Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Transport Assessment

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Cremorne Wharf Depot

Main Report

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Thames Tideway Tunnel

Creating a cleaner, healthier River Thames

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Thames Tideway Tunnel

Transport Assessment

Section 12: Cremorne Wharf Depot

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12.1 Introduction

12.1.1 This site-specific *Transport Assessment (TA)* presents the findings of the assessment of the transport issues of the Thames Tideway Tunnel project at the Cremorne Wharf Depot site located within the Royal Borough (RB) of Kensington and Chelsea.

12.1.2 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.

12.1.3 The site is located behind the existing Thames Water Lots Road Pumping Station adjacent to Chelsea Wharf and Lots Road power station sites.

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

12.1.5 The *TA* draws on a number of project-wide or common 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*.

12.1.6 The *TA* structure is as follows:

a. Section 12.2 includes a description of the proposed development. This details construction phasing, vehicle and person trip generation and construction traffic routing. It also provides details on transport during the operational phase

b. Section 12.3 outlines the assessment methodology used for the *TA* for the construction and operational phases

c. Section 12.4 details the baseline conditions on the transport network surrounding the site, including survey data analysis and accident analysis

d. Section 12.5 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 12.6 provides the assessment of the operational phase of the project

f. Section 12.7 summarises the *TA* findings.

12.2 Proposed development

12.2.1 The proposed development site is located in the RB of Kensington and Chelsea. It comprises a council depot, the safeguarded Cremorne Wharf and the Thames Water Lots Road Pumping Station. Figure 12.2.1 in the Cremorne Wharf Depot *Transport Assessment* figures shows the Cremorne Wharf Depot site location.

12.2.2 The site is bounded to the north by Chelsea Wharf (which consists of mixed commercial and residential use), to the east by the River Thames, to the south by the Circadian development (Lots Road Power Station) site, and to the west by Lots Road.

12.2.3 The Thames Path runs to the northwest of the site along Lots Road. Existing access to the site is from Lots Road through the depot entrance, with a separate exit to the southwest of Lots Road Pumping Station. Fulham Broadway London Underground station is 1.3km to the northwest, and Imperial Wharf station is 640m to the southwest, providing both London Overground and National Rail services.

12.2.4 The development at Cremorne Wharf Depot would link the existing Lots Road Pumping Station CSO outlet to the Thames Tideway Tunnel via a CSO drop shaft and a connection tunnel.

Construction

12.2.5 The construction site would be located behind the existing Thames Water Lots Road Pumping Station adjacent to Chelsea Wharf and Lots Road Power Station sites.

12.2.6 Construction at the Cremorne Wharf Depot site is anticipated to last for three years. There would be two phases of construction at the Cremorne Wharf Depot site: phase 1 - covering site set-up, shaft construction and tunnelling, and phase 2 - construction of other structures. The access plan and highway layout during construction plans in the Cremorne Wharf Depot *Transport Assessment* figures present the highway layout during construction. One construction highway layout plan applies for both phases of construction.

12.2.7 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 12 Appendix E.

12.2.8 The Thames Path runs to the northwest of the site along the southern footway of Lots Road. The southern footway on Lots Road would only be closed to pedestrians to construct the crossovers for access to the site; otherwise, it would remain open and unobstructed. However, pedestrians would have to cross the site access points where appropriate measures would be taken to ensure pedestrian safety.

12.2.9 Vehicle access to and from the site would take place from Lots Road. Vehicles would approach and leave the site via the junction of Lots Road / Cremorne Road/Cheyne Walk (A3220) which forms part of the Transport for London Road Network (TLRN).

12.2.10 During construction a one way system in and out of the site would be operated. There would be separate gated access and egress points and construction traffic would turn left into and right out of the site from the northeastern section of Lots Road.

12.2.11 During construction the available carriageway width on Lots Road, adjacent to the Cremorne Wharf Depot site, would be increased by the temporary restriction of two pay and display parking bays and three resident parking bays and the relocation of a blue badge holder parking bay. These restrictions would be required to enable two HGVs to pass each other in Lots Road. At the beginning of construction, the existing access and egress points to the Lots Road Pumping Station would be widened to accommodate 16.5m articulated vehicles turning into and out of the site.

12.2.12 During construction, shaft and other excavated material (export) would be transported by barge and all other material by road. For the *TA* it has been assumed that 90% of these materials are taken by river. This allows for periods when the river is unavailable and material unsuitable for river transport. All other materials would be transported by road.

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

12.2.14 Construction details for the site relevant to the construction transport assessment are summarised in the Table 12.2.1.

Table 12.2.1 Construction traffic 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) and duration	24 movements per day (12 vehicle trips) For one month
Assumed peak period of construction barge movements	Site Year 1 of construction
Assumed average peak daily construction barge movements (in Site Year 1 of construction)	2 movements per day (1 barge trip)
Typical types of lorry requiring access (comprising rigid-bodies, flatbed and articulated vehicles)	Excavated material lorries Plant and equipment deliveries Imported fill lorries Ready mix concrete lorries Office/general delivery lorries

Description	Assumption
	Rebar lorries Temporary construction material lorries including pipe/track/oils/greases lorries Shaft precast concrete lining 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

12.2.15 Figure 12.2.2 in the Cremorne Wharf Depot *Transport Assessment* figures shows the construction routes for the Cremorne Wharf Depot site. These have been discussed with both Transport for London (TfL) and the Local Highway Authority.

12.2.16 The site is located on Lots Road and is approximately 150m west of the junction with Cremorne Road/Cheyne Walk (A3220), which are part of the TLRN. The main junctions along the construction traffic routes are:

a. King's Road (A3217) / Edith Grove (A308)

b. King's Road (A3217) / Ashburnham Road (A3220) / Gunter Grove (A3220)

c. Fulham Road (A308) / Edith Grove (A308)

d. Fulham Road (A308) / Gunter Grove (A3220) / Finborough Road (A3220)

e. New King's Road (A308) / Wandsworth Bridge Road (A217).

12.2.17 During all phases of construction at Cremorne Wharf Depot construction vehicles would use Cremorne Road (A3220) and would turn right at the junction of Cheyne Walk (A3220) / Cremorne Road (A3220) / Lots Road into Lots Road.

12.2.18 Vehicles leaving the site would either travel northwest along Finborough Road (A3220) or Redcliffe Gardens (A3220) to and from West Cromwell Road (A4) or to the west along King's Road (A308) and Wandsworth Bridge Road (A217).

12.2.19 Vehicles would use the existing gated access and egress points for the Lots Road Pumping Station. Vehicle access would be arranged on a left-turn in / right- turn out basis.

12.2.20 The exact routing of construction traffic depends on the origins and destinations of construction materials which are shown indicatively in the *Project-wide TA* (contained within Section 3).

Proposed construction flows

Construction vehicles and barges

12.2.21 Vehicle movements would take place during the standard day shift of ten and a half hours on weekdays (08:00 to 18:30) and five and a half hours

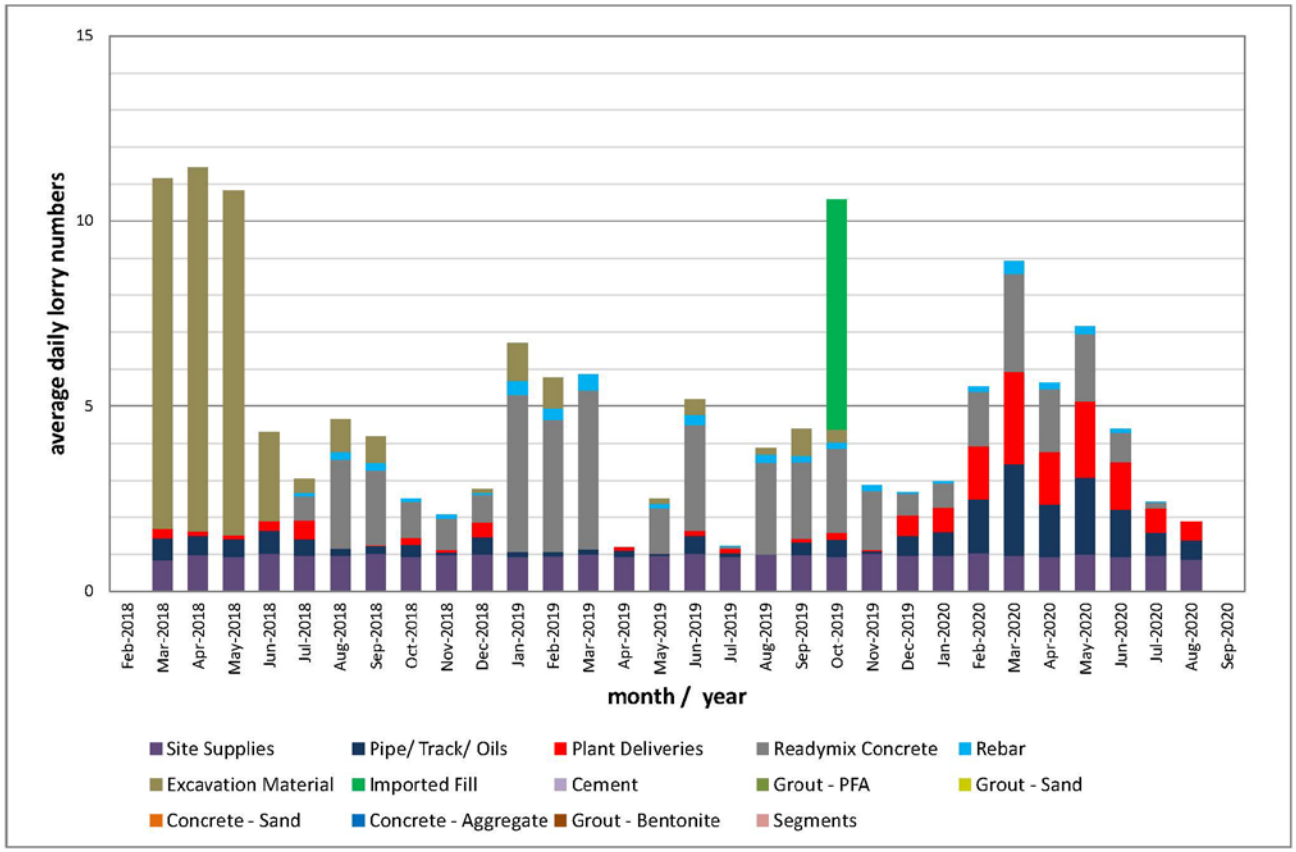
on Saturdays (08:00 to 13:30). It would only be in exceptional circumstances that HGV and abnormal load movements could occur up to 22:00 on weekdays for large concrete pours and later at night on agreement with RB of Kensington and Chelsea.

12.2.22 A site-specific peak construction assessment year has been identified. The histograms in Plate 12.2.1 and Plate 12.2.2 show that the peak site-specific activity at the Cremorne Wharf Depot site for construction lorries and construction barges would occur in Site Year 1 of construction.

12.2.23 This *TA* assesses these site-specific peak construction years. As detailed in Table 12.2.1, there would be an estimated 24 average peak daily construction lorry vehicle movements in the peak month of this peak year and Plate 12.2.1 shows how the number of vehicular movements would vary through the construction period. Plate 12.2.2 indicates the variation in the number of construction barge movements during construction.

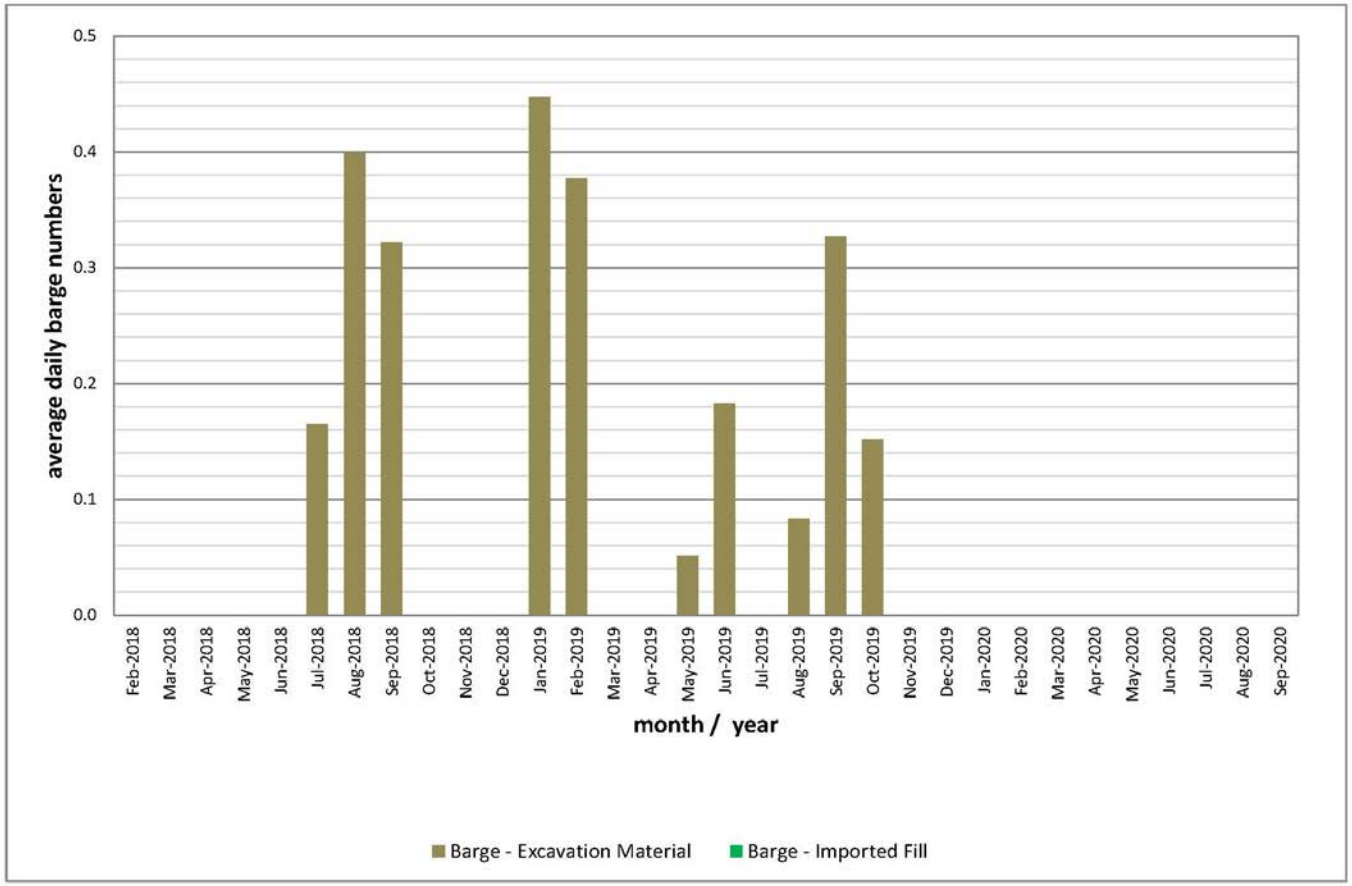
12.2.24 The assessment has been based on 10% of the daily number of lorry journeys occurring in the peak hours, which has been agreed with TfL as a reasonable approach. It is recognised that it may be desirable to reduce the number of construction lorry movements in peak hours and the mechanisms for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

Plate 12.2.1 Estimated construction lorry profile



Note: Plate 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.

