Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Transport Assessment

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Hammersmith Pumping Station

Main Report

APFP Regulations 2009: Regulation **5(2)(q)**

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Thames Tideway Tunnel

Creating a cleaner, healthier River Thames

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Thames Tideway Tunnel

Transport Assessment

Section 5: Hammersmith Pumping Station

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5.1 Introduction

5.1.1 This site specific *Transport Assessment* (*TA)* presents the findings of the assessment of the transport issues of the Thames Tideway Tunnel project at the Hammersmith Pumping Station site located within the London Borough (LB) of Hammersmith and Fulham.

5.1.2 The assessment takes into consideration the changes as a result of all other Thames Tideway Tunnel project sites to ensure that results indicate the significance of each individual site in combination with construction works being undertaken at other sites.

5.1.3 The purpose of this *TA* is to identify the Hammersmith Pumping Station site context, development proposals and any transport implications arising from these proposals to ensure that appropriate mitigation measures are identified, where necessary.

5.1.4 The *TA* draws on a number of project-wide or application documents which include the *Transport Strategy* and the *Code of Construction Practice* (*CoCP*). Further detail on these documents which form the background to the *TA* can be found in Section 1 of the *TA*.

5.1.5 The *TA* structure is as follows:

a. Section 5.2 includes a description of the proposed development, detailing construction phasing, vehicle and person trip generation and construction traffic routing. It also provides details on transport during the operational phase

b. Section 5.3 outlines the assessment methodology used for the *TA* for the construction and operational phases.

c. Section 5.4 details the baseline conditions on the transport network surrounding the Hammersmith Pumping Station site, including survey data analysis and accident analysis.

d. Section 5.5 provides the assessment of the construction phase of the project, including a comparison between the construction base case and the construction development case. This section also outlines sensitivity testing for the highway network.

e. Section 5.6 provides the assessment of the operational phase of the project.

f. Section 5.7 summarises the *TA* findings.

5.2 Proposed development

5.2.1 The site is currently part of the cleared plot known as Hammersmith Embankment / Fulham Reach. The site is located at the corner of Chancellor's Road and Distillery Road in the LB of Hammersmith and

Fulham. The site is bounded by the Thames Water Hammersmith Pumping Station and a vacant former industrial site to the west, Chancellor's Road in the north, Distillery Road in the east and Winslow Road in the south. There is also a modern office development to the south of the site. Figure 5.2.1 in the Hammersmith Pumping Station *Transport Assessment* figures indicates the Hammersmith Pumping Station site location.

Construction

5.2.2 The site is bounded to the east by Distillery Road, including partially within the existing Thames Water Hammersmith Pumping Station which is adjacent to Chancellor's Road. Access into the Hammersmith Pumping Station site would be via the existing access from Distillery Road with a right turn in and left turn out only arrangement.

5.2.3 All materials would be transported by road during construction at the Hammersmith Pumping Station site.

5.2.4 Construction at Hammersmith Pumping Station is anticipated to last for approximately 36 months.

5.2.5 There would be in principle two main phases of construction: Phase 1 - covering site set-up, shaft construction and tunnelling, and phase 2 - construction of other structures and site renovation. The access plan and highway layout during construction plans are provided in the Hammersmith Pumping Station *Transport Assessment* Figures.

5.2.6 Stage 1 *Road Safety Audits* have been carried out on the illustrative highway layouts proposed for this site. The *Road Safety Audit* reports for this site are contained in Section 5 Appendix E.

5.2.7 During construction it is anticipated that transport networks may be affected as a result of the additional construction traffic associated with the Hammersmith Pumping Station site and other construction sites with construction routes along Fulham Palace Road (A219).

5.2.8 Works to modify the junction of Chancellor's Road with Distillery Road (minor kerb radii widening) would be required to ensure the safe movement of construction vehicles to and from the site.

5.2.9 There would be a gated access for the right-turn in, left turn out arrangement for construction traffic using Distillery Road.

5.2.10 It would be necessary to extend the restricted hours applying to single yellow lines to 07:00 to 19:00 Monday to Saturday along Chancellor's Road and Distillery Road to assist the passage of construction vehicles. In addition, a small section of on-street parking on the southern side of Chancellor's Road close to and east of the junction with Distillery Road would need to be suspended for the duration of construction to enable large construction vehicles to make the left-turn into Distillery Road. Construction vehicle movements would be managed along the rest of Chancellor's Road so that larger vehicles would not be required to pass each other at sections where on-street parking is located.

5.2.11 Parking for two essential maintenance / operational vehicles would be provided on site. No worker parking would be provided.

5.2.12 A summary of the construction lorry movement details for the Hammersmith Pumping Station site relevant to the construction activities is presented in Table 5.2.1.

Table 5.2.1 Construction details

Description	Assumption
Assumed peak period of construction lorry movements	Site Year 1 of construction
Assumed average peak daily construction lorry vehicle movements (in peak month of Site Year 1 of construction)	42 movements per day (21 vehicle trips)
Types of lorry requiring access (comprising rigid-bodied, flatbed and articulated vehicles)	Excavated material lorries Ready mix concrete lorries Office delivery lorries Plant and equipment deliveries Steel reinforcement lorries Cement tanker lorries Aggregate lorries

Note: a movement is a construction vehicle moving either to or from the site. A Site Year is a 12 month period, one in a series of Site Years; Site Year 1 commences at the start of construction.

Construction routes

5.2.13 The access plan and highway layout during construction plans are provided in the Hammersmith Pumping Station *Transport Assessment* figures.

5.2.14 Figure 5.2.2 in the Hammersmith Pumping Station *Transport Assessment* figures shows the construction traffic routes for access to / from the Hammersmith Pumping Station site. Construction routes have been discussed with both Transport for London (TfL) and the Local Highway Authority; LB of Hammersmith and Fulham.

5.2.15 Access into Hammersmith Pumping Station site would be via an access from Distillery Road with a right-turn in and left-turn out only arrangement.

5.2.16 Construction lorries would access Chancellor's Road and Distillery Road via the Fulham Palace Road (A219) which is part of the Strategic Road Network (SRN). The main junctions on the immediate construction routes are:

a. Distillery Road / Chancellor's Road

b. Chancellor's Road / Fulham Palace Road (A219)

c. Fulham Palace Road (A219) / Lillie Road (A3218)

d. Fulham Palace Road (A219) / Hammersmith Gyratory (A4) / King Street (A315) / Hammersmith Road (A315)

5.2.17 Construction vehicles would access Fulham Palace Road (A219) via the A4 and A3220 corridors and locally via the Hammersmith Gyratory system.

5.2.18 There are weight and width restrictions on Hammersmith Bridge which would mean that heavier construction traffic would remain on routes to the north of the River Thames. There are also traffic calming measures adjacent to the site along Distillery Road and Chancellor's Road.

5.2.19 The nearest section of the Transport for London Road Network (TLRN) is some 500m to the north at the Hammersmith Gyratory (A4) and 2km to the east on Warwick Road (A3220). Fulham Palace Road (A219) is part of the SRN.

5.2.20 The exact routing of construction traffic depends on the material origin and destinations which is detailed in the *Project-wide TA (contained in Section 3)*.

Proposed construction flows

Construction vehicles and barges

5.2.21 The proposed working hours are set out in the *CoCP* and vehicle movements would take place during the standard day shift of ten hours on weekdays (08:00 to 18:00) and five hours on Saturdays (08:00 to 13:00).

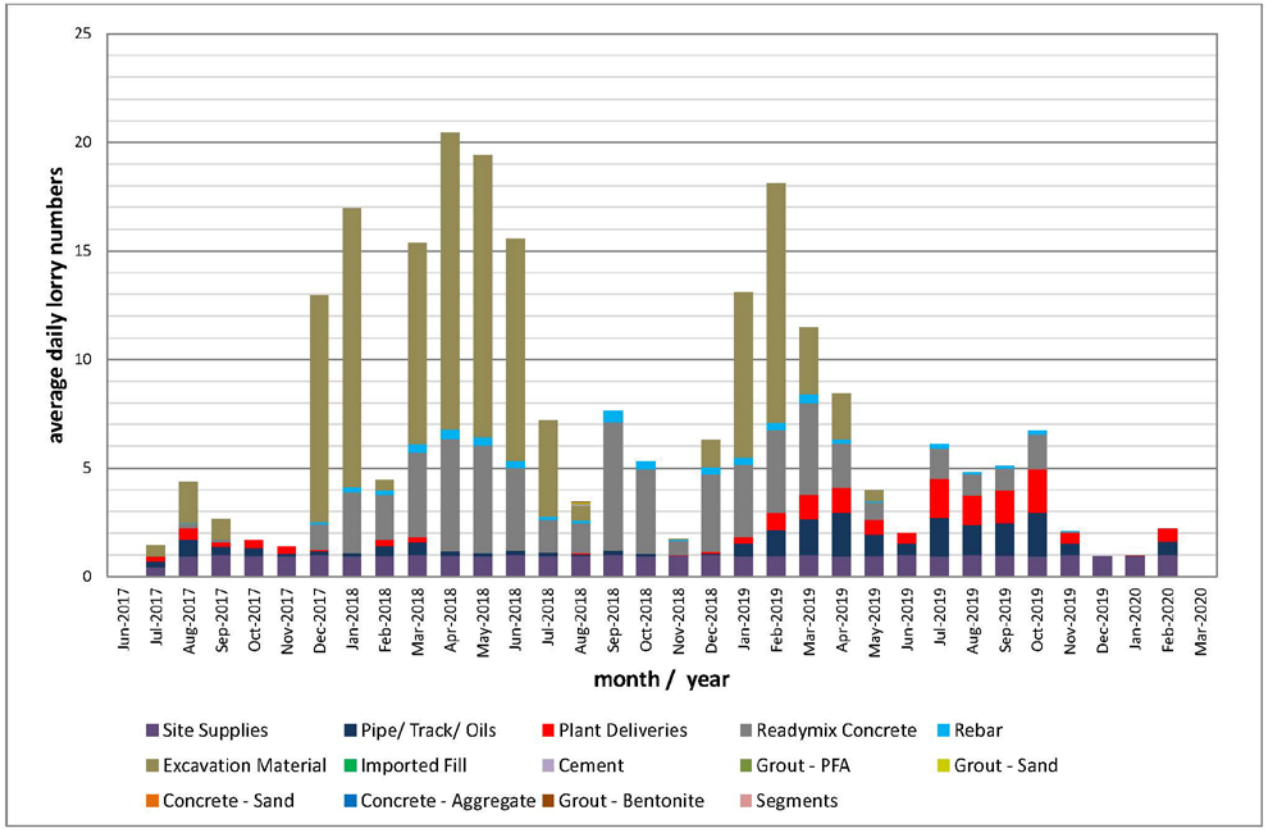
5.2.22 There is a short period of time during the connection tunnel construction where a number of workers would be on site at night. In exceptional circumstances HGV and abnormal load movements could occur up to 22:00 on weekdays for large concrete pours and later at night on agreement with the LB of Hammersmith and Fulham.

5.2.23 A site-specific peak construction assessment year has been identified. The histogram in Plate 5.2.1 shows that the peak site-specific activity at the Hammersmith Pumping Station site would occur in Site Year 1 of construction. This site-specific peak is in the same year as the overall Project-wide construction peak activity year of 2019.

5.2.24 This *TA* assesses this site-specific peak construction year. As detailed in Table 5.2.1 there would be an estimated 42 average peak daily construction lorry vehicle movements, for a period of approximately three months. The number of vehicular movements will vary throughout the construction period, and the histogram in Plate 5.2.1 shows the construction vehicle profile during construction.

5.2.25 The assessment is based on 10% of the daily number of lorry journeys occurring in the peak hours, which has been agreed with TfL as a reasonable approach. It is recognised that it may be desirable to reduce the number of construction lorry movements in peak hours and the mechanisms for addressing this would form part of the *Traffic Management Plans* which are required as part of the *CoCP*.

Plate 5.2.1 Estimated construction lorry profile



Note: Figure shows approximate volumes and number of vehicle trips based upon assumed timings for the works. It is not a programme and remains subject to change.

5.2.26 As the *Project-wide TA* explains, the TfL Highway Assignment Models (HAMs) used for the strategic highway modelling represent peak hours of 08:00 to 09:00 and 17:00 to 18:00 and these have been taken as being the network-wide AM and PM peak hours in the project-wide and site-specific assessments.

5.2.27 The 07:00 to 09:00 and 17:00 to 19:00 periods identified from the local traffic surveys are busier on the network in the weekday than those encountered at the weekends (this is discussed in Section 5.4). Whilst the AM and PM peak hours may differ slightly from these network-wide peak hours, in practice the number of vehicle movements at this site would be low in comparison to base case traffic flows on the adjacent network and is expected to be constant throughout the day.

5.2.28 Hourly construction vehicle trips during the inter-peak period are not expected to exceed the hourly trips assumed for the 08:00 to 09:00 and 17:00 to 18:00 periods used in this assessment. The peak travel periods used for the modelling in this assessment are therefore the weekday periods between 08:00 and 09:00 and 17:00 and 18:00.

5.2.29 Other construction vehicle movements associated with site operations and contractor activities would be cars and light goods vehicles (LGVs). The construction vehicle movements expected to be generated by the Hammersmith Pumping Station site is summarised in Table 5.2.2.

Construction workers

5.2.30 The construction site is expected to require a maximum workforce of 45 workers at any one time during normal operating hours. The number and type of workers is shown in Table 5.2.2.

Table 5.2.2 Maximum estimated construction worker numbers

Contractor				Client	
Staff*		Labour**		Staff***	
08:00-18:00	18:00-08:00	08:00-18:00	19:00-07:00	08:00-18:00	18:00-08:00
20	0	20	0	5	0

** Contractor Staff –engineering and support staff to direct and project manage the engineering work on site.*
*** Contractor Labour – those working on site doing engineering, construction and manual work.*
****Staff Client – engineering and support staff managing the project and supervising the Contractor.*

5.2.31 The anticipated mode split of worker trips for the Hammersmith Pumping Station site and has been generated based on 2001 Census[i] data for journeys to workplaces within the vicinity of the Hammersmith Pumping

[i] Based on 2001 Census. This type of data had not been released from the 2011 Census at the time of the assessment.

Station site. This shows that the predominant mode of travel for construction workers would be public transport.

5.2.32 At the Hammersmith Pumping Station site there would be no parking provided within the site boundary for workers. As parking on surrounding streets is also restricted and measures to reduce car use would be incorporated into site-specific *Travel Plan* (prepared by the contractors in accordance with the overall aims and objectives of the *Draft Project Framework Travel Plan)*, it is highly unlikely that any workers would travel by car.

5.2.33 The Census mode shares have therefore been adjusted in Table 5.2.3 to reflect increased levels of non-car use by workers at this site. The mode split outlined in Table 5.2.3 has therefore been used to assess the impacts of worker journeys on the highway and public transport networks. The assessment has been undertaken on this basis.

Table 5.2.3 Transport mode split

Mode	Percentage of trips to site	Equivalent number of worker trips (based on 45 worker trips)	
		AM peak (07:00-08:00)	PM peak (18:00-19:00)
Bus	13%	6	6
National Rail	19%	8	8
Underground	46%	21	21
Car driver	<1%*	0	0
Car passenger	<1%*	0	0
Cycle	4%	2	2
Walk	15%	7	7
River	0%	0	0
Other (taxi/motorcycle)	3%	1	1
Total	**100%**	**45**	**45**

** Assumed to be zero for the purpose of this assessment*

5.2.34 Information regarding the travel arrangements of these workers would be included in the contractors *Construction Management Plan* and *Site Specific Travel Plan* documents for the Hammersmith Pumping Station site.

5.2.35 It is difficult to predict with certainty the directions to and from which workers at the site would travel. Staff could potentially be based in the local area or in the wider Greater London area and are unlikely to have the same trip origin-destination distributions as construction lorries.

Vehicle movements summary

5.2.36 The total anticipated number of construction-related vehicle movements in the peak month of activity at this site is set out in Table 5.2.4.

Table 5.2.4 Construction works movements

Vehicle type	Vehicle movements per time period				
	Total Daily	0700 to 0800	0800 to 0900	1700 to 1800	1800 to 1900
Construction lorry vehicle movements 10%*	42	0	4	4	0
Other construction vehicle movements**	36	4	4	4	4
Worker vehicle movements***	nominal	0	0	0	0
Total	**78**	**4**	**8**	**8**	**4**

** The assessment is based on 10% of the daily construction lorry movements associated with materials taking place in each of the peak hours*
*** Other construction vehicle movements includes cars and light goods vehicles associated with site operations and contractor activity*
**** Worker vehicle numbers are based on less than 1% of workers driving, on the basis that there would be no worker parking on site, on-street parking in the area is restricted, and site-specific Travel Plan measures would discourage workers from driving by car. In practical terms, this would be close to zero.*

5.2.37 To ensure the assessment of the highway network is robust it has been based on a combination of the peak hour of movements for construction lorries and other construction vehicles between 07:00 and 09:00 and 17:00 and 19:00. These have been combined and applied to the peak hour to take into account the highest number of movements generated by the site.

5.2.38 On the basis that all construction material would be transported by road, an average peak flow of 78 vehicle movements a day is expected during the months of greatest activity during Site Year 1 of construction at this site. At other times in the construction period, vehicle period, vehicle flows would be lower than this average peak figure.

5.2.39 Table 5.2.4 shows that in the AM and PM peak periods, the Hammersmith Pumping Station site would generate approximately 12 vehicle movements in the AM peak and 12 vehicle movements in the PM peak. This has been assessed against the peak hour operation of the highway network and represents a robust figure for assessment as it combines the anticipated movements between 07:00 and 09:00 in the morning and 16:00 to 18:00 in the evening.

Code of Construction Practice

5.2.40 Measures incorporated into the *Code of Construction Practice* (*CoCP*) *(CoCP) Part A* (Section 5) to reduce transport effects include:

a. site specific *Traffic Management Plans (TMP)*: to set out how vehicular access to the site would be managed so as to minimise impact on the local area and communicate this with the local borough and other stakeholders. This includes any works on the highway, diversion or temporary closure of the highway or public right of way

b. HGV management and control: to ensure construction vehicles use appropriate routes to the sites and the vehicle fleet and/or drivers meet current safety and environmental standards.

5.2.41 In addition to the general measures within the *CoCP Part A*, the following transport measures have been incorporated into the *CoCP Part B* (Section 5) relating to the Hammersmith Pumping Station site:

a. the main site entrance would be from Distillery Road with right turn in, left turn out

b. all vehicles would access/egress the site from Fulham Palace Road (A219) and Chancellor's Road and turning into the site at an entrance on Distillery Road

c. the contractor would manage arrivals and departures to minimise potential conflicts with other road users along Chancellor's Road

d. two-way operation of Chancellor's Road would be maintained during short term lane closure to connect utilities

e. a small section of parking equivalent to one parking space would be suspended along the southern side of Chancellor's Road

f. the single yellow line parking restrictions on Distillery Road and Chancellor's Road would be extended.

5.2.42 The effective implementation of the *CoCP Part A and Part B* measures is assumed for the assessment of construction effects

5.2.43 Based on current travel planning guidance including TfL's 'Travel planning for new development in London' (Tfl, 2011)[1], this development lies within the threshold for producing a Strategic Framework Travel Plan. A *Draft Project Framework Travel* Plan has been prepared based on the TfL ATTrBuTE guidance[ii]. The *Draft Project Framework Travel Plan* addresses Project-wide travel planning measures including the need for a project wide Travel Plan Manager, initial travel surveys during construction and a monitoring framework. It also contains requirements and guidelines for the development of site-specific travel plans to be prepared by the site contractors. The site-specific travel planning requirements of relevance to the *Draft Project Framework Travel Plan* are as follows:

[ii] Assessment Tool for Travel plan Building Testing and Evaluation, (ATTrBuTE), is a web-based travel planning tool, which ensures that Travel Plans are in accordance with TfL's published guidance on travel planning for new development in London, http://www.attrbute.org.uk/.

a. information on existing transport networks and travel initiatives for the Hammersmith Pumping Station site

b. a mode split established for the Hammersmith Pumping Station site construction workers to establish and monitor travel patterns

c. site-specific targets and interim targets based on the mode share which would link to objectives based on local, regional and national policy

d. a nominated person assigned responsibility for managing the Travel Plan monitoring and action plans specifically for the site.

Other measures during construction

5.2.44 Embedded design measures which are not outlined in the *CoCP* but are of relevance to the transport assessment at the Hammersmith Pumping Station site include the following:

a. the proposed modifications to the junction of Chancellor's Road with Distillery Road comprising kerb realignments to ensure safe access by construction vehicles is achievable

b. suspension of parking on Chancellor's Road

c. extension of single yellow line parking restrictions on Distillery Road and Chancellor's Road.

Operation

5.2.45 Once the Thames Tideway Tunnel is operational it is not expected that there would be any significant effects on the transport infrastructure and operation within the local area, because maintenance trips to the site would be infrequent and short-term. On this basis the only elements considered are:

a. effects on parking

b. effects on highway layout and operation

c. effects on Fulham Reach residents.

5.2.46 The potential for operational impacts on highway layout and operation is due to the short-term effects of the physical aspects of access to the site for maintenance. These elements are considered qualitatively because the minimal effect on the highway network means that a quantitative assessment is not required. The scope of this analysis has been discussed with LB of Hammersmith & Fulham and TfL.

5.2.47 Access would be required for a light commercial vehicle on a three to six monthly maintenance schedule.

5.2.48 Additionally there would be more substantive maintenance visits at approximately ten year intervals which would require access to enable two mobile cranes and associated support vehicles to be brought to the site, which may require temporary extension to the restricted hours on single yellow lines on Distillery Road and Chancellor's Road.

5.2.49 During operation, maintenance vehicles would enter the site from Distillery Road. The permanent highway layout plan is provided in the

Hammersmith Pumping Station *Transport Assessment* figures and indicates the operational phase permanent works.

5.3 Assessment methodology

Engagement

5.3.1 An extensive scoping and technical engagement process has been undertaken. All consultation comments relevant to this site are presented in Volume 5 of the *Environmental Statement*.

5.3.2 Whilst the issues associated with transport for the operational phase have been scoped out of the *Environmental Statement*., the *TA* examines the operational phase in order to satisfy the relevant stakeholders that technical issues have been addressed (for example, those associated with access for maintenance activities).

Consultees

5.3.3 Throughout the scoping and technical engagement process for the project, the key stakeholders with regards to transport, primarily TfL and the relevant local borough for each site, have been consulted. For Hammersmith Pumping Station, the LB of Hammersmith and Fulham has been consulted and the comments which have arisen relating directly have been recorded and responded to accordingly.

5.3.4 The key issues arising from the stakeholder engagement are:

a. Fulham Reach development may use barges to remove excavated material. Thames Water may be able to use their jetty

b. Fulham Reach construction period may overlap with the Thames Tideway Tunnel project

c. it would be preferable for construction vehicles to route along the A4 and A3220 rather than using Fulham Palace Road (A219)

d. parking surveys are to be undertaken to determine the impact of any loss of parking on Chancellor's Road

e. lost parking to be replaced elsewhere

f. where parking suspension would be required, 24 hour suspensions would be clearer to communicate and enforce

g. there are no planned changes to the CPZs. The area affected spans over different CPZs and it is anticipated that suspension or relocation of parking will be difficult. In addition, where there is perceived parking surplus along Queen Caroline Street, it is unlikely to be utilised because of a fear of crime and general ambience

h. HGV arrivals should be managed through radio networks

i. ensure that the construction traffic does not impede the operation of the SRN/TLRN

j. construction vehicles should preferably avoid Holland Park Roundabout, Shepherd's Bush Gyratory and Earls Court one-way system

k. use of the river to transport material should be investigated, including discussion with Fulham Riverside developers to investigate feasibility of sharing any river facilities they install

l. the use of the Fulham Riverside site for relocated parking should be discussed with the site developers

m. the cycle superhighway proposed on the A4 should be considered in terms of safety for cyclists on construction vehicle routes

n. the proposals for the Hammersmith Gyratory should be considered with regards to construction vehicle access

o. ensure that a good quality Thames Path diversion is put in place[iii].

5.3.5 The key technical issues raised have been addressed as far as is practicable at this stage within this *TA*, *Project-wide TA* and the *Environmental Statement*, in consultation with both TfL and the LB of Hammersmith and Fulham.

Construction

5.3.6 The assessment methodology for the construction phase follows that described in the *Project-wide TA.* There are no site specific variations for undertaking the construction assessment of this site.

Construction assessment area

5.3.7 The assessment area for the Hammersmith Pumping Station site includes the site access on Distillery Road, together with the access route on Chancellor's Road and Fulham Palace Road (A219). The junctions of Chancellor's Road / Distillery Road and Fulham Palace Road (A219) / Chancellor's Road have also been considered.

5.3.8 These roads and junctions have been assessed for highway, cycle and pedestrian impacts. The Thames Path has been included within the assessment due to its proximity to the development site. Effects on local bus services within 640m of the site and rail services within 960m of the site have also been assessed. The Public Transport Accessibility Level (PTAL) of the site, calculated using TfL's approved PTAL methodology assumes a walking speed of 4.8km/h and considers rail stations within a 12 minute walk (960m) of the site and bus stops within an eight minute walk (640m).

5.3.9 The extent of the assessment area for the local highway network modelling has been informed by considering the volume of construction traffic at this site and the degree of impact that would be experienced at the nearest junction of the construction vehicle route with the SRN or

[iii] Note this comment related to an earlier design at the Hammersmith Pumping Station site. The Thames Path is not affected in the proposed design.

TLRN. Where the assessment shows that the forecast impacts at this junction would not be significant, junctions further afield on the strategic network have not been assessed. Where impacts are forecast to be significant, a wider area of the local network has been considered in the assessment.

5.3.10 The assessment for each site takes account of construction vehicle movements associated with Hammersmith Pumping Station, together with construction traffic from other Thames Tideway Tunnel sites that would use the highway network in the vicinity of this site being assessed in Year 1 of construction.

Construction assessment year

5.3.11 To assess the busiest case scenario for the Hammersmith Pumping Station locality, the peak construction traffic year has been identified. This ensures that the assessment for Hammersmith Pumping Station takes into consideration the heaviest flow of construction vehicles at this site on local roads for the local modelling assessment.

5.3.12 The site-specific peak construction traffic year at Hammersmith Pumping Station is Site Year 1 of construction.

5.3.13 The assessment of the aggregated Thames Tideway Tunnel construction traffic flows on the wider highway network is included within the *Project-wide TA.*

Highway network modelling

5.3.14 The assessment for each site takes account of construction vehicle movements associated with Hammersmith Pumping Station, together with construction traffic from other Thames Tideway Tunnel project sites that would use the highway network in the vicinity of this site in Site Year 1 of construction.

5.3.15 As indicated in the *Project-wide TA*, the TfL HAMs have been used as part of the assessment. The strategic highway modelling has used three of the HAMs, which cover west, central and east London. These three models cover the locations of all of the Thames Tideway Tunnel project sites and this approach has been agreed with TfL.

5.3.16 The HAMs have been developed by TfL using GLA employment and population forecasts, which are based on the employment and housing projections, set out in the London Plan. As a result the assessment inherently takes into account a level of future growth and development across London.

5.3.17 For future year assessments for the Hammersmith Pumping Station site, the TfL West London HAM (WeLHAM) has been used to test the strategic highway network impacts associated with this site. Construction traffic associated with other Thames Tideway Tunnel project sites using routes in this area has been included in the WeLHAM scenarios.

5.3.18 This approach provides a robust assessment case for local modelling as the background traffic has been growthed to 2021, which is later than the site specific peak year of construction, and no allowance has been made

for existing traffic that might divert to other routes as a consequence of the use of local roads by the project-related traffic.

Operation

5.3.19 The assessment methodology for the operational phase follows that described in the *Project-wide TA*. There are no site specific variations for undertaking the operational assessment of this site.

5.3.20 Given the level of transport activity associated with the Thames Tideway Tunnel project during the operational phase, only the localised transport effects around the Hammersmith Pumping Station site are assessed. Other Thames Tideway Tunnel sites would not affect the area around Hammersmith Pumping Station in the operational phase and therefore they are not considered in the assessment.

5.3.21 With regard to other developments in the vicinity of the site (as detailed in Volume 5 Appendix N of the *Environmental Statement*), the Fulham Reach development would be fully complete and operational (all phases) by Year 1 of operation. As a result, the Fulham Reach development has been included within the operational base case which takes into consideration the effects on highway layout, operation and parking and the effects of maintenance trips on residents of the development. There are no other schemes that meet the criteria for inclusion in the cumulative effects assessment

Operational assessment area

5.3.22 The assessment area for the operational assessment remains the same as for the construction assessment as set out in paras 5.3.7 to 5.3.10.

