolidated purpose built College in the north and western area of the site. The land freed up by the new College will enable the provision of a new secondary education school, a special needs education school, a new sports centre and upgrade of the facilities on the Craneford Way Playing Field, a new 'Tech Hub' operated by Haymarket Media, and an enabling residential development which will help fund the provision of the REEC.

25.2 In order to understand the existing situation with regards to the local transport network, for the roads and streets, vehicle, pedestrian, parking and interview surveys were commissioned, and for the bus and rail network, a desktop study of the services available was undertaken. TRL's industry standard software modelling tools were used to assess the existing road junction conditions. The survey data was used to calculate the existing College trip generation. Consultation has also been undertaken with LBRuT, Transport for London and local stakeholders.

25.3 A trip generation assessment of the proposed REEC development has been undertaken using the survey data, trip rates obtained from TRICS, 'Hands Up' survey data and a first principles approach. The impact of the proposed REEC's all-mode trip generation has then been assessed on the road network including on local road links, local junctions, nearby on-street parking and footways, the bus network and the rail network. The cumulative developments of the former Royal Mail sorting office and redevelopment of Twickenham Station, plus the construction impacts of the proposed REEC development have also been assessed.

25.4 As part of proposed REEC development, a number of infrastructure improvements are being brought forward, including the upgrading of the A316 Chertsey Road / Langhorn Drive junction from a simple left in / left out junction, to a fully signal controlled left in / left and right out junction. Whilst not required for mitigation purposes, the proposed junction will implement a number of improvements to the local highway network and surrounding residential estates.

25.5 The proposed A316 Chertsey Road / Langhorn Drive junction avoids vehicles having to complete a 3.7Km round trip to same point on the A316 when wishing to travel eastbound. This in turn will release capacity at the A316 Chertsey Road / B358 Hospital Bridge Road signal controlled roundabout. Further to this, it will

provide at grade pedestrian crossings over the A316 and Langhorn Drive. The crossings will have a dedicated pedestrian phase within the signal timing. This will improve the desire line to bus stops on Whitton Road and London Underground stations to the north of the REEC development site. It will also improve the pedestrian crossing capacity over the A316, easing any pressure on the nearby footbridge and the Toucan crossing near Chudleigh Road.

25.6 The proposed A316 Chertsey Road / Langhorn Drive junction removes the need for the proposed Residential site having to use the Heatham Estate for access. Indeed, the only use of Heatham Estate by vehicular traffic associated with the proposed REEC development will be by cars and vans from the SEN School and some of the drop off and pick up car trips from the Secondary School. All other vehicular traffic accessing the site, including HGVs, will do so via Langhorn Drive.

25.7 The impact assessment includes a capacity assessment of the local road links of the A316 Chertsey Road, the B361 Whitton Road, Court Way and Langhorn Drive, and the local road junctions of the A316 Chertsey Road / Langhorn Drive , B361 Whitton Road / Court Way and the A316 Chertsey Road / Egerton Road. For the proposed development assessment, the road junction of the A316 Chertsey Road / Langhorn Drive has been assessed as a 'left in', 'left out / right out' signal controlled junction. The assessment demonstrates that all road links and junctions operate within capacity with the proposed REEC development traffic, cumulative development traffic and growth applied for the proposed year of opening in 2019 and for the future year of 2034. Therefore, the impact on the road network is will be negligible.

25.8 Another infrastructure improvement brought forward by the proposed REEC development is the upgrade to the Marsh Farm Lane cycle/footpath. The Marsh Farm Lane cycle/footpath and the Twickenham Rough cycle/footpath, which will be brought forward by St James Group Limited as part of the former Post Office sorting office site redevelopment, will provide a high quality desirable pedestrian and cycle route to Twickenham Station, the bus stops near it and to Twickenham town centre for users of the Replacement College, Tech Hub and Residential site, and the wider community. The route will help to reduce the pedestrian and cycle demand on local residential roads such as Court Way and Craneford Way.

25.9 TfL are bringing forward an upgrade of the existing shared cycle/footway on both sides of the A316 Chertsey Road between its junction with Langhorn Drive and Whitton Road to a segregated cycle/footway. The upgrade will include

improvements to the existing Toucan crossing over the A316 near Chudleigh Road and will improve access for pedestrians and cyclists from the REEC development and the wider community.

25.10 The improvements to the pedestrian and cycle infrastructure brought about by the proposed development and third parties will help to encourage users of the REEC development and the wider community to use more sustainable modes of travel to access the site and local area. This has the added benefit of releasing capacity on the local road, bus and rail network. An assessment of pedestrian and cycle trips demonstrates that whilst the increases in pedestrian and cycle movements appear high, the existing pedestrian and cycle flows are low, hence the percentage increase figures are misleading. In practical terms the effects of the increase in pedestrians and cycles on local routes is likely to be negligible.

25.11 There will be an increase in the number of bus users due to the proposed REEC development. Therefore, discussions with TfL to develop bus service frequency improvements to accommodate the additional demand on the bus network in the AM peak hour period are being undertaken.

25.12 Improvements to Twickenham Station and improvements further afield to London Waterloo Station will improve travel for users of the REEC site and local residents traveling in and out of London. These improvements are being brought forward by third parties. There are also an extra 24,000 extra peak-time seats being brought forward by South West Trains. This will mitigate the additional demand generated by the REEC development.

25.13 Impact assessments of the local bus and rail services demonstrate that with mitigation measure in place, the impacts on the local bus and rail network will be negligible.

25.14 The RREC development is providing sufficient on-site parking spaces to meet local parking standards and the CPZs around the site prevent unauthorised parking on local roads. However, funds will be made available through the Section 106 to undertake a study of the CPZ to the north of site which is only in operation on event days, and if deemed appropriate will have the CPZ operation times extended. Also, measures set out in the College Travel Plan to discourage students using their cars to travel to the College will make the impacts of the REEC development on parking negligible.

Conclusion

25.15 Overall, the proposed REEC development will not have a significant impact on the local transport network. Therefore, the impact assessment in this Transport Assessment demonstrates that with the proposed improvements to the REEC site and surrounding area in place, and the measures set out in initially the framework site wide Travel Plan and then subsequently each development use's own Travel Plan which will be prepared post occupation, there is no reason not to grant planning permission for the proposed development on transport grounds.