Plate 12.2.2 Estimated construction barge profile



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

12.2.25 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.

12.2.26 The 07:00 to 09:00 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 12.4). Whilst the AM and PM peak hours 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.

12.2.27 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.

12.2.28 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 Cremorne Wharf Depot site are shown in Table 12.2.4.

Construction workers

12.2.29 The construction site is expected to require a maximum workforce of 65 workers on site at any one time. The number and type of workers is shown in Table 12.2.2.

Table 12.2.2 Maximum estimated construction worker numbers

Contractor		Client
Staff*	**Labour****	**Staff*****
08:00-18:00	**08:00-18:00**	**08:00-18:00**
30	25	10

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

12.2.30 The mode split outlined in Table 12.2.3 has been used to assess the changes as a result of the worker journeys on the highway and public transport networks. It has been derived using the 2001 Census[i] journey to work data for the area in the vicinity of the Cremorne Wharf Depot site. The Census data indicates that the predominant mode of travel for journeys to work in this area is public transport.

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

12.2.31 At this site there would be no parking provided within the site boundary for workers. As parking on surrounding streets would also be restricted, and measures to reduce car use would be incorporated into the site-specific *Travel Plan* (prepared by the contractor 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. It is therefore assumed that construction workers would access the site by other modes of transport and the Census mode shares have therefore been adjusted in Table 12.2.3 to reflect increased levels of non-car use by workers at this site. The assessment has been undertaken on this basis.

Table 12.2.3 Transport mode split

Mode	Percentage of trips to site	Equivalent number of worker trips (based on 65 worker trips)	
		AM peak hour (07:00-08:00)	PM peak hour (18:00-19:00)
Bus	20%	13	13
National Rail	14%	9	9
Underground	34%	22	22
Car driver	<1%*	0	0
Car passenger	<1%*	0	0
Cycle	9%	6	6
Walk	18%	12	12
River	1%	1	1
Other (taxi/motorcycle)	5%	3	3
Total	100%	65	65

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

12.2.32 As indicated in Table 12.2.3, it is assumed that the predominant mode of travel for journeys to work in this area is public transport and it is assumed that the primary public transport services used would be from Fulham Broadway London Underground station on Fulham Road (A304) and the bus stops on King's Road (A308), Beaufort Street, Gunter Grove (A3220), and Harbour Avenue.

Vehicle movements summary

12.2.33 The total anticipated number of construction-related vehicle movements in the peak month of activity at this site is set out in Table 12.2.4.

Table 12.2.4 Peak construction works vehicle movements

Vehicle type	Vehicle movements per time period				
	Total Daily	07:00 to 08:00	08:00 to 09:00	17:00 to 18:00	18:00 to 19:00
Construction lorry vehicle movements 10%*	24	0	2	2	0
Other construction vehicle movements**	36	4	4	4	4
Worker vehicle movements***	nominal	0	0	0	0
Total	**60**	**4**	**6**	**6**	**4**

** The assessment has been 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.*

12.2.34 An average peak flow of 60 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.

12.2.35 Table 12.2.4 shows that in the AM and PM peak hours, the Cremorne Wharf Depot site would generate approximately six vehicle movements.

Code of Construction Practice

12.2.36 Measures incorporated into the *Code of Construction Practice (CoCP)*[ii] *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

c. site specific *River Transport Management Plans (RTMP)* are to be produced for each relevant worksite. As with the TMP's this would set out how river access to site would be managed so as to minimise

[ii] The *Code of Construction Practice (CoCP)* is provided in Vol 1 Appendix A. It contains general requirements (Part A), and site specific requirements for this site (Part B).

impact on the river and communicate this with the PLA, local borough and other stakeholders.

12.2.37 In addition to the above general transport measures within the *CoCP Part A*, the following transport measures have been incorporated into the *CoCP Part B* (Section 5) relating to the Cremorne Wharf Depot site:

a. a one way system in and out of the site would operate. The access would be from the east end of the site and egress from the west

b. the eastern site access would be left turn in only and the western site access would be right turn out only

c. where practical HGVs would access and egress the site between 09:30 and 15:00 to avoid school traffic outside these hours

d. all vehicles would access and egress the site from Cremorne Road (A3220) and Lots Road junction from the east

e. temporary restriction of five parking bays on Lots Road

f. the southern footway on Lots Road would only be closed to construct the crossovers for access, otherwise it would remain open and unobstructed.

12.2.38 The effective implementation of the *CoCP Part A and Part B* measures is assumed within the assessment.

12.2.39 Based on current travel planning guidance including TfL's Travel planning for new development in London[1], this development falls 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[2]; this is submitted as part of the application documentation. 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 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:

a. information on existing transport networks and travel initiatives for the Cremorne Wharf Depot site

b. a mode split established for the Cremorne Wharf Depot 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 with assigned responsibility for managing the *Travel Plan* monitoring and action plans specifically for this site.

Other measures during construction

12.2.40 Embedded design measures which are not outlined in the *CoCP* but are of relevance to the transport assessment at the Cremorne Wharf Depot site include modification to the existing access and egress points at Lots Road

Pumping Station to enable articulated HGV movements to take place into and out of the site.

Operation

12.2.41 For the operational phase, the on-street parking bays along Lots Road would be reinstated to the baseline situation.

12.2.42 Once the Thames Tideway Tunnel is operational it is not expected that there would be any significant changes to 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 issues considered during the operational phase are those affecting highway layout and operation.

12.2.43 These elements have been considered qualitatively because the changes required to the highway network during maintenance activity would be minor and temporary meaning that a quantitative assessment is not required. The scope of this analysis has been discussed with RB of Kensington and Chelsea and TfL.

12.2.44 Given the level of transport activity associated with the Thames Tideway Tunnel project during the operational phase, only the localised transport effects around the Cremorne Wharf Depot site are assessed. Other Thames Tideway Tunnel sites would not affect the area around the site in the operational phase and therefore they have not been considered in the assessment.

12.2.45 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 mobile cranes and associated support vehicles to be brought to the site. The cranes would facilitate lowering and recovery of tunnel inspection vehicles and to provide duty/standby access for personnel.

12.2.46 During operation, the site would be accessed via Lots Road and maintenance vehicles would approach the site from the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction. The permanent highway layout plan in the Cremorne Wharf Depot *Transport Assessment* figures shows the highway layout during the operational phase at Cremorne Wharf Depot.

12.3 Assessment methodology

Engagement

12.3.1 An extensive scoping and technical engagement process has been undertaken. All consultee comments relevant to this site are presented in Volume 12 of the *Environmental Statement.* .

12.3.2 Whilst the effects 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

12.3.3 Throughout the scoping and technical engagement process, the key stakeholders with regards to transport, primarily TfL and the relevant local authority for each site, have been consulted. For Cremorne Wharf Depot, RB of Kensington and Chelsea has been consulted and the comments which have arisen relating directly to Cremorne Wharf Depot have been recorded and responded to accordingly.

12.3.4 The key technical issues raised have been addressed as far as practical at this stage within this *TA*, the *Project-wide TA*, and the *Environmental Statement*, in consultation with both TfL and RB of Kensington and Chelsea.

12.3.5 The key issues arising from the stakeholder engagement are:

a. the *TMP* should set out how pedestrians and cyclists on Lots Road would be protected from construction traffic

b. confirmation of the number of the number of daily lorry movements is sought

c. consideration should be given to limiting construction vehicle movements in peak hours

d. the need to ensure that the construction activity does not impede the operation of the TLRN or the Strategic Road Network (SRN) including Cheyne Walk (A3220)

e. swept path analysis should be undertaken to demonstrate that construction vehicles can use the junction of Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road safely

f. reasonable use should be made of river transportation to reduce traffic impacts on Lots Road and the wider network

g. the need for parking restrictions in proximity to the site entrance should be minimised

h. acknowledging that work on the development at the adjacent site/sites on Lots Road is scheduled to start prior to Thames Tideway Tunnel works

i. development at the adjacent sites on Lots Road includes a new bus route and new signal controlled junction and these should be considered

j. information on construction traffic associated with other Thames Tideway Tunnel sites should be provided

k. additional details and analyses of type of users involved in the accidents should be shown on a plan

l. Road Safety Audits should be carried out

m. justification should be provided of why some nearby junctions were not modelled

n. clarification of the basis for defining the year of construction is required

o. clarification of working hours assumed in the *TA* for the assessment is required

p. swept path analysis for vehicle access to the construction site and final operational site should be undertaken.

Construction

12.3.6 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.

12.3.7 The effect of all other Thames Tideway Tunnel project sites on the area surrounding the Cremorne Wharf Depot site has been taken into account within the assessment of the peak year of construction at this site.

Construction assessment area

12.3.8 The assessment area for the Cremorne Wharf Depot site includes the site accesses from Lots Road and the junction with Cremorne Road/Cheyne Walk (A3220) which is part of the TLRN.

12.3.9 Consideration has also been given to the potential impacts on pedestrian and cycle routes, including the Thames Path, and on bus services and rail or river services within 640m and 960m of the site respectively. 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).

12.3.10 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 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.

Construction assessment year

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

12.3.12 The site-specific peak construction traffic year at Cremorne Wharf Depot is Site Year 1 of construction.

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

Highway network modelling

12.3.14 The assessment for each site takes account of construction vehicle movements associated with Cremorne Wharf Depot, 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.

12.3.15 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.

12.3.16 The HAMs have been developed by TfL using GLA employment and population forecast set out in the London Plan[3]. As a result the assessment inherently takes into account a level of future growth and development across London.

12.3.17 For future year assessments for the Cremorne Wharf Depot site, the TfL Central London HAM (CLoHAM) 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 the routes in this area has been included in the CLoHAM scenarios.

12.3.18 Construction lorry, operational and worker vehicle trips (where relevant) associated with the project peak month were assigned to CLoHAM to create the scenarios for testing strategic highway impacts.

12.3.19 CLoHAM also provides factors for the increase in vehicle-kilometres in the borough between the CLoHAM model base and forecast years (2008/9 and 2021 respectively). The relevant growth factor for RBKC was applied to the traffic data collected in 2011 in the vicinity of the Cremorne Wharf Depot site to produce base case traffic flows for the purposes of local highway modelling.

12.3.20 Construction lorry, operational and worker vehicle movements (where relevant) associated with the Cremorne Wharf Depot site for the site-specific peak month were added to the 2021 base case flows to provide the development case flows for local modelling.

12.3.21 This approach provides a robust assessment case for local modelling as the baseline traffic has been projected 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.

Sensitivity testing

12.3.22 The ‘core’ assessment presented in the *TA* is based on the *Transport Strategy*. It examines the month(s) in which construction vehicle activity at this site would be greatest and uses the average daily number of construction lorry movements that would occur in that month. This is considered to be reasonable because it addresses:

a. the time at which construction vehicle movements would be greatest at this site and there would be longer periods when the number of vehicle movements would be lower

b. although there may be occasions in the peak month when the number of lorry movements in one day might exceed the average daily figure, these would be limited. The number of instances would be small in the context of the overall construction period at this site and would be offset by other times when the number of construction vehicle movements would be lower than the average daily figure for the peak month

c. if lorry movements are required outside the standard hours of 08:00 to 18:30, this would be agreed in advance with TfL and the local highway authority.

12.3.23 The need for sensitivity testing has been discussed with TfL. Such a test could be used to address:

a. variation in construction vehicle numbers around the average daily figure for the peak month

b. a lower level of river transport for construction materials (leading to an increased number of lorry movements)

c. changes in programme which might lead to construction activity peaking at different times and/or a greater coincidence of peaks at adjacent sites which could lead to higher construction lorry flows on the surrounding highway network.

12.3.24 As para. 12.3.22 explains, if construction vehicle numbers were to exceed the average daily figure for the peak month, this would be an infrequent occurrence and should be seen in the context that the assessment is based on the peak month of construction activity at each site, rather than a lower 'typical' month.

12.3.25 It is expected that river transport will be used for certain construction materials and this forms part of the *Transport Strategy*. It is therefore not likely that all materials would be moved by road at all sites. However, there is the possibility that river transport might not be available at a particular site or sites for short periods of time and this might be the result of temporary navigational constraints, local issues temporarily preventing access to the river, or wider issues restricting river movements to a number of sites (such as the closure of the Thames Barrier).

12.3.26 In practice the potential for increased coincidence of construction peaks between sites is limited because of the sequential nature of the construction activities required. Whilst it is possible that individual site peaks might change slightly, it is very unlikely that all sites would experience peak activity in the same period.

12.3.27 Although these events, if they were to arise, would be limited and short-term, it has been agreed with TfL that sensitivity testing would be undertaken within the *TA* to identify the potential impacts associated with such occurrences. It has also been agreed that for consistency, the test would be based on the number of construction lorry movements that would

be related to moving all construction materials by road. This has been assumed to act as a proxy for events of this nature and represents an upper bound on the level of construction traffic that could be expected.

Operation

12.3.28 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.