Operational assessment year

5.3.23 The operational assessment year has been taken as Year 1 of operation. As the number of vehicle movements associated with the operational phase is very low, there is no requirement to assess any other year beyond that date.

5.4 Baseline

5.4.1 This section sets out the baseline conditions on the local transport network in the vicinity of the Hammersmith Pumping Station site in 2012, with the exception of the traffic survey data which was collected in 2011.

Policy review

5.4.2 The site is located within the LB of Hammersmith and Fulham; the relevant national, regional and local policy documents have been reviewed, the review is presented in Appendix A.

Existing land use

5.4.3 The site is currently vacant and formerly accommodated an industrial land use. Planning permission has been granted for new residential development on the site.

5.4.4 The nearest residential area is Chancellor's Road, located approximately 10m to the northwest of the site.

Existing access

5.4.5 There is an existing vehicular access to the site on Distillery Road onto the site. This will form the means to access and egress the site during construction.

Pedestrian network and facilities

5.4.6 The key pedestrian network to and from the site is directly related to local public transport services, particularly London Underground services and bus services. The key pedestrian routes related to the Hammersmith Pumping Station site are:

a. The Thames Path

b. Chancellor's Road – providing connections on foot to bus stops on Fulham Palace Road (A219) to the north and Hammersmith Underground Station

c. Distillery Road and Winslow Road – providing connections on foot to bus stops on Fulham Palace Road (A219) to the south of the site.

5.4.7 The existing pedestrian network and facilities in the vicinity of the Hammersmith Pumping Station site are described below and shown in Figure 5.4.1 in the Hammersmith Pumping Station *Transport Assessment* figures.

Thames Path

5.4.8 The Thames Path (a Public Right of Way) runs along the river front of the Fulham Reach development site to the south and west of Hammersmith Pumping Station.

Fulham Palace Road (A219)

5.4.9 Fulham Palace Road (A219) provides a north-south pedestrian connection between Hammersmith Bridge Road (A306) and Fulham High Street (A219). Pedestrian routes from the site to Fulham Palace Road (A219) are via Chancellor's Road to the northeast and Winslow Road to the southeast. The footways along either side of Fulham Palace Road (A219) are wide at approximately 3m wide with active shop frontages.

5.4.10 There is a signalised pedestrian crossing located on Fulham Palace Road (A219) approximately 40m south of the Fulham Palace Road (A219) / Chancellor's Road junction.

5.4.11 There is also a network of pedestrian routes through the Frank Banfield Park that will provide pedestrian access between the site and Fulham Palace Road (A219). However, the park is only open between 07:30 and dusk every day.

Chancellor's Road and surrounding streets

5.4.12 Chancellor's Road has footways on both sides of approximately 2m in width. There is an entry treatment on Chancellor's Road on approach to Fulham Palace Road (A219).

5.4.13 Winslow Road to the southeast has footways on both sides of approximately 2m in width.

5.4.14 The footways on Distillery Road are also approximately 2m wide on either side of the road.

Cycle network and facilities

5.4.15 The existing cycle network and facilities in the vicinity of the site are described below and shown in Figure 5.4.1 in the Hammersmith Pumping Station *Transport Assessment* figures.

5.4.16 The main cycle route within the area is a designated National Cycle Route runs along Chancellor's Road, to the west of its junction with Distillery Road and continues south along Distillery Road. The cycle route then continues further south and east through a number of residential roads towards Fulham.

5.4.17 Currently there are no on-road cycle markings along Fulham Palace Road (A219), Chancellor's Road or Distillery Road.

Barclays Cycle Superhighways

5.4.18 There is currently no Barclays Cycle Superhighway (CS) in the immediate vicinity of the site.

Barclays Cycle Hire scheme

5.4.19 The closest Barclays Cycle Hire docking station is located on West Cromwell Road, Earls Court, approximately 2.3km to the north-east of the site in the eastbound carriageway and accommodates 23 bicycles.

5.4.20 TfL has also announced proposals to provide new docking stations as part of a western extension due to be completed in 2014.

Cycle parking

5.4.21 There are eight Sheffield Cycle Stands capable of accommodating up to 16 bicycles which are provided on the western footway of Fulham Palace Road (A219), approximately 250m north of the site.

Public transport

Public Transport Accessibility Level

5.4.22 The Public Transport Accessibility Level (PTAL) of the site has been calculated using TfL's approved PTAL methodology and the analysis is included in Appendix B. This assumes a walking speed of 4.8km/h and considers rail stations within a 12 minute walk (960m) of the site and bus stops within an eight minute walk (640m).

5.4.23 Using this methodology the Hammersmith Pumping Station site has a PTAL rating of between 5 and 6b, indicating that public transport provision in the vicinity is 'excellent' (with 1 being the lowest accessibility and 6b being the highest accessibility). The following sections detail the public transport services in the vicinity of the site. Figure 5.4.2 in the Hammersmith Pumping Station *Transport Assessment* figures shows the public transport services in the vicinity of the Hammersmith Pumping Station site.

Bus services

5.4.24 A total of 11 daytime bus and three night time routes operate within 640m walking distance of the site. These bus services form a comprehensive network, extending outwards in all directions from the site. These bus services operate from the following bus stops:

a. Charing Cross Hospital (Fulham Palace Road (A219) – northbound and southbound; approximately 300m southeast of the site)

b. Hammersmith Bus Station (Hammersmith Gyratory; approximately 585m from the site)

5.4.25 Table 5.4.1 provides a summary of the regular bus services and their frequencies during the weekday peaks.

Table 5.4.1 Existing daytime weekday peak hour local bus services and frequencies per hour*

Bus number	Weekday two-way services		Nearest bus stop to the site	Approximate walking distance from the site	Origin - destination
	AM peak (08:00-09:00)	PM peak (17:00-18:00)			
9	10	11	Hammersmith Bus Station	585	Aldwych/Somerset House to Hammersmith Bus Station
10	11	8	Hammersmith Bus Station	585	Hammersmith Bus Station to Kings Cross Station
27	11	8	Hammersmith Bus Station	585	Turnham Green/Sutton Lane to Chalk Farm Morrisons
33	8	8	Hammersmith Bridge North Side	725	Fulwell Station to Hammersmith Bus Station
72	7	7	Hammersmith Bridge	685	Brunel Road to Roehampton, Bessborough Road
190	4	4	Charing Cross Hospital	345	Empress State Building/West Brompton Station to Richmond Bus Station
209	15	15	Hammersmith Bridge North Side	725	Mortlake Bus Station to Hammersmith Bus Station
211	7	8	Charing Cross Hospital	345	Waterloo Station to Hammersmith Bus Station
220	10	10	Charing Cross Hospital	345	Mapleton Crescent to Willesden Junction
266	8	8	Hammersmith Bus Station	585	Hammersmith Bus Station to Brent Cross Shopping Centre
267	8	7	Hammersmith Bus Station	585	Hammersmith Bus Station to Fulwell

Bus number	Weekday two-way services		Nearest bus stop to the site	Approximate walking distance from the site	Origin - destination
	AM peak (08:00-09:00)	PM peak (17:00-18:00)			
283	8	8	Hammersmith Bridge	685	Brunel Road to Barnes Pond
295	7	7	Charing Cross Hospital	345	Clapham Junction Station/Falcon Road to Ladbroke Grove Sainsbury's
391	7	7	Hammersmith Bus Station	585	Richmond Bus Station to Sands End Sainsbury's
419	6	6	Hammersmith Bridge	685	Hammersmith Bus Station to Richmond Bus Station
485	8	8	Hammersmith Bridge	685	Hammersmith Bus Station to Ram Street
609	3	2	Hammersmith Bridge	685	Hammersmith Bus Station to Mortlake
H91	7	8	Hammersmith Bus Station	585	Hounslow West Station to Hammersmith Bus Station

** Transport for London (TfL) (2011) Timetables. www.tfl.gov.uk (site last accessed March 2012)*

London Underground

5.4.26 Hammersmith Underground stations (two stations) are located approximately 500m and 800m walking distance north of the site. They serve the Circle, District, Piccadilly and Hammersmith & City Lines, as shown on Figure 5.4.2 in the Hammersmith Pumping Station *Transport Assessment* figures.

5.4.27 Circle Line trains terminate at Hammersmith and travel via Paddington, Liverpool Street and Victoria to Edgware Road. Services operate with frequencies of every eight to 12 minutes providing five to eight services per hour in each direction throughout the day.

5.4.28 Hammersmith and City Line trains also terminate at Hammersmith and travel east to Barking Underground Station with frequencies of every seven to 13 minutes providing four to eight services per hour in each direction throughout the day.

5.4.29 District Line trains travel west to Ealing Broadway, Richmond and Wimbledon and east to Tower Hill and Upminster with AM and PM peak frequencies of approximately every two to seven minutes providing on average 12 to 15 services per hour in each direction throughout the day. . These services can also be accessed at Ravenscourt Park (1.6km walking distance to the northwest) and Barons Court (1km walking distance to the east).

5.4.30 Piccadilly Line trains travel west to Heathrow Airport and northeast to Cockfosters with frequencies of every two to five minutes providing approximately 20 to 24 services per hour in each direction throughout the day. These services can also be accessed at Barons Court station.

5.4.31 On average there are approximately 15 arrivals and 15 departures at the Circle / Hammersmith and City station and a further 35 services in each direction at the District / Piccadilly station during each of the AM and PM peak hours.

5.4.32 Table 5.4.2 provides a summary of the London Underground services and their frequencies during the weekday and weekend peaks.

Table 5.4.2 Existing London Underground weekday peak hour services and frequencies per hour*

Line	Weekday two-way frequency		Nearest London Underground station to the site	Approx distance from the site	Origin - destination
	AM peak (08:00-09:00)	PM peak (17:00-18:00)			
Circle Line	5-8	6	Hammersmith	800m	Edgware Road – Hammersmith
District Line	9-20	9-15	Hammersmith	500m	Edgware Road, Ealing Broadway, Richmond, Wimbledon, Kensington (Olympia) – Upminster

Line	Weekday two-way frequency		Nearest London Underground station to the site	Approx distance from the site	Origin - destination
	AM peak (08:00-09:00)	PM peak (17:00-18:00)			
Piccadilly Line	12-30	12-30	Hammersmith	500m	Cockfosters, Uxbridge and Heathrow Terminal 5
Hammersmith & City Line	5-7	6	Hammersmith	800m	Barking

** Transport for London (TfL) (2012) Timetables www.tfl.gov.uk (site last accessed: March 2012).*

London Overground

5.4.33 The closest London Overground station to the site is Kensington Olympia rail station, located approximately 1.7km or 21 minutes' walk to the north-east of the site.

5.4.34 Kensington Olympia provides access to London Overground services to and from Clapham Junction, Willesden Junction.

5.4.35 In the AM and PM peak hours there are seven to eight services calling at Kensington Olympia in each direction.

National Rail

5.4.36 There are no Network Rail stations within the vicinity of the site. The closest rail station is Kensington Olympia rail station, located approximately 1.7km or 21 minutes' walk to the north-east of the site.

5.4.37 In the AM and PM peak hours there is one service calling at Kensington Olympia in each direction.

River services

5.4.38 The Hammersmith Pumping Station site has no jetty facilities in the immediate vicinity, with the nearest passenger pier being Putney Pier approximately 2.9km to the east. Putney Pier only provides services which travel to destinations further east along the river, so is not of relevance to the *TA* of the Hammersmith Pumping Station site.

Taxis

5.4.39 There are no taxi ranks within 640m walking distance of the Hammersmith Pumping Station site.

Highway network and operation

5.4.40 Fulham Palace Road (A219) forms part of the SRN and is a busy distributor road. It provides a north-south connection between the Hammersmith gyratory system in the north and Fulham High Street (A219) in the south. Fulham Palace Road (A219) is approximately 12m wide with one with flow bus lane in the northbound direction and one general traffic lane in each direction and is subject to a 30mph speed limit.

5.4.41 The Hammersmith gyratory system is approximately 400m north of the Chancellor's Road / Fulham Palace Road (A219) junction. The gyratory is a major distributor of traffic to and from the west via the A4. It is a complex of signal controlled junctions surrounding Hammersmith underground (District and Piccadilly lines) and bus stations with pedestrian and cycle facilities.

5.4.42 Chancellor's Road forms a priority junction with Fulham Palace Road (A219). There is a right turn reservoir in place on Fulham Palace Road (A219) to assist with this movement into Chancellor's Road. There are also yellow boxes currently in place on the northbound lanes on Fulham Palace Road (A219) to reduce delay caused by vehicles queuing across the junction.

5.4.43 Chancellor's Road is a single carriageway two way road with traffic calming measures (speed cushions) throughout its length, car parking on both sides, and is subject to a 30mph speed limit. It has a priority junction with Distillery Road close to the existing Hammersmith Pumping Station.

5.4.44 Distillery Road also has traffic calming measures, is a two way road and is subject to a 20mph speed limit. It meets Winslow Road at a priority junction south of the site.

5.4.45 There is an existing vehicular access on Distillery Road onto the site which would be utilised during the operational phase.

5.4.46 The modelling results for the baseline situation of the Chancellor's Road / Fulham Palace Road (A219) junction are shown in Table 5.4.9. The results show that the junction operates within capacity in the weekday AM and PM peak hours.

Parking

5.4.47 Figure 5.4.3 in the Hammersmith Pumping Station *Transport Assessment* figures shows the locations of the existing car parking within the vicinity of the site.

Existing on-street car parking

5.4.48 There are shared use parking bays consisting of permit holder parking and pay and display parking, operating at different times. There are 85 shared-use parking bays along Chancellor's Road, 11 shared-use parking bays along Distillery Road and 38 shared-use parking bays along Winslow Road. These parking bays are within a CPZ operated by the LB of Hammersmith and Fulham.

5.4.49 There is resident permit holder or pay at meter parking along the eastern side of Distillery Road. Metered parking is subject to a maximum eight hour stay with restrictions in place from Monday to Saturday between 08:00 – 18:30. Charges are in place during these times and are £2.80 per hour with a minimum payment of £1.40 for 30 minutes.

5.4.50 There is further resident permit holder or pay at meter parking along both sides of Chancellor's Road. Metered parking in this road is subject to a four hour maximum stay. Charges are the same as above with restrictions in place from Monday to Saturday between 08:30 – 18:30.

5.4.51 There are no motorcycle parking bays or blue-badge parking bays on the road network within close proximity of the site.

5.4.52 There is no provision for car parking along Fulham Palace Road (A219).

5.4.53 Table 5.4.3 summarises the parking restrictions and the number of bays on the roads in the vicinity of the site. The availability and usage of the parking capacity on a weekday and a Saturday on the roads in the vicinity of the site are summarised later in this section in Table 5.4.8.

Table 5.4.3 Existing on-street car parking in the vicinity of Hammersmith Pumping Station Site

Road name	Type of parking restrictions and number of bays	
	Resident-only parking bay	Shared use parking bay
Queen Caroline Street	0	56
Crisp Road	0	33
Chancellor's Road	0	18
St James Street	0	21
Chancellor's Road	0	85
The Square	23	0
Manbre Road	0	36
Distillery Road	0	11
Winslow Road	0	38
Total	**23**	**298**

Existing off-street/private car parking

5.4.54 The nearest off-street car park is the Charing Cross Hospital car park located at Fulham Palace Road, approximately 400m walking distance south east of the site. The car park is open 24 hours Monday to Sunday and it has 127 spaces. There is a pay and display charge of £2 per hour but is intended for hospital use only.

5.4.55 The Hammersmith Novotel hotel car park is located in 1 Shortlands, approximately 880m walking distance north east of the site. It is open 24 hours Monday to Friday and there is a standard charge of £3 per hour with a discounted rate of £1 per hour for hotel residents. There is capacity available for 240 spaces, which is intended for customers use only.

5.4.56 There is a NCP public car park located at Hammersmith Grove which is open 24 hours Monday to Sunday. The charge is £6 every two hours and a maximum charge of £25 per 24 hours. There is capacity available for 260 spaces and is approximately 800m walking distance from the site entrance. The charges are shown in Table 5.4.4.

Table 5.4.4 Off street parking charges

Duration	Charge
Up to 1 hour	£6.00
Up to 2 hours	£6.00
Up to 3 hours	£12.00
Up to 4 hours	£12.00
Up to 6 hours	£18.00
Up to 9 hours	£24.00
Up to 24 hours	£24.00

Coach parking

5.4.57 There is no coach parking facilities within 640m walking distance of the site, with the nearest being at Holland Road, Kensington.

Car clubs

5.4.58 Car clubs provide members with easy access to cars for short-term use. Cars are available as and when needed and allow members to access a car without purchase, storage and operational costs associated with owning a private car.

5.4.59 The closest car club parking spaces are located on Riverview Gardens and Arundel Terrace, both approximately 480m walking distance northwest of the site. These spaces are operated by Zipcar.

5.4.60 There are an additional four car club spaces within 640m walking distance of the site. These are located at Margravine Road, Hammersmith Grove and two spaces are provided within the Hammersmith Grove NCP car park.

Servicing and deliveries

5.4.61 There are no loading bays in the immediate vicinity of the Hammersmith Pumping Station site.

Baseline survey data

Description of data

5.4.62 Automatic traffic count (ATC) data was obtained from TfL for Fulham Palace Road (A219) as shown on Figure 5.4.4 in the Hammersmith Pumping Station *Transport Assessment* figures. This data was analysed to understand the two-way traffic flows along this route in February 2011.

5.4.63 Five year accident data on roads in the vicinity of the Hammersmith Pumping Station site was also obtained from TfL. This data is discussed in paras 5.4.108to 5.4.120.

5.4.64 Baseline survey data for the Hammersmith Pumping Station site was collected in May and June 2011 to establish the existing transport movements in the area. Figure 5.4.4 in the Hammersmith Pumping Station *Transport Assessment* figures shows the survey locations in the

vicinity of the site. Appendix A of the *Project-wide Transport Assessment* includes the *Baseline Data Report* baseline report which further details the data collection.

5.4.65 As part of surveys in May and June 2011, manual and ATCs were undertaken to establish specific traffic, pedestrian and cycle movements including turning volumes, queue lengths, saturation flows and traffic signal timings. Parking surveys were undertaken to establish the use of metered parking and resident permit parking. Surveys were also undertaken on the Thames Path at the riverside immediately between the site and the River Thames.

5.4.66 The scope of the surveys in terms of location and time periods was considered to ensure that the data required for assessment was collected. Junction turning count data was collected at junctions that TfL had advised required assessment. In some cases, ATC data was collected on links to validate the junction turning count data and provide information for noise and air quality assessments.

5.4.67 Pedestrian and cycle count data was collected at locations where flows could be affected either through diversions or the generation of additional trips or where conflicts could occur with construction vehicles. Parking survey data was collected where parking suspensions would be necessary or where additional parking demand could be generated.

5.4.68 Traffic surveys were carried out on a weekday and a weekend to represent a weekly profile of traffic at particular locations. Where two weekly profiles have been surveyed, the busiest survey was used.

5.4.69 The surveys undertaken and their locations are summarised in the table below.

Table 5.4.5 Survey types and locations

Survey type and location	Date
Junction turning movement survey (including pedestrian and cycle movements)	
Yeldham Road / A219 Fulham Palace Road / Chancellor's Road A3218 Lillie Road / A219 Fulham Palace Road / Silverton Road	12th May 2011 and 14th May 2011
Automatic Traffic Count (ATC) survey	
Fulham Palace Road (A219) approximately 130m north of Chancellor's Road	21st May 2011 to 24th June 2011

Survey type and location	Date
Pedestrian and cycle surveys	
Thames Path on Riverside – between Winslow Road and Chancellor's Road	12th May 2011 and 14th May 2011
Parking surveys	9th June 2011 and 11th June 2011
Chancellor's Road	
Distillery Road	
Winslow Road	
Manbre Road	
Crisp Road	
St James Street	
Chancellor's Road	
Queen Caroline Street	
The Square and roads leading to it from Fulham Palace Road and Queen Caroline Street	

5.4.70 Pedestrian and cyclist flow data from the surveys provided the baseline pedestrian traffic data sets which are set out in Table 5.4.6 and Table 5.4.7.

5.4.71 Vehicular traffic flow data from the junction turning movement surveys provided the baseline vehicular traffic data sets which were input into the junction assessment models described in paras 5.4.100 to 101.

5.4.72 The following ATC and junction surveys are on construction traffic routes to and from the Hammersmith Pumping Station site:

a. ATC on Fulham Palace Road (A219)

b. Yeldham Road / A219 Fulham Palace Road / Chancellor's Road junction survey.

Results of the surveys

5.4.73 The surveys inform the baseline situation in the area surrounding the site and are summarised in the following paragraphs.

Pedestrians

5.4.74 Pedestrian surveys were undertaken along the Thames Path between Winslow Road and Chancellor's Road as shown n Figure 5.4.4 of the Hammersmith Pumping Station *Transport Assessment* figures.

5.4.75 Pedestrian surveys were also undertaken at the pedestrian crossings as part of the junction surveys.

5.4.76 Table 5.4.6 shows the pedestrian flows surrounding the Hammersmith Pumping Station site during the AM, PM and weekend peak hours.

Table 5.4.6 Existing pedestrian flows

Pedestrian route	Direction	Weekday			Weekend
		AM peak (08:00-09:00)	Inter-peak (12:00-13:00)	PM peak (17:00-18:00)	(13:00-14:00)
Riverside between Winslow Road and Chancellor's Road	NB	56	97	49	55
Riverside between Winslow Road and Chancellor's Road	SB	54	58	56	76
Fulham Palace Road(A219) / Chancellors Road junction:					
Fulham Palace Road (A219) - South arm	EB	137	106	95	66
	WB	107	121	78	86
Fulham Palace Road (A219)/ Lillee Road junction:					
Fulham Palace Road(A219) - North arm	EB	32	14	26	27
	WB	47	31	34	39
Lillee Road	SB	70	25	104	30
	NB	61	18	30	44
Fulham Palace Road(A219) - South arm	WB	17	10	30	10
	EB	39	16	23	17

5.4.77 Pedestrian surveys along the Thames Path indicate that there is a relatively balanced flow of pedestrians in both northbound and southbound direction within the AM peak and PM peak hours respectively.

5.4.78 There are approximately 55 pedestrians in each direction in the AM peak and 53 in each direction in the PM peak. There is a slightly heavier pedestrian flow in the northbound direction in the inter-peak period (12:00-13:00) with 97 walking trips in the northbound direction compared to 58 walking trips in the southbound direction. However, the pedestrian flow on a Saturday between 13:00 and 14:00 is heavier in the southbound direction with 76 walking trips as compared to the northbound direction with 55 walking trips observed.

5.4.79 The junction of Fulham Palace Road (A219)/Chancellors Road has the heaviest pedestrian flow with 137 people travelling eastbound and 107 westbound in the AM peak hour. There were 95 and 78 people respectively in the PM peak hour.

5.4.80 All other flows reflected low usage across the crossing points although Lillee Road southbound had a high 104 people travelling southbound in the PM peak hour.

Cyclists

5.4.81 Cyclist surveys were undertaken at the same locations as the pedestrian surveys.

5.4.82 Table 5.4.7 shows the cyclist flows surrounding the Hammersmith Pumping Station site during the AM, PM and weekend peak hours.

Table 5.4.7 Existing cycle flows

Road/route	Direction	Weekday			Weekend
		AM peak (08:00-09:00)	Inter-peak (12:00-13:00)	PM peak (17:00-18:00)	(13:00-14:00)
Riverside - between Winslow Road and Chancellor's Road	NB	85	21	27	20
Riverside - between Winslow Road and Chancellor's Road	SB	46	12	43	21
Fulham Palace Road(A219) / Chancellors Road junction:					
Fulham Palace Road(A219) - North arm	NB	188	28	87	35
	SB	89	27	151	29
Yeldham Road	EB	0	0	2	0
	WB	1	0	0	0
Fulham Palace Road (A219) - South arm	SB	84	28	140	26
	NB	175	22	84	31
Chancellors Road	WB	8	0	12	3
Fulham Palace Road (A219)/ Lillee Road junction:	EB	15	7	6	4
Fulham Palace Road(A219) - North arm	NB	127	16	55	30
	SB	44	16	99	21
Lillee Road	EB	68	13	36	12
	WB	55	14	34	16
Fulham Palace (A219) Road - South arm	SB	15	9	77	15
	NB	97	13	37	19

Road/route	Direction	Weekday			Weekend
		AM peak (08:00-09:00)	Inter-peak (12:00-13:00)	PM peak (17:00-18:00)	(13:00-14:00)
Silverton Road	WB	13	7	13	3
	EB	27	3	11	4

5.4.83 The cycle flow surveys on the Thames Path indicate that there is a significantly higher cycle flow in the northbound direction during the AM peak hour with 85 trips observed compared to 27 in the PM peak hour. There were a similar number of cycle trips observed in the southbound direction for both the AM and PM peak hour at 46 and 43 trips respectively.

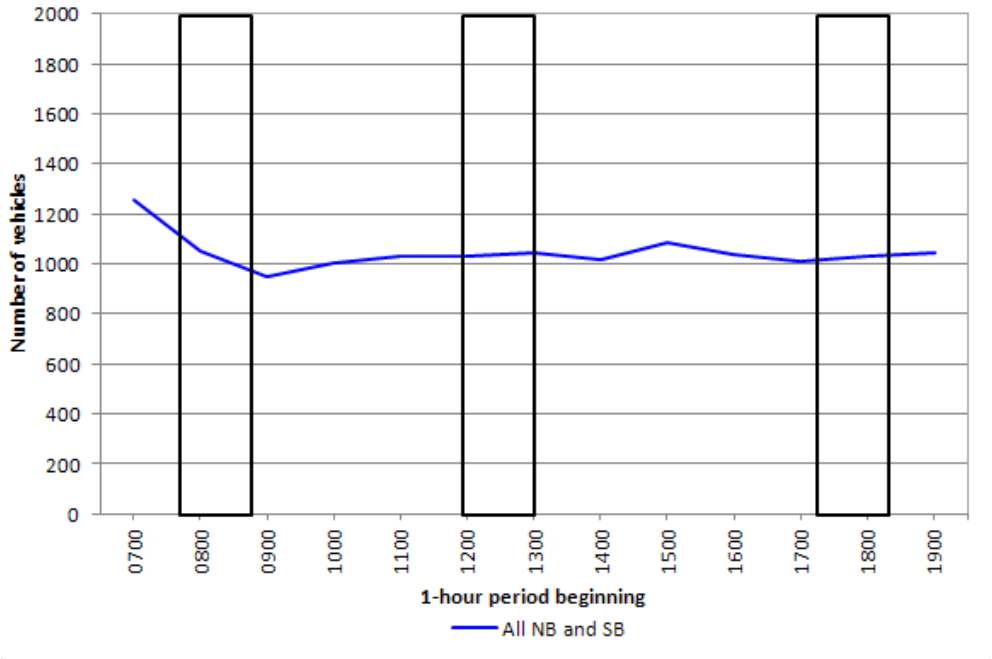
5.4.84 Yeldham Road, Chancellors Road and Silverton Road show low levels of cycle usage throughout the day.

5.4.85 Fulham Palace Road (A219) has high cycle usage on all arms during the peak period, the highest being at the Fulham Palace Road(A219) / Chancellors Road junction, north arm, with 188 people travelling northbound and 89 southbound in the AM peak hour and 87 northbound and 151 southbound in the PM peak hour.

Traffic flows

5.4.86 The ATC data for Fulham Palace Road (A219) has been collected from TfL and has been analysed for the weekdays, Saturdays and Sunday periods surveyed. The data supplied by TfL was not classified to 15 minute intervals, or by direction, so only total flow volumes for each hour have been reported.

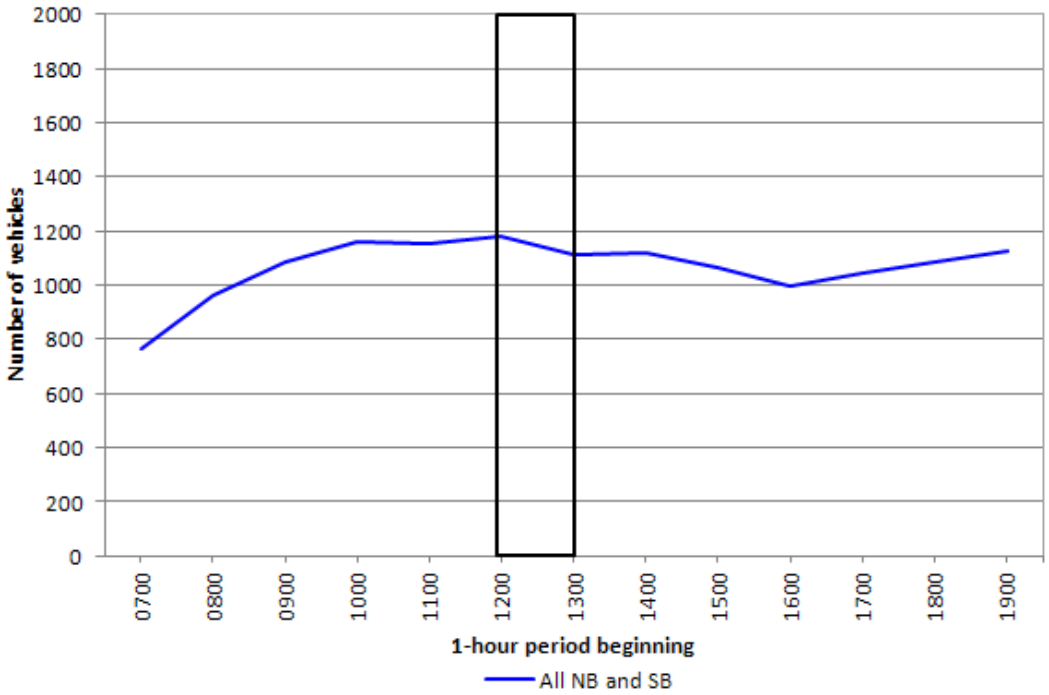
Plate 5.4.1 Existing traffic flow along Fulham Palace Road (A219) (weekday ATC survey)



NB – Northbound, SB – Southbound. The black box represents the peak hour traffic flows used for the traffic assessment

5.4.87 The weekday ATC data on Plate 5.4.2 shows that between 08:00 and 09:00 there were approximately 1,054 two-way vehicle movements. For the period between 17:00 and 18:00 there were approximately 1,010 two-way vehicle movements.

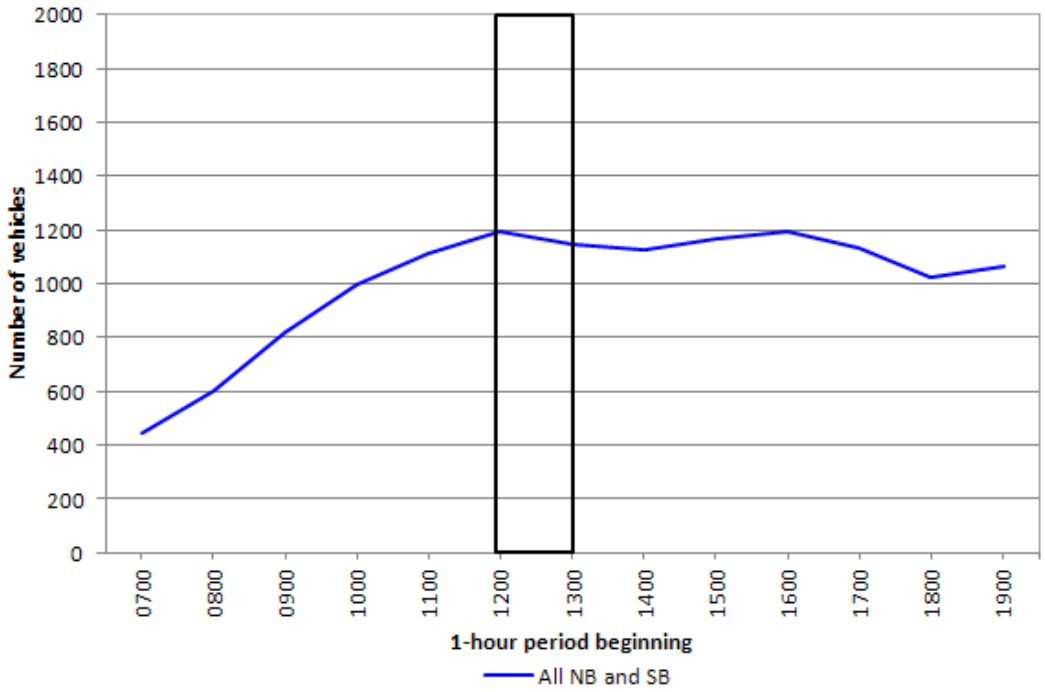
Plate 5.4.2 Existing traffic flow along Fulham Palace Road (A219) (Saturday ATC survey)



NB – Northbound, SB – Southbound. The black box represents the peak hour traffic flows used for the traffic assessment

5.4.88 Analysis of the data on Plate 5.4.3 showed that the Saturday peak travel period occurred between 12:00 and 13:00 with 1,181 total two-way vehicle movements recorded. This is slightly higher than the AM and PM weekday two-way traffic flows and the period falls within the expected weekend construction works vehicle movements period of between 08:00 and 13:00 on a Saturday.

Plate 5.4.3 Existing traffic flow along Fulham Palace Road (A219) (Sunday ATC survey)



NB – Northbound, SB – Southbound. The black box represents the peak hour traffic flows used for the traffic assessment

5.4.89 Analysis of the data on Plate 5.4.4 showed that the Sunday peak travel period occurred between 12:00 and 13:00 with 1,198 two-way vehicle movements recorded. This is slightly higher than the AM and PM weekday two-way traffic flows. However, construction vehicle movements are not expected to take place on a Sunday.

5.4.90 Data from the turning count at the Chancellor's Road / Fulham Palace Road (A219) junction show that the northbound and southbound traffic on Fulham Palace Road (A219) reaches 826 and 893 vehicles respectively during the AM peak hour. The next busiest movement at this junction in the AM peak hour is the left turn from Chancellors Road onto the northbound arm of Fulham Palace Road (A219) with 78 vehicles making this turning.

5.4.91 The PM peak hour shows a reverse of traffic movement on Fulham Palace Road (A219), with heavier northbound traffic of 771 compared to southbound of 740 vehicles during this hour. The left turn movement on Chancellors Road onto the northbound arm of Fulham Palace Road (A219) remains high with 84 vehicles turning per hour at the PM peak.

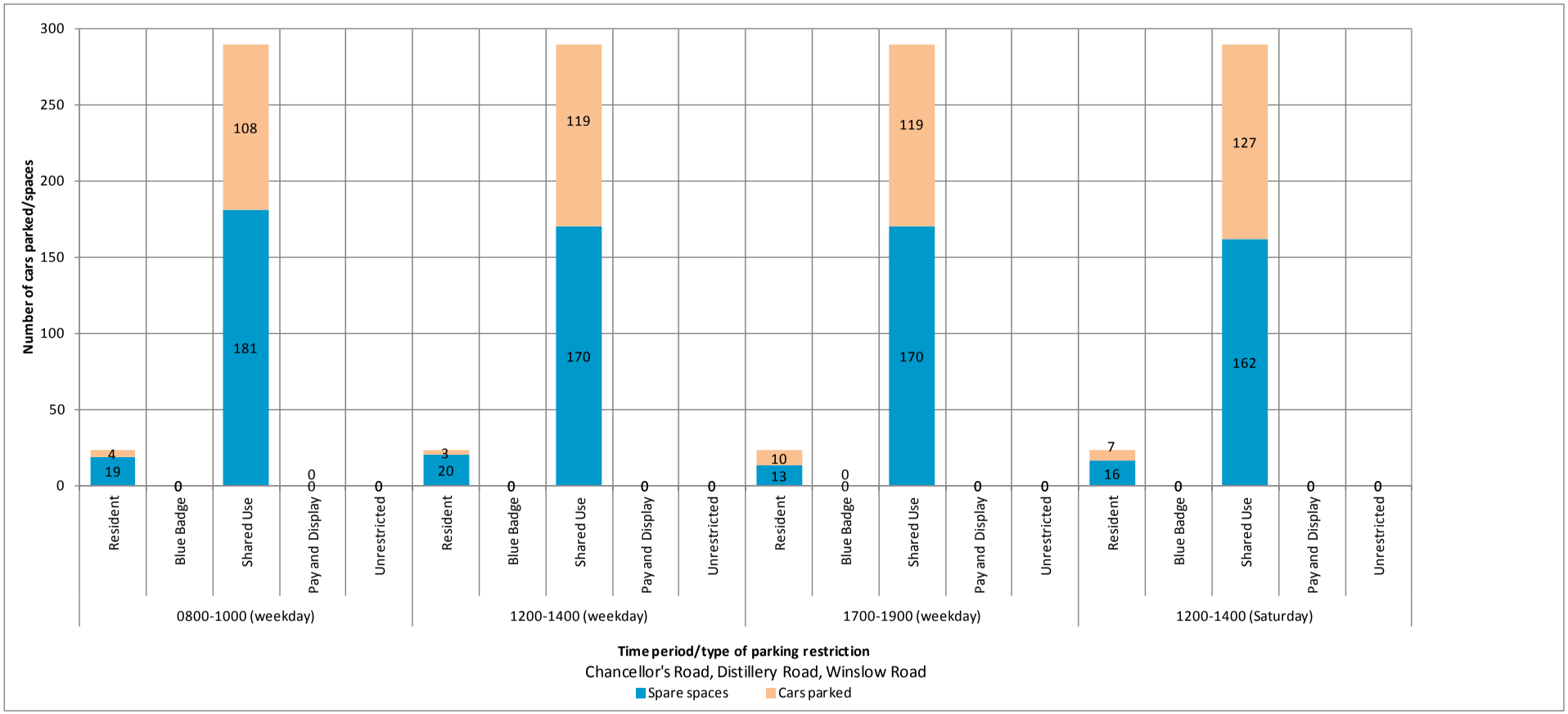
5.4.92 The traffic flows for the weekday AM peak hour, 08:00-09:00 are shown in Figure 5.4.5 and 5.4.6 in the Hammersmith Pumping Station *Transport Assessment* figures.

Parking

5.4.93 Surveys were undertaken to establish the availability of parking stock in the vicinity of the site to understand existing occupancy and capacity.

5.4.94 The plate below indicates a histogram of the car parking in the area surrounding Hammersmith Pumping Station during the AM, inter-peak, PM peaks and the weekend peak periods

Plate 5.4.4 Existing on-street car parking availability and usage



5.4.95 Table 5.4.8 indicates the roads where parking capacity was found to be available throughout a weekday and on Saturday.

Table 5.4.8 Parking bay usage

Location	No. of Shared Use	No. of permit parking	No. of spaces available - weekday			No. of spaces available Saturday
			08:00-10:00	12:00-14:00	17:00-19:00	12:00-14:00
The Square	0	23	19	20	13	16
Queen Caroline Street	56	0	26	25	26	27
Crisp Road	33	0	23	17	19	24
Chancellor's Road	9	0	3	5	5	4
St James Street	21	0	6	6	5	5
Chancellor's Road	85	0	62	58	55	60
Manbre Road	36	0	26	25	28	27
Distillery Road	11	0	8	11	8	3
Winslow Road	38	0	27	23	24	12

5.4.96 The results of the surveys show that the greatest demand for parking within the vicinity of the site occurs at the weekend, between 12:00 and 14:00. Overall, the results indicate that there are a number of available spaces during the time periods surveyed.

Local highway modelling

5.4.97 To establish the existing capacity on the local highway network a scope was discussed with TfL and the LB of Hammersmith and Fulham to assess the Chancellor's Road / Fulham Palace Road (A219) junction using a PICADY model.

5.4.98 Whilst there would be an interaction between the Fulham Palace Road / Chancellor's Road junction and the Yeldham Road / Chancellor's Road junction, the level of this potential interaction is considered to be limited. The baseline data shows that a maximum of 13 PCUs exit the Yeldham Road arm of the junction during the peak hours and a maximum of 14 PCUs enter the arm. This equates on average to less than one PCU emerging or entering the road nearly every 2.5 minutes. The impact on traffic entering or exiting Chancellor's Road is therefore considered to be minimal. On this basis, and given that the flows generated by the development are well within the likely daily variation of traffic at this junction, it was considered appropriate to model the junction as a priority T-junction instead of a staggered crossroads.

5.4.99 Traffic models for this junction have been developed for this assessment and where possible suitable models from TfL have been used. The models have been constructed using on-site measurements of classified vehicle volumes and queue lengths.

5.4.100 The TfL modelling guidelines and Modelling Audit Process (MAP) have been used as the basis for preparing and checking models and their outputs. All required input data has been used in order to calibrate the model. Where TfL models have been used, saturation flows have been retained where no change is proposed to junctions; where changes are proposed, saturation flows have been calculated and compared with site observations to determine suitable values. Validation of the models has been based on observed data including signal timings, vehicle volumes and queue lengths to provide the key criteria for comparison with modelled queue lengths.

5.4.101 The models are considered suitable for this planning stage and are intended to demonstrate the nature of the effects of the additional vehicles generated by the Thames Tideway Tunnel project in this location. It is acknowledged that these models may require further refinement as the project moves from planning to detailed design stage; however as a period of time will elapse before construction commences at this site, it will be necessary in any case to review and revalidate the models against traffic conditions at that time, as is normal practice.

5.4.102 The baseline model therefore accounts for the current traffic and transport conditions within the vicinity of the site.

5.4.103 The weekday AM and PM baseline model flows for Fulham Palace Road (A219) were compared against observed queue lengths for the peak periods to validate the PICADY model and ensure reasonable representation of existing conditions.

5.4.104 Table 5.4.9 shows the modelling outputs.

Table 5.4.9 Baseline PICADY model outputs, baseline

Approach	Movement	Weekday							
		AM peak hour (08:00-09:00)				PM peak hour (17:00-18:00)			
		Flow (vehs)	RFC	Max. Queue (vehs)	Delay (seconds per veh)	Flow (vehs)	RFC	Max. Queue (vehs)	Delay (seconds per veh)
Chancellor's Road	Left / right	104	35%	1	18	107	29%	0	14
Fulham Palace Road (A219) (northbound)	Right	67	16%	0	10	38	9%	0	9

Notes: 1. RFC represents Ratio of Flow to Capacity. MMQ represents Mean Maximum Queue for the busiest-case 15 minute modelled period (in vehicle lengths). Delay represents the mean delay per vehicle.
2. The PICADY model reports only right turns from major roads as other movements have the right of way.

5.4.105 The results in Table 5.4.9 demonstrate that the Chancellor's Road / Fulham Palace Road (A219) junction is currently operating within capacity.

5.4.106 The model indicates that the AM peak hour is the busiest period and that Chancellor's Road is operating at 35% ratio of flow to capacity in that period, with minimal queuing. The delay to vehicles is most significant during the AM peak hour on the Chancellor's Road movements, which currently experience an average of 18 seconds of delay per vehicle.

5.4.107 More detailed model outputs are included in Appendix C.

Accident analysis

5.4.108 Data have been obtained for a five year period. Figure 5.4.7 in the Hammersmith Pumping Station *Transport Assessment* figures shows the accidents that have occurred within the vicinity of the site. The following roads and junctions have been analysed:

a. Fulham Palace Road

b. Fulham Palace Road/ Parfrey Street;

c. Chancellor's Road;

d. Distillery Road;

5.4.109 A total of nine serious accidents and 34 slight accidents occurred in the Hammersmith Pumping Station assessment area over the five year accident data analysed. There were no fatal accidents.

5.4.110 Nine serious accidents occurred along Fulham Palace Road (A219), including two serious accidents on Fulham Palace Road (A219) between junctions, two serious accidents at the junction with Parfrey Street and five other individual serious accidents at the junctions with Biscay Road, Sussex Place, Winslow Road and Yeldham Road.

5.4.111 There was also one serious accident recorded at the Chancellor's Road/Crisp Road junction.

5.4.112 The major contributory factor to these serious accidents was a failure to look properly and travelling too fast for the conditions. None of the serious accidents happened as a result of the road geometry.

5.4.113 Of the 43 accidents reported the majority were caused by conflict between cars and/or pedestrians.

5.4.114 Of the total accidents, there were no LGV, medium goods vehicles (MGV) or HGV's involved in any accidents within the study area.

5.4.115 Overall, the accidents that occurred in the area of interest were mainly caused by vehicle/pedestrian path collisions or poor turning manoeuvres which resulted from not looking properly and careless or reckless driving. The analysis concludes that the accidents were not due to the road geometry or failure of transport infrastructure.

5.4.116 Table 5.4.10 indicates the accidents that occurred within the vicinity of the site.

Table 5.4.10 Accident severity form 2006 to 2011

Location	Slight	Serious	Fatal	Total
Fulham Palace Road	7	2	0	9
Fulham Palace Road/ Beryl Road Junction	3	0	0	3
Fulham Palace Road/ Biscay Road Junction	1	1	0	2
Fulham Palace Road/ Chancellor's Road Junction	2	0	0	2
Fulham Palace Road/ Dunstan's Road Junction	3	0	0	3
Fulham Palace Road/ Hammersmith Flyover	1	0	0	1
Fulham Palace Road/ Parfrey Street Junction	8	2	0	10
Fulham Palace Road/ Peabody Estate Junction	2	0	0	2
Fulham Palace Road/ Sussex Place Junction	0	1	0	1
Fulham Palace Road/ Winslow Road Junction	5	1	0	6
Fulham Palace Road/ Yeldham Road Junction	1	1	0	2
Chancellor's Road/ Crisp Road Junction	0	1	0	1
Distillery Road/ Winslow Road Junction	1	0	0	1
Total	**34**	**9**	**0**	**43**

5.4.117 Figure 5.4.8 in the Hammersmith Pumping Station *Transport Assessment* figures shows the pedestrian and cyclist accidents by severity.

5.4.118 The records show that there were 14 accidents involving pedestrians and / or cyclists. All but one occurred on the roads to be taken by construction vehicles within the study area. Inspection of the data showed that three of these occurred at junctions with signalised control facilities, with the remaining accidents occurring at locations without signal control.

5.4.119 In the context of the construction HGV movements associated with the Hammersmith Pumping Station site, the accident risk to these modes of travel would be managed by providing pedestrian and cyclist awareness training for commercial drivers associated with the construction works as set out in the *CoCP*. For sections of road affected by roadworks, the risk to all road users would be managed by the contractor(s) in accordance with the provisions made under the Traffic Signs Manual Chapter 8 - Traffic Safety Measures and Signs for Road Works (DfT, 2009)[2].

5.4.120 Appendix D provides a full analysis of accidents within the local area surrounding the Hammersmith Pumping Station site.

5.5 Construction assessment

5.5.1 The *TA*, including both qualitative and quantitative analysis has been undertaken drawing on discussions with TfL and the Local Highway Authorities, knowledge of the transport networks and their operational characteristics in the vicinity of each site and the anticipated construction programme, duration and levels of construction activity.

5.5.2 The construction assessment compares a construction base case, which represents transport conditions in the assessment year without the Thames Tideway Tunnel project, with a construction development case, which represents conditions with the Thames Tideway Tunnel under construction. The construction base case does not include any traffic related to the Thames Tideway Tunnel, whether from the Hammersmith Pumping Station site or from other sites.

Construction base case

5.5.3 As described in Section 5.3, the construction assessment year for transport issues in relation to this site is Site Year 1 of construction.

Pedestrians and cyclists

5.5.4 No changes are anticipated to pedestrian routes within the area by Site Year 1 of construction. Cycle routes are anticipated to change from baseline conditions with the proposed construction of Cycle Superhighway (CS) Route 9. CS9 is due to be completed by 2015 and will run from Kensington Gardens along the Kensington Road (A315) to Hammersmith Road and through the Hammersmith Gyratory then along the A4 before routing north through Nigel Playfair Avenue to King Street and Chiswick High Road. The section along the A4 is approximately 450m from the Hammersmith Pumping Station site.

Public transport

5.5.5 At the time of undertaking the assessment, there were no firm proposals by TfL to alter bus routes within the vicinity of Hammersmith Pumping Station. The assessment has therefore assumed that bus routes would be unchanged from the baseline.

5.5.6 In terms of the public transport network, it is expected that as a result of the TfL London Underground Upgrade Plan, compared to the current baseline, capacity will increase by approximately 24% on the District Line. The TfL Upgrade Plan envisages a combined increase in capacity on the Circle and Hammersmith & City Line of 65% although it is clear that a significant proportion of this increase is attributed to the revised service patterns implemented in 2009, which will already be reflected in the baseline data. It is envisaged that London Underground and National Rail patronage will also increase by Site Year 1 of construction.

5.5.7 Other planned line upgrades included in the TfL London Underground Upgrade Plan, such as capacity improvements on Jubilee, Victoria, Northern, District, Circle and Metropolitan lines are due to be in place by the construction base case.

5.5.8 Due to traffic growth in the construction base case compared to the baseline situation, there would be an increase in delay of a maximum of approximately four seconds on Chancellor's Road in the AM peak. There would be a maximum increases in delay on Fulham Palace Road (A219) of one second as a result of traffic growth in the PM peak.

5.5.9 It is anticipated that patronage on public transport services may change between the baseline situation and Site Year 1 of construction. Future patronage changes on bus and rail will be driven by a range of complex factors and there are inherent uncertainties in setting a patronage level for a future year.

5.5.10 There are further capacity improvements anticipated on the Bakerloo, Piccadilly and Central lines. TfL are currently investigating the optimum timescales and method of delivering these improvements. At this stage, Thames Tideway Tunnel are unable to estimate to what extent the upgrades will have been completed by the time of the construction base case.

5.5.11 There are no proposals to alter any river navigation patterns from the current baseline conditions and therefore the construction base case remains similar to the baseline position.

5.5.12 Therefore, in order to ensure that a busiest base case scenario is used in assessing the result of additional construction worker journeys by public transport, the capacity for public transport services in the construction base case has been assumed to remain the same as capacity in the baseline situation. This ensures a robust assessment.

Highway network and operation

5.5.13 A re-configuration of the Fulham Palace Road (A219) entry to the Hammersmith gyratory is to be carried out to provide two entry and two exit lanes and a dedicated bus lane. This re-configuration was set to start in August 2011 and was completed in 2012. Sussex Place, which currently operates one-way southbound into Fulham Palace Road (A219) south of the gyratory, no longer connects to Fulham Palace Road (A219), instead terminating underneath the flyover adjacent to Hammersmith Apollo.

5.5.14 Baseline traffic flows (from the junction surveys) have been used and forecasting carried out to understand the capacity on the highway network in the vicinity of the Hammersmith Pumping Station site in Site Year 1 of construction without the Thames Tideway Tunnel project. The scope of this analysis has been discussed with the LB of Hammersmith and Fulham and TfL.

5.5.15 Strategic highway network modelling has been undertaken at a project-wide level using the TfL HAMs, which include forecasts of employment and population growth in line with the London Plan. Growth factors have been derived at individual Borough level by comparing the 2008/9 base and 2021 forecast years in the HAMs, as described in the *Project-wide TA*.

5.5.16 It should be noted that these factors represent growth over the period to 2021, which is beyond Year 1 of construction at Hammersmith Pumping Station and therefore ensures that the construction base case for the highway network is robust.

Committed developments

5.5.17 As indicated in the Development Schedule (see Volume 5 Appendix N of the *Environmental Statement*), there is only one other development identified within 1km of the Hammersmith Pumping Station site, at Fulham Reach. Phases 1-7 of this development would be complete and operational by Site Year 1 of construction at the Hammersmith Pumping Station site. The completed elements of the Fulham Reach development in Site Year 1 of construction have been included in the construction base case.

Local highway modelling

5.5.18 The growth factors for the LB of Hammersmith & Fulham based on the WeLHAM model have been discussed with TfL and the LB of Hammersmith & Fulham and applied to all the baseline traffic flows. The growth factors are:

a. Weekday AM Peak growth factor: +4.7%

b. Weekday PM Peak growth factor: +5.0%

5.5.19 Para 5.3.9 explains the definition of the assessment area for local highway network modelling. At this site, the assessment examines only the nearest junction of the construction vehicle route with the SRN.

5.5.20 The base case model also included the construction traffic flow for Fulham Reach, located around the Hammersmith Pumping Station site. According to the Fulham Reach construction plan, on average there will be six HGVs per hour required to access site. These vehicles will also be using the Fulham Palace Road (A219) / Chancellor's Road junction.

5.5.21 Table 5.5.1 shows the construction base case model outputs.

Table 5.5.1 Construction base case PICADY model outputs

Approach	Movement	Weekday							
		AM peak hour (08:00-09:00)				PM peak hour (17:00-18:00)			
		Flow (veh)	RFC	Max. Queue (vehs)	Delay (seconds per veh)	Flow (veh)	RFC	Max. Queue (vehs)	Delay (seconds per veh)
Chancellor's Road	Left / right	116	53%	1	32	119	39%	1	18
Fulham Palace Road (A219) (northbound)	Right	75	19%	0	11	43	10%	0.	10

Notes: RFC represents Ratio of Flow to Capacity. Maximum Queue represents number of vehicles in queue. Delay represents the mean delay per vehicle.

5.5.22 The resulting construction base case PICADY model for the Fulham Palace Road (A219) / Chancellor's Road junction indicates that there will be no increase in queue lengths at the junction and a slight increase in delay when compared to baseline conditions.

5.5.23 Overall the results indicate that in the construction base case the local network will operate within capacity.

Construction development case

5.5.24 This section summarises the findings of the assessment undertaken for the peak year of construction at the Hammersmith Pumping Station site (Site Year 1 of construction).

5.5.25 Information regarding the travel arrangements of the workers associated with the site will be included in the *Draft Project Framework Travel Plan* and site-specific *Travel Plan* documents contained for the site in Section 3.

Pedestrian routes

5.5.26 During construction, there would be no footway closures or diversions and footways would be maintained at their existing widths, except for a small area of footway on the inside radii of the Chancellor's Road / Distillery Road junction that would need to be removed to allow large construction vehicles to make the left-turn. However, some additional management measures would be required in the vicinity of the site access.

5.5.27 The construction phase (phase 1 and phase 2) plans are provided in the Hammersmith Pumping Station *Transport Assessment* figures and show the effect on pedestrian footways during construction. To assess a busiest case scenario, it has been anticipated that all workers would finish their journeys to the site and start their journeys from the site by foot. As a result the 45 worker trips generated by the site have been added to the construction base case pedestrian flows during the AM and PM peak hours.

5.5.28 Pedestrians would have to cross the new site entrance on Distillery Road which has the potential to introduce additional pedestrian delay. However, as the number of construction vehicle movements is expected to be low, any delay in crossing the site access would be small and would affect only a small number of pedestrians. This would result in a negligible impact on pedestrian delay for those walking along the western side of Distillery Way. Other pedestrian movements in the area would also experience a negligible impact.

5.5.29 The footway most likely to be affected by an increase in worker trips is along Fulham Palace Road and Chancellor's Road. A forecast distribution of worker pedestrian trips can be determined using the location of public transport facilities and the mode split Table 5.2.3. Based on this it is assumed that 90% of walk trips would use Chancellor's Road to access the site from the north using Fulham Palace Road. 5% of pedestrians would arrive at the site from the Thames Path and the remaining 5% of walk trips would arrive from the south via Winslow Road.

5.5.30 Footways would be maintained at their existing widths. Some additional management measures may be required in the vicinity of the site access to ensure safe crossing points for pedestrians (see *CoCP Part A*).

5.5.31 During all construction work and on any section of road subject to temporary diversions or restrictions imposed by roadworks associated with the Hammersmith Pumping Station site, the risk to all road-users would be managed by the contractor(s) in accordance with the provisions made under the Traffic Signs Manual Chapter 8 - Traffic Safety Measures and Signs for Road Works. This will include compliance with the Equality Act 2010 (HM Government, 2010) [3] to ensure safe passage for mobility and vision impaired pedestrians.

Cycle routes

5.5.32 Cyclists using the highway may experience an additional delay to journey time as a result of the construction works at the Hammersmith Pumping Station site. The delay to journey times is identified in the highway operation and network assessments and would be an increase of a maximum of three seconds on Chancellor's Road over that in the construction base case. This represents a negligible impact.

5.5.33 Cycle routes, including the Thames Path, would not be affected by construction at Hammersmith Pumping Station.

5.5.34 With regard to accidents and safety, cyclists routing along Distillery Road would cross the site entrance and on Chancellor's Road cyclists would be cycling on routes also taken by construction vehicles. Taking account of the anticipated construction vehicle flow of less than four two-way HGV movements an hour and the impact on cycle accidents and safety has been assessed as a very small risk to cyclists.

5.5.35 Construction vehicles serving the site will comprise a range of sizes and types, including light vans, rigid bodied vehicles and longer articulated vehicles. At this site the majority of the vehicles are expected to be medium or heavy rigid bodied goods vehicles.

5.5.36 As indicated in para 5.2.44, works to create the site access point and modify the junction of Chancellor's Road with Distillery Road (kerb realignments) would be required to ensure the safe movement of construction vehicles to and from the site.

5.5.37 Measures set out in the *CoCP* described in paras 5.2.40 – 5.2.43 include increasing driver awareness of restrictions on the road network and marshalling of traffic at the site access. During all construction work and on any section of road subject to temporary diversions or restrictions imposed by roadworks associated with the Hammersmith Pumping Station site, the risk to all road-users would be managed by the contractor(s) in accordance with the provisions made under the Traffic Signs Manual Chapter 8 - Traffic Safety Measures and Signs for Road Works. This would include compliance with TfL guidance (Cyclists at Roadworks – Guidance (DfT, 1999)[4]) to ensure safe passage for cyclists.