12.3.29 Given the level of transport activity associated with the Thames Tideway Tunnel project during the operational phase, only the localised transport issues around the Cremorne Wharf Depot site have been assessed. Other Thames Tideway Tunnel project sites would not affect the area around Cremorne Wharf Depot in the operational phase and therefore they have not been considered in the assessment.

Operational assessment area

12.3.30 The assessment area for the operational assessment remains the same as for the construction assessment as outlined in paras. 12.3.8 and 12.3.9.

Operational assessment year

12.3.31 The operational assessment year has been taken as Year 1 of operation which is the year in which it is assumed that the Thames Tideway Tunnel project would become operational. As the number of vehicle movements associated with the operational phase would be low, there is no requirement to assess any other year beyond that date.

12.4 Baseline

12.4.1 This section sets out the baseline conditions on the local transport network in the vicinity of the Cremorne Wharf Depot site in 2012, with the exception of the traffic survey data which was collected in 2011.

Policy review

12.4.2 The site is located within the Royal Borough of Kensington and Chelsea; the relevant national, regional, and local policy documents have been reviewed and included in Appendix A.

Existing land use

12.4.3 The site is located immediately adjacent to the existing Thames Water pumping station on Lots Road. It is located on the site of a former waste transfer station operated by RBKC, which has now ceased operations.

12.4.4 The site is on a residential street with the nearest residential units located approximately 10m to the northeast of the site at Chelsea Wharf.

Existing access

12.4.5 The site is accessible by vehicle from Lots Road using separate existing access and egress points. There is no public access to the site. These accesses were formerly used by vehicles entering and leaving the waste transfer station.

Pedestrian network and facilities

12.4.6 The key pedestrian network related to the Cremorne Wharf Depot site comprises:

a. Lots Road and Cheyne Walk (A3220) providing an east-west link between Cheyne Walk bus stop to the east and the site

b. Lots Road and Harbour Avenue providing a north-south link between Chelsea Harbour bus stop to the south and the site

c. Edith Grove (A308) and Ashburnham Road (A3220) providing a north-south link between Edith Grove / World's End and Gunter Grove bus stops to the north and the site

d. Fulham Road (A304) and Gunter Grove (A3220) providing east-west and north-south links respectively between Fulham Broadway Underground station to the northwest and the site.

12.4.7 The Thames Path and the London Strategic Walk network in the vicinity of the site are shown on Figure 12.4.1 in the Cremorne Wharf Depot *Transport Assessment* figures.

12.4.8 The Thames Path (a Public Right of Way) routes along the southern footway of Lots Road. The Thames Path continues to the east along Cheyne Walk (A3220) and Chelsea Embankment (A3212) and to the south along Chelsea Harbour Drive. Plate 12.4.1 shows the Thames Path on the southern footway of Lots Road.

Plate 12.4.1 Thames Path facing west along Lots Road

12.4.9 Lots Road provides an east-west link for pedestrians between Cremorne Road/Cheyne Walk (A3220) to the east and Harbour Avenue to the west. The northwestern section of Lots Road also provides a north-south link

between King's Road (A308) and Gunter Grove (A3220) to the north and Harbour Avenue to the south.

12.4.10 The northern footway on Lots Road passing the site is between 2.2m and 2.4m in width, and the southern footway is between 1.1m and 2.1m.

12.4.11 Traffic calming is provided to the south of the Lots Road / Harbour Avenue roundabout and to the north of the entrance to the car park on Harbour Avenue to improve safety for pedestrians along Lots Road.

12.4.12 Pedestrian crossing facilities are provided on the east and south sides of the junction of Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road. The crossing on Cremorne Road/Cheyne Walk (A3220) is a zebra crossing located approximately 2m east of the junction. The crossing on Lots Road is a pedestrian refuge island at the junction. This is shown in Plate 12.4.2.

Plate 12.4.2 Pedestrian crossing at Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction

12.4.13 Cremorne Road/Cheyne Walk (A3220) routes to the north of the site and has footways of approximately 2m to 3m wide on both sides of the road, providing a continuous east-west link for pedestrians between Ashburnham Road (A3220) to the west and Chelsea Embankment (A3212) to the east.

12.4.14 A zebra crossing is located at the junction of Cremorne Road (A3220) and Edith Grove (A3220) to aid north-south and east-west pedestrian movement.

Cycle network and facilities

12.4.15 The existing cycle network and facilities in the vicinity of the site are described below and shown on Figure 12.4.1 in the Cremorne Wharf Depot *Transport Assessment* figures.

12.4.16 The main cycle route within the area is National Cycle Network (NCN) Route 4 (traffic free through the central section) which routes through central London along Cremorne Road/Cheyne Walk (A3220) and Chelsea Embankment (A3212). NCN Route 4 continues along Lots Road on-street.

12.4.17 The Thames Path on the southern footway of Cremorne Road/Cheyne Walk (A3220) is a shared pedestrian / cycle route.

Barclays Cycle Superhighways

12.4.18 The closest Barclays Cycle Superhighway (CS) to the site is CS8 which routes from Westminster to Wandsworth, passing along Chelsea Bridge (A3216) and to the east along Grosvenor Road (A3212). The closest point of approach to the site is at Chelsea Bridge (A3216), approximately 2.4km to the east.

Barclays Cycle Hire Scheme

12.4.19 There are no Barclays Cycle Hire docking stations within the immediate vicinity of the site.

12.4.20 The closest docking station to the site is located on Limerston Street approximately1.1km walking distance to the northeast of the site.

Cycle parking

12.4.21 Four Sheffield cycle stands capable of accommodating up to eight cycles are located along Ashburnham Road (A3220) close to the junction with Tadema Road, approximately 370m to the northwest of the site. This is shown in Plate 12.4.3.

Plate 12.4.3 Cycle stands at Ashburnham Road (A3220) and Tadema Road junction

Public transport

Public Transport Accessibility Level

12.4.22 The Public Transport Accessibility Level (PTAL) of the site, calculated using TfL's approved PTAL methodology[4] (analysis is included in Appendix B).

12.4.23 The site has a PTAL rating of 3, rated as 'moderate' (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 which are shown in Figure 12.4.2 in the Cremorne Wharf Depot *Transport Assessment* figures.

Bus services

12.4.24 There are no bus routes passing the site on Lots Road. A total of eight daytime bus routes and four night bus routes operate within 640m walking distance of the site. These bus services form a comprehensive network, extending outwards in all directions from the site. Table 12.4.1 provides a summary of the bus services and their frequencies during the weekday peaks.

12.4.25 These bus routes operate from the following bus stops:

a. Edith Grove / World's End bus stop on King's Road (A308) – eastbound and westbound, 450m walking distance to the north

b. Cheyne Walk bus stop on Beaufort Street – eastbound and southbound, 630m walking distance to the northeast

c. Gunter Grove bus stop on Gunter Grove (A3220) – northbound only, 430m walking distance to the northwest

d. Chelsea Harbour bus stop on Harbour Avenue – northbound and southbound, 310m walking distance to the southwest

12.4.26 On average there are approximately 147 and 144 daytime bus services in total per hour in the AM and PM peak hours within a 640m walking distance of the site.

12.4.27 There are approximately 11 night-time bus services per hour Monday – Friday between 00:00 – 06:00 and a total of 11 night-time bus services per hour on Saturdays between 00:00 – 06:00 within a 640m walking distance of the site.

Table 12.4.1 Existing daytime weekday peak hour local bus services and frequencies (number of buses per hour)

Bus number	Origin - destination	Nearest bus stop to Cremorne Wharf Depot site	Approximate walking distance from Cremorne Wharf Depot site (m)	Weekday peak hour two-way frequencies	
				AM peak (08:00-09:00)	PM peak (17:00-18:00)
11	Fulham Town Hall – Liverpool Street Station	Edith Grove / World's End	450	22	21
19	Finsbury Park Interchange – Battersea Bridge	Cheyne Walk	630	18	18
22	Putney Common – Piccadilly Circus	Edith Grove / World's End	450	20	20
49	White City – Clapham Junction	Cheyne Walk	630	16	16
319	Sloane Square – Streatham Hill	Cheyne Walk	630	18	18
328	Golders Green – Limerston Street	Gunter Grove	430	19	19
345	South Kensington Station – Peckham bus station	Cheyne Walk	630	16	16
C3	Falcon Road – Warwick Road	Chelsea Harbour	310	18	16

Source: Transport for London (TfL) (2011) Timetables. Available at www.tfl.gov.uk (site last accessed December 2012)

London Underground

12.4.28 As shown in Figure 12.4.2 in the Cremorne Wharf Depot *Transport Assessment* figures, the closest London Underground station to the site is Fulham Broadway, located approximately 1.3km walking distance to the northwest of the site and served by the District Line.

12.4.29 Trains from this station travel north to Earls Court and Edgware Road, east to Upminster, south to Wimbledon, and west to Ealing Broadway and Richmond for interchange with National Rail services.

12.4.30 Currently in the AM and PM peak hours the frequency of the District Line trains at Fulham Broadway is approximately one every four minutes providing 15 services per hour in each direction.

12.4.31 On average there are approximately 30 underground services in total during each of the AM and PM peak hours from Fulham Broadway station.

12.4.32 Table 12.4.2 provides a summary of both London Underground and London Overground services and their frequencies during the weekday peaks.

London Overground

12.4.33 Imperial Wharf station is located approximately 640m walking distance to the west of the site. Imperial Wharf station is served by the London Overground route to Clapham Junction to the south and Stratford to the east. In the AM and PM peak hours there are approximately five and seven trains per hour respectively towards Clapham Junction, and seven and six trains per hour respectively towards Stratford.

12.4.34 On average there are therefore 12 and 13 London Overground services in total during the AM and PM peak hours respectively within a 960m walking distance of the site.

National Rail

12.4.35 The closest station to the site that provides National Rail services is also Imperial Wharf. The station provides access to Southern services to and from Milton Keynes, East Croydon and South Croydon.

12.4.36 In the AM peak hour there are approximately three services and in the PM peak hour there are approximately two services.

12.4.37 Table 12.4.3 summarises the National Rail services and frequencies during the weekday peaks.

Table 12.4.2 Existing London Underground and London Overground weekday peak hour services and frequencies (number of services per hour)

Line	Origin - destination	Approximate walking distance from Cremorne Wharf Depot site (m)	Weekday peak hour two-way frequencies	
			AM peak (08:00-09:00)	PM peak (17:00-18:00)
District Line	Edgware Road, Ealing Broadway, Richmond, Wimbledon, Kensington (Olympia) – Upminster	1,300	30	30
London Overground	Stratford – Richmond/Clapham Junction	640	12	13

Source: Transport for London (TfL) (2012) Timetables. Available at www.tfl.gov.uk (site last accessed December 2012)

Table 12.4.3 Existing National Rail weekday peak hour services and frequencies (number of services per hour)

National Rail station	Origin - destination	Approximate walking distance from Cremorne Wharf Depot site (m)	Weekday peak hour two-way frequency	
			AM peak (08:00-09:00)	PM peak (17:00-18:00)
Imperial Wharf	Milton Keynes, South Croydon, East Croydon	640	3	2

Source: Railplanner information and timetables: www.nationalrail,co,uk (site last accessed December 2012)

River passenger services

12.4.38 Cremorne Wharf Depot is approximately 800m to the northeast of Chelsea Harbour Pier which is served by the TfL River Bus. The River Bus runs from Putney Pier in the west to Blackfriars Millennium Pier in the northeast, calling at Wandsworth Riverside Quarter Pier, Chelsea Harbour Pier, Cadogan Pier and Embankment Pier. Onward connections can be made at Blackfriars Millennium Pier for eastbound services as far as Woolwich Arsenal.

12.4.39 Chelsea Harbour Pier is only served during Monday to Friday peak hours. The eastbound River Bus service begins at 06:35 from Chelsea Harbour Pier with the last morning service departing at 09:05. In total, there are six services in the morning with a frequency of approximately 25 to 45 minutes. In the evening, there are two services from the pier at 16:45 and 18:20.

12.4.40 There is no westbound River Bus service beyond Chelsea Harbour Pier in the morning peak. The first service arrives at the pier at 07:20 with the latest morning service arriving at 10:00. In total, there are four morning services arriving at the pier with a frequency of 55 minutes. In the evening, there are three services from the pier at 17:45, 19:00 and 19:35. Services do not run outside the peak hours or at weekends.

12.4.41 TfL River Tours do not serve Chelsea Harbour Pier.

12.4.42 The frequency distribution of the services that stop at the Chelsea Harbour Pier is shown in Table 12.4.4. The peak hour for services stopping at the pier is between 08:00 to 09:00, Monday to Friday with three services using the pier.

River navigation and access

12.4.43 There are no active cargo handling wharves in the immediate vicinity of the Cremorne Wharf Depot site.

12.4.44 An analysis has been made of the typical volume of river vessel traffic passing the Cremorne Wharf Depot site, based on published river passenger service timetables and estimates of freight traffic based on discussions with operators.

12.4.45 It is estimated that the peak hour is between14:00 and 15:00, Monday to Friday. During this hour about 18 vessels are estimated to pass the site. This figure is not constant as freight vessel transit patterns, which are included in the traffic, are influenced by the rising and falling tide. Therefore, such a peak will only occur every ten to 12 days when the tide is at its highest. Table 12.4.5 shows the estimated passing traffic rate.