5.5.38 During the construction period, the operation and layout of the road network will not change. A minimum carriageway width of either 4m

(where HGVs can safely overtake cyclists) or 3.25m (where HGVs cannot overtake cyclists) would be retained for traffic in each direction. Where necessary, carriageway widths of less than 3.25m would be agreed with the LB of Hammersmith and Fulham prior to execution of any works.

Bus routes and patronage

5.5.39 No bus services run immediately past the site. However, additional construction vehicles serving the site along Fulham Palace Road (A219) and through the Hammersmith Gyratory may affect some bus routes and bus journey times along Fulham Palace Road (A219) and within the wider area. The effect on journey times has been calculated in the highway operation and network assessment and the results suggest there could be an increase of a maximum of approximately one second to bus journey times. This represents a negligible impact.

5.5.40 It is expected that approximately six additional two-way worker trips would be made by bus during the AM and PM peak hours, which would result in less than one worker trip per bus (based on a service of 269 buses within 640m walking distance during the peak hours). On this basis the additional worker trips made by bus in peak hours would have a negligible impact on bus patronage.

London Underground patronage

5.5.41 No underground stations are directly adjacent to the site and therefore none would be directly affected by the construction site development.

5.5.42 It is anticipated that approximately 29 construction workers and labourers would use London Underground services, London Overground or National Rail services to access the site.

5.5.43 This would result in 21 additional person trips on London Underground services in each of the AM and PM peak hours. This equates to less than one person per train during the AM and PM peak hours based on a frequency of 50 trains during the peaks. This could be easily accommodated within existing capacity.

National Rail and London Overground patronage

5.5.44 No National Rail stations are directly adjacent to the site and therefore none would be directly affected by the construction site development.

5.5.45 It is expected that an eight additional person trips on London Overground and National Rail services in each of the AM and PM peak hours. This equates to less than one person per train during the AM and PM peak hours. This could be easily accommodated within existing capacity.

River services

5.5.46 During construction, no river passenger services would be directly affected. It is anticipated that less than 1% of construction workers and labourers would use the river services to access the construction site, which would result in less than one construction worker per boat service.

Parking

5.5.47 Parking for two essential maintenance vehicles would be provided on site but no construction worker parking would be provided. As parking on surrounding streets is restricted and measures to reduce car use would be incorporated into site-specific *Travel Plan* requirements, there would be no impact on local parking from construction workers.

5.5.48 It would not be necessary to remove on-street parking along Distillery Road during construction at the site. A section of parking approximately equal to one parking space would need to be suspended on Chancellor's Road east of the junction with Distillery Road to enable large construction vehicles to make the left-turn into Distillery Road without conflict with parked vehicles at this location. Construction vehicle movements would be managed along the rest of Chancellor's Road so that larger vehicles would not be required to pass each other at sections where on-street parking is located.

5.5.49 It would be necessary to extend the restricted hours applying to single yellow lines to 07:00 to 19:00 Monday to Saturday along Chancellor's Road and Distillery Road to assist the passage of construction vehicles.

5.5.50 As there would be no of suspension of parking bays during the construction period. The impact on parking would be negligible.

5.5.51 As there are no loading bays located in the vicinity of the site the loading change impact criterion does not apply to this site.

Highway assessment

Highway layout

5.5.52 The highway layout during construction plan is provided in the Hammersmith Pumping Station *Transport Assessment* figures and shows that the site would be accessed from Distillery Road. The highway layout during construction vehicle swept path analysis plan is also provided in the Hammersmith Pumping Station *Transport Assessment* figures and shows that the construction vehicles would be able to safely enter and leave the site.

5.5.53 Works to create the site access point and modify the junction of Chancellor's Road with Distillery Road (kerb realignments) would be required to ensure the safe movement of construction vehicles to and from the site

Highway network

5.5.54 There would be a gated access for the right-turn in, left-turn out arrangement for construction traffic using Distillery Road. Construction lorry movements would be limited to the day shift only (08:00 to 18:00 Monday to Friday and 08:00 to 13:00 Saturdays). In exceptional circumstances and if it is necessary for vehicle movements to take place outside these hours, arrangements would be agreed in advance with LB of Hammersmith and Fulham.

5.5.55 Table 5.2.4 shows the vehicle movement assumptions for the local peak traffic periods based on the peak months of construction activity at the Hammersmith Pumping Station site.

5.5.56 The *Project-wide TA* explains the method used to assign construction traffic to the HAMs, from which the likely changes in turning movements at local junctions have been identified and added to the construction base case flows.

5.5.57 The assignment of construction lorry trips has been undertaken using OmniTrans[iv] software, which enables a fixed assignment to be created for these trips in order to ensure that they are assigned only to the proposed construction routes. The OmniTrans outputs also identify lorry traffic which would be associated with the Hammersmith Pumping Station site, or with other Thames Tideway Tunnel project sites, that would use routes in the vicinity of the Hammersmith Pumping Station site. Figure 5.5.1 in the Hammersmith Pumping Station *Transport Assessment* figures shows the OmniTrans plot for the local road network around the Hammersmith Pumping Station site.

5.5.58 Table 5.2.4 shows an average peak flow of 78 vehicle movements a day is expected during the months of greatest activity during Site Year 1 of construction at this site. At other times in the construction period vehicle flows would be lower than this average peak figure.

5.5.59 The busiest peak in the AM and PM period for each type of movement (construction, other and worker) has been combined in the development case and assessed against the peak hour operation of the highway network. In reality, not all peaks for these movements will occur concurrently and the peak for worker trips will be outside of the highway network peak hour, therefore, the assessment is considered to be robust.

5.5.60 No construction traffic from other Thames Tideway Tunnel sites would route on Chancellor's Road, Distillery Road or Fulham Palace Road (A219). On Fulham Palace Road (A219) it is anticipated that there would be an additional two two-way HGV movements per hour as a result of the construction at Hammersmith Pumping Station. Considering this level of traffic and that the site access is not on a strategic road the impact on accidents and safety for vehicle users has been assessed as low adverse.

5.5.61 Changes to the highway network during construction and the additional construction traffic generated by the project may lead to local changes in traffic flow and capacity. Local modelling has been undertaken to assess the effect on the highway operation resulting from these changes. The construction development case includes the optimisation of traffic signal timings in order to minimise journey time increases within the local area.

[iv] OmniTrans is a software package used for multi-modal transport network modelling and in this case has been used to produce assignments of construction traffic across the proposed network of routes to be used for the project

5.5.62 A PICADY model has been used to apply the construction traffic demands and local geometrical changes to the construction base case to determine the changes in the highway network operation due to the project (i.e. comparison of base and development cases).

5.5.63 A summary of the construction development case assessment results for the weekday AM and PM peak hours for the Fulham Palace Road (A219) / Chancellor's Road junction is presented in Table 5.5.2 and Table 5.5.3.

Table 5.5.2 Construction development case PICADY model outputs, AM peak hour

Approach	Arm	Flow (vehs)	Weekday								
			AM peak hour (08:00-09:00)								
			RFC			Max. Queue (vehs)			Delay (seconds per veh)		
			Base case	Devt case	Change	Base case	Devt case	Change	Base case	Devt case	Change
Chancellor's Road	Left / right	120	53%	56%	+3%	1	1	0	32	35	+3
Fulham Palace Road (A219) (northbound)	Right	81	19%	21%	+2%	0	0	0	11	12	+1

Notes: RFC represents Ratio of Flow to Capacity. Maximum Queue represents number of vehicles in queue. Delay represents the mean delay per vehicle.

Table 5.5.3 Construction development case PICADY model outputs, PM peak hour

Approach	Arm	Flow (vehs)	Weekday								
			PM peak hour (17:00-18:00)								
			RFC			Max. Queue (vehs)			Delay (seconds per veh)		
			Base case	Devt case	Change	Base case	Devt case	Change	Base case	Devt case	Change
Chancellor's Road	Left / right	124	39%	40%	+1%	1	1	0	18	19	+1
Fulham Palace Road (A219) (northbound)	Right	46	10%	11%	+1%	0	0	0	10	10	0

Notes: RFC represents Ratio of Flow to Capacity. Maximum Queue represents number of vehicles in queue. Delay represents the mean delay per vehicle.

5.5.64 The construction base case indicates that the junction of Fulham Palace Road (A219) with Chancellor's Road will be operating within capacity without the Thames Tideway Tunnel proposals. The construction traffic generated in the construction development case would produce a marginal increase in demand resulting in a maximum increase of three seconds delay per vehicle on Chancellor's Road for emerging traffic at the junction. The results indicate that although the additional construction traffic generated by the project would result in a slight reduction in capacity in the southbound direction along Fulham Palace Road (A219) and along Chancellor's Road the junction would still operate within capacity.

Construction mitigation

5.5.65 The project has been designed to limit the issues arising on transport networks as far as possible and many measures have been embedded directly in the design of the project. These are summarised in Table 5.5.4.

Table 5.5.4 Hammersmith Pumping Station design measures

Phase	Issues	Design measures
Construction	Creating access point	• Creation of a gated access for the left-turn in / left turn-out movement for construction traffic at existing site access point • Minor kerb radii widening at Chancellor's Road/ Distillery Road junction to enable safe passage of construction vehicles
	Service connections on Chancellor's Road	• Maintaining a minimum 4.3m width for cyclists
	Street parking	• Suspension of short section of on-street parking on Chancellor's Road to enable safe passage of construction vehicles
	Movement of construction traffic flows on the local highway network	• Extending restricted hours of parking on existing single yellow lines to 07:00 to 19:00 Monday to Saturday on Chancellor's Road and Distillery Road to allow safe passage of construction vehicles • Minor widening of crossing point on Chancellor's Road at the junction with Fulham Palace Road (A219) to enable safe access for construction vehicles • Suspension of short section of on-street parking on Chancellor's Road to enable safe passage of

Phase	Issues	Design measures
		construction vehicles
Operation	Permanent access point	• Provision of permanent kerbing and gates at site access to accommodate ten yearly maintenance vehicles - architect to advice on finishes / material

5.5.66 These embedded measures, discussed in Section 5.2, have been taken into account in the assessment. The outcomes indicate that with these measures in place the changes to be expected in the transport networks are not significant and therefore no additional measures are required for the construction phase.

5.6 Operational assessment

5.6.1 This section summarises the findings of the assessment undertaken for Year 1 of operation at the Hammersmith Pumping Station site.

5.6.2 The transport demands in the operational phase would be extremely low. Access would be required for a light commercial vehicle on a three to six monthly maintenance schedule. Additionally there would be more substantive maintenance visits at approximately ten year intervals which would require access to enable two cranes and other associated support vehicles to be brought to the site.

5.6.3 The assessment of the operational phase is limited to the physical issues associated with accessing the site from the highway network as outlined in Section 5.4. This has been discussed with the LB of Hammersmith and Fulham and TfL.

Operational base case

5.6.4 The operational assessment year for transport is Year 1 of operation.

5.6.5 The elements of the transport network that would be affected during operation are highway layout and operation and parking. There could also be an effect on residents within the Fulham Reach development when maintenance activity occurs. For the purposes of the operational base case, it is anticipated that the parking and highway layout will be as indicated in the construction base case.

5.6.6 The operational assessment has taken into consideration those elements that would be affected, which comprise the short term impacts on the highway layout and operation and on Fulham Reach residents, when maintenance visits are made to the site.

Operational development case

5.6.7 The operational development case for the site includes any permanent changes in the vicinity of the Hammersmith Pumping Station site as a result of the Thames Tideway Tunnel project and takes into consideration the occasional maintenance activities required at the site.

5.6.8 The transport demands created by the development in the operational phase would be extremely low and limited to occasional maintenance visits every three to six months, and larger mobile cranes required for access to the shaft and tunnel approximately every 10 years.

5.6.9 The operational assessment has taken into consideration the short term changes to the highway layout and operation when maintenance visits are made to the site.

5.6.10 As outlined in section 5.2, during the operational phase, the Hammersmith Pumping Station site would be accessed via the proposed vehicular access on Distillery Road. The permanent highway layout plan is provided in the Hammersmith Pumping Station Transport Assessment figures and indicates the operational phase permanent works.

Parking

5.6.11 Parking for two essential maintenance vehicles would be provided on site.

5.6.12 No parking suspensions would be required for maintenance vehicle access. However, it would be necessary to temporarily extend the restricted hours applying to single yellow lines along Chancellor's Road and Distillery Road during the ten year major maintenance visit requiring access by cranes.

5.6.13 As there would be no suspension of parking bays during the operational period the impact on parking would be negligible.

Highway layout and operation

5.6.14 The site would be accessed from a new access point on Distillery Road and the existing access off Chancellor's Road. The local route to the site would be via Chancellor's Road and Fulham Palace Road (A219) during the operational phase.

5.6.15 For routine three or six monthly inspections vehicular access would be required for light commercial vehicles, typically a van-type vehicle. On occasion there may be a consequent need for small flatbed vehicles to access the site.

5.6.16 During ten-yearly inspections, an area to locate two large cranes within the site area would be required. The cranes would facilitate lowering and recovery of tunnel inspection teams and to provide duty/standby access for personnel. To assess the effect of these on the highway layout, swept paths have been undertaken for the largest vehicles including a 11.4m mobile crane, a 10m articulated vehicle and a 10.7m articulated vehicle. The permanent highway layout vehicle swept path analysis plan is provided in the Hammersmith Pumping Station *Transport Assessment* figures and shows safe access / egress at the site for the operational phase.

5.6.17 When larger vehicles are required to service the site, there may also be some temporary, short-term delay to other road users while manoeuvres are made. However it is anticipated that the arrival of large vehicles would normally be scheduled to take place outside of the peak hours to minimise the effect on the local highway network.

5.7 Summary of Transport Assessment findings

5.7.1 The outcomes of this *Transport Assessment* demonstrate the key findings indicated in Table 5.7.1

Table 5.7.1 Hammersmith Pumping Station Transport Assessment results

Phase	Mode of transport	Key Findings
Construction	Pedestrians	45 worker trips to site. A widened crossing point on Chancellor's Road at the junction with Fulham Palace Road (A219). Additional site crossing point but less than four HGV movements an hour.
	Cyclists	A maximum delay of three seconds on the construction development case at the Chancellor's Road/ Fulham Palace Road (A219) junction.
	Bus patronage and operators	Approximately six additional worker trips per peak period and no delay to bus services.
	London Underground and National Rail patronage	Approximately 21 additional worker trips on London Underground and eight on National Rail and London Overground services per peak period.
	River passenger services and patronage	River services would not be affected during construction.
	River navigation	No effect.
	Parking	Suspension of a parking bay on Chancellor's Road. Extend the restricted hours applying to single yellow lines to 07:00 to 19:00 Monday to Saturday along Chancellor's Road and Distillery Road.
	Highway network and operation	12 vehicle movements in the AM peak and 12 vehicle movements in the PM peak, during peak periods. Additional construction traffic would increase delay by a maximum of 1 second per vehicle in the AM peak hour on Chancellor's Road and Fulham Palace Road (A219). A widened crossing point on Chancellor's Road at the junction with Fulham Palace Road (A219) and a widening of kerb radii at Chancellor's Road/ Distillery Road junction.

Phase	Mode of transport	Key Findings
Operation	Parking	Possible extension to single yellow lines to 07:00 to 19:00 Monday to Saturday along Chancellor's Road and Distillery Road required during maintenance vehicle access Temporary suspension of on-street parking along Chancellor's Road maybe required every 10 years.
	Highway layout and operation	When larger vehicles are required to service the site (every 10 years), there may be some temporary, short-term delay to other road users while manoeuvres are made.

References

[1] TfL, *Travel Planning for new development in London, Transport for London (2011).*

[2] Department for Transport (DfT), *Traffic Signs Manual Chapter 8 - Traffic Safety Measures and Signs for Road Works and Temporary Situations, 2009.*

[3] HM Government, *Equality Act 2010 – Guidance, 2010.*

[4] Department for Transport (DfT), *Traffic Advisory Leaflet 15/99 - Cyclists at Road Works, December 1999.*

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Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Transport Assessment

Doc Ref: **7.10.02**

Hammersmith Pumping Station

Appendices

APFP Regulations 2009: Regulation **5(2)(q)**

Hard copy available in

Box **49** Folder **B**
January 2013

Thames Tideway Tunnel

Creating a cleaner, healthier River Thames

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Thames Tideway Tunnel

Transport Assessment

Section 5 Appendices: Hammersmith Pumping Station

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Appendix A – Policy review

A.1 Introduction

A.1.1 There are a number of documents containing planning policies that are relevant to transport matters for the proposed development at Hammersmith. This includes national, regional and local policies relevant to the site.

A.1.2 This section reviews current documents relevant to the proposed development which is situated within the Borough of Hammersmith and Fulham.

A.2 National Policy

National Planning Policy Framework (March 2012)

A.2.1 The Department for Communities and Local Government published the National Planning Policy Framework (NPPF) in March 2012. The NPPF replaces a variety of existing planning guidance, most notable the following document, Planning Policy Guidance 13: Transport (November 2010).

A.2.2 The key objective of the NPPF is to create a policy context to support economic growth. The principle of the guidance is to place an emphasis on sustainable development, where environmental conditions should be considered alongside economical and social matters.

A.2.3 It outlines the importance of local development plans and notes that where development accords with an up to date development plan then the proposals should be approved. Moreover, it suggests that local authorities should follow the approach of the presumption in favour of sustainable development.

A.2.4 With particular reference to transport matters the documents states:

"*In preparing local plans, local planning authorities should therefore support a pattern of development which, where reasonable to do so, and facilitates the use of sustainable modes of transport.*"

A.2.5 The guidance goes on to advise at paragraph 32:

"All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:

- *the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;*
- *safe and suitable access to the site can be achieved for all people; and*

- *improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe."*

A.2.6 The document also states that:

"Plans should protect and exploit opportunities for the use of sustainable transport modes for the movement of goods or people". Therefore:

"A key tool to facilitate this would be a Travel Pan. *All developments which generate significant amounts of movement should be required to provide a Travel Plan".*

National Policy Statement for Waste Water (March 2012)

A.2.7 The National Policy Statement for Waste Water was published by the Department of Environment, Food and Rural Affairs in March 2012. This National Policy Statement (NPS) sets out Government policy for the provision of major waste water infrastructures. The NPS does not recognise the Thames Tideway Tunnel project within the original thresholds which is contained within the Planning Act. However the document indicates that *"the Government has already stated its intention that the project should be considered at a national level"*.

A.2.8 The Secretary of State announced that development consent for the Thames Tideway Tunnel project should also be dealt with under the regime for nationally significant infrastructure projects under the Planning Act 2008.

A.2.9 The NPS for Waste Water seeks a sustainable long term solution to address the untreated sewage discharged into the river Thames and Thames Tideway Tunnel has been considered as the preferred solution.

A.2.10 With particular reference to transport matters the document states:

"The ES should include a transport assessment, using the NATA/WebTAG methodology stipulated in Department for Transport (DfT), or any successor to such methodology. Applicants should consult the Highways Agency and/or the relevant highway authority, as appropriate, on the assessment and on mitigation measures. The assessment should distinguish between the construction, operation and decommissioning project stages as appropriate".

A.2.11 The document states that the impacts on the surrounding transport infrastructure should be mitigated and where the mitigation measures are not sufficient the requirements to mitigate adverse impacts on transport networks should be considered.

A.2.12 Therefore it is advised to prepare a travel plan which includes demand management measures to mitigate transport impacts, and *"to provide details of proposed measures to improve access by public transport, walking and cycling, to reduce the need for parking associated with the proposal and to mitigate transport impacts".*

A.2.13 The NPS for Waste Water prefers water-borne or rail transport over road transport and where there is likely to be substantial HGV traffic, the following measures should be looked:

- *"control numbers of HGV movements to and from the site in a specified period during its construction and possibly on the routing of such movements;*
- *make sufficient provision for HGV parking, either on the site or at dedicated facilities elsewhere, to avoid 'overspill' parking on public roads, prolonged queuing on approach roads and uncontrolled on-street HGV parking in normal operating conditions; and*
- *ensure satisfactory arrangements for reasonably foreseeable abnormal disruption, in consultation with network providers and the responsible police force".*

A.2.14 The proposed development is located at a relatively moderate accessible transport hub and the proposed location has a Public Transport Accessibility Level (PTAL) rating of 3, rated as 'moderate'. It is assumed that construction workers would not travel by car to and from the site on the basis that there would be no worker parking on site; on-street parking in the area is restricted; and site-specific Travel Plan measures will discourage workers from travelling by car. Information regarding the travel arrangements of the workers associated with the site will be included in the *Project Framework Travel Plan* and site-specific Travel Plan documents.

A.3 Regional policy

The London Plan (July 2011)

A.3.1 The London Plan 2011 is produced by the Greater London Authority (GLA) and sets out the strategic planning guidance for London planning authorities. The Mayor of London is responsible for strategic planning and the production of a Spatial Development Strategy called The London Plan. The London plan sets out the integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years. The Plan takes the year 2031 as its formal end date and its over-arching vision is supported by six detailed objectives for London:

- A city that meets the challenges of economic and population growth;
- An internationally competitive and successful city;
- A city of diverse, strong, secure and accessible neighbourhoods;
- A city that delights the senses;
- A city that becomes a world leader in improving the environment; and
- A city where it is easy, safe and convenient for everyone to access jobs, opportunities and facilities.

A.3.2 The last objective of the plan relates specifically to transport. Policies within the London Plan of relevance to the proposed development are outlined as follows:

A.3.3 **Policy 6.1 – Strategic Approach** advises that the mayor will work with all relevant partners to encourage the closer integration of transport and development by:

- Encouraging patterns and nodes of development that reduce the need to travel, especially by car;
- Seeking to improve the capacity and accessibility of public transport, walking and cycling, particularly in areas of greater demand;
- Supporting development that generates high levels of trips at locations with high public transport accessibility and/or capacity, either currently or via committed, funded improvement;
- Seeking to increase the use of the Blue Ribbon Network, especially the Thames, for passenger and freight use;
- Facilitating the efficient distribution of freight whilst minimising its impacts on the transport network;
- Supporting measures that encourage shifts to mode sustainable modes and appropriate demand management; and
- Promoting greater use of low carbon technology so that carbon dioxide and other contributors to global warming are reduced.

A.3.4 **Policy 6.2 – Providing public transport capacity and safeguarding land for transport** which notes that development proposals that do not provide adequate safeguarding for the schemes should be refused.

A.3.5 **Policy 6.3 – Assessing effects of development on transport capacity** outlines that development proposals should ensure that impacts on transport capacity and the transport network, at both a corridor and local level, are fully assessed. Development should not adversely affect safety on the transport network. Where existing transport capacity is insufficient for the travel generated by proposed developments, and no firm plans exist for an increase in capacity, boroughs should ensure that the development proposals are phased until it is known that these requirements can be met. The policy notes that the use of Travel Plans and addressing freight issues can help reduce the impact of development on the transport network.

A.3.6 **Policy 6.7 – Better streets and surface transport** notes that high levels of priority should be provided to bus routes and there should be direct, secure, accessible and pleasant walking routes to stops. The development would include provision of transport to and from public transport nodes where sites are at a distance from public transport services.

A.3.7 **Policy 6.9 – Cycling** presents measures to increase cycling mode share in London to 5 percent by 2026. Measures include completing the Cycle Super Highways and expanding the London cycle hire scheme. To support this, developments should provide cycle parking to at least the

minimum standards, provide showers and changing facilities and facilitate the major cycling schemes in London (Super Highways / Cycle Hire).

A.3.8 **Policy 6.10 – Walking** recommends the use of shared space principles with simplified streetscape, de-cluttering and access for all. Developments should therefore ensure high quality pedestrian environments and emphasise the quality of pedestrian and street space. It points to the 'Legible London' pedestrian wayfinding system as a successful measure to support walking journeys.

A.3.9 **Policy 6.13 – Parking** outlines the need to seek an appropriate balance between promoting new development and preventing excessive car parking provision that can undermine cycling, walking and public transport use. As such, car parking should reduce as public transport accessibility (measured by PTAL) increases. The policy advises that Transport assessments and travel plans for major developments should give details of proposed measures to improve non-car based access, reduce parking and mitigate adverse transport impacts.

A.3.10 **Policy 6.14 – Freight** notes that freight distribution should be improved and movement of freight by rail and waterway should be promoted. To support this, developments that generate high number of freight movements should be located close to major transport routes. In addition, the Freight Operators Recognition Scheme, construction logistics plans and delivery and servicing plans should be promoted. The policy also advises the increase in the use of the Blue Ribbon Network for freight transport.

The Mayors Transport Strategy (GLA, 2010)

A.3.11 In addition to the London Plan, the Mayor has prepared a number of strategies that are essentially an extension of the London Plan. Published by the GLA in 2010, the Mayor's Transport Strategy (MTS) (Greater London Authority, May 2010) envisages *"London's Transport system excelling among that of global cities, providing access to opportunities for all people and enterprises while achieving the highest environmental standards and leading the world in its move towards tackling the urban transport challenges of the 21st century"*.

A.3.12 The MTS sets out a number of policy commitments or requirements which have implications for TfL and a range of other delivery partners including the GLA and the London boroughs. The policies that are relevant to the proposed development are:

- **Policy 4** indicating that the Mayor will seek *"to improve people's access to jobs, business' access to employment markets, business to business access, and freight access by seeking to ensure appropriate transport capacity and connectivity is provided on radial corridors into central London";*
- **Policy 5** seeks *"to ensure efficient and effective access for people and goods within central London";*
- **Policy 8** supports *"a range of transport improvements within metropolitan town centres for people and freight that help improve*

connectivity and promote the vitality and viability of town centres, and that provide enhanced travel facilities for pedestrians and cyclists";

- **Policy 9** states that the Mayor *"will use the local and strategic development control processes";*
- **Policy 11** specifies that the Mayor will *"encourage the use of more sustainable, less congesting modes of transport, set appropriate parking standards, and aim to increase public transport, walking and cycling mode share";*
- **Policy 12** states that the Mayor *"will seek to improve the distribution of freight through the provision of better access to/from Strategic Industrial Locations, delivery and servicing plans, and other efficiency measures across London"; and*
- **Policy 15** and **Policy 16** indicate that the Mayor will seek to reduce emissions of air pollutants and noise impacts from transport respectively.

A.3.13 The *London Freight Plan, Sustainable Freight Distribution: a Plan for London* (TfL, June 2008) sets out the steps that have to be taken over the next five to ten years to identify and begin to address the challenge of delivering freight sustainably in the capital. Principles set in that document are expected to be relevant to the consideration of the construction logistics strategy for the proposed development.

A.4 Local policy

A.4.1 The London Borough of Hammersmith and Fulham have a number of policies relevant to transport within the Unitary Development Plan (UDP), Local Development Framework (LDF) and Supplementary Planning Guidance (SPG) for the Thames Strategy.

Unitary Development Plan (LB of Hammersmith and Fulham, 2003)

A.4.2 The UDP was adopted by the London Borough of Hammersmith and Fulham in August 2003 with certain policies 'saved' from September 2007 and will remain until adopted policies in Development Plan Documents (DPDs) and Supplementary Planning Documents (SPDs) within the LDF replace them. It is a technical town planning document that acts as a land use strategy document and also sets out policies that planning applications will be considered against.

A.4.3 The transport related policies set out the integration of land use and transport , major improvements to both the public transport and road networks as well as all other modes of transport.

A.4.4 **Policy G0 – Sustainable development** with regards to transport wishes to:

- Seek a co-ordinated transportation structure based on the main structural land use elements of the borough; and

- Encourage the use of public transport and energy-efficient transport modes.

A.4.5 **Policy G3 – Environment** aims to conserve, protect and enhance the quality, character and identity of the borough's built and open environment through:

- Making the environment safer and more accessible for all; and
- Reduction of pollution such as from road traffic and other forms of transport.

A.4.6 Policy G4 – Transportation and accessibility

A.4.7 Development will be guided to locations that minimise the need to travel, and will be required to incorporate access arrangements that encourage the use of sustainable modes of travel and transport;

A.4.8 Promotion of traffic restraint and reduction with the aim of reducing congestion and air pollution, and avoiding the need for increasing the road capacity;

A.4.9 Land use provision for improvements to the road network only when necessary to maintain a safe, free flow traffic network;

A.4.10 The siting, design and layout of development will require providing easy access for disabled people, as well as a safe, secure and direct access for pedestrians, as well as the provision of facilities to encourage sustainable modes of transport; and

A.4.11 Measures will be sought to promote rail and water for freight transport.