Table 12.4.4 Chelsea Harbour Pier weekday peak hour services and frequencies (number of services per hour)

River service	Origin - destination	Approximate walking distance from Cremorne Wharf Depot site (m)	Weekday peak hour two-way frequency	
			AM peak (08:00-09:00)	PM peak (17:00-18:00)
Thames Executive Charters	Putney – Blackfriars Millennium	800	3	1
Complete Pleasure Boats Ltd	Putney – Blackfriars Millennium	800	1	1

Source: Transport for London (TfL) (2012) Timetables. Available at www.tfl.gov.uk (site last accessed December 2012)

Table 12.4.5 Aggregated typical river movement frequencies (number of passing craft per hour)

	06:00 – 07:00	07:00 – 08:00	08:00 – 09:00	9:00 – 10:00	10:00 – 11:00	11:00 – 12:00	12:00 – 13:00	13:00 – 14:00	14:00 – 15:00	15:00 – 16:00	16:00 – 17:00	17:00 – 18:00	18:00 – 19:00	19:00 – 20:00	20:00 – 21:00	21:00 – 22:00	22:00 – 23:00	23:00 – 00:00
Cremorne Wharf Depot site	1	3	3	3	2	1	1	3	18	2	3	8	2	2	0	0	0	0

Source: http://www.tfl.gov.uk/modalpages/2648.aspx and consultation with aggregates companies, West London Waste Authority, barge operators, Port of London Authority

Taxis

12.4.46 Taxis (black cabs) can either be booked in advance or hailed on the street or from designated taxi ranks. The nearest taxi rank to the site is located on King's Road (A308) with one taxi space, approximately 960m walking distance to the northeast of the site.

Highway network and operation

12.4.47 The site is located on Lots Road to the west of the junction with Cremorne Road/Cheyne Walk (A3220) as shown in Figure 12.2.1 in the Cremorne Wharf Depot *Transport Assessment* figures. Cremorne Road/Cheyne Walk (A3220) forms part of the TLRN. Lots Road and Cremorne Road (A3220) would be used by the construction vehicles to travel to and from the Cremorne Wharf Depot site.

12.4.48 Lots Road meets Cremorne Road/Cheyne Walk (A3220) at a priority T-junction and is divided into an approach and an exit lane by a pedestrian refuge island. All construction vehicles would approach the site via this junction.

12.4.49 Cremorne Road (A3220) is a single carriageway with a 30mph speed limit and no weight restrictions. The road leads to Ashburnham Road (A3220) to the north before becoming Gunter Grove (A3220) as it continues northwards, and to the south it leads to Cheyne Walk (A3220).

12.4.50 Cremorne Road (A3220) between the junction with Lots Road and the junction with Edith Grove (A3220) is a two-way single carriageway which runs northwest-southeast to the northeast of the site.

12.4.51 From the junction with Edith Grove (A3220) to the junction with Ashburnham Road (A3220), Cremorne Road (A3220) is one-way in the northbound direction only, leading into Gunter Grove (A3220).

12.4.52 Ashburnham Road (A3220) which runs to the north of Cremorne Road (A3220) would also be used by project construction vehicles. This is a one-way road (northbound) with two lanes which leads to Kings Road (A308) and Gunter Grove (A3220) to the north. Ashburnham Road (A3220) is also part of the TLRN.

12.4.53 Edith Grove (A3220) would be used by the construction vehicles to access the site. The road runs to the north of the site and is a one-way road in the southbound direction with two lanes which forms part of the TLRN. The road links to Cremorne Road (A3220) to the south and King's Road (A308) to the north.

12.4.54 Cheyne Walk (A3220) is part of the TLRN and is located to the east of the junction with Cremorne Road (A3220) and Lots Road. Cheyne Walk (A3220) is a two-way single carriageway road with a 30mph speed limit and no weight restrictions. The road leads to Chelsea Embankment (A3212) to the east and Cremorne Road (A3220) to the west. Cheyne Walk (A3220) would not be used by the construction vehicles to travel to and from the Cremorne Wharf Depot site; however, this road would be used by some construction traffic associated with other Thames Tideway Tunnel project sites.

12.4.55 To the west Lots Road links to Harbour Avenue and the northwestern section of Lots Road at a mini-roundabout. To the north, Lots Road leads to King's Road (A308) which is part of the SRN. Lots Road is a two-way road with car parking bays on both sides and at certain places the effective road width reduces to approximately 3.7m. The speed limit on the road is 30mph and no weight restrictions apply.

12.4.56 Local highway modelling has been undertaken to determine the operation of the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction in the baseline situation. This is discussed in paras. 12.4.99-12.4.107.

Parking

12.4.57 Figure 12.4.3 in the Cremorne Wharf Depot *Transport Assessment* figures shows the locations of the existing car parks and car club spaces within the vicinity of the site. The existing off-street/private car parking and car clubs parking spaces are also shown in this figure.

Existing on-street car and motorcycle parking

12.4.58 There are approximately 58 resident permit holder parking spaces available on Lots Road.

12.4.59 On-street parking bays are also provided along the adjacent streets such as Upcerne Road, Uverdale Road, Tadema Road, Tetcott Road, Ashburnham Road, Burnaby Street, Stadium Street and Thorndike Road. The total number of residential parking bays available in these streets, including Lots Road is approximately 426.

12.4.60 All residential parking bays are restricted to permit holders only between 08:30 to 22:00 Monday to Friday and 08:30 to 18:30 on Saturday.

12.4.61 In addition to the residents' parking bays, there are 108 pay and display spaces provided along Lots Road and the adjacent streets. 71 of these pay and display bays are located on Lots Road. The restricted hours for all the pay and display bays are 08:30 to 18:30 Monday to Saturday. The charges for parking are £3 per hour, with a maximum stay of four hours.

12.4.62 A total of seven blue badge holders parking bays are provided on Ashburnham Road, Burnaby Street, Lots Road, Stadium Street and Tetcott Road. Two of these blue badge parking bays are on Lots Road (one space at either end of the road). The bays are restricted between 08:30 to 18:30, Monday to Saturday.

12.4.63 Motorcycle parking bays are located on Lots Road, Tadema Road, Stadium Street and Thorndike Road. They can accommodate approximately 35 motorcycles in total.

12.4.64 Table 12.4.6 summarises the existing parking restrictions and the number of bays on the roads in the vicinity of the site. The availability and usage of parking capacity on a weekday and a Saturday on the roads in the vicinity of the site is summarised later in this section in Table 12.4.11.

Table 12.4.6 Existing on-street car parking in the vicinity of Cremorne Wharf Depot site

Road name	Type of parking and number of bays				
	Pay and display	Resident	Blue badge	Unrestricted	Short-term*
Ashburnham Road	0	22	1	0	0
Burnaby Street	11	62	2	0	0
Lots Road	71	58	2	0	0
Stadium Street	0	56	1	0	0
Tadema Road	4	56	0	0	0
Tetcott Road	10	31	1	0	0
Thorndike Road	0	30	0	0	0
Upcerne Road	5	42	0	0	0
Uverdale Road	7	69	0	0	0

**The maximum stay for short-term parking bays is 20 minutes.*

Existing off-street/private car parking

12.4.65 The nearest public off-street car park to the site is approximately 310m walking distance to the north of the site on Edith Grove (A3220) and can accommodate 192 cars. This 24 hour car park is open Monday to Friday and managed by LCP Parking Services. The charges are as set out in Table 12.4.7.

Table 12.4.7 Edith Grove private car parking charges

Duration	Charge
Up to 1 hour	£3.00
Up to 24 hour	£25.00
Overnight	£10.00
Weekly	£100.00

Coach parking

12.4.66 There are no coach parking spaces within 640m walking distance of the site.

Car clubs

12.4.67 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.

12.4.68 The closest car club parking space to the site is operated by City Car Club and is approximately 210m walking distance to the west on Burnaby Street, where a single car space is provided.

12.4.69 There are two car club spaces operated by Zip Car on Lots Road. The first is approximately 350m walking distance to the northeast to the south of the junction with Cremorne Road (A3220) and Cheyne Walk (A3220), and the second is approximately 540m walking distance to the northwest, just south of the junction with King's Road (A308).

Servicing and deliveries

12.4.70 A loading / blue badge parking bay is located approximately 300m walking distance from the site on Cremorne Road (A3220) to the north of the junction with Ashburnham Road.

12.4.71 A further four bays that can provide parking for blue badge vehicles or for loading / unloading are situated approximately 350m walking distance east of the site on Cheyne Walk (A3220).

12.4.72 A further loading bay is located approximately 450m walking distance to the east of the site on Cheyne Walk (A3220) to the west of the junction with Milman's Street.

12.4.73 The maximum stay for all loading bays is 20 minutes.

Baseline survey data

Description of data

12.4.74 Junction movement data for the Lots Road / Chelsea Harbour Drive mini-roundabout were obtained from TfL. Data have been analysed to validate the traffic surveys undertaken in 2011 for the project which are discussed in further detail in paras. 12.4.91 and 12.4.93.

12.4.75 Baseline survey data were collected in May, July, and September 2011 to establish the existing transport movements and usage of parking in the area. 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. Figure 12.4.4 in the Cremorne Wharf Depot *Transport Assessment* figures indicates the survey locations in the vicinity of the site.

12.4.76 As part of surveys in May and July 2011, manual and automated traffic surveys were undertaken to establish specific traffic, pedestrian and cycle movements including turning volumes, queue lengths and traffic signal timings. Parking surveys were undertaken to establish the availability and usage of parking in the vicinity of the site. Further pedestrian and cycle movement surveys were conducted in September 2011 to establish the summer usage of Thames Path along Lots Road and the zebra crossing to the east of Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction. As indicated in para. 12.4.75, the busiest survey data, which were in September 2011, are shown in Table 12.4.9.

12.4.77 The scope of the surveys in terms of location and time periods was considered to ensure that the data required for assessment was collected.

In some cases ATC data was collected on links to validate the junction count data and provide information for noise and air quality assessments. Pedestrian and cycle count data was collected at locations where flows could be affected by pedestrian and cycle diversions during construction, the generation of additional trips or where conflicts could occur with construction vehicles. Parking survey data was collected where it was possible that parking restrictions would be necessary or where additional parking demand might be generated by the proposed development.

12.4.78 The *Baseline Data Report* presents the method for field survey data collection and data collected through other sources which is an appendix to the *Project-wide TA*.

12.4.79 The surveys undertaken and their locations are summarised in Table 12.4.8.

Table 12.4.8 Survey types and locations

Survey type and location	Date
Junction survey (including pedestrian and cycle movements)	
King's Road (A308) / Gunter Grove (A3220) / Ashburnham Road (A3220)	12 and 14 May 2011
King's Road (A3217) / Edith Grove (A3220)	
Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road	
Beaufort Street / Chelsea Embankment (A3212) / Battersea Bridge (A3220) / Cheyne Walk (A3220)	
Beaufort Street / King's Road (A3217)	2 and 5 July 2011
Pedestrian and cycle surveys	
Thames Path on Lots Road to the west of the junction with Cremorne Road (A3220) and Cheyne Walk (A3220)	12 and 14 May, and 1 and 3 September 2011
Zebra crossing to the east of Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction	
Parking surveys	
Lots Road	9 and 11 June 2011
Tetcott Road	
Upcerne Road	
Burnaby Street	
Uverdale Road	
Tadema Road	
Ashburnham Road	
Stadium Street	
Thorndike Road	

12.4.80 The following junction surveys are on construction traffic routes to and from the Cremorne Wharf Depot site:

a. junction survey at Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road

b. junction survey at King's Road (A308) / Gunter Grove (A3220) / Ashburnham Road (A3220)

c. junction survey at King's Road (A3217) / Edith Grove (A3220)

Results of the surveys

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

Pedestrians

12.4.82 Table 12.4.9 indicates the pedestrian flows surrounding the site during the AM, inter-peak, PM and weekend peak hours.

12.4.83 Pedestrian surveys surrounding the site indicate that there are pedestrian flows of 62 and 72 during the AM and PM peak hours respectively along Lots Road in the northeast direction. In the southwest direction, the flows are 67 and 44 pedestrians in the AM and PM peak hours.

12.4.84 53 and 59 pedestrians use the zebra crossing to the east of the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction northbound in the AM and PM peak hours respectively. In the southbound direction the flow is balanced with 32 and 34 pedestrians in the AM and PM peak hours respectively.

Cyclists

12.4.85 Cycle surveys around the site show the existing usage of cycle routes surrounding Cremorne Wharf Depot. Table 12.4.10 indicates the flows of bicycles along the main routes surrounding the site.

12.4.86 Table 12.4.10 indicates that during the AM peak, the predominant flow of cyclists is along the eastbound carriageway of Cremorne Road (A3220) with 243 cyclists travelling eastbound and 79 travelling westbound. During the PM peak the flow of cyclists along Cremorne Road (A3220) is lower overall but less tidal, with 159 eastbound and 132 westbound cyclists.

12.4.87 Lots Road experiences lower cycle flows during the AM and PM peak hours, with predominant eastbound flows in the AM peak hour and westbound flows in the PM peak hour of around 51 to 56 cyclists.

Table 12.4.9 Existing pedestrian flows

Pedestrian crossing	Direction	Weekday			Weekend
		AM peak hour (08:00-09:00)	Inter-peak hour (12:00-13:00)	PM peak hour (17:00-18:00)	Saturday peak hour (13:00-14:00)
Thames Path on Lots Road	Northeast bound	62	30	72	24
	Southwest bound	67	36	44	26
Zebra crossing to the to the east of Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction	Northbound	53	30	59	7
	Southbound	32	19	34	19

Table 12.4.10 Existing cycle flows

Road/route	Direction	Weekday			Weekend
		AM peak hour (08:00-09:00)	Inter-peak hour (12:00-13:00)	PM peak hour (17:00-18:00)	Saturday peak hour (13:00-14:00)
Lots Road	Northeast bound	51	8	22	10
Lots Road	Southwest bound	27	1	56	18
Cremorne Road (A3220)	Eastbound	243	12	79	20
Cremorne Road (A3220)	Westbound	159	12	132	25

Traffic flows

12.4.88 The traffic flows for the junction of Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road in the AM and PM peak hours are shown in Figure 12.4.5 and Figure 12.4.6 in the Cremorne Wharf Depot *Transport Assessment* figures respectively.

12.4.89 The junction surveys for the junction of Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road indicate that there is a total traffic flow of 2,063 and 2,130 vehicles in the AM and PM peak hours respectively using this junction with a predominant traffic flow between Cheyne Walk (A3220) and Cremorne Road (A3220).

12.4.90 During the AM and PM peak hours there is a two-way flow of approximately 338 and 380 vehicles respectively along Lots Road with a predominant eastbound flow of 249 vehicles in the AM peak hour (with 89 vehicles in the westbound direction) and a predominant westbound flow of 230 vehicles during the PM peak hour (with 146 vehicles in the eastbound direction).