Local Development Framework – Core Strategy (LB of Hammersmith and Fulham, 2010)

A.4.12 The LDF was adopted in October 2011, replacing the Unitary Development Plan. The document "sets out the Borough Partnership's long term vision,...to create a borough of opportunity for all."

A.4.13 With regards to transport, improvements to public transport, as well as the highway, pedestrian and cycle networks where required particularly as a results of regeneration initiatives will be carefully considered.

A.4.14 **Strategic policy SFR – South Fulham riverside** seeks to encourage river related use as well as linkages to the riverside. All developments must be acceptable in terms of its transport impact, and where necessary, contributions to improvements to affected networks should be made.

A.4.15 **Borough wide strategic policy - RTC1 – River Thames and Grand Union Canal** aims to enhance and increase access and use of the waterways in the Borough, namely the River Thames and the Grand Union Canal by several means, including:

A.4.16 Ensuring the provision, or improvement and greening of the Thames Path National Trail (the Riverside Walk) in all riverside developments and the canalside tow path; and

A.4.17 Improvement to the linkages to the river and riverside walk and the canal where appropriate.

A.4.18 **London wide strategic policy - CC3 – Waste management** seeks where possible to provide movement of waste and recyclable materials by sustainable means of transport, including the use of the Grand Union Canal.

A.4.19 **Borough wide strategic policy - T1 – Transport** seeks to improve transportation provision and accessibility by:

- Promote major improvements with new stations and passenger services on the West London Line;
- Supporting Crossrail and the national High Speed 2 (HS2) Heathrow rail link proposal;
- Seeking a new station on the Central Line at Du Cane Road;
- Seeking increased capacity and reliability on Piccadilly and District Lines;
- Seeking a routeing of the Chelsea-Hackney line (Crossrail 2) via Chelsea Harbour/Sands End;
- Seeking increased use of the Thames for passenger services and the Grand Union Canal for passenger and freight use;
- Increasing the opportunities for walking, i.e. extending the Thames Path National Trail, and for cycling, i.e. completing the Cycle Super Highways;
- Seeking localised improvements to the highway network to reduce congestion on north-south routes in the borough;
- Securing access improvements for all, particularly people with disabilities, as part of planning permissions for new developments in the borough;
- Ensuring appropriate parking is provided to meet the essential needs of the development without impacting on the quality of the urban environment; and
- To relate the intensity of development to public transport accessibility and highway capacity.

Supplementary Planning Guidance – Thames Strategy (Kew-Chelsea) (WS Atkins plc, 2002).

A.4.20 This document provides the following guidance with regards to transport:

- Consideration to improvements in areas such as installation of bus lanes where accessibility to rail and underground are particularly poor. In addition there are accessibility issues regarding the links of local areas of interest particularly concerning the route for tourists;

- Improving the interchange between public transport modes in the vicinity of the River, providing easier access to the riverside for pedestrians and cyclists;
- Provision for new or improved river crossings;
- Design of new sections of the riverside path should incorporate full accessibility, including full access for disabled people, way marking and other sign posting and street furniture to indicate links to other walking routes, stations and bus stops;
- Locations to car parking facilities for disabled users close to the river should be as close as possible to the site;
- Consideration for the provision of an Eco-bus route along both sides of the River to facilitate improved accessibility to the riverside;
- Options for extending the use of the Thames for regular and frequent passenger travel should be explored; and
- Consideration for the use of the river for freight movement.

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Appendix B – PTAL analysis

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PTAI Study Report File Summary

PTAI Run Parameters

PTAI Run	20122609151254
Description	20122609151254
Run by user	PTAL web application
Date	26/09/2012

Walk File Parameters

Walk File	PLSQLTest
Day of Week	M-F
Time Period	AM Peak
Walk Speed	4.8 kph
BUS Walk Access Time (mins)	8
BUS Reliability Factor	2.0
LU LRT Walk Access Time (mins)	12
LU LRT Reliability Factor	0.75
NATIONAL_RAIL Walk Access Time (mins)	12
NATIONAL_RAIL Reliability Factor	0.75
Coordinates:	523353, 178078

Mode	Stop	Route	Distance (metres)	Frequency (vph)	Weight	Walk time (mins)	SWT (mins)	TAT (mins)	EDF	AI
BUS	HAMMERSMITH FULHAM PAL R	220	359.17	7.5	0.5	4.49	6	10.49	2.86	1.43
BUS	HAMMERSMITH FULHAM PAL R	295	359.17	7.5	0.5	4.49	6	10.49	2.86	1.43
BUS	HAMMERSMITH FULHAM PAL R	211	359.17	8	1	4.49	5.75	10.24	2.93	2.93
BUS	HAMMERSMITH FULHAM PAL R	190	359.17	4	0.5	4.49	9.5	13.99	2.14	1.07
BUS	HAMMERSMITH BRIDGE ROAD	419	615.19	4	0.5	7.69	9.5	17.19	1.75	0.87
BUS	HAMMERSMITH BRIDGE ROAD	485	615.19	2	0.5	7.69	17	24.69	1.22	0.61
BUS	HAMMERSMITH BRIDGE ROAD	209	615.19	13.33	0.5	7.69	4.25	11.94	2.51	1.26
BUS	HAMMERSMITH BRIDGE ROAD	33	615.19	7.5	0.5	7.69	6	13.69	2.19	1.1
BUS	HAMMERSMITH BRIDGE ROAD	72	615.19	8	0.5	7.69	5.75	13.44	2.23	1.12
BUS	HAMMERSMITH BRIDGE ROAD	283	615.19	7.5	0.5	7.69	6	13.69	2.19	1.1
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Uxbridge to Cockfosters	779.39	2.7	0.5	9.74	11.86	21.6	1.39	0.69
LU LRT	Hammersmith (Dist&Picc Line)	District Line Richmond to Dagenham East	779.39	0.3	0.5	9.74	100.75	110.49	0.27	0.14
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Oakwood to Uxbridge	779.39	0.7	0.5	9.74	43.61	53.35	0.56	0.28
LU LRT	Hammersmith (Dist&Picc Line)	District Line Richmond to	779.39	6.3	0.5	9.74	5.51	15.25	1.97	0.98

Mode	Stop	Route	Distance (metres)	Frequency (vph)	Weight	Walk time (mins)	SWT (mins)	TAT (mins)	EDF	AI
		Upminster								
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Ruislip to Arnos Grove	779.39	1.3	0.5	9.74	23.83	33.57	0.89	0.45
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Arnos Grove to Uxbridge	779.39	1.3	0.5	9.74	23.83	33.57	0.89	0.45
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Rayners Lane to Cockfosters	779.39	2.7	0.5	9.74	11.86	21.6	1.39	0.69
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Oakwood to Ruislip	779.39	0.7	0.5	9.74	43.61	53.35	0.56	0.28
LU LRT	Hammersmith (Dist&Picc Line)	District Line Ealing Broadway to Upminster	779.39	6.7	1	9.74	5.23	14.97	2	2
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Rayners Lane to Arnos Grove	779.39	1.3	0.5	9.74	23.83	33.57	0.89	0.45
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Arnos Grove to Northfields	779.39	2.3	0.5	9.74	13.79	23.54	1.27	0.64
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Heathrow T5 to Cockfosters	779.39	6	0.5	9.74	5.75	15.49	1.94	0.97
LU LRT	Hammersmith (Dist&Picc Line)	District Line Ealing Broadway to High Street Kensington	779.39	0.3	0.5	9.74	100.75	110.49	0.27	0.14
LU LRT	Hammersmith (Dist&Picc Line)	District Line Tower Hill to Richmond	779.39	0.7	0.5	9.74	43.61	53.35	0.56	0.28

Mode	Stop	Route	Distance (metres)	Frequency (vph)	Weight	Walk time (mins)	SWT (mins)	TAT (mins)	EDF	AI
LU LRT	Hammersmith (Dist&Picc Line)	District Line Ealing Broadway to Tower Hill	779.39	0.3	0.5	9.74	100.75	110.49	0.27	0.14
LU LRT	Hammersmith (Dist&Picc Line)	District Line Dagenham East to Ealing Broadway	779.39	0.7	0.5	9.74	43.61	53.35	0.56	0.28
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Cockfosters to Heathrow Terminal 4	779.39	6	0.5	9.74	5.75	15.49	1.94	0.97
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Oakwood to Rayners Lane	779.39	0.7	0.5	9.74	43.61	53.35	0.56	0.28
LU LRT	Hammersmith (Dist&Picc Line)	District Line Barking to Ealing Broadway	779.39	0.3	0.5	9.74	100.75	110.49	0.27	0.14
LU LRT	Hammersmith (Dist&Picc Line)	Piccadilly Line Heathrow Terminal 4 to Arnos Grove	779.39	2	0.5	9.74	15.75	25.49	1.18	0.59
LU LRT	Hammersmith (Dist&Picc Line)	District Line Barking to Richmond	779.39	0.3	0.5	9.74	100.75	110.49	0.27	0.14
LU LRT	Hammersmith (H&C Line)	Piccadilly Line Cockfosters to Ruislip	750.38	0.7	0.5	9.38	43.61	52.99	0.57	0.28
LU LRT	Hammersmith (H&C Line)	Hammersmith and City Barking to Hammersmith (H&C Line)	750.38	6	0.5	9.38	5.75	15.13	1.98	0.99

Mode	Stop	Route	Distance (metres)	Frequency (vph)	Weight	Walk time (mins)	SWT (mins)	TAT (mins)	EDF	AI
LU LRT	Hammersmith (H&C Line)	Circle Line Hammersmith (H&C Line) to Edgware Road (Circle Line)	750.38	6	0.5	9.38	5.75	15.13	1.98	0.99

Total AI for this POI is 26.16.

PTAL Rating is 6a.

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Appendix C – Local modelling outputs

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C.1 Baseline results, AM peak hour

Fulham Palace Road / Chancellor's Road, existing priority junction

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Baseline AM	ARCADY		✓	✓	D5		100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Baseline, AM	Baseline	AM	Base Case AM	DIRECT	08:00	09:00	60	15						

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
untitled	T-Junction	Two-way	A,B,C		15.28	C

Junction Network Options

Driving Side	Lighting	Road Surface
Left	Normal/unknown	(Mini-roundabouts only)

Arms

Arms

Arm	Name	Description	Arm Type
A	Fulham Palace Road (South)		Major
B	Chancellors Road		Minor
C	Fulham Palace Road (North)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
C	6.60	✓	3.10	✓	3.10	120.00	✓	3.30

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	3.80										40	40

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept	Slope	Slope	Slope	Slope

		(Veh/hr)	for A-B	for A-C	for C-A	for C-B
1	B-A	589.264	0.098	0.247	0.155	0.353
1	B-C	701.108	0.105	0.265	-	-
1	C-B	706.484	0.267	0.267	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	DIRECT	✓	N/A	100.000
B	DIRECT	✓	N/A	100.000
C	DIRECT	✓	N/A	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	9.000	962.000
	B	14.000	0.000	90.000
	C	918.000	67.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.00	0.01	0.99
	B	0.13	0.00	0.87
	C	0.93	0.07	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		A	B	C
From	A	1.000	1.324	1.085
	B	1.228	1.000	1.074
	C	1.110	1.041	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	32.407	8.524

	B	22.782	0.000	7.363
	C	11.002	4.060	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
B-AC	0.35	18.24	0.52	C	104.00	104.00	30.46	17.57	0.51	30.49	17.59
C-AB	0.16	10.49	0.20	B	67.49	67.49	11.78	10.47	0.20	11.78	10.47
C-A	-	-	-	-	917.51	917.51	-	-	-	-	-
A-B	-	-	-	-	9.00	9.00	-	-	-	-	-
A-C	-	-	-	-	962.00	962.00	-	-	-	-	-

C.2 Baseline results, PM peak hour

Fulham Palace Road / Chancellor's Road, existing priority junction

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Baseline PM	ARCADY		✓	✓	D6		100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Baseline, PM	Baseline	PM	Base Case PM	DIRECT	17:00	18:00	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
untitled	T-Junction	Two-way	A,B,C		12.72	B

Junction Network Options

Driving Side	Lighting	Road Surface

Left	Normal/unknown	(Mini-roundabouts only)

Arms

Arms

Arm	Name	Description	Arm Type
A	Fulham Palace Road (South)		Major
B	Chancellors Road		Minor
C	Fulham Palace Road (North)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
C	6.60	✓	3.10	✓	3.10	120.00	✓	3.30

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	3.80										40	40

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	589.264	0.098	0.247	0.155	0.353
1	B-C	701.108	0.105	0.265	-	-
1	C-B	706.484	0.267	0.267	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	DIRECT	✓	N/A	100.000
B	DIRECT	✓	N/A	100.000
C	DIRECT	✓	N/A	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	8.000	846.000
	B	16.000	0.000	91.000
	C	881.000	38.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.00	0.01	0.99
	B	0.15	0.00	0.85
	C	0.96	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		A	B	C
From	A	1.000	1.262	1.067
	B	1.151	1.000	1.041
	C	1.045	1.070	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To

From		A	B	C
	A	0.000	26.242	6.738
	B	15.103	0.000	4.099
	C	4.540	6.968	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
B-AC	0.29	14.02	0.41	B	107.00	107.00	24.30	13.63	0.41	24.32	13.64
C-AB	0.09	9.11	0.10	A	38.04	38.04	5.75	9.07	0.10	5.75	9.07
C-A	-	-	-	-	880.96	880.96	-	-	-	-	-
A-B	-	-	-	-	8.00	8.00	-	-	-	-	-
A-C	-	-	-	-	846.00	846.00	-	-	-	-	-

C.3 Construction base case results, AM peak hour

Fulham Palace Road / Chancellor's Road, existing priority junction

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Base Case AM	ARCADY		✓	✓	D1		100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base Case, AM	Base Case	AM	Base Case AM	DIRECT	08:00	09:00	60	15						

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
untitled	T-Junction	Two-way	A,B,C		25.93	D

Junction Network Options

Driving Side	Lighting	Road Surface

Left	Normal/unknown	(Mini-roundabouts only)

Arms

Arms

Arm	Name	Description	Arm Type
A	Fulham Palace Road (South)		Major
B	Chancellors Road		Minor
C	Fulham Palace Road (North)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
C	6.60		0.00	✓	3.10	120.00	✓	3.30

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	3.80										40	40

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	551.116	0.098	0.247	0.155	0.353
1	B-C	701.108	0.105	0.265	-	-
1	C-B	706.484	0.267	0.267	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	DIRECT	✓	N/A	100.000
B	DIRECT	✓	N/A	100.000
C	DIRECT	✓	N/A	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	13.000	1018.000
	B	18.000	0.000	98.000
	C	971.000	74.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.00	0.01	0.99
	B	0.16	0.00	0.84
	C	0.93	0.07	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		A	B	C
From	A	1.000	1.324	1.085
	B	1.228	1.000	1.074
	C	1.110	1.041	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To

From		A	B	C
	A	0.000	32.407	8.524
	B	22.782	0.000	7.363
	C	11.002	4.060	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
B-AC	0.53	34.94	1.11	D	116.00	116.00	62.48	32.32	1.04	62.64	32.40
C-AB	0.19	11.24	0.24	B	74.93	74.93	14.05	11.25	0.23	14.05	11.25
C-A	-	-	-	-	970.07	970.07	-	-	-	-	-
A-B	-	-	-	-	13.00	13.00	-	-	-	-	-
A-C	-	-	-	-	1018.00	1018.00	-	-	-	-	-

C.4 Construction base case results, PM peak hour

Fulham Palace Road / Chancellor's Road, existing priority junction

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Base Case PM	ARCADY		✓	✓	D2		100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Base Case, PM	Base Case	PM	Base Case PM	DIRECT	17:00	18:00	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
untitled	T-Junction	Two-way	A,B,C		16.52	C

Junction Network Options

Driving Side	Lighting	Road Surface

Left	Normal/unknown	(Mini-roundabouts only)

Arms

Arms

Arm	Name	Description	Arm Type
A	Fulham Palace Road (South)		Major
B	Chancellors Road		Minor
C	Fulham Palace Road (North)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
C	6.60		0.00	✓	3.10	120.00	✓	3.30

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	3.80										40	40

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	551.116	0.098	0.247	0.155	0.353
1	B-C	701.108	0.105	0.265	-	-
1	C-B	706.484	0.267	0.267	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	DIRECT	✓	N/A	100.000
B	DIRECT	✓	N/A	100.000
C	DIRECT	✓	N/A	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	11.000	892.000
	B	20.000	0.000	99.000
	C	929.000	43.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.00	0.01	0.99
	B	0.17	0.00	0.83
	C	0.96	0.04	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		A	B	C
From	A	1.000	1.262	1.067
	B	1.151	1.000	1.041
	C	1.045	1.070	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To

From		A	B	C
	A	0.000	26.242	6.738
	B	15.103	0.000	4.099
	C	4.540	6.968	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
B-AC	0.39	19.06	0.62	C	119.00	119.00	36.31	18.31	0.61	36.35	18.33
C-AB	0.10	9.54	0.11	A	43.08	43.08	6.82	9.50	0.11	6.82	9.50
C-A	-	-	-	-	928.92	928.92	-	-	-	-	-
A-B	-	-	-	-	11.00	11.00	-	-	-	-	-
A-C	-	-	-	-	892.00	892.00	-	-	-	-	-

C.5 Construction development case results, AM peak hour

Fulham Palace Road / Chancellor's Road, existing priority junction

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Dev Case AM	ARCADY		✓	✓	D3		100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Dev Case EIA, AM	Dev Case EIA	AM	Future and Proposed AM Peak EIA	DIRECT	08:00	09:00	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
untitled	T-Junction	Two-way	A,B,C		28.08	D

Junction Network Options

Driving Side	Lighting	Road Surface
Left	Normal/unknown	(Mini-roundabouts only)

Arms

Arms

Arm	Name	Description	Arm Type
A	Fulham Palace Road (South)		Major
B	Chancellors Road		Minor
C	Fulham Palace Road (North)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
C	6.60		0.00	✓	3.10	120.00	✓	3.30

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	3.80										40	40

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	551.116	0.098	0.247	0.155	0.353
1	B-C	701.108	0.105	0.265	-	-
1	C-B	706.484	0.267	0.267	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	DIRECT	✓	N/A	100.000
B	DIRECT	✓	N/A	100.000
C	DIRECT	✓	N/A	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	13.000	1018.000
	B	19.000	0.000	101.000
	C	971.000	79.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.00	0.01	0.99
	B	0.16	0.00	0.84
	C	0.92	0.08	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		A	B	C
From	A	1.000	1.324	1.085
	B	1.216	1.000	1.091
	C	1.110	1.063	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To

From		A	B	C
	A	0.000	32.407	8.524
	B	21.571	0.000	9.069
	C	11.002	6.269	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
B-AC	0.56	38.61	1.26	E	120.00	120.00	70.71	35.35	1.18	70.93	35.47
C-AB	0.21	11.68	0.26	B	80.48	80.48	15.73	11.72	0.26	15.73	11.73
C-A	-	-	-	-	969.52	969.52	-	-	-	-	-
A-B	-	-	-	-	13.00	13.00	-	-	-	-	-
A-C	-	-	-	-	1018.00	1018.00	-	-	-	-	-

C.6 Construction development case results, PM peak hour

Fulham Palace Road / Chancellor's Road, existing priority junction

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Dev Case PM	ARCADY		✓	✓	D4		100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Dev Case EIA, PM	Dev Case EIA	PM	PM Peak EIA	DIRECT	17:00	18:00	60	15				✓		

Junction Network

Junctions

Name	Junction Type	Major Road Direction	Arm Order	Do Geometric Delay	Junction Delay (s)	Junction LOS
untitled	T-Junction	Two-way	A,B,C		17.00	C

Junction Network Options

Driving Side	Lighting	Road Surface
Left	Normal/unknown	(Mini-roundabouts only)

Arms

Arms

Arm	Name	Description	Arm Type
A	Fulham Palace Road (South)		Major
B	Chancellors Road		Minor
C	Fulham Palace Road (North)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Width of kerbed central reserve (m)	Has right turn bay	Width For Right Turn (m)	Visibility For Right Turn (m)	Blocks?	Blocking Queue (PCU)
C	6.60		0.00	✓	3.10	120.00	✓	3.30

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor Arm Type	Lane Width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate Flare Length	Flare Length (PCU)	Visibility To Left (m)	Visibility To Right (m)
B	One lane	3.80										40	40

Pedestrian Crossings

Arm	Crossing Type
A	None
B	None
C	None

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	551.116	0.098	0.247	0.155	0.353
1	B-C	701.108	0.105	0.265	-	-
1	C-B	706.484	0.267	0.267	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
A	DIRECT	✓	N/A	100.000
B	DIRECT	✓	N/A	100.000
C	DIRECT	✓	N/A	100.000

Turning Proportions

Turning Counts or Proportions (Veh/hr) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.000	12.000	892.000
	B	20.000	0.000	104.000
	C	929.000	46.000	0.000

Turning Proportions (Veh) - Junction 1 (for whole period)

		To		
		A	B	C
From	A	0.00	0.01	0.99
	B	0.16	0.00	0.84
	C	0.95	0.05	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		A	B	C
From	A	1.000	1.241	1.067
	B	1.151	1.000	1.058
	C	1.045	1.107	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

	To

From		A	B	C
	A	0.000	24.131	6.738
	B	15.103	0.000	5.773
	C	4.540	10.745	0.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
B-AC	0.40	19.69	0.67	C	124.00	124.00	39.01	18.88	0.65	39.05	18.90
C-AB	0.11	10.00	0.13	A	46.16	46.16	7.66	9.96	0.13	7.66	9.96
C-A	-	-	-	-	928.84	928.84	-	-	-	-	-
A-B	-	-	-	-	12.00	12.00	-	-	-	-	-
A-C	-	-	-	-	892.00	892.00	-	-	-	-	-

Appendix D – Accident Analysis

D.1 Existing Highway Safety Analysis

D.1.1 Details of road traffic accidents within the vicinity of the site have been obtained from Transport for London (TfL) and have been reviewed to determine whether there are particular issues or trends on the local highway network.

D.1.2 Data on accidents for 5 years until the end of March 2011 has been analysed for the following junctions and surrounding roads:

- Fulham Palace Road
- Fulham Palace Road/ Parfrey Street;
- Chancellor's Road;
- Distillery Road;

D.1.3 Based on the DfT Design Manual for Roads and Bridges, Volume 13 Economic Assessment of Road Schemes, accidents have been analysed according to the method outlined in this guidance which states that accidents that have occurred within 20m of each junction are associated with that specific junction, and the remaining accidents are grouped to the relevant links.

D.1.4 The area of interest together with the locations of the recorded road traffic accidents are indicated in Table D.1 below. The study area is also graphically represented in Figure 1.1.

D.1.5 A total of 43 road traffic accidents have occurred in the area of interest during the five year period. These have been assessed in this section.

D.1.6 Of these accidents, 34 are classified as slight, 9 is classified as serious and none as fatal. Table D.1 below summarises where these accidents occurred, and their level of severity. Accident analysis for the individual junctions and roads sections is discussed below.

Vol 4 Table D.1 Accident severity 2006 to 2011

Location	Slight	Serious	Fatal	Total
Fulham Palace Road	7	2	0	9
Fulham Palace Road/ Beryl Road Junction	3	0	0	3
Fulham Palace Road/ Biscay Road Junction	1	1	0	2
Fulham Palace Road/ Chancellor's Road Junction	2	0	0	2
Fulham Palace Road/ Dunstan's Road Junction	3	0	0	3
Fulham Palace Road/ Hammersmith	1	0	0	1

Flyover				
Fulham Palace Road/ Parfrey Street Junction	8	2	0	10
Fulham Palace Road/ Peabody Estate Junction	2	0	0	2
Fulham Palace Road/ Sussex Place Junction	0	1	0	1
Fulham Palace Road/ Winslow Road Junction	5	1	0	6
Fulham Palace Road/ Yeldham Road Junction	1	1	0	2
Chancellor's Road/ Crisp Road Junction	0	1	0	1
Distillery Road/ Winslow Road Junction	1	0	0	1
Total	**34**	**9**	**0**	**43**

Fulham Palace Road

D.1.7 The A219 Fulham Palace Road runs perpendicular to the A4 Hammersmith Gyratory in a southern direction towards the northern/ eastern boundary of the site area. For the stretch of the A219 within the study area, the highway is a three lane dual carriageway inclusive of a bus lane heading in the north-south direction. The Fulham Palace Road extends north as far as the A315 Hammersmith Road and south as far as the A24 Morden Road. The junctions involved within this analysis are as follows:

- Fulham Palace Road/ Beryl Road Junction;
- Fulham Palace Road/ Biscay Road Junction;
- Fulham Palace Road/ Dunstan's Road Junction;
- Fulham Palace Road/ Hammersmith Flyover;
- Fulham Palace Road/ Parfrey Street Junction;
- Fulham Palace Road/ Peabody Estate Junction;
- Fulham Palace Road/ Sussex Place Junction;
- Fulham Palace Road/ Winslow Road Junction; and
- Fulham Palace Road/ Yeldham Road Junction.

D.1.8 In total, 41 accidents have occurred along Fulham Palace Road and the junction associated with this stretch of highway. In terms of severity, 33 of these accidents were identified as slight, and the remaining 8 accidents were identified as serious.

D.1.9 In general, the slight accidents predominantly resulted from drivers/riders failing to look properly, carelessness or poor manoeuvres. These accidents generally involved a car and another motor vehicle/motorcycle. Of the total 33 slight accidents, 5 accidents involved pedestrians where

contributing factors were generally failing to look properly, and failure to judge the other person's path or speed.

D.1.10 Of the 8 serious accidents along the A219 Fulham Palace Road, 4 involved pedestrians and were generally as a result of carelessness of drivers and failing to judge the other person's path or speed. The remainder of the serious accidents involved cars and motorcycles, and can be attributed to failing to look properly and travelling too fast for the conditions.

D.1.11 Of the total accidents, there were no LGV, MGV or HGV's involved in any accidents along Fulham Palace Road, and the majority of accidents involved cars and motorcycles, with the remaining majority of accidents involving pedestrians and pedal cycles equally. No fatal accident occurred along the A219 Fulham Palace Road in the 5 year period analysed.

Chancellor's Road

D.1.12 Chancellor's Road forms part of the access/egress route to the site, which leads from Fulham Palace Road in a western direction towards the site area. The road is a two-way single-carriageway and there was just 1 serious accident and no slight accidents accruing on Chancellor's Road in the 5 year time analysed. The major contributory factor to the serious accident was failure to look properly, failure to judge other person's path or speed and carelessness. The junction involved within this analysis is as follows:

- Chancellor's Road/ Crisp Road Junction

D.1.13 No fatal accident occurred along Chancellor's Road in the 5 year period analysed.

Distillery Road

D.1.14 Distillery Road forms part of the access/egress route to the site, which leads from Chancellor's Road in a southern direction towards the site entrance/exit. The road is a two-way single-carriageway and there has been 1 slight and no serious accidents accruing on Chancellor's Road in the 5 year time analysed. The major contributory factor to the slight accident was failure to look properly, poor manoeuvring and failure to judge other persons path or speed.

D.2 Summary and Conclusion

D.2.1 The largest number of road traffic accidents has occurred at the Fulham Palace Road junction with Parfrey Road; of which eight have been classified as slight and two as serious. The largest number of serious accidents has again occurred on Fulham Palace Road, located along Fulham Palace Road where it meets with Parfrey Road.

D.2.2 In total 9 serious accidents occurred within the study area, 2 scattered along Fulham Palace Road and 2 at its junction with Parfrey Road. For the accidents along Fulham Palace Road and at the junction of Parfrey Road the modes of transport were a combination of car and car/ pedestrian collisions. The contributory factor to each of the accidents was a failure to

look properly, failure to judge other person's speed and disobeying an automatic traffic signal.

D.2.3 Overall, the accidents occurred in the area of interest were mainly caused by vehicle/pedestrian paths crossing or poor turning movements which resulted from not looking properly and careless/ reckless driving indicating that the accidents are not due to highway geometry or poor infrastructure.

Appendix E – Road Safety Audit

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Your ref -
Our ref 211146-00/cvl

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Thames Tideway Tunnel
The Point (7th Floor),
37 North Wharf Road,
Paddington,
London W2 1AF
For the attention of Dermot Scanlon

12 February 2013

Dear Sirs

Thames Tideway Tunnel
Hammersmith Pumping Station - Stage 1 Road Safety Audit

I have the pleasure of enclosing our Hammersmith Pumping Station – Stage 1 Road Safety Audit report. In addition to the enclosed report the Audit Team noted the following point outwith the remit of the audit. I would be grateful if you would bring this issue to the attention of the Highway Authority, Designer and/or Maintainer as appropriate.

Additional Comment

- Distillery Road and Chancellor's Road are signed cycle routes. Any traffic management proposed on these roads should take full account of cycles. Delivery drivers and site staff should be made aware of the presence of the cycle routes and the likely increased risk of cycle / goods vehicle conflict through inclusion in the site induction process and construction method statements. Furthermore Thames Water Utilities Limited staff maintaining the existing pumping station throughout the duration of the works using the existing access on Chancellor's Road should also be briefed accordingly.

If you have any further queries regarding this letter or the enclosed report, please do not hesitate to contact me

Ove Arup & Partners Ltd | Registered in England & Wales
Registered Number: 1312453 | Registered Address: 13 Fitzroy Street London W1T 4BQ

Yours faithfully

Chris van Lottum
Senior Engineer
Road Safety Audit Team Leader

Enc

cc Phil Longman, Peter Brett Associates
Gavin Wicks, Arup

Thames Tideway Tunnel

Thames Tideway Tunnel - Hammersmith Pumping Station

Stage 1 Road Safety Audit

RSA1.1A

Rev A | 12 February 2013

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 211146-03

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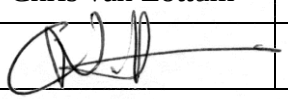
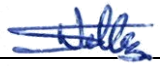
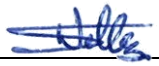
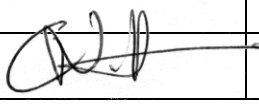
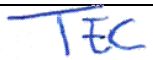
ARUP

Document Verification

ARUP

Job title		Thames Tideway Tunnel - Hammersmith Pumping Station		**Job number** 211146-03	
Document title		Stage 1 Road Safety Audit		**File reference**	
Document ref		RSA1.1A			
Revision	**Date**	**Filename**	RP CVL TTT 02 Hammersmith RSA1.1 130212 Rev A.docx		
Issue	19 Dec 2012	**Description**	Issue report		
			Prepared by	Checked by	Approved by
		Name	Chris van Lottum	Steve Wells	Steve Wells
		Signature			
Rev A	12 Feb 2013	**Filename**	RP CVL TTT 02 Hammersmith RSA1.1 130212 Rev A.docx		
		Description	Revised information received		
			Prepared by	Checked by	Approved by
		Name	Chris van Lottum	Tome Corke	Steve Wells
		Signature			
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		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document Verification with Document	✓

Contents

Figures

Appendices

1 Introduction

Arup was appointed by Thames Tideway Tunnel to conduct a Stage 1 Road Safety Audit on proposals to create a construction access and egress for works associated with the Thames Tideway Tunnel at Hammersmith Pumping Station, Chancellor's Road, in the London Borough of Hammersmith and Fulham.

The agreed Audit Team consisted of:

- Mr C van Lottum MEng (Hons), MCIHT, MSoRSA
- Mr T Corke BEng (Hons), MSc, CEng, MICE, MCIHT, MSoRSA

The Audit Team visited the site together on Tuesday 4th December 2012; weather conditions at the time of the site visit were bright and cold and the road surface was damp.

At the time of the site visit the site was hoarded and part of the Fulham Reach development site.

IMG_8346.jpg

A list of information provided to the Audit Team has been included as Appendix A to this Report.

The following information was **not** made available to the Audit Team and as such any specific influence of these details on road user safety has not been considered by this audit:

- Departures from Standard
- Road profiles
- Cross sections
- Drainage
- Landscape
- Public utilities
- Traffic signals
- Traffic signs
- Street lighting
- Road markings
- Road restraint systems

The site access on Distillery Road is not shown on the Permanent Highway Layout drawings as such the swept path assessment cannot be examined by this audit.

It is understood that no previous Road Safety Audits have been conducted on this scheme.

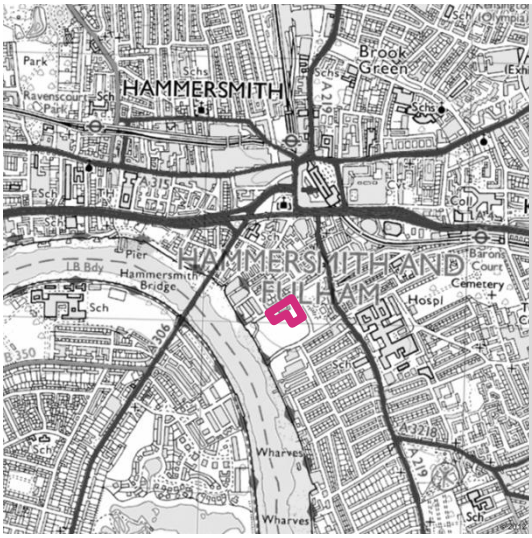
This audit has been undertaken in accordance with the Terms of Reference set out in TfL Procedure 'Road Safety Audit SQA-0170 – Issue 4'; and the Audit Team members meet the training and experience requirements set out therein. The Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the design to any other criteria. However, to clearly explain a problem or recommendation the Audit Team may occasionally refer to design standards without engaging in technical audit.

All problems and recommendations identified by this audit are referenced to in the design drawings and the locations have been indicated on the attached plan.

Other issues, including safety issues identified during the Audit but excluded from this report by the Terms of Reference, which the Audit Team wishes to draw to the attention of the Audit Project Sponsor, are set out in separate correspondence.

Road Safety Audit is based upon a qualitative risk assessment process and there is no measure of the success achieved by any recommendations given herein. Road Safety Audit cannot guarantee the safe operation of the scheme under consideration in this report as accidents are rare and random events and are largely caused by factors outside the Audit Team's influence, such as driving behaviour and, to a lesser extent, vehicle condition.

1.1 Site Description



Scheme Location

The Hammersmith Pumping Station is situated on Chancellor's Road, west of Frank Banfield Park. To the east Chancellor's Road joins the A219 Fulham Palace Road which links Hammersmith and Fulham in west London. The site access would be made from the adjacent Distillery Road.

1.2 Scheme Description

The scheme proposes extending the restricted hours applying to single yellow lines to 07:00 to 19:00 Monday to Saturday along Chancellor's Road and Distillery Road to assist the passage of construction vehicles.

Minor kerb radii widening would be required at the junction of Chancellor's Road with Distillery Road to ensure the safe movement of construction vehicles to and from the site.

The site access from Distillery Road would be gated for a right-turn in, left turn out arrangement for construction traffic.

2 Stage 1 Road Safety Audit

The Recommendations below are numbered as follows:

STAGE . AUDIT NUMBER . RECOMMENDATION NUMBER

2.1 Construction Layout

Location: Chancellor's Road

Summary: The poor condition of existing traffic calming measures could lead to vehicle damage.

Description: Traffic calming has been installed in the form of speed cushions on Chancellor's Road and raised tables at the junctions of Chancellor's Road with Fulham Palace Road and Distillery Road with Chancellor's Road. Some of the measures are in poor condition with missing ramps and loose / sunken blocks.

IMG_8355.jpg

IMG_8357.jpg

Repeated over running by construction traffic is likely to exacerbate the existing problem, to a point at which vehicles could be damaged by debris.

S1.1.1 **Recommendation:** Remove the traffic calming measures for the duration of the works and replace with new traffic calming following completion of the works.

Location: Distillery Road

Summary: Swept path shows HGV conflict with site hoarding.

Description: The swept path analysis for a 16.5m HGV entering the site from Distillery Road conflicts with the hoarding on the northern side of the access.

Notwithstanding the damage a collision with the gate and hoarding could cause to a vehicle, if the movement cannot be completed without conflict it will be necessary for HGV drivers to reverse back into the carriageway to complete their manoeuvre, thereby placing other road users at risk from a collision as a result of reduced rearward visibility.

S1.1.2 **Recommendation:** Widen the site entrance to fully accommodate the vehicle movement, allowing HGVs to enter the site in a forward direction of travel.

2.2 Permanent Layout

	Location:	Chancellor's Road
	Summary:	Tight swept path could result in vehicle damage.
	Description:	The swept path analysis for the permanent road layout indicates conflicts between some vehicle types approaching the site, and the parking bays on Chancellor's Road around the site entrance. Swept path conflicts can lead to vehicle damage and could result in injuries for vehicle occupants or pedestrians if footways are over run to avoid a collision.
S1.1.3	**Recommendation:**	Temporary suspension of parking bays on Chancellor's Road may be required during maintenance periods so as to ensure unobstructed access.

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

3 Road Safety Audit Statement

I certify that this audit has been carried out in accordance with HD19/03.

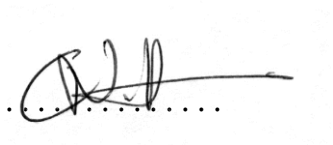
Audit Team Leader

Mr C van Lottum MEng (Hons), MCIHT, MSoRSA

Senior Engineer

Arup

Central Square, Forth Street,
Newcastle upon Tyne, NE1 3PL



12 February 2013

Audit Team Member

Mr T Corke BEng (Hons), MSc, CEng, MICE, MCIHT, MSoRSA

Senior Engineer

Arup

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Figures

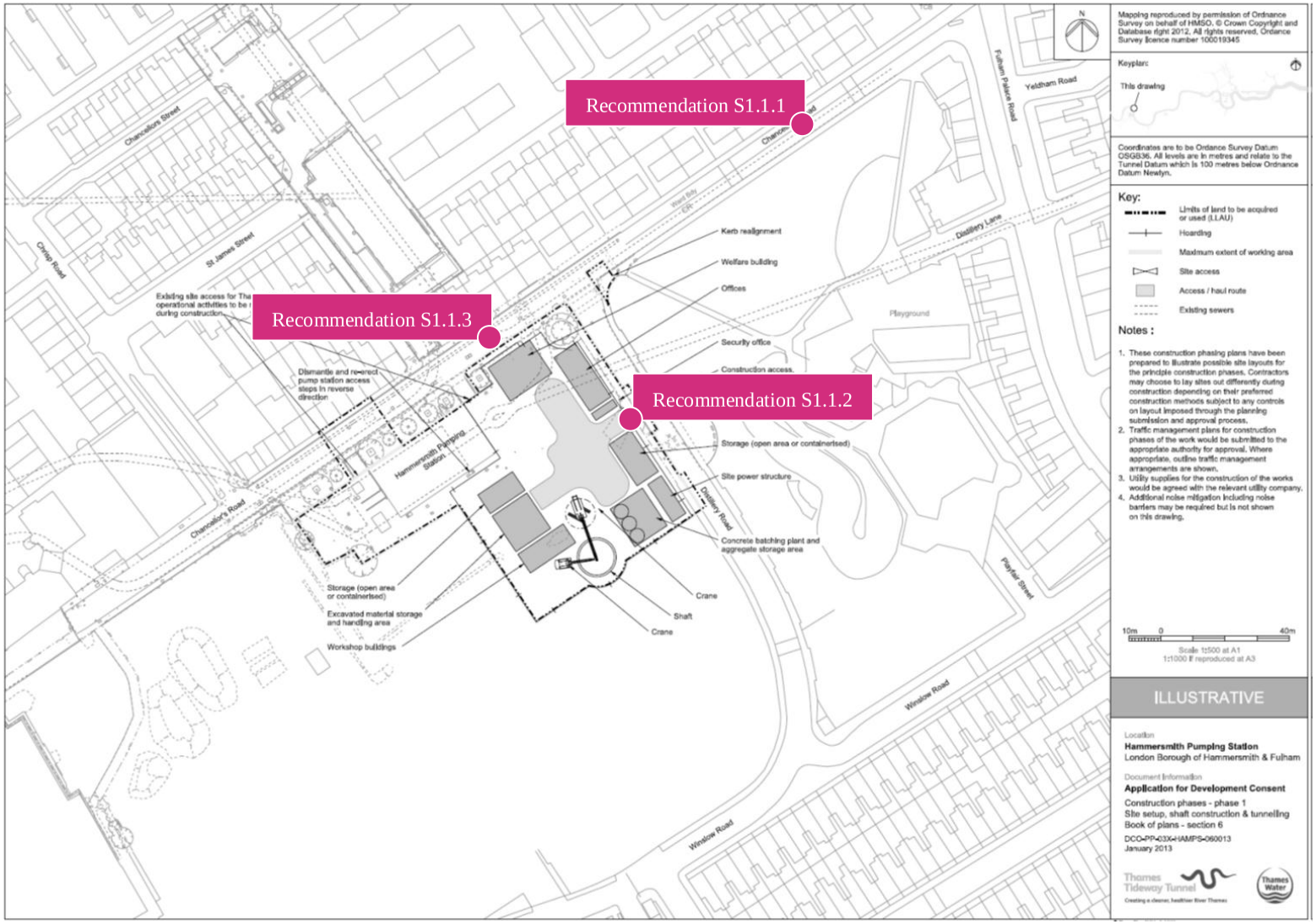

Figure 1 Location of Recommendations

Appendix A

Documents and Drawings

A1 Documents and Drawings

The following documents and drawings were supplied to the Audit Team by the Designer and have been examined in the course of conducting this audit.

A1.1 Documents

Title	Reference	Revision
Road Safety Audit Brief	-	11/12/2012

A1.2 Drawings

Title	Reference	Revision
Transport - site location plan	1PL03-TT-50613	Jan 2013
Transport - construction traffic routes	1PL03-TT-50605	Jan 2013
Transport - accident locations	1PL03-TT-50749	Jan 2013
Construction phases - phase 1 – Site setup, shaft construction & tunnelling	DCO-PP-03X-HAMPS-060013	Jan 2013
Highway layout during construction (Area 1)	DCO-PP-03X-HAMPS-060017	Jan 2013
Permanent highway layout – Area 1 work	DCO-PP-03X-HAMPS-060018	Jan 2013
Highway layout during construction (Area 1) – Vehicle swept path analysis	DCO-PP-03X-HAMPS-060020	Jan 2013
Permanent highway layout (Area 1) – Vehicle swept path analysis	DCO-PP-03X-HAMPS-060021	Jan 2013

TECHNICAL NOTE

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Job Name	**Thames Tideway Tunnel – Hammersmith Pumping Station**	
Job No.	22104	
Note No.	001	
Date	15th February 2013	
Subject	Stage 1 Road Safety Audit – Designer's Response	
Prepared by	L Harney	**Reviewed:** B Kemp

1 Introduction

1.1 Arup was appointed by Thames Water to conduct a Stage 1 Road Safety Audit on proposals to create a construction access and egress for works associated with the Thames Tideway Tunnel at Hammersmith Pumping Station in the London Borough of Hammersmith and Fulham.

1.2 This technical note provides the Designer's Response to the Stage 1 Audit for this site.

2 Stage 1 Road Safety Audit

Construction Layout

2.1 Location: Chancellor's Road

Summary: The poor conditions of the existing traffic calming measures could lead to vehicle damage.

Description: Traffic calming has been installed in the form of speed cushions on Chancellor's Road and raised tables at the junctions of Chancellor's Road with Fulham Palace Road and Distillery Road with Chancellor's Road. Some of the measures are in poor condition with missing ramps and loose/sunken blocks.

Repeated over running by construction traffic is likely to exacerbate the existing problems, to a point at which vehicles could be damaged by debris.

S1.1.1 Recommendation: Remove the traffic calming measures for the duration of the works and replace with new traffic calming following the completion of the works.

Recommendation Accepted – The removal of traffic calming measures for the duration of construction will be reviewed at Stage 2 (Detailed Design).

2.2 Location: Distillery Road

Summary: Swept path shows HGV conflict with site hoarding.

Description: The swept path analysis for a 16.5m HGV entering the site from Distillery Road conflicts with the hoarding on the northern side of the access.

Notwithstanding the damage a collision with the gate and hoarding would cause to a vehicle, if the movement cannot be completed without conflict it will be necessary for HGV drivers to reverse back into the carriageway to complete their manoeuvre, thereby placing other road users at risk from a collision as a result of reduced rearward visibility.

S1.1.2 Recommendation: Widen the site entrance to fully accommodate the vehicle movement, allowing HGVs to enter the site in a forward direction of travel.

Recommendation Accepted – The hoarding at the site access will be reviewed and adequate width provided for HGVs to access the site at Stage 2 (Detailed Design).

Permanent Layout

2.3 Location: Chancellor's Road

Summary: Tight swept path could result in vehicle damage.

Description: The swept path analysis for the permanent road layout indicates conflicts between some vehicle types approaching the site, and the parking bays on Chancellor's Road around the site entrance.

Swept path conflicts can lead to vehicle damage and could result in injuries for vehicle occupants or pedestrians if footways are over run to avoid a collision.

S1.1.3 Recommendation: Temporary suspension of parking bays on Chancellor's Road may be required during maintenance periods so as to ensure unobstructed access.

Recommendation Accepted – The requirement for temporary suspension of parking bays on Chancellor's Road during maintenance will be reviewed at Stage 2 (Detailed Design).

3 Response to Comments provided in addition to the Stage 1 Road Safety Audit

3.1 Additional Comments

Distillery Road and Chancellor's Road are signed cycle routes. Any traffic management proposed on these roads should take full account of cycles. Delivery drivers and site staff should be made aware of the presence of the cycle routes and the likely increased risk of cycle / goods vehicle conflict through inclusion in the site induction process and construction method statements. Furthermore Thames Water staff maintaining the existing pumping stations throughout the duration of the works using the existing access onto Chancellor's Road should be briefed accordingly.

Comment Response – Site staff and delivery drivers associated with the Thames Water site will be briefed on the presence of cyclists on Distillery Road and Chancellor's Road. This measure will be included in the Code of Construction Practice at Stage 2 (Detailed Design).

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Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Transport Assessment

Doc Ref: **7.10.02**

Hammersmith Pumping Station

Figures

APFP Regulations 2009: Regulation **5(2)(q)**

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Thames Tideway Tunnel

Creating a cleaner, healthier River Thames

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Thames Tideway Tunnel

Transport Assessment

Section 5: Hammersmith Pumping Station figures

List of contents

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Plans

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Hammersmith Pumping Station

THAMES TIDEWAY TUNNEL - SCHEDULE OF ASSOCIATED HIGHWAY WORKS

Drawing Number	Works Reference	Location	Item of Work	Date of Implementation
DCO-PP-03X-HAMPS-060017	PHF2X_C01	Chancellor's Road - Eastern end near junction with Fulham Palace Road	Extension of the hours of operation of the single yellow line parking restriction from Mon - Sat 8am to 6.30pm to Mon - Sat 7am to 7pm	TBC
	PHF2X_C02	Chancellor's Road - Eastern end near junction with Fulham Palace Road	Extension of the hours of operation of the single yellow line parking restriction from Mon - Sat 8am to 6.30pm to Mon - Sat 7am to 7pm	TBC
	PHF2X_C03	Distillery Road - Junction with Chancellor's Road	Realignment of kerb and relocation of tactile paving in order to accommodate the turning movements of construction vehicles approaching the site.	TBC
	PHF2X_C04	Distillery Road - South of Chancellor's Road	Extension of the hours of operation of the single yellow line parking restriction from Mon - Sat 8.30am to 6.30pm to Mon - Sat 7am to 7pm	TBC
	PHF2X_C05	Distillery Road - South of Chancellor's Road	Extension of the hours of operation of the single yellow line parking restriction from Mon - Sat 8am to 6.30pm to Mon - Sat 7am to 7pm	TBC
	PHF2X_C06	Distillery Road - South of Chancellor's Road	Provision of gated site access during the construction phase	TBC
	PHF2X_C07	Chancellor's Road - East of Junction with Distillery Road	Suspension of 5m of shared use on-street parking on southern side of Chancellor's Road	TBC
DCO-PP-03X-HAMPS-060018	PHF2X_P01	Chancellor's Road - Eastern end near junction with Fulham Palace Road	Reinstatement of the hours of operation to Mon - Sat 8am to 6.30pm	TBC
	PHF2X_P02	Chancellor's Road - Eastern end near junction with Fulham Palace Road	Reinstatement of the hours of operation to Mon - Sat 8am to 6.30pm	TBC
	PHF2X_P03	Distillery Road - Junction with Chancellor's Road	Reinstatement of kerb alignment and footway which was moved as per PHF2X_C03.	TBC
	PHF2X_P04	Distillery Road - South of Chancellor's Road	Reinstatement of the hours of operation of the single yellow line parking to Mon - Sat 8.30am to 6.30pm	TBC
	PHF2X_P05	Distillery Road - South of Chancellor's Road	Reinstatement of the hours of operation of the single yellow line parking to Mon - Sat 8am to 6.30pm	TBC
	PHF2X_P06	Distillery Road - South of Chancellor's Road	Provision of maintenance access via Fulham Reach development. Exact location of access to be determined by Fulham Reach Development.	TBC
	PHF2X-P07	Chancellor's Road - East of Junction with Distillery Road	Reinstatement of 5m of shared use on-street parking on southern side of Chancellor's Road	
	PHF2X_P08	Chancellor's Road - South east of Chancellors Road / Distillery Road Junction	Provision of maintenance access via existing Thames Water access. (Two access locations)	TBC

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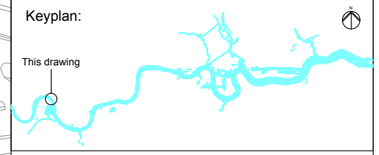
Keyplan:



Coordinates are to be Ordnance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Key

Existing
- Parking restrictions
- On street parking
- Bus lane
- Bus stop / stand
- Pedestrian crossing
- Cycle lane / advance stop line

Revised
- Limit of land to be acquired or used. (LLAU)

On Street Parking

Shared use (1) - Mon - Sat 8:30am - 6:30pm Permit holders A or pay and display max stay 4 hours

Shared use (2) - Permit holders T or pay at meter. Display ticket. 8 hour limit.

Shared use (3) - Mon - Fri 9:00am - 5:00pm Permit holders H or pay at meter. Display ticket.

Stage

Existing

Standards
- Design Manual For Roads And Bridges, Dft, 1992
- Traffic Signs Regulations & General Directions, Tso, 2002
- Traffic Signs Manual, Dft, 2006
- Manual For Streets, Dft, 2007
- Manual For Streets 2, Ciht, 2010
- Designing For Deliveries, Fta, 1998
- Cycle Infrastructure Design Ltn 2/08, Dft, 2008
- Design Of Pedestrian Crossings Ltn 2/95, Dft, 1995
- Guidance For The Use Of Tactile Paving, Dft, 1998
- Accessible Bus Stop Design Guidance, Tfl, 2006

10m 0 100m

Scale 1:1000 at A1
1:2000 if reproduced at A3

FOR INFORMATION

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Application for Development Consent

Existing highway layout

DCO-PP-03X-HAMPS-060016
January 2013

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Thames Water

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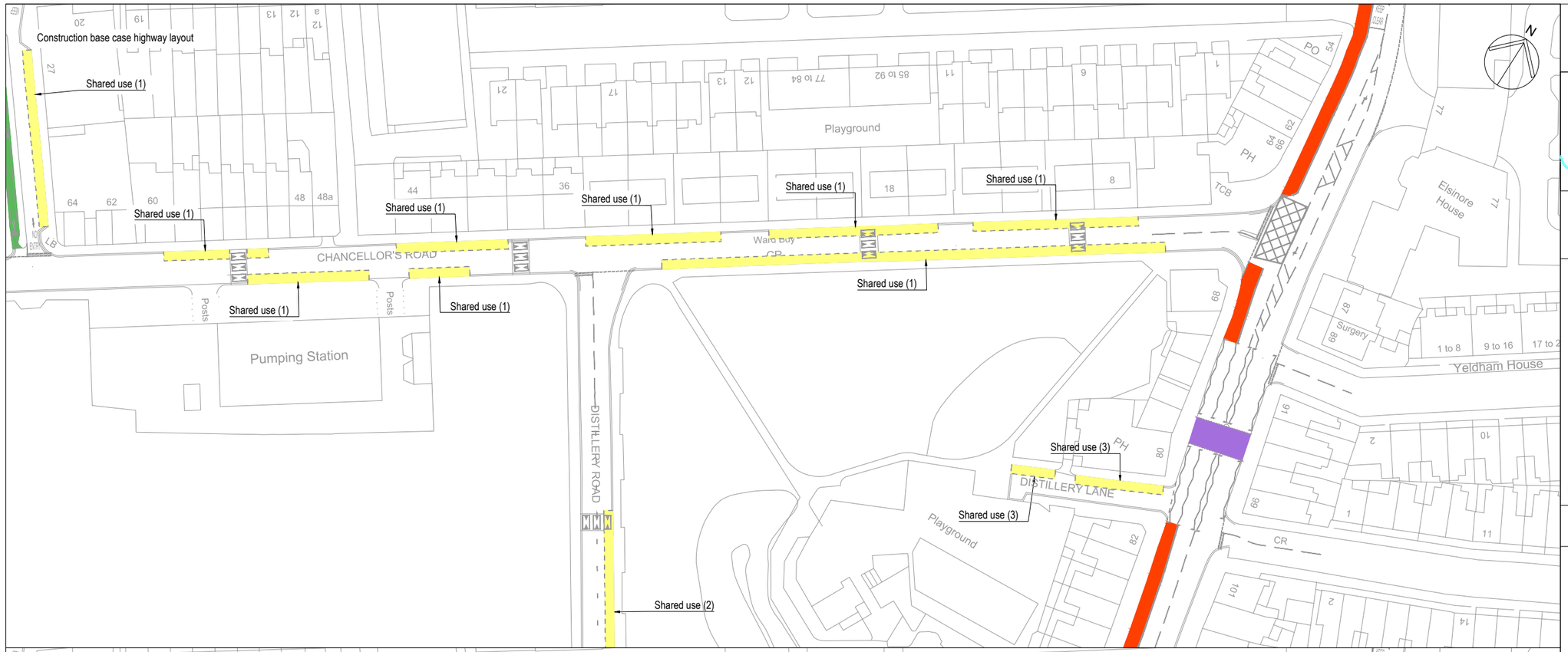
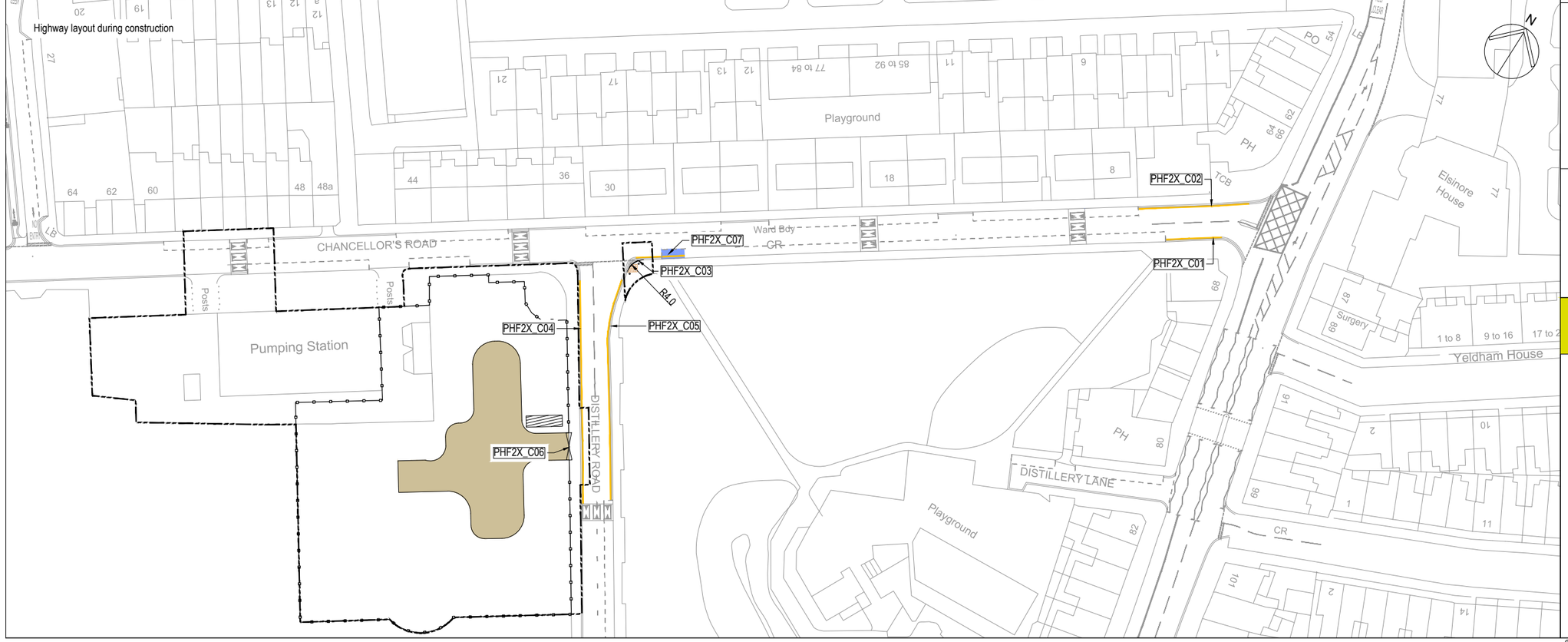
Construction base case highway layout



Highway layout during construction



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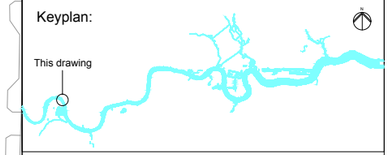

Coordinates are to be Ordnance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Key

Existing
- Parking restrictions
- On street parking
- Bus lane
- Pedestrian crossing
- Cycle lane / advance stop line

Revised
- Parking restrictions
- Tactile paving
- Bollard
- Illustrative on site manoeuvring zone
- Limit of land to be acquired or used (LLAU)
- Suspended on street parking
- Removal of footway
- PHF2X_C00 See schedule of works

Stage
Phase 1 and 2

On Street Parking
Shared use (1) - Mon - Sat 8:30am - 6:30pm Permit holders A or pay and display max stay 4 hours
Shared use (2) - Permit holders T or pay at meter. Display ticket. 8 hour limit.
Shared use (3) - Mon - Fri 9:00am - 5:00pm Permit holders H or pay at meter. Display ticket.