12.4.91 The junction survey data for the Lots Road / Chelsea Harbour Drive mini-roundabout sourced from TfL was undertaken in March 2009. The baseline traffic flow diagrams in Figures 12.4.7 and 12.4.8 in the Cremorne Wharf Depot *Transport Assessment* figures indicate the AM and PM peak hour traffic flows for this mini-roundabout.

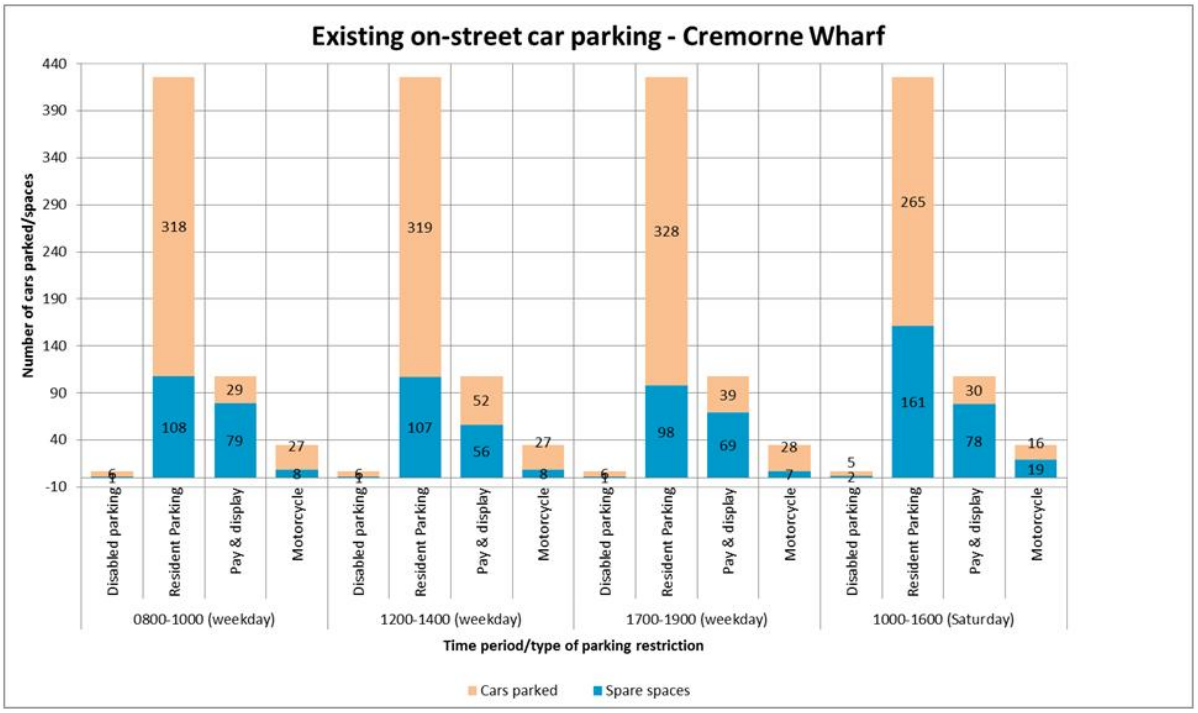
12.4.92 The TfL data for the Lots Road / Chelsea Harbour Drive mini-roundabout indicate that there is a total traffic flow of 775 and 623 vehicles in the AM and PM peak hours respectively using the mini-roundabout with a predominant traffic flow of 360 vehicles from Chelsea Harbour Drive to Lots Road (eastbound) in the AM peak hour.

12.4.93 During the AM and PM peak hours there is a two-way flow of approximately 514 and 360 vehicles along Lots Road respectively. Comparison of the 2011 junction survey against the TfL junction survey data shows that the traffic flow along Lots Road recorded in the 2011 data is slightly lower, but of a similar order of magnitude, to the traffic flow obtained from the TfL information.

Parking

12.4.94 Plate 12.4.4 shows a histogram of the car and motorcycle parking survey availability and usage in the area surrounding Cremorne Wharf Depot during the AM, inter-peak and PM peaks on a weekday and during the weekend peak period.

Plate 12.4.4 Existing on-street car parking availability and usage



12.4.95 Table 12.4.11 indicates the parking capacity available throughout a weekday and on Saturday on the roads in the vicinity of the site.

Table 12.4.11 Parking bay availability and usage

Location	Number and Type of Bays		No. of spaces available			
			Weekday			Saturday
			08:00-10:00	12:00-14:00	17:00-19:00	12:00-14:00
Lots Road	Resident parking bays	58	9	9	16	17
	Pay and Display parking bays	71	56	34	47	47
	Blue badge parking bays	2	0	0	0	0
	Motorcycle spaces	10	1	0	0	5
Uverdale Road	Resident parking bays	69	13	17	19	30
	Pay and Display parking bays	7	4	4	3	6
Ashburnham Road	Resident parking bays	22	4	6	3	4
	Blue badge parking	1	0	0	0	0

Location	Number and Type of Bays		No. of spaces available			
			Weekday			Saturday
			08:00-10:00	12:00-14:00	17:00-19:00	12:00-14:00
	bays					
Burnaby Street	Resident parking bays	62	16	16	20	20
	Pay and Display parking bays	11	7	9	8	9
	Blue badge parking bays	2	0	0	0	1
Stadium Street	Resident parking bays	56	13	12	1	20
	Blue badge parking bays	1	0	0	0	0
	Motorcycle spaces	5	4	4	4	4
Tadema Road	Resident parking bays	56	22	25	16	28
	Pay and Display parking bays	4	4	1	4	3
	Loading bays	1	1	0	1	1
	Motorcycle spaces	15	0	1	1	7
Tetcott Road	Resident parking bays	31	5	4	3	8
	Pay and Display parking bays	10	5	4	3	8
	Blue badge parking bays	1	0	1	1	1
Thorndike Road	Resident parking bays	30	17	15	16	19
	Motorcycle spaces	5	3	3	2	3
Upcerne Road	Resident parking bays	42	9	3	4	15
	Pay and Display parking bays	5	3	4	4	5

**Motorcycle spaces available based on an assumed width of 1m per motorcycle*

12.4.96 The results of the parking surveys indicate that pay and display parking spaces within the area are approximately 37% utilised on a weekday and 27% utilised during the weekend peak period and that there is significant spare capacity available on both weekdays and at weekends.

12.4.97 The usage of resident parking bays and motorcycle parking is relatively high with between 75% and 80% of the capacity utilised on weekdays although there is still spare capacity available during the peak and off-peak periods. During the weekends, the usage of these parking bays is lower with 62% of the resident parking bays and 46% of the motorcycle parking utilised.

12.4.98 The usage of pay and display parking on Lots Road is approximately 35% on both weekdays and at weekends. Resident parking bays on Lots Road are 80% utilised on weekdays and 70% at weekends, and motorcycle parking is 97% and 50% utilised on weekdays and at weekends respectively. The blue badge holder parking usage along Lots Road is fully used on weekdays and at weekends.

Local highway modelling

12.4.99 To establish the existing capacity on the local highway network, a scope was discussed with TfL and RB of Kensington and Chelsea to model the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction for the baseline using a LinSig model. The baseline model therefore accounts for the current traffic and transport conditions within the vicinity of the site.

12.4.100 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-street measurements of classified vehicle volumes and queue lengths,

12.4.101 The TfL Modelling Guidelines[5] and Modelling Audit Process (MAP)[6] 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 used on observed data including signal timings, vehicle volumes and queue lengths to provide the key criteria for comparison with modelled queue lengths.

12.4.102 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 Tunnels 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.

12.4.103 As the strategic modelling has not identified any major issues at other junctions in the vicinity of the site, no local modelling is required for other junctions.

12.4.104 Table 12.4.12 shows the modelling outputs for the baseline case.

Table 12.4.12 Baseline LinSig model outputs (priority junction)

Approach	Movement	Weekday							
		AM peak hour (08:00-09:00)				PM peak hour (17:00-18:00)			
		Flow (PCU)	DoS	MMQ (PCU)	Delay (seconds per PCU)	Flow (PCU)	DoS	MMQ (PCU)	Delay (seconds per PCU)
Cheyne Walk (A3220)	Ahead left	1163	58%	1	2	1248	64%	1	3
Cremorne Road (A3220)	Ahead right	651	31%	0	1	737	35%	0	1
Lots Road	Right left	251	96%	6	82	148	56%	1	15
		PRC		Total delay (PCU hours)		PRC		Total delay (PCU hours)	
Overall junction performance		-7%		7		+41%		2	

Notes: 1. DoS represents Degree of Saturation; the ratio of flow to capacity. MMQ represents Mean Maximum Queue for the busiest-case 15 minute modelled period (in vehicle length). Delay represents the mean delay per PCU. PCU represents Passenger Car Unit. PRC represents Practical Reserve Capacity; measure of how much additional traffic could pass through a junction whilst maintaining a maximum DoS of 90% on all lanes. PCU value for a car is one PCU. Vans and three-axle vehicles are 1.5 PCUs, vehicles with four or more axles are 2.3 PCUs. Buses and coaches are two PCUs. Motorcycles are 0.4 and pedal cycles are 0.2 PCUs.

12.4.105 The modelling outputs demonstrate that the junction is currently operating above the theoretical maximum capacity in the weekday AM peak hour and below capacity during the PM peak hour. The model indicates that the longest queue and greatest delay is during the AM peak hour on Lots Road which currently experiences an average of 82 seconds of delay per PCU.

12.4.106 The LinSig priority junction model output shows that total junction delay is seven PCU hours in the AM peak period assessed and two PCU hours in the PM peak period assessed. These equate to 12 seconds per PCU in the AM peak period assessed and three seconds per PCU in the PM peak period assessed.

12.4.107 More detailed model outputs are included in Appendix C.

Accident analysis

12.4.108 Accident data in the assessment area for the most recent five-year period available were obtained from TfL.

12.4.109 A total of one fatal, 14 serious accidents and 99 slight accidents occurred in the Cremorne Wharf Depot assessment area over the five years for which accident data was obtained and analysed.

12.4.110 Of the total accidents, 32 accidents which occurred in the assessment area involved LGVs, medium goods vehicles (MGVs) or heavy goods vehicles (HGVs). Of these accidents, 28 were slight accidents and the remaining four accidents were serious accidents. These accidents were predominantly caused by both drivers and pedestrians not looking properly, poor manoeuvring, failing to judge the other vehicle's path or speed, or reckless driving.

12.4.111 There were a total of 12 accidents along this Lots Road and associated junctions. Of these, one was classified as serious which involved a motorcycle and a car. The accident was not caused by the road geometry, but by failing to look properly, reckless driving and poor manoeuvring.

12.4.112 The slight accidents that occurred along Lots Road and its associated junctions were caused by not looking properly, the driver's vision being affected due to stationary or parked vehicles, and poor road conditions due to weather, not the road geometry.

12.4.113 One fatal accident occurred along Cremorne Road (A3220) in which a car and a pedestrian were involved. The accident was caused by both the car driver and the pedestrian not looking properly rather than as a result of the road geometry.

12.4.114 Of the five years of accident data analysed four of the accidents were considered to have occurred as a result of the road geometry. One accident at each of the junctions of Cremorne Road (A3220) and Edith Grove (A3220), and Ashburnham Road (A3220) and Tadema Road occurred at a result of the road layout (ie bend, hill, narrow carriageway). Of the remaining two accidents, one happened at the Lots Road / Chelsea Harbour Drive mini-roundabout and one at the Cheyne Walk (A3220) / Cremorne Road (A3220) / Lots Road junction. These two accidents were

caused while some roadworks were in place. These temporary situations led to a contraflow.

12.4.115 Table 12.4.13 and Figure 10.4.9 in the Cremorne Wharf Depot *Transport Assessment* figures indicate the accidents that have occurred within the vicinity of the site.

Table 12.4.13 Accident severity 2006 to 2011

Location	Slight	Serious	Fatal	Total
Lots Road	5	0	0	5
Cremorne Road (A3220)	2	0	1	3
Cheyne Walk (A3220) between the junctions with Blantyre Street and Lots Road	2	2	0	4
Ashburnham Road (A3220)	2	0	0	2
Edith Grove (A3220)	1	0	0	1
King's Road (A308) between the junctions with Edith Grove (A3220) and Gunter Grove (A3220)	2	0	0	2
Lots Road / Ashburnham Road junction	1	1	0	2
Lots Road / Tadema Road junction	3	0	0	3
Lots Road / Upcerne Road junction	1	0	0	1
Lots Road / Chelsea Harbour Drive mini-roundabout	1	0	0	1
Cheyne Walk (A3220) / Blantyre Street junction	11	0	0	11
Lots Road / Cheyne Walk (A3220) / Cremorne Road (A3220) junction	13	3	0	16
Cremorne Road (A3220) / Edith Grove (A3220) junction	7	1	0	8
Cremorne Road (A3220) / Ashburnham Road (A3220) junction	2	0	0	2
Ashburnham Road (A3220) / Tadema Road junction	4	0	0	4
King's Road (A308) / Fernshaw Road junction	5	0	0	5

Location	Slight	Serious	Fatal	Total
King's Road (A308) / Tadema Road (A3220) / Gunter Grove (A3220) junction	21	3	0	24
King's Road (A308) / Edith Grove (A3220) junction	16	4	0	20
Total	**99**	**14**	**1**	**114**

12.4.116 Of the 20 pedestrian-injury accidents, 17 occurred on the roads expected to be used by construction vehicles within the study area. Inspection of the data showed that 11 of these occurred at junctions with signalised pedestrian crossing facilities, with the remaining accidents occurring at locations without signal control. Of the 35 accidents involving cyclists, six occurred on the roads expected to be used by construction vehicles within the study area. Figure 12.4.10 in the Cremorne Wharf Depot *Transport Assessment* figures shows the pedestrian and cycle accidents by severity that occurred within the vicinity of the site

12.4.117 In the context of the construction HGV movements associated with the Cremorne Wharf Depot 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 roads 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)[7].

12.4.118 Appendix D provides a full analysis of accidents within the local area surrounding Cremorne Wharf Depot.

12.5 Construction assessment

12.5.1 The *TA* for the Cremorne Wharf Depot site 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 the site and the anticipated construction programme, duration and levels of construction activity.

12.5.2 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 project under construction. The construction base case does not include any traffic related to the Thames Tideway Tunnel, whether from the Cremorne Wharf Depot site or from other sites.

Construction base case

12.5.3 As described in Section 12.2 above, the construction assessment year for transport effects in relation to this site is Site Year 1 of construction.

Pedestrians and cyclists

12.5.4 There are no known proposals to change the cycle or pedestrian networks by Site Year 1 of construction and the construction base case for these networks is therefore the same as indicated in the baseline description in Section 12.4.

Public transport

12.5.5 In terms of the public transport network, the TfL London Underground Upgrade Plan[8] envisages an increase in capacity on the District Line of approximately 24% compared to the current baseline.

12.5.6 At the time of undertaking the assessment, there were no specific details of improvements to the bus network planned by TfL. A new bus route has been proposed as part of the Lots Road Power Station development (described in para. 12.5.18); however, this has not been included within the construction base case, as that development would still be under construction in Site Year 1 of construction at Cremorne Wharf Depot.

12.5.7 It is expected that river services between Putney and Blackfriars may increase from baseline conditions as a result of planned service changes which were being tendered at the time of writing.

12.5.8 It is anticipated that patronage on public transport services generally may change between the baseline situation and Site Year 1 of construction. Future patronage changes on bus, rail and river networks will be driven by a range of complex factors and there are inherent uncertainties in setting a patronage level for a future year. Therefore, in order to ensure that a busiest base case scenario has been 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.

River navigation

12.5.9 The underlying pattern of river use has not substantially changed in recent years, but the Mayor of London and TfL do actively promote the use of passenger services and encourage the provision of more piers. Greater freight use is also encouraged through policies in the London Plan[9]. Consequently it is possible that the nature and number of vessel movements on the River Thames might change over time.

12.5.10 However, it is difficult to determine what the scale and nature of any change might be and at the time of writing there were no specific proposals to alter river navigation patterns from the current baseline conditions in the vicinity of the Cremorne Wharf Depot site. For this assessment, therefore, the construction base case has been assumed to be the same as the baseline position.

12.5.11 It is noted that a separate *Navigational Issues and Preliminary Risk Assessment* has been undertaken for the temporary construction works and barges to be used at the Cremorne Wharf Depot site. This is reported separately outside of the *TA*.

Highway network and operation

12.5.12 The consented Lots Road Power Station development described in para. 12.5.16 includes proposals to signalise the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction. However as this development would still be under construction in Site Year 1 of construction at Cremorne Wharf Depot, the construction base case assumes that the signalisation scheme would not have been introduced and therefore assesses the existing priority junction arrangement using the LinSig model.

12.5.13 Baseline traffic flows (determined from the junction surveys) have been used and forecasting carried out to understand the capacity on the highway network in the vicinity of the Cremorne Wharf Depot site in Site Year 1 of construction without the Thames Tideway Tunnel project. The scope of this analysis has been discussed with RBKC and TfL.

12.5.14 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[10]. 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*.

12.5.15 For the Cremorne Wharf Depot site, CLoHAM has been used. The relevant growth factor for this site is described in para. 12.5.19 which was applied to the survey flows undertaken in 2011 to produce flows for the base and development cases.

12.5.16 It should be noted that these factors represent growth over the period to 2021, which is beyond Site Year 1 of construction at Cremorne Wharf Depot and therefore ensures that the construction base case for the highway network is robust.

Committed developments

12.5.17 The construction base case takes into account new developments within the vicinity of the site by Site Year 1 of construction at Cremorne Wharf Depot. The only committed development in the immediate vicinity of the site is Lots Road Power Station development adjacent to the site which would still be under construction in Site Year 1 of construction.

12.5.18 The Lots Road Power Station development includes proposals to introduce traffic signals at the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction and to introduce a new bus service along Lots Road. However, as the development would not be complete by Site Year 1 of construction at Cremorne Wharf Depot, these proposals have not been included in the construction base case for this assessment.

Local highway modelling

12.5.19 The growth factors for Cremorne Wharf Depot based on CLoHAM have been discussed with TfL and RB of Kensington and Chelsea and applied equally to all of the baseline traffic flow movements. The growth factors are:

a. Weekday AM Peak growth factor – +6.8%

b. Weekday PM Peak growth factor – +9.7%

12.5.20 Para. 12.3.10 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 TLRN.

12.5.21 The results of the construction base case LinSig model for the existing junction layout at Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road are shown in Table 12.5.1.

Table 12.5.1 Construction base case LinSig model outputs (priority junction)

Approach	Movement	Weekday							
		AM peak hour (08:00-09:00)				PM peak hour (17:00-18:00)			
		Flow (PCU)	DoS	MMQ (PCU)	Delay (seconds per PCU)	Flow (PCU)	DoS	MMQ (PCU)	Delay (seconds per PCU)
Cheyne Walk (A3220)	Ahead left	1244	62%	1	2	1373	70%	1	3
Cremorne Road (A3220)	Ahead right	697	33%	0	1	811	38%	0	1
Lots Road	Right left	269	114%	40	292	163	72%	1	27
		PRC		Total delay (PCU hours)		PRC		Total delay (PCU hours)	
Overall junction performance		-27%		23		+26%		3	

Note: 1. DoS represents Degree of Saturation; the 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 PCU. PCU represents Passenger Car Unit. PRC represents Practical Reserve Capacity; measure of how much additional traffic could pass through a junction whilst maintaining a maximum DoS of 90% on all lanes. PCU value for a car is one PCU. Vans and three-axle vehicles are 1.5 PCUs, vehicles with four or more axles are 2.3 PCUs. Buses and coaches are two PCUs. Motorcycles are 0.4 PCUs and pedal cycles are 0.2 PCUs.

12.5.22 The modelling results indicate that the junction will be operating above capacity in the weekday AM peak and within capacity in the PM peak hour. Lots Road northbound will experience the greatest queue during the AM peak hour with a maximum queue of 40 PCUs. Lots Road also experiences the greatest delay, with approximately four minutes and 52 seconds per PCU on average during the AM peak hour and 27 seconds per PCU on average during the PM peak hour.

12.5.23 Overall total delay at the junction will increase compared to the baseline situation.

12.5.24 The LinSig priority junction model output shows that total junction delay is 23 PCU hours in the AM peak period assessed and three PCU hours in the PM peak period assessed. These equate to 37 seconds per PCU in the AM peak period assessed and four seconds per PCU in the PM peak period assessed.

Junction changes associated with Lots Road Power Station redevelopment

12.5.25 As para. 12.5.12 explain, the construction base case does not include the signalisation of the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction which is part of the Lots Road Power Station development proposals, as that development would still be under construction in Site Year 1 of construction at Cremorne Wharf Depot.

12.5.26 However, consideration has been given to whether the outcomes of the construction base case assessment would be different if the signalisation proposals at the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction were to be in place.

12.5.27 A local LinSig model has therefore been developed to determine the operation of the signalised junction proposed by the Lots Road Power Station development for construction base case traffic flows. These flows are shown on Figure 12.4.5 and Figure 12.4.6 in the Cremorne Wharf Depot *Transport Assessment* figures.

12.5.28 A summary of the results of the LinSig model for the weekday AM and PM peaks is contained in Table 12.5.2.

Table 12.5.2 Construction base case LinSig model outputs (signalised junction)

Approach	Movement	Weekday							
		AM peak hour (08:00-09:00)				PM peak hour (17:00-18:00)			
		Flow (PCU)	DoS	MMQ (PCU)	Delay (seconds per PCU)	Flow (PCU)	DoS	MMQ (PCU)	Delay (seconds per PCU)
Cheyne Walk (A3220)	Left	95	11%	1	14	253	26%	4	12
	Ahead	1149	105%	69	145	1120	93%	33	38
Cremorne Road (A3220)	Ahead	349	34%	6	16	406	36%	6	13
	Ahead right	348	34%	6	16	405	36%	6	14
Lots Road	Right left	269	100%	15	147	163	91%	8	118
		PRC		Total delay (PCU hours)		PRC		Total delay (PCU hours)	
Overall junction performance		-17%		63		-4%		24	

Notes: 1. DoS represents Degree of Saturation; the 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 PCU. PCU represents Passenger Car Units. PRC represents Practical Reserve Capacity; measure of how much additional traffic could pass through a junction whilst maintaining a maximum DoS of 90% on all lanes. PCU value for a car is one PCU. Vans and three-axle vehicles are 1.5 PCUs, vehicles with four or more axles are 2.3 PCUs. Buses and coaches are two PCUs. Motorcycles are 0.4 PCUs and pedal cycles are 0.2 PCUs.

2. Assessment has assumed that traffic signal optimisation has been undertaken as detailed in Volume 2 of the ES.

12.5.29 The results indicate that in the base case situation the signalised junction would be operating above capacity in the AM peak hour in the base case with the longest average queues and delays occurring on the ahead movement from Cheyne Walk (A3220), with a queue of 69 PCUs and delay of two minutes and 25 seconds per PCU. Average delays of two minutes and 27 seconds would be experienced by traffic on the Lots Road approach. The overall junction delay would be 63 seconds in the AM peak hour.

12.5.30 In the PM peak hour the junction would also be operating above capacity in the base case. The longest queues would again occur on the ahead movement from Cheyne Walk (A3220) of 33 PCUs with average delays of 38 seconds per PCU. The greatest delay in the PM peak would be experienced on the Lots Road approach, with delays of approximately two minutes per PCU. The overall junction delay would be 24 seconds in the PM peak hour.

12.5.31 The LinSig signalised junction model output shows that total junction delay is 63 PCU hours in the AM peak period assessed and 24 PCU hours in the PM peak period assessed. These equate to 103 seconds per PCU in the AM peak period assessed and 37 seconds per PCU in the PM peak period assessed.

Construction development case

12.5.32 This section summarises the findings of the assessment undertaken for the peak year of construction at the Cremorne Wharf Depot site (Site Year 1 of construction).

12.5.33 Information regarding the travel arrangements of the workers associated with the site would be included in the *Draft Project Framework Travel Plan* and site-specific *Travel Plan* documents.

Pedestrian routes

12.5.34 As discussed in Section 12.2, the southern footway on Lots Road would only be closed to pedestrians to construct the crossovers for access to the site; otherwise, it would remain open and unobstructed. However pedestrians would have to cross the site access points. The construction phase layout plan in the Cremorne Wharf Depot *Transport Assessment* figures shows the layout of pedestrian footways during construction.

12.5.35 To assess a busiest case scenario, it has been anticipated that all worker trips would finish their journeys by foot. As a result the 65 worker trips generated by the site have been added to the construction base case pedestrian flows during the AM and PM peak hours.

12.5.36 As detailed in Section 12.2, it is anticipated that because the pedestrian route on the south side of Lots Road would cross the access points to the Cremorne Wharf Depot site a journey time increase of up to 30 seconds at each access point could result as a consequence of vehicle movements into and out of the site. For pedestrians walking along the southern footway of Lots Road, two access points to the site would need to be crossed which could potentially lead to a journey time increase of up to 60 seconds.

12.5.37 The site accesses would be marshalled and have appropriate signage to ensure that pedestrian and vehicle conflicts are minimised and that construction vehicle movements into and out of the site are supervised to minimise the risk of pedestrian accidents.

12.5.38 During all construction work and on any section of road subject to temporary diversions or restriction imposed by roadworks associated with the Cremorne Wharf Depot 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[11]. This will include compliance with the Equality Act 2010[12] to ensure safe passage for mobility and vision impaired pedestrians.

Cycle routes

12.5.39 Cyclists using the highway would experience an additional delay to journey time as a result of the construction works at the Cremorne Wharf Depot site. The effect on journey times on the highway network is identified in the LinSig modelling outlined in the highway operation and network assessments paras. 12.5.69 to 12.5.81. This would be an increase of a maximum of 26 seconds per PCU in the AM peak hour and a maximum of one second per PCU in the PM peak hour on Lots Road over that in the construction base case. Cyclists using Lots Road at the junction with Cremorne Road (A3220) and Cheyne Walk (A3220) could therefore experience additional delays of this order.

12.5.40 Measures set out in the *CoCP* described in para. 12.2.36 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 Cremorne Wharf Depot 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[13]. This would include compliance with TfL guidance (Cyclists at Roadworks – Guidance Document[14]) to ensure safe passage for cyclists.

Bus routes and patronage

12.5.41 Construction vehicles travelling along Cremorne Road (A3220) and Cheyne Walk (A3220) serving the Cremorne Wharf Depot site or other Thames Tideway Tunnel sites may affect bus route journey times in the wider area. However, the construction traffic volumes are small and the strategic modelling reported in the *Project-wide TA* indicates no significant change in delays in this part of the network and also there are no bus routes passing through the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction. In the context of local area and general journey times for bus services, no significant change for bus users is expected.

12.5.42 It is expected that approximately 13 additional worker trips would be made by bus during the AM and PM peak hours. The area is served by eight day-time bus routes with multiple origins and destinations, providing a total

of 147 and 144 buses within 640m walking distance during the AM and PM peak hours. On this basis the additional worker trips made by bus in the peak hours to and from the Cremorne Wharf Depot site would be capable of being accommodated on the base case bus services and would typically be within the normal daily variation in bus patronage on these routes.

12.5.43 If workers travelling by London Underground to and from Fulham Broadway station were to complete their journeys by bus, this would add a further 22 journeys to bus services in the vicinity of the site. However, given the level of bus services available in the area, these journeys would still be capable of being accommodated on base case bus services.

Bus route associated with Lots Road Power Station redevelopment

12.5.44 As para. 12.5.6 explains, as part of the Lots Road Power Station redevelopment, new bus services would be provided which would operate along Lots Road. However, as the development would still be under construction in Site Year 1 of construction at the Cremorne Wharf Depot site, these new bus services are not included in the construction base case in this assessment.

12.5.45 Consideration has been given to whether the impacts on bus routes and patronage reported in paras. 12.5.41 and 12.5.43 would be altered if the assessment were to include the new bus services on Lots Road.