Standards
- Design Manual For Roads And Bridges, Dft, 1992
- Traffic Signs Regulations & General Directions, Tso, 2002
- Traffic Signs Manual, Dft, 2006
- Manual For Streets, Dft, 2007
- Manual For Streets 2, Ciht, 2010
- Designing For Deliveries, Fta, 1998
- Cycle Infrastructure Design Ltn 2/08, Dft, 2008
- Design Of Pedestrian Crossings Ltn 2/95, Dft, 1995
- Guidance For The Use Of Tactile Paving, Dft, 1998
- Accessible Bus Stop Design Guidance, Tfl, 2006

10m 0 40m

Scale 1:500 at A1
1:1000 if reproduced at A3

ILLUSTRATIVE

Location
Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information
Application for Development Consent
Highway layout during construction (Area 1)

DCO-PP-03X-HAMPS-060017
January 2013

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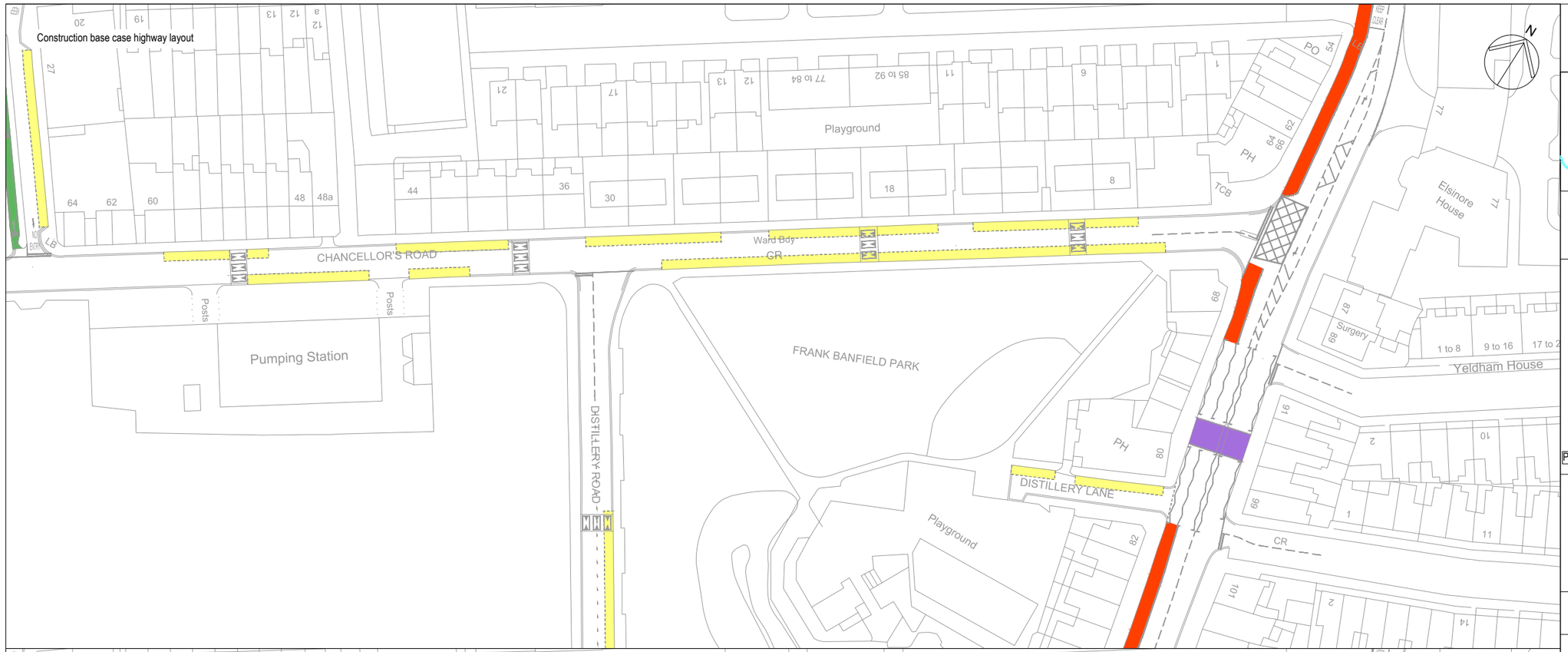
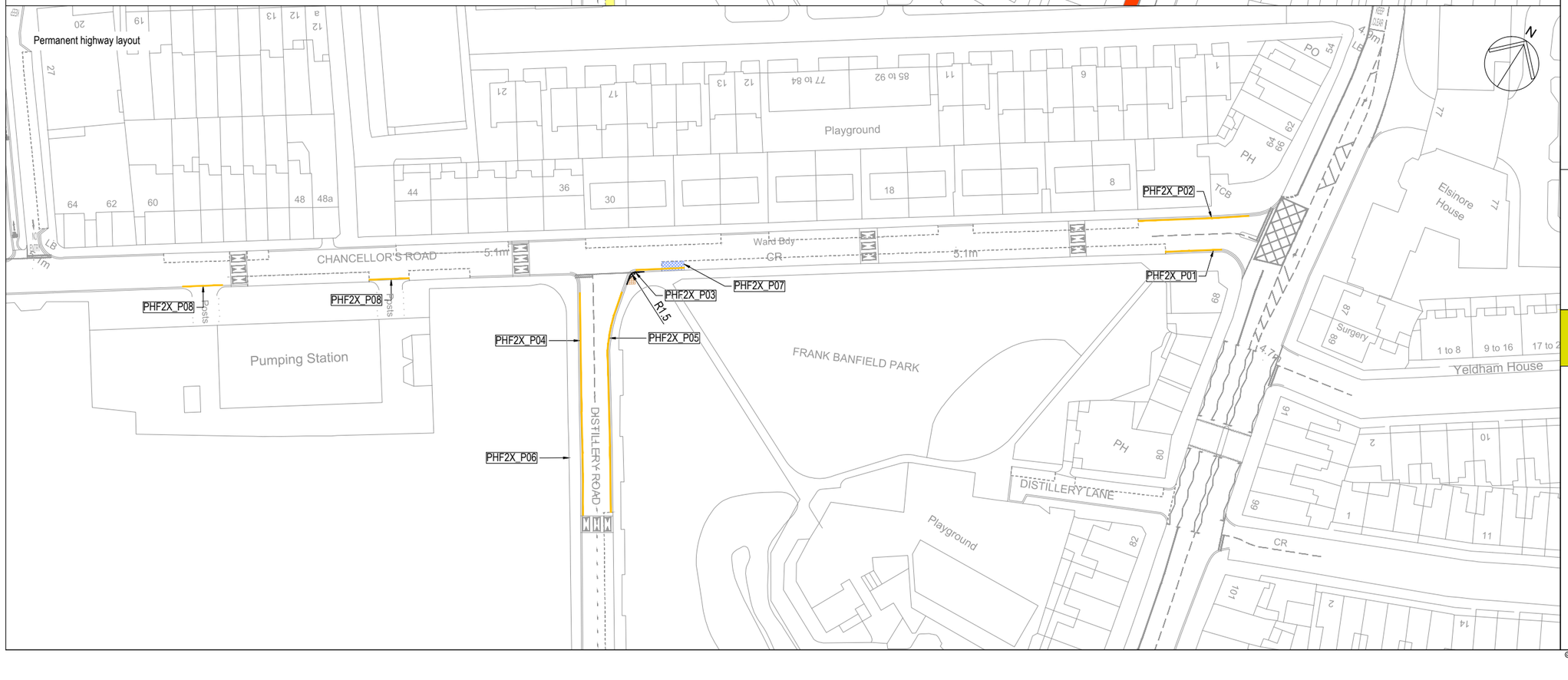
Construction base case highway layout



Permanent highway layout



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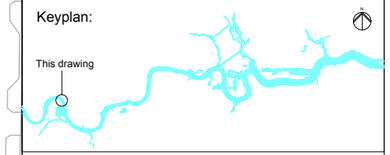

Coordinates are to be Ordnance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Key

Existing
- Parking restrictions
- On street parking
- Bus lane
- Pedestrian crossing
- Cycle lane / advance stop line

Revised
- Parking restrictions
- Footway reinstatement
- Tactile paving
- Reinstated on-street parking

PHF2X_P00 See schedule of works

On Street Parking

Shared use (1) - Mon - Sat 8:30am - 6:30pm Permit holders A or pay and display max stay 4 hours

Shared use (2) - Permit holders T or pay at meter. Display ticket. 8 hour limit.

Shared use (3) - Mon - Fri 9:00am - 5:00pm Permit holders H or pay at meter. Display ticket.

Stage

Permanent phase

Standards

- Design Manual For Roads And Bridges, Dft, 1992
- Traffic Signs Regulations & General Directions, Tso, 2002
- Traffic Signs Manual, Dft, 2006
- Manual For Streets, Dft, 2007
- Manual For Streets 2, Ciht, 2010
- Designing For Deliveries, Fta, 1998
- Cycle Infrastructure Design Ltn 2/08, Dft, 2008
- Design Of Pedestrian Crossings Ltn 2/95, Dft, 1995
- Guidance For The Use Of Tactile Paving, Dft, 1998
- Accessible Bus Stop Design Guidance, Tfl, 2006

10m 0 40m

Scale 1:500 at A1
1:1000 if reproduced at A3

ILLUSTRATIVE

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Application for Development Consent

Permanent highway layout - Area 1 work

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January 2013

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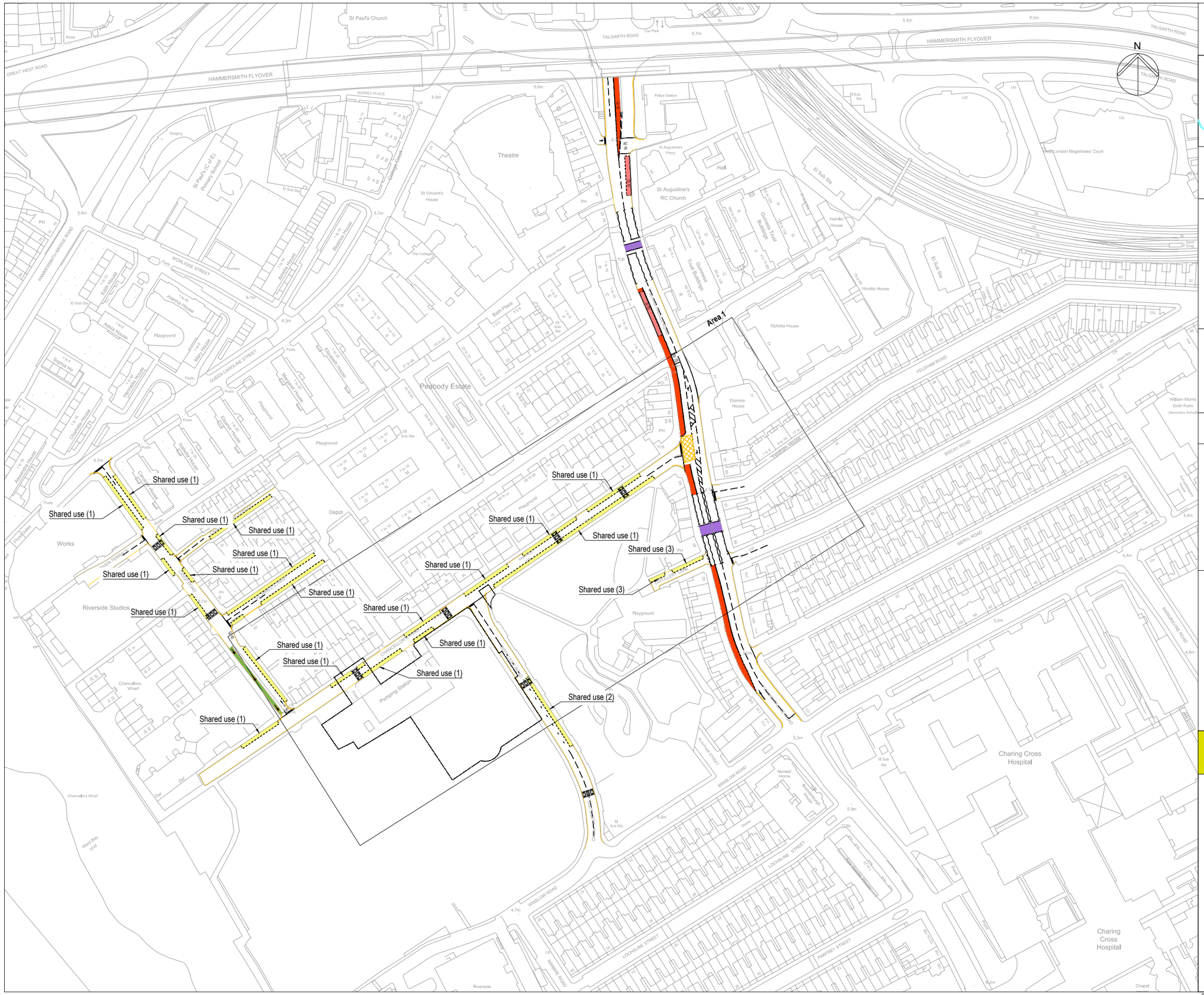

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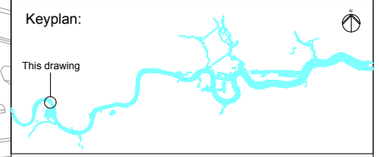

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Key

Existing

- Parking restrictions
- On street parking
- Bus lane
- Bus stop / stand
- Pedestrian crossing
- Cycle lane / advance stop line

Revised

- Limit of land to be acquired or used (LLAU)

On Street Parking

Shared use (1) - Mon - Sat 8:30am - 6:30pm Permit holders A or pay and display max stay 4 hours

Shared use (2) - Permit holders T or pay at meter. Display ticket. 8 hour limit.

Shared use (3) - Mon - Fri 9:00am - 5:00pm Permit holders H or pay at meter. Display ticket.

Stage

Construction base case

Standards

- Design Manual For Roads And Bridges, Dft, 1992
- Traffic Signs Regulations & General Directions, Tso, 2002
- Traffic Signs Manual, Dft, 2006
- Manual For Streets, Dft, 2007
- Manual For Streets 2, Ciht, 2010
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- Guidance For The Use Of Tactile Paving, Dft, 1998
- Accessible Bus Stop Design Guidance, Tfl, 2006

10m 0 40m

Scale 1:500 at A1
1:1000 if reproduced at A3

ILLUSTRATIVE

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Application for Development Consent

Construction base case highway layout

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16.5m Articulated Vehicle

12.0m Rigid Vehicle

CHANCELLOR'S ROAD

DISTILLERY ROAD

DISTILLERY LANE

Pumping Station

Playground

Yeldham House

Elsinore House

Surgery

PH

PO

TCB

CR

Ward Bdy

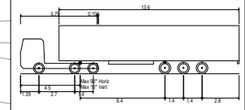
LB

Posts

5.1m

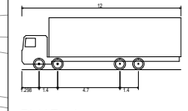
4.7m

16.5m Articulated Vehicle



Max Legal Articulated Vehicle (16.5m)	
Overall Length	16.500m
Overall Width	2.500m
Overall Body Height	3.632m
Min Body Ground Clearance	0.396m
Max Track Width	2.500m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	6.870m

12.0m Rigid Vehicle



Rigid Truck	12.000m
Overall Length	2.500m
Overall Width	3.928m
Overall Body Height	0.412m
Min Body Ground Clearance	2.471m
Track Width	6.00 sec
Lock to Lock Time	11.900m
Kerb to Kerb Turning Radius	

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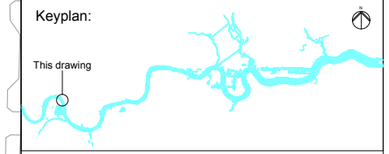

Coordinates are to be Ordnance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Key

Existing
- On street parking
- Pedestrian crossing
- Bus lane
- Cycle lane

Revised
- Removal of footway
- Suspended on street parking
- Illustrative on-site manoeuvring zone
- Security hut
- Site hoarding
- Access gate
- Limit of land to be acquired or used (LLAU)

Vehicle swept path analysis
- Vehicle body outlines
- Vehicle chassis outline
- Vehicle swept path

Stage
Phase 1 and 2

Standards
- Design Manual For Roads And Bridges, Dft, 1992
- Traffic Signs Regulations & General Directions, Tso, 2002
- Traffic Signs Manual, Dft, 2006
- Manual For Streets, Dft, 2007
- Manual For Streets 2, Ciht, 2010
- Designing For Deliveries, Fta, 1998
- Cycle Infrastructure Design Ltn 2/08, Dft, 2008
- Design Of Pedestrian Crossings Ltn 2/95, Dft, 1995
- Guidance For The Use Of Tactile Paving, Dft, 1998
- Accessible Bus Stop Design Guidance, Tfl, 2006

10m 0 40m

Scale 1:500 at A1
1:1000 if reproduced at A3

ILLUSTRATIVE

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Application for Development Consent

Highway layout during construction (Area 1)
Vehicle swept path analysis

DCO-PP-03X-HAMPS-060020
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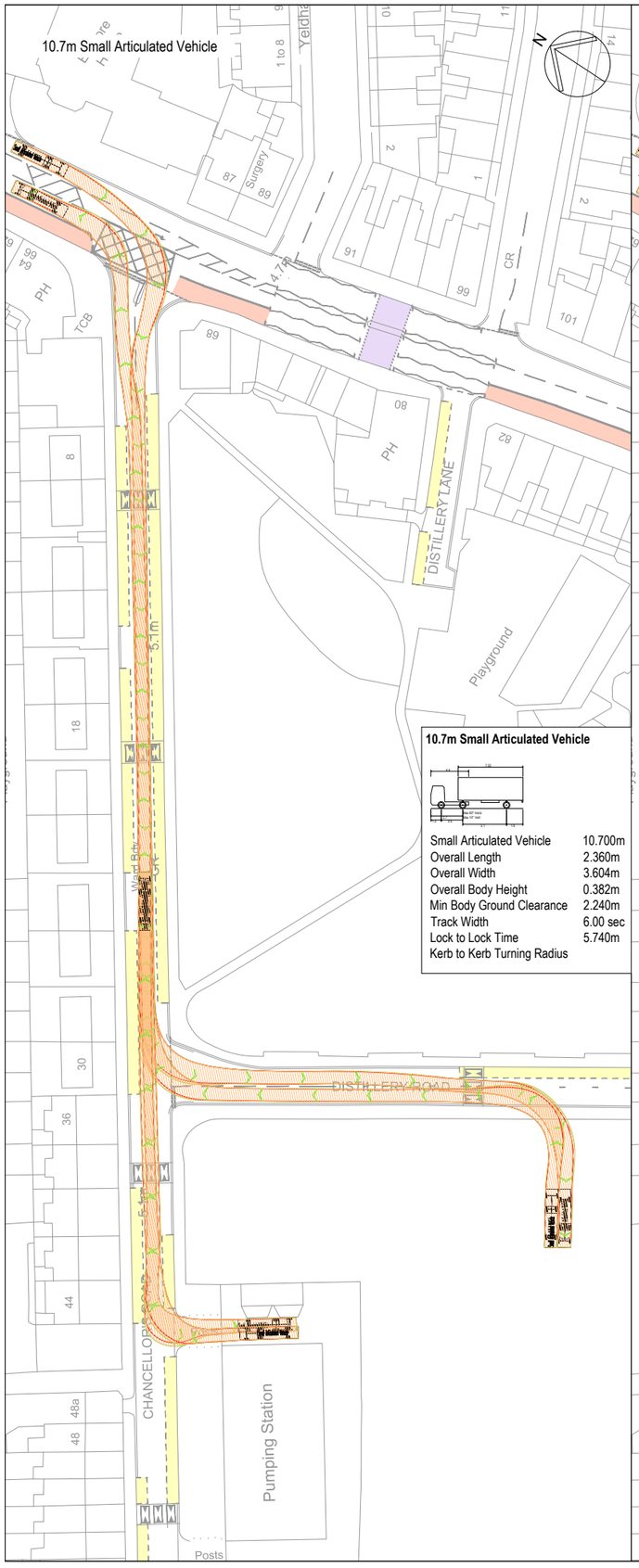
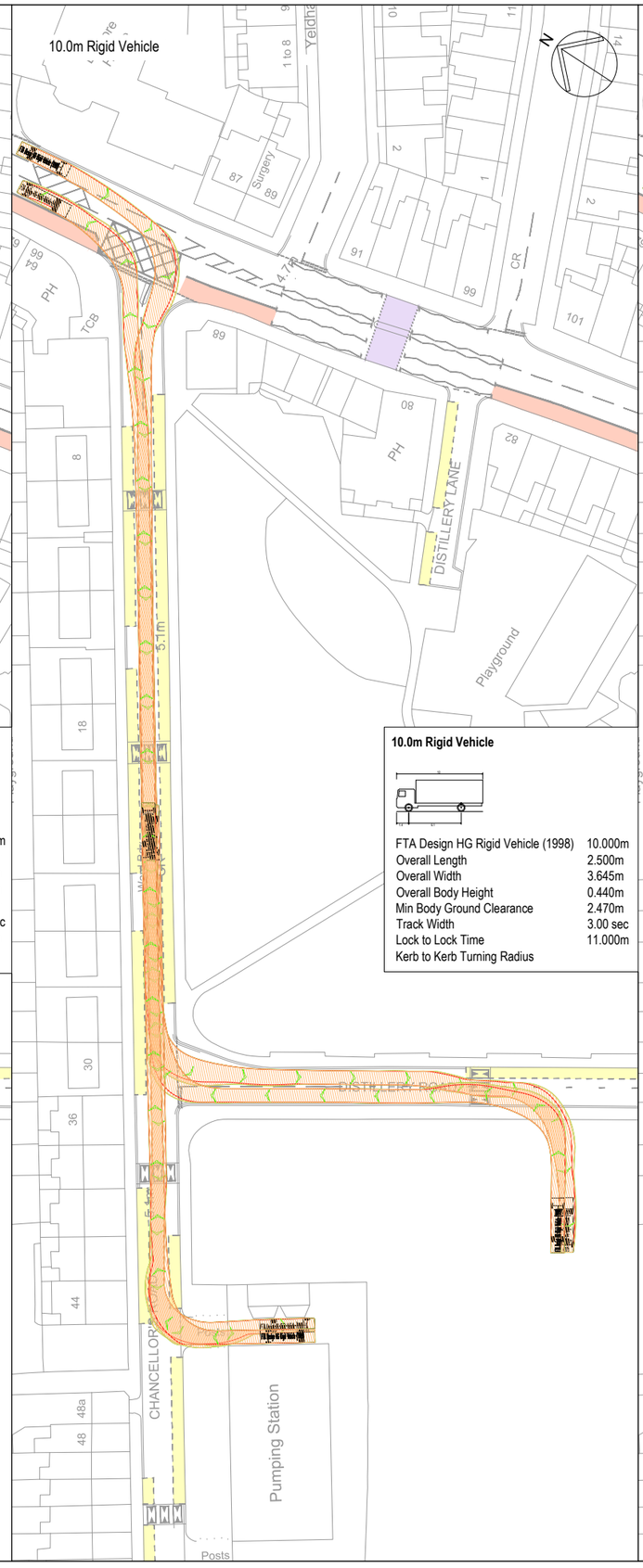


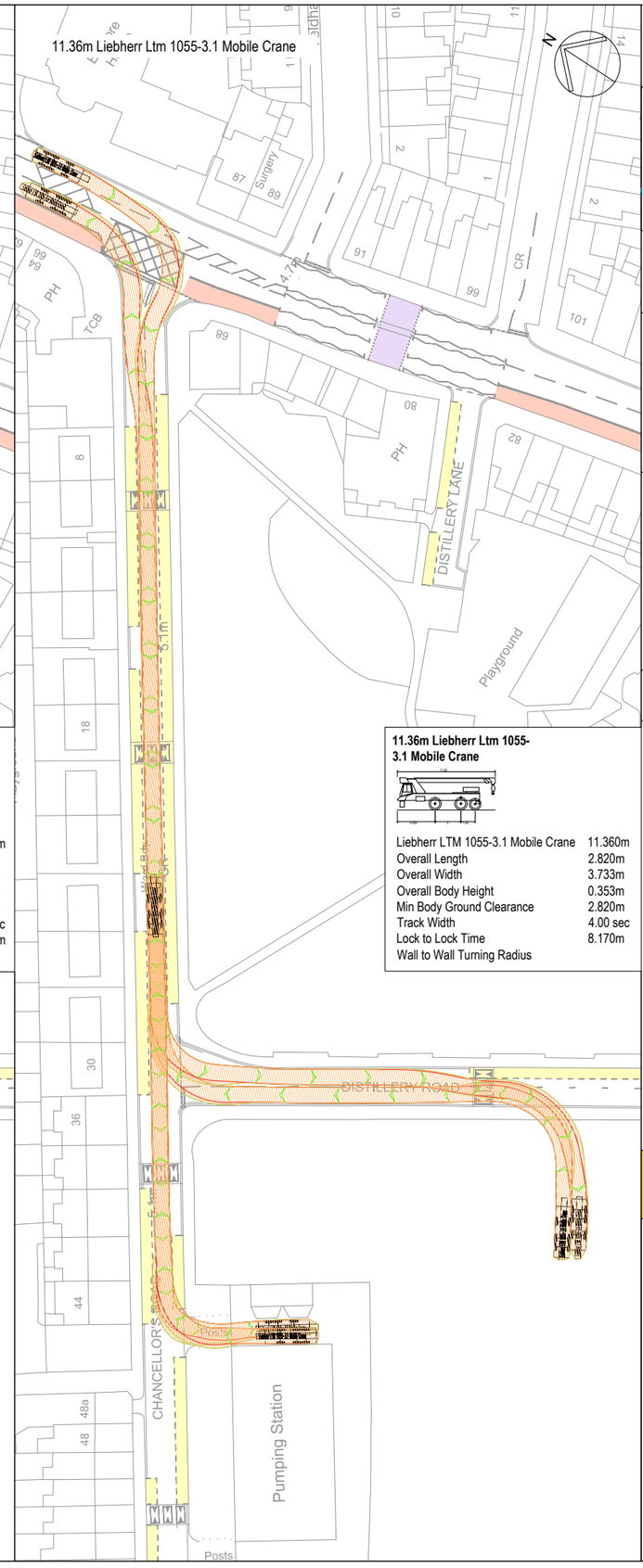
10.7m Small Articulated Vehicle

Small Articulated Vehicle	10.700m
Overall Length	2.360m
Overall Width	3.604m
Overall Body Height	0.382m
Min Body Ground Clearance	2.240m
Track Width	6.00 sec
Lock to Lock Time	5.740m
Kerb to Kerb Turning Radius	



10.0m Rigid Vehicle

FTA Design HG Rigid Vehicle (1998)	10.000m
Overall Length	2.500m
Overall Width	3.645m
Overall Body Height	0.440m
Min Body Ground Clearance	2.470m
Track Width	3.00 sec
Lock to Lock Time	11.000m
Kerb to Kerb Turning Radius	



11.36m Liebherr Ltm 1055-3.1 Mobile Crane

Liebherr LTM 1055-3.1 Mobile Crane	11.360m
Overall Length	2.820m
Overall Width	3.733m
Overall Body Height	0.353m
Min Body Ground Clearance	2.820m
Track Width	4.00 sec
Lock to Lock Time	8.170m
Wall to Wall Turning Radius	

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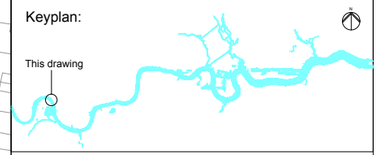
Keyplan:



Coordinates are to be Ordnance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Key