12.5.46 In terms of bus patronage, para. 12.5.42 reports that there would be a very small impact on bus patronage. New bus services on Lots Road would increase the number of bus services available within 640m walking distance of the site and as the number of bus journeys generated by the site would remain as set out in Table 12.2.3, there would still be no material impact on bus patronage if these new bus services were taken into consideration.

12.5.47 In terms of bus journey times, the modelling results described in paras. 12.5.86-12.5.89 indicate that the delay to bus journey times on the Lots Road arm at the junction of Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road would increase by 19 seconds in the AM peak hour and 17 seconds in the PM peak hour in comparison to the construction base case. Therefore the impact would still be insignificant if new bus services on Lots Road are taken into consideration as reported in para. 12.5.41.

London Underground and patronage

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

12.5.49 It is anticipated that there would be approximately 22 additional person trips on London Underground services in each of the AM and PM peak hours. This equates to less than one additional journey per train based on the 30 services per hour available at Fulham Broadway Underground station during the AM and PM peak hours. This additional demand could be easily accommodated within existing capacity.

London Overground and National Rail and patronage

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

12.5.51 It is anticipated that construction at Cremorne Wharf Depot would result in nine additional person trips on London Overground or National Rail services in each of the AM and PM peak hours.

12.5.52 London Overground provides 12 and 13 services per hour at Imperial Wharf station during the AM and PM peak hours. There are a further two and three National Rail services per hour at this station.

12.5.53 The additional worker journeys therefore would result in an insignificant number of additional passengers on London Overground and National Rail services in the local area, which could easily be accommodated within the existing capacity.

River services and patronage

12.5.54 No river passenger service piers are directly adjacent to the site and therefore none would be directly affected by construction at Cremorne Wharf Depot.

12.5.55 During construction, no river passenger services would be altered as a result of the works at Cremorne Wharf Depot. It is anticipated that few, if any, construction workers and labourers would use river services to access the construction site, based on the mode shares set out in Table 12.2.3 and therefore there would be no discernible change in river patronage as a result of the construction proposals at this site.

River navigation and access

12.5.56 During construction it has been assumed that 90% of shaft and other excavated material (export) would be transported by barge. The peak number of barge movements would occur in Site Year 1 of construction with a daily average of two barge movements a day.

12.5.57 It is anticipated that 350T barges would be used at this site.

12.5.58 It is anticipated that the impact on river navigation in the vicinity of the Cremorne Wharf Depot site as a result of the additional barges arriving at the site would not be significant.

12.5.59 It is noted that a separate *Navigational Issues and Preliminary Risk Assessment* has been undertaken for the temporary construction works and barges to be used at Cremorne Wharf Depot. This is reported separately outside of the *Environmental Statement* and *Transport Assessment* as part of the application documentation.

Parking

12.5.60 Lots Road has a combination of on-street car parking available to residents and pay and display parking spaces in the area in the immediate vicinity of the site.

12.5.61 To accommodate the additional HGV traffic two pay and display parking bays along the southern carriageway of Lots Road to the west of the site entrance would require temporary restriction.

12.5.62 In addition, three resident parking bays, one to the south of the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction and two to the north of the Lots Road / Ashburnham Road junction would require temporary restriction.

12.5.63 The temporary restriction of these parking bays on Lots Road has been discussed with RB of Kensington and Chelsea.

12.5.64 These spaces would not be re-provided as there is spare capacity currently shown to be available along Lots Road. The highway layout during construction plan in the Cremorne Wharf Depot *Transport Assessment* figures shows the proposed temporary restriction of the pay and display, and resident parking bays, associated with the construction works at the Cremorne Wharf Depot site.

12.5.65 Parking for five essential maintenance vehicles would be provided on site. However, there would be no on-site parking for workers, parking on surrounding streets is restricted and site-specific *Travel Plan* measures would discourage workers from travelling by car to and from the site. There would therefore be no impact on local parking from construction workers.

12.5.66 There would be no change to the loading bays on Cremorne Road (A3220) and Cheyne Walk (A3220) outlined in paras. 12.4.70 to 12.4.72.

Highway assessment

Highway layout

12.5.67 The highway layout during construction plan in the Cremorne Wharf Depot *Transport Assessment* figures shows the highway layout during the construction works at the Cremorne Wharf Depot site. The site is on the southern side of Lots Road and would be accessed from the east via the junction with Cremorne Road (A3220) and Cheyne Walk (A3220). At the beginning of construction, the existing access and egress points to the Lots Road Pumping Station would require widening to accommodate 16.5m articulated vehicles turning into and out of the site.

12.5.68 The highway layout during construction vehicle swept path analysis plans in the Cremorne Wharf Depot *Transport Assessment* figures show the swept path movements and shows that the construction vehicles would be able to safely enter and leave the site.

Highway operation

12.5.69 Construction lorry movements would be limited to the day shift only (08:00 to 18:30 Monday to Friday and 08:00 to 13:30 Saturday) except in exceptional circumstances when HGV and abnormal load movements could occur up to 22:00 on weekdays for large concrete pours and later at night on agreement with RBKC.

12.5.70 Table 12.2.4 in Section 12.2 shows the vehicle movement assumptions for the local peak traffic periods based on the peak months of construction

activity at this site. The table shows an average peak flow of 60 vehicle movements a day is expected during the months of greatest activity during Site Year 1 of construction at this site.

12.5.71 In the AM and PM peak periods, the Cremorne Wharf Depot site would generate approximately ten vehicle movements.

12.5.72 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 assessmed against the peak hour operation of the highway network. In reality, not all peaks for these movements would occur concurrently and the peak for worker trips would be outside of the highway network peak hour, therefore, the assessment is considered to be robust.

12.5.73 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.

12.5.74 The assignment of construction lorry trips has been undertaken using OmniTrans[iii] 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 Cremorne Wharf Depot site, or with other Thames Tideway Tunnels sites, that would use routes in the vicinity of the Cremorne Wharf Depot site. Figure 12.5.1 in the Cremorne Wharf Depot *Transport Assessment* figures shows the OmniTrans plot for the local road network around the Cremorne Wharf Depot site.

12.5.75 It is anticipated that there would be an average of one additional HGV movement on Cremorne Road (A3220) and Cheyne Walk (A3220) during the peak hours associated with other Thames Tideway Tunnel project sites during Site Year 1 of construction at Cremorne Wharf Depot.

12.5.76 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.

12.5.77 The local LinSig model has been used to apply the construction traffic demands to the construction base case to determine the changes in the highway network operation due to the project (ie, comparison of base and development cases).

12.5.78 The changes to the operation of the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction have been assessed. A summary of the construction assessment results from the LinSig model for the weekday AM and PM peak hours is presented Table 12.5.3 and Table 12.5.4.

[iii] 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.

Table 12.5.3 Construction LinSig model outputs (priority junction) (AM peak)

Approach	Arm	Flow (PCU)	Weekday								
			AM peak hour (08:00-09:00)								
			DoS			MMQ (PCU)			Delay (seconds per PCU)		
			Base case	Devt case	Change	Base case	Devt case	Change	Base case	Devt case	Change
Cheyne Walk (A3220)	Ahead left	1246	62%	63%	+1%	1	1	0	2	2	0
Cremorne Road (A3220)	Ahead right	703	33%	33%	0%	0	0	0	1	1	0
Lots Road	Right left	274	114%	116%	+2%	40	42	+2	292	318	+26
			PRC						Total delay (PCU hours)		
Overall junction performance			-27%	-29%	-2%				23	25	+2

Note: 1. DoS represents Degree of Saturation; the 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 PCU. PCU represents Passenger Car Units. PRC represents Practical Reserve Capacity; measure of how much additional traffic could pass through a junction whilst maintaining a maximum DoS of 90% on all lanes. PCU value for a car is one PCU. Vans and three-axle vehicles are 1.5 PCUs, vehicles with four or more axles are 2.3 PCUs. Buses and coaches are two PCUs. Motorcycles are 0.4 PCUs and pedal cycles are 0.2 PCUs. Thames Tideway Tunnel construction vehicles would be a mixture of three- and four-axle vehicles and have therefore been given a PCU value of two.

Table 12.5.4 Construction LinSig model outputs (priority junction) (PM peak)

Approach	Arm	Flow (PCU)	Weekday								
			PM peak hour (17:00-18:00)								
			DoS			MMQ (PCU)			Delay (seconds per PCU)		
			Base case	Devt case	Change	Base case	Devt case	Change	Base case	Devt case	Change
Cheyne Walk (A3220)	Ahead left	1375	70%	70%	0%	1	1	0	3	3	0
Cremorne Road (A3220)	Ahead right	815	38%	39%	+1%	0	0	0	1	1	0
Lots Road	Right left	169	72%	74%	+2%	1	1	0	27	28	+1
			PRC						Total delay (PCU hours)		
Overall junction performance			+26%	+22%	-4%				3	3	0

Note: 1. DoS represents Degree of Saturation; the 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 PCU. PRC represents Practical Reserve Capacity; measure of how much additional traffic could pass through a junction whilst maintaining a maximum DoS of 90% on all lanes. PCU value for a car is one PCU. Vans and three-axle vehicles are 1.5 PCUs, vehicles with four or more axles are 2.3 PCUs. Buses and coaches are two PCUs. Motorcycles are 0.4 PCUs and pedal cycles are 0.2 PCUs. Thames Tideway Tunnel construction vehicles would be a mixture of three- and four-axle vehicles and have therefore been given a PCU value of two.

12.5.79 The construction traffic generated by the project in this area would result in a marginal increase in demand at the junction of Cremorne Road (3220) / Cheyne Walk (A3220) / Lots Road in the AM and PM peak hours. Overall the junction would continue to operate above capacity in the AM peak hour and below capacity in the PM peak hour, as in the base case situation.

12.5.80 The construction assessment indicates that the additional delay during the AM and PM peak hours at this junction as a result of the additional construction traffic would be on Lots Road with a maximum of 26 seconds per PCU in the AM peak hour and a maximum of one second per PCU in the PM peak hour.

12.5.81 The LinSig priority junction model output for the construction development case shows that total junction delay is 25 PCU hours in the AM peak period assessed and three PCU hours in the PM peak period assessed. These equate to 41 seconds per PCU in the AM peak period assessed and four seconds per PCU in the PM peak period assessed.

Junction changes associated with Lots Road Power Station redevelopment

12.5.82 The construction development case does not include the signalisation of the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction which is part of the Lots Road Power Station development proposals, as that development would still be under construction in Site Year 1 of construction at Cremorne Wharf Depot.

12.5.83 However, consideration has been given to whether the outcomes of the construction assessment would be different if the signalisation proposals at the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction were to be in place.

12.5.84 A local LinSig model has therefore been developed to determine the operation of the signalised junction for construction development case traffic flows. These flows are shown on Figure 12.4.5 and Figure 12.4.6 in the Cremorne Wharf Depot *Transport Assessment* figures.

12.5.85 A summary of the results of the LinSig model for the weekday AM and PM peaks is contained in Table 12.5.5 and Table 12.5.6.

Table 12.5.5 Construction LinSig model outputs (signalised junction) (AM peak hour)

Approach	Arm	Flow (PCU)	Weekday								
			AM peak hour (08:00-09:00)								
			DoS			MMQ (PCU)			Delay (PCU hours)		
			Base case	Devt case	Change	Base case	Devt case	Change	Base case	Devt case	Change
Cheyne Walk (A3220)	Left	96	11%	11%	0%	1	1	0	14	14	0
	Ahead	1150	105%	105%	0%	69	69	0	145	146	+1
Cremorne Road (A3220)	Ahead	352	34%	35%	+1%	6	6	0	16	16	0
	Ahead right	351	34%	35%	+1%	6	6	0	16	16	0
Lots Road	Right left	274	100%	102%	+2%	15	17	+2	147	166	+19
			PRC						Total delay (PCU hours)		
Overall junction performance			-17%	-17%	0%				63	65	+2

Notes: 1. DoS represents Degree of Saturation; the 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 PCU. PCU represents Passenger Car Units. PRC represents Practical Reserve Capacity; measure of how much additional traffic could pass through a junction whilst maintaining a maximum DoS of 90% on all lanes. PCU value for a car is one PCU. Vans and three-axle vehicles are 1.5 PCUs, vehicles with four or more axles are 2.3 PCUs. Buses and coaches are two PCUs. Motorcycles are 0.4 PCUs and pedal cycles are 0.2 PCUs. Thames Tideway Tunnel construction vehicles would be a mixture of three- and four-axle vehicles and have therefore been given a PCU value of two.

2. Assessment has assumed that traffic signal optimisation has been undertaken as detailed in Volume 2 of the Environmental Statement.

Table 12.5.6 Construction LinSig model outputs (signalised junction) (PM peak hour)

Approach	Arm	Flow (PCU)	Weekday								
			PM peak hour (17:00-18:00)								
			DoS			MMQ (PCU)			Delay (PCU hours)		
			Base case	Devt case	Change	Base case	Devt case	Change	Base case	Devt case	Change
Cheyne Walk (A3220)	Left	254	26%	27%	+1%	4	4	0	12	12	0
	Ahead	1121	93%	94%	+1%	33	34	+1	38	38	0
Cremorne Road (A3220)	Ahead	409	36%	37%	+1%	6	6	0	13	13	0
	Ahead right	406	36%	37%	+1%	6	6	0	14	14	0
Lots Road	Right left	169	91%	94%	+3%	8	9	+1	118	135	+17
			PRC						Total delay (PCU hours)		
Overall junction performance			-4%	-4%	0%				24	25	+1

Notes: 1. DoS represents Degree of Saturation; the 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 PCU. PCU represents Passenger Car Units. PRC represents Practical Reserve Capacity; measure of how much additional traffic could pass through a junction whilst maintaining a maximum DoS of 90% on all lanes. PCU value for a car is one PCU. Vans and three-axle vehicles are 1.5 PCUs, vehicles with four or more axles are 2.3 PCUs. Buses and coaches are two PCUs. Motorcycles are 0.4 PCUs and pedal cycles are 0.2 PCUs. Thames Tideway Tunnel construction vehicles would be a mixture of three- and four-axle vehicles and have therefore been given a PCU value of two.