Existing
- On street parking
- Bus lane
- Pedestrian crossing

Vehicle swept path analysis
- Vehicle body outlines
- Vehicle chassis outline
- Vehicle swept path

Standards
- Design Manual For Roads And Bridges, Dft, 1992
- Traffic Signs Regulations & General Directions, Tso, 2002
- Traffic Signs Manual, Dft, 2006
- Manual For Streets, Dft, 2007
- Manual For Streets 2, Ciht, 2010
- Designing For Deliveries, Fta, 1998
- Cycle Infrastructure Design Ltn 2/08, Dft, 2008
- Design Of Pedestrian Crossings Ltn 2/95, Dft, 1995
- Guidance For The Use Of Tactile Paving, Dft, 1998
- Accessible Bus Stop Design Guidance, Tfl, 2006

Stage
Permanent phase

10m 0 40m

Scale 1:500 at A1
1:1000 if reproduced at A3

ILLUSTRATIVE

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Application for Development Consent

Permanent highway layout (Area 1)
Vehicle swept path analysis

DCO-PP-03X-HAMPS-060021
January 2013

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Transport assessment figures

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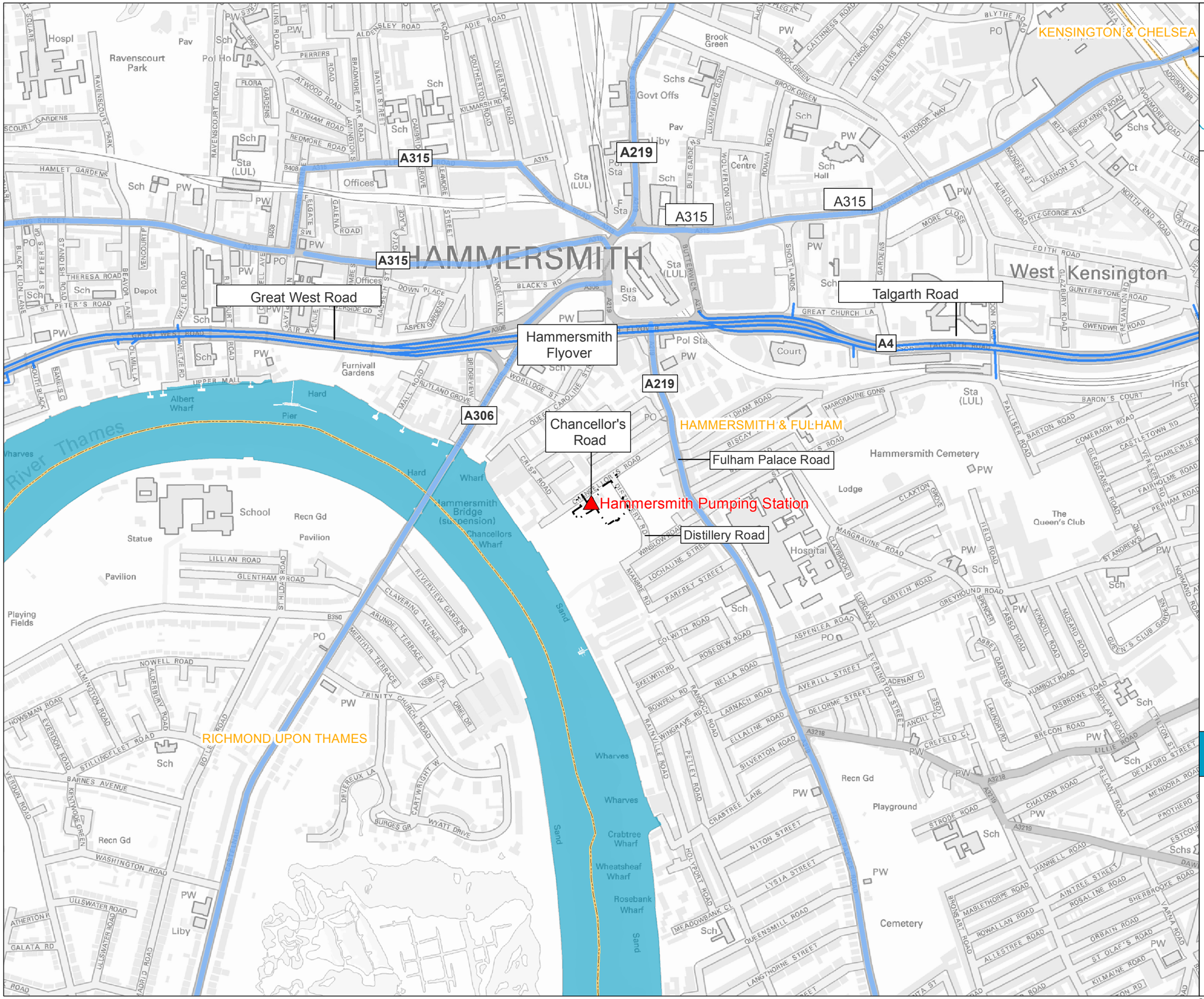

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Keyplan:

Key

- Pumping station
- TFL road network
- Strategic road network
- Limits of Land to be Acquired or Used
- Local authority boundary

110 55 0 110 m

Scale 1 : 7,500 at A3

FOR INFORMATION

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Transport Assessment

Transport - site location plan

Figure 5.2.1

1PL03-TT-50613
January 2013

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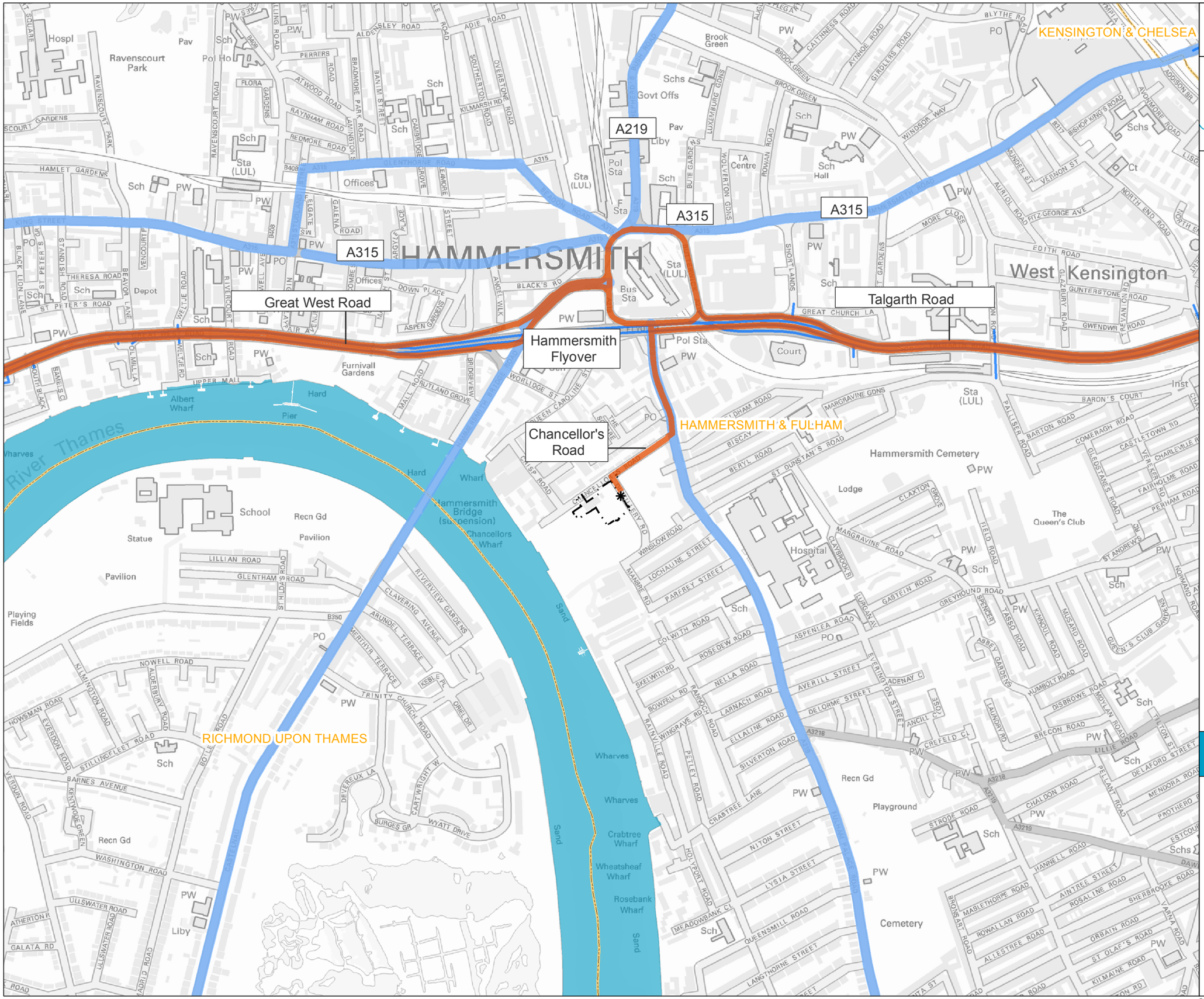

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Keyplan:

Key

- Site access
- TFL road network
- Strategic road network
- Primary construction route
- Limits of Land to be Acquired or Used
- Local authority boundary

110 55 0 110 m

Scale 1 : 7,500 at A3

FOR INFORMATION

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Transport Assessment

Transport - construction traffic routes

Figure 5.2.2

1PL03-TT-50605
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

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Keyplan:

Key

- Cycle parking
- Underground stations with cycle parking
- London strategic walk network
- London cycle routes
- Cycle superhighway (open 2013)
- Cycle superhighway (open 2015)
- Thames Path
- Pedestrian routes
- Limits of Land to be Acquired or Used
- Local authority boundary

110 55 0 110 m

Scale 1 : 7,500 at A3

FOR INFORMATION

Location

Hammersmith Pumping Sation
London Borough of Hammersmith & Fulham

Document Information

Transport Assessment

Tramsport - pedestrian and cycle network

Figure 5.4.1

1PL03-TT-50621
January 2013

Thames Tideway Tunnel
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Keyplan:

Key

- TFL bus stops
- London underground stations
- TfL bus routes
- Limits of Land to be Acquired or Used
- Local authority boundary

110 55 0 110 m

Scale 1 : 7,500 at A3

FOR INFORMATION

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Transport Assessment

Transport - public transport

Figure 5.4.2

1PL03-TT-50629
January 2013

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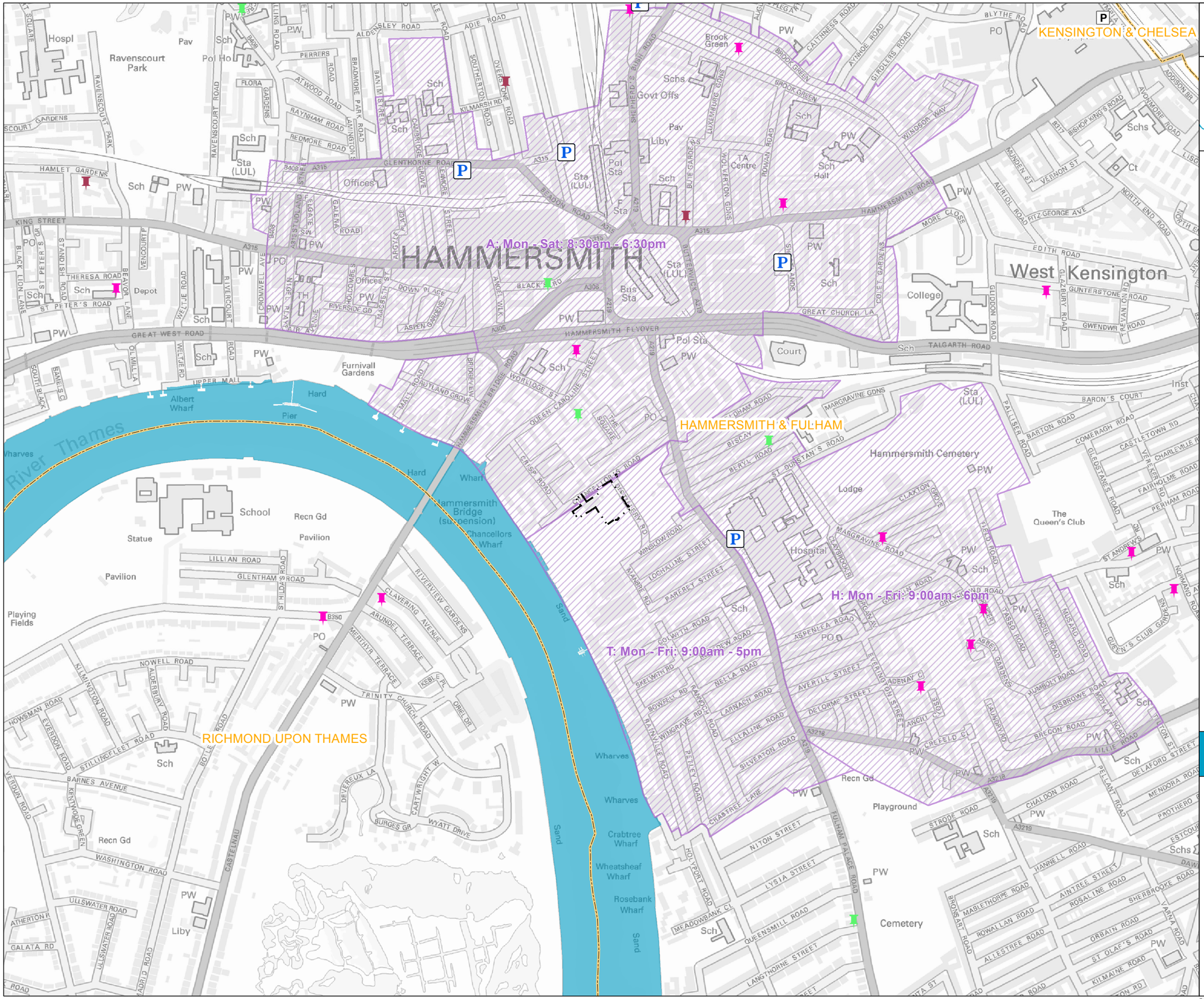

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Keyplan:

Key

- Private car parking
- Coach parking
- City Car
- Hertz on Demand
- Zip Car
- Controlled Parking Zones and hours of operation
- Limits of Land to be Acquired or Used
- Local authority boundary

110 55 0 110 m

Scale 1 : 7,500 at A3

FOR INFORMATION

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Transport Assessment

Transport - parking

Figure 5.4.3

1PL03-TT-50637
January 2013

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Keyplan:

Key

- Automatic traffic count surveys
- Pedestrian and cycle surveys
- Junction surveys
- Parking surveys
- Limits of Land to be Acquired or Used
- Local authority boundary

80 40 0 80 m

Scale 1 : 5,000 at A3

FOR INFORMATION

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Transport Assessment

Transport - survey locations

Figure 5.4.4

1PL03-TT-50645
January 2013

Thames Tideway Tunnel
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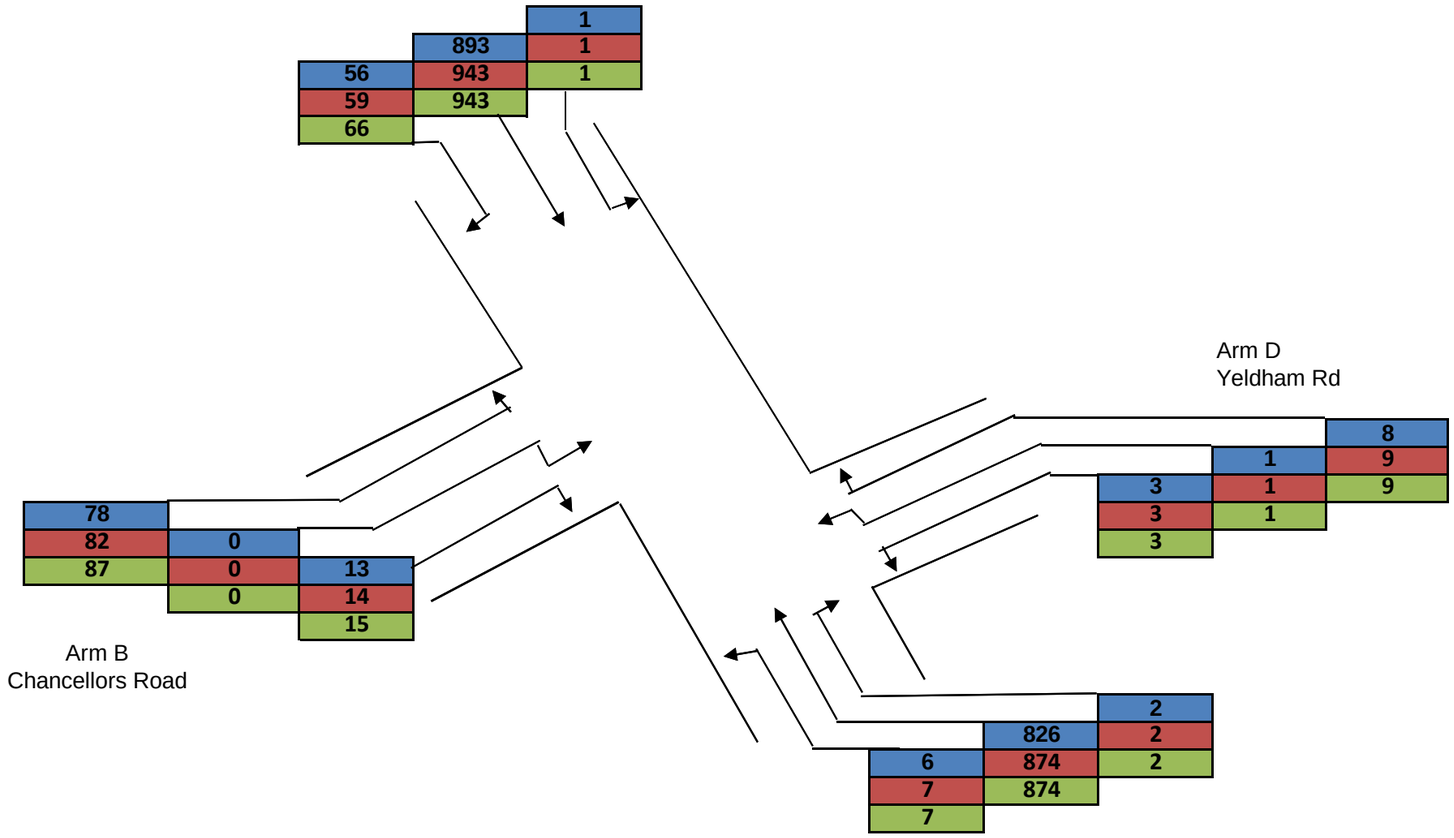
Site: Hammersmith PS
Borough: Hammersmith & Fulham
Junction: Fulham Palace Road/ Chancellor's Rd/ Yeldham Rd
Junction no.: PBA 4

Data: Traffic Flow in PCUs - AM Peak Hour
from Traffic Survey

Key

- Baseline
- Construction Base
- Development Case



FOR INFORMATION

Location
Hammersmith PS
LB of Hammersmith & Fulham

Document Information
Transport Assessment

Baseline, Construction and Development case traffic flow (AM peak hour)

Figure 5.4.5
1PL03-TT-50904
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames
Thames Water

Site: Hammersmith PS

Borough: Hammersmith & Fulham

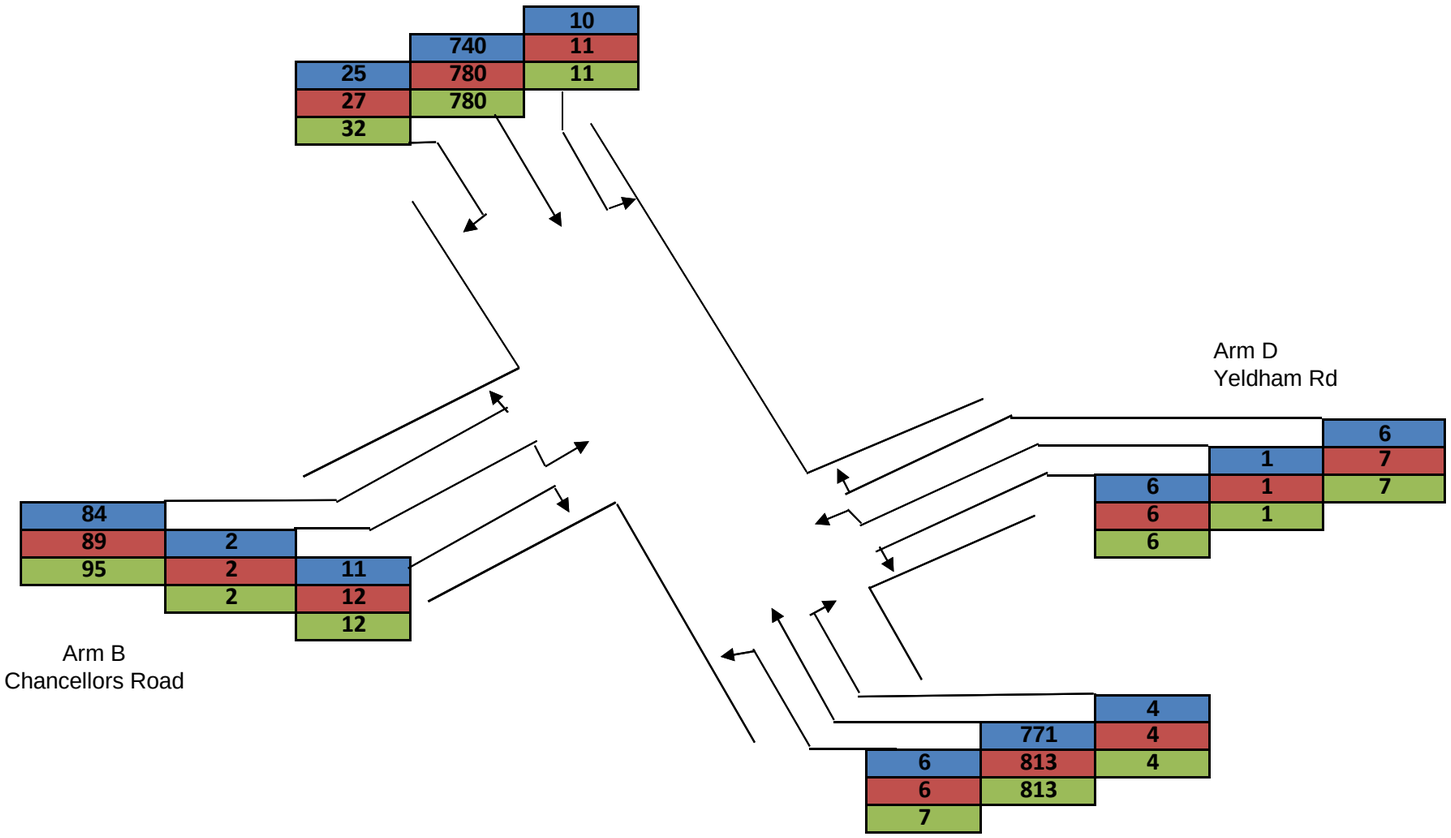
Junction: Fulham Palace Road/ Chancellor's Rd/ Yeldham Rd

Junction no.: PBA 4

Data: Traffic Flow in PCUs - PM Peak Hour from Traffic Survey

Key

- Baseline
- Construction Base
- Development Case



FOR INFORMATION

Location
Hammersmith PS
LB of Hammersmith & Fulham

Document Information
Transport Assessment

Baseline, Construction and Development case traffic flow (PM peak hour)

Figure 5.4.6
1PL03-TT-50928
January 2013

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Keyplan:

Key

- Slight
- Serious
- Limits of Land to be Acquired or Used
- Local authority boundary

110 55 0 110 m

Scale 1 : 7,500 at A3

FOR INFORMATION

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Transport Assessment

Transport - accident locations

Figure 5.4.7

1PL03-TT-50749
January 2013

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Keyplan:

Key

Accidents

(Severity, Mode of travel)

- Slight, Pedestrian
- Slight, Pedal Cycle
- Serious, Pedestrian
- Limits of Land to be Acquired or Used
- Local authority boundary

110 55 0 110 m

Scale 1 : 7,500 at A3

FOR INFORMATION

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Transport Assessment

Transport - pedestrian and cyclist accidents by severity
Figure 5.4.8

1PL03-TT-50833
January 2013

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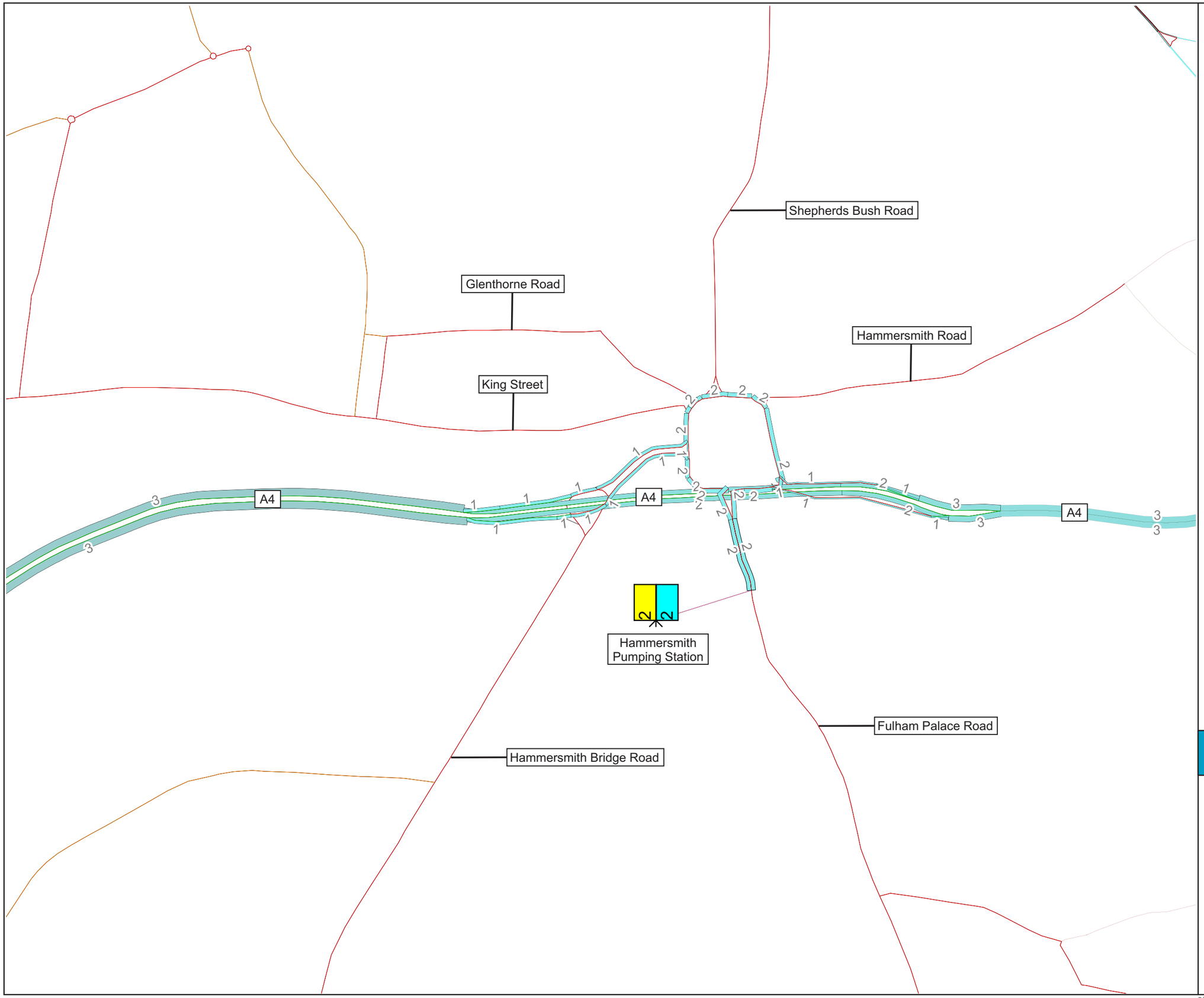

Hourly construction lorries arrivals and departures

- Arrivals
- Departures

Hourly construction lorries movements

- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6 - 7
- 7 - 8
- 8 - 9
- 9 - 10
- 10 - 11
- 11 - 12
- 12 - 13
- 13 - 14
- 14 - 15
- > 15

Note: Construction vehicle flows include all Thames Tideway Tunnel sites on this network during this period.

FOR INFORMATION

Location

Hammersmith Pumping Station
London Borough of Hammersmith & Fulham

Document Information

Transport Assessment
Hourly Construction Lorry Movements -
Site Year 1 of Construction

Figure 5.5.1

1PL03-TT-50889

Thames Tideway Tunnel
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Thames Water

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