2. Assessment has assumed that traffic signal optimisation has been undertaken as detailed in Volume 2 of the ES.

12.5.86 The results indicate that in the AM and PM peak hours the project would result in no overall change in capacity at the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction. The junction would continue to operate above capacity in both the AM and PM peak hours as in the base case. There would be no significant change to queue lengths on the individual arms of the junction.

12.5.87 In the construction development case the change in road network delay during the AM and PM peak hours as a result of the additional construction traffic would be a maximum of 19 seconds per PCU in the AM peak hour and a maximum of 17 seconds per PCU during the PM peak hour on Lots Road.

12.5.88 The LinSig signalised junction model output shows that total junction delay is 65 PCU hours in the AM peak period assessed and 25 PCU hours in the PM peak period assessed. These equate to 105 seconds per PCU in the AM peak period assessed and 38 seconds per PCU in the PM peak period assessed.

12.5.89 Based on these results, the impact on road network delay arising from construction at the Cremorne Wharf Depot site would be insignificant assuming that the signalisation of the junction proposed as part of the Lots Road Power Station development is in place. This means that the change resulting from the Thames Tideway Tunnel project is similar regardless of whether the junction is a priority junction or a signalised junction.

Construction mitigation

12.5.90 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 12.5.7.

Table 12.5.7 Cremorne Wharf Depot design measures

Phase	Issues	Design measures
Construction	Creating site access point	• Widening the existing access and egress points to the Lots Road Pumping Station to accommodate 16.5m articulated vehicles turning into and out of the site • Temporary restriction of two pay and display parking bays along the southern carriageway of Lots Road to the west of the site entrance to facilitate HGV turning movements
	Pedestrian safety at the site access points	• Where necessary pedestrian safety at the site access points could be assisted by a banksman during periods of greater construction activity

Phase	Issues	Design measures
		• Provision of appropriate warning signage for pedestrians and drivers
	Movement of construction traffic vehicles on Lots Road	• Increasing the available carriageway width on Lots Road to allow two HGV to pass each other by the temporary restriction of three resident parking bays
Operation	Creating access point	• The widened existing access point to the Lots Road Pumping Station would be retained in the operational phase.

12.5.91 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 or operational phases.

Sensitivity testing

12.5.92 The assessment outcomes reported earlier in this Section and in Volume 12 of the *Environmental Statement* are based on the *Transport Strategy*, as outlined in section 12.2. In that scenario, the number of construction vehicle movements generated by Cremorne Wharf Depot in the peak year of construction would be approximately six vehicles in the AM and PM peak hours which would use the junction of Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road.

12.5.93 A sensitivity test has been undertaken to examine the implications of variation in the number of construction vehicles in the peak month of activity at this site, including the possibility that river transport is not available for short periods of time which could temporarily increase vehicle numbers. In this sensitivity test, the number of construction vehicle would be approximately eight and nine vehicles in the AM and PM peak hours. This would be an increase of two and three construction vehicles in the AM and PM peak hours compared with that for the *Transport Strategy*.

12.5.94 A summary of the construction assessment results from the LinSig model for the existing junction of Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road in the weekday AM and PM peak hours using the sensitivity test figures is presented in Table 12.5.8 and Table 12.5.9.

Table 12.5.8 Construction LinSig model outputs – sensitivity test (priority junction) (AM peak hour)

Approach	Arm	Flow (PCU)	Weekday								
			AM peak hour (08:00-09:00)								
			DoS			MMQ (PCU)			Delay (seconds per PCU)		
			EIA	Sensitivity test	Change	EIA	Sensitivity test	Change	EIA	Sensitivity test	Change
Cheyne Walk (A3220)	Ahead left	1246	63%	63%	0%	1	1	0	2	2	0
Cremorne Road (A3220)	Ahead right	703	33%	33%	0%	0	0	0	1	1	0
Lots Road	Right left	274	116%	116%	0%	42	40	0	318	318	0
			PRC						Total delay (PCU hours)		
Overall junction performance			-29%	-29%	0%				25	25	0

Notes: 1. DoS represents Degree of Saturation; the 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 PCU. PCU represents Passenger Car Unit. PRC represents Practical Reserve Capacity; measure of how much additional traffic could pass through a junction whilst maintaining a maximum DoS of 90% on all lanes. PCU value for a car is one PCU. Vans and three-axle vehicles are 1.5 PCUs, vehicles with four or more axles are 2.3 PCUs. Buses and coaches are two PCUs. Motorcycles are 0.4 PCUs and pedal cycles are 0.2 PCUs. Thames Tideway Tunnel construction vehicles would be a mixture of three- and four-axle vehicles and have therefore been given a PCU value of two.

Table 12.5.9 Construction LinSig model outputs – sensitivity test (priority junction) (PM peak hour)

Approach	Arm	Flow (PCU)	Weekday								
			PM peak hour (17:00-18:00)								
			DoS			MMQ (PCU)			Delay (seconds per PCU)		
			EIA	Sensitivity test	Change	EIA	Sensitivity test	Change	EIA	Sensitivity test	Change
Cheyne Walk (A3220)	Ahead left	1375	70%	70%	0%	1	1	0	3	3	0
Cremorne Road (A3220)	Ahead right	816	39%	39%	0%	0	0	0	1	1	0
Lots Road	Right left	169	74%	74%	0%	1	1	0	28	29	+1
			PRC						Total delay (PCU hours)		
Overall junction performance			+22%	+22%	0%				3	3	0

Notes: 1. DoS represents Degree of Saturation; the 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 PCU. PCU represents Passenger Car Unit. PRC represents Practical Reserve Capacity; measure of how much additional traffic could pass through a junction whilst maintaining a maximum DoS of 90% on all lanes. PCU value for a car is one PCU. Vans and three-axle vehicles are 1.5 PCUs, vehicles with four or more axles are 2.3 PCUs. Buses and coaches are two PCUs. Motorcycles are 0.4 PCUs and pedal cycles are 0.2 PCUs. Thames Tideway Tunnel construction vehicles would be a mixture of three- and four-axle vehicles and have therefore been given a PCU value of two.

12.5.95 The results indicate that under the sensitivity test, the junction would operate above capacity in the AM peak hour and below capacity in the PM peak hour.

12.5.96 In the AM and PM peak hours there would not be any changes in capacity under the sensitivity test compared with that for the *Transport Strategy*.

12.5.97 In the sensitivity test, the road network delay as a result of the additional construction traffic would be an increase of a maximum of one second per PCU in the PM peak hour on the Lots Road arm compared with that for the *Transport Strategy*. There would be no change in the AM peak hour.

12.5.98 With regards to total delay, there would be no change in the AM and PM peak hours.

12.5.99 It must be recognised that this analysis represents a maximum sensitivity test and that the *Transport Strategy* envisages the use of the river to transport some of the construction materials required at this site. If the sensitivity test did occur over a prolonged period, which is unlikely for the reasons given in Section 12.2, the design measures which have been embedded directly in the design of the project and are listed in Table 12.5.7 would remain appropriate and there would be no need for further mitigation measures.

12.5.100 From the results it is clear that the sensitivity test scenario would also have an insignificant impact on the signalised junction layout proposed for the Lots Road Power Station development, if there were to be in place.

12.6 Operational assessment

12.6.1 This section summarises the findings of the assessment undertaken for Year 1 of operation at the Cremorne Wharf Depot site.

12.6.2 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 12.2. This has been discussed with RB Kensington Chelsea and TfL.

Operational base case

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

12.6.4 As explained in para. 12.2.42, the element of the transport network considered in the operational assessment is highway layout and operation. For the purposes of the operational base case, it is anticipated that the highway layout will be as indicated in the construction base case.

Operational development case

12.6.5 The operational development case for the site includes permanent changes in the vicinity of the Cremorne Wharf Depot site as a result of the Thames Tideway Tunnel project and takes into consideration the occasional maintenance activities required at the site.

12.6.6 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 cranes and support vehicles required for access to the shaft and tunnel every ten years.

12.6.7 The operational assessment has taken into consideration those elements that would be affected, which comprise the short-term changes to the highway layout and operation when maintenance visits are made to the site.

12.6.8 The permanent highway layout plan in the Cremorne Wharf Depot *Transport Assessment* figures shows the highway layout during the operational phase.

12.6.9 When maintenance activity takes place during the operational phase, pedestrians would not be diverted away from the Thames Path but would have to cross the site access point. When large maintenance vehicles are required to access the site, pedestrian movements could be assisted by a banksman in order to ensure pedestrian safety.

Highway layout and operation

12.6.10 The layout of the existing access and egress points to the Lots Road Pumping Station would be as indicated in para. 12.5.67 to ensure that the highway layout provided is adequate for the large vehicles required to access the site during the operational phase. The widened existing access point to the Lots Road Pumping Station would be retained in the operational phase. Swept paths have been undertaken for the largest vehicles including an 11.36m mobile crane, a 10.7m articulated vehicle, and a 10m rigid vehicle. The permanent highway layout vehicle swept path analysis plan in the Cremorne Wharf Depot *Transport Assessment* figures indicates the swept path movements during operation and shows that the maintenance vehicles are able to safely enter and leave the site.

12.6.11 When larger vehicles are required to service the site, there may 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.

12.6.12 Due to the infrequent nature of maintenance trips there is anticipated to be no significant change to the operation of the surrounding highway network during the operational phase at the Cremorne Wharf Depot site.

12.7 Summary of Transport Assessment findings

12.7.1 The key outcomes of this TA are indicated in Table 12.7.1.

Table 12.7.1 Cremorne Wharf Depot transport assessment results

Phase	Mode of transport	Key Findings
Construction	Pedestrians	A maximum of 30 seconds delay at each access point to pedestrian journeys currently using the southern footway of Lots Road due to additional construction vehicles entering to and exiting from the site. However an individual pedestrian is likely to encounter such delays infrequently as the number of vehicles using the site would be low.
	Cyclists	A small additional delay (maximum of approximately 26 seconds in the AM peak hour and one second in the PM peak hour) experienced by cyclists using Lots Road as a result of the additional construction traffic on the network.
	Bus patronage and operators	Approximately 13 two-way worker trips would be made by bus which could be accommodated on base case services. Base case services could also accommodate workers travelling by Underground and using buses between the site and Fulham Broadway station No significant change to bus journeys times on the bus network in the surrounding area, based on the strategic highway network modelling work undertaken for the project-wide assessment.
	London Underground, London Overground, and National Rail patronage	Approximately 31 worker trips would be made by London Underground, London Overground or National Rail and could be accommodated on base case services.
	River passenger services and patronage	River services would not be altered during construction and construction barge movements would not significantly affect services. No material change in river service patronage.
	River navigation and access	A peak number of two barge movements per day would occur within Site Year 1 of construction which is not anticipated to impact on existing river navigation.

Phase	Mode of transport	Key Findings
	Parking	To accommodate the movement of larger construction vehicles, two pay and display and three resident parking bays along Lots Road would be temporarily restricted. There would be sufficient spare capacity in the local area to accommodate displaced parking demand.
	Highway network and operation	The existing access and egress points to the Lots Road Pumping Station would require widening to accommodate the turning movements of large vehicles. Approximately 60 additional daily movements would be generated by the construction works at Cremorne Wharf Depot in Site Year 1 of construction. Approximately six vehicle movements are anticipated in each of the AM and PM peak hours. The Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction will be operating above capacity in the construction base case in the AM peak hour and below capacity in the PM peak hour. The addition of the Thames Tideway Tunnel project traffic would not materially reduce capacity at this junction and would result in a maximum increase in delay of 26 seconds and one second per PCU on Lots Road in the AM and PM peak hours respectively.
Operation	Highway layout and operation	Some slight network delay may be experienced by other road users when large vehicles are accessing the site, however this would be infrequent and temporary.

References

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

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[3] Greater London Authority, *London Plan*, July 2011.

[4] Transport for London, *Transport Assessment Best Practice guidance,* April 2010.

[5] Transport for London, *Modelling Guidelines*, 2010.

[6] Transport for London, *Modelling Audit Process (MAP)*, 2011.

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

[8] Transport for London, *London Underground Upgrade Plan*, February 2011. http://www.tfl.gov.uk/assets/downloads/corporate/our-upgrade-plan-london-underground-february-2011.pdf

[9] Greater London Authority, 2011. See citation above.

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[11] Department for Transport, 2009. See citation above.

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

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[14] Department for Transport, *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: **7.10.09**

Cremorne Wharf Depot

Appendices

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

Hard copy available in

Box **51** Folder **A**
January 2013

Thames Tideway Tunnel

Creating a cleaner, healthier River Thames

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Thames Tideway Tunnel

Transport Assessment

Section 12 Appendices: Cremorne Wharf Depot

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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 Cremorne Wharf Depot. 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 Royal Borough (RB) of Kensington and Chelsea.

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:

a. 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;

b. safe and suitable access to the site can be achieved for all people; and

c. 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 (NPS) 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 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 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:

a. *"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;*

b. *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*

c. *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.

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. A city that meets the challenges of economic and population growth;

b. An internationally competitive and successful city;

c. A city of diverse, strong, secure and accessible neighbourhoods;

d. A city that delights the senses;

e. A city that becomes a world leader in improving the environment; and

f. 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:

a. Encouraging patterns and nodes of development that reduce the need to travel, especially by car;

b. Seeking to improve the capacity and accessibility of public transport, walking and cycling, particularly in areas of greater demand;

c. 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;

d. Seeking to increase the use of the Blue Ribbon Network, especially the Thames, for passenger and freight use;

e. Facilitating the efficient distribution of freight whilst minimising its impacts on the transport network;

f. Supporting measures that encourage shifts to mode sustainable modes and appropriate demand management; and

g. 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:

a. **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";

b. **Policy 5** seeks "to ensure efficient and effective access for people and goods within central London";

c. **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";

d. **Policy 9** states that the Mayor "will use the local and strategic development control processes";

e. **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";

f. **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

g. **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 RB of Kensington and Chelsea have a number of policies relevant to transport. These are the Local Development Framework (LDF), Unitary Development Plan (UDP), Air Quality Supplementary Planning Document (SPD) and Transport SPD. All reflect regionally focused policies and are referred to where appropriate.

Local Development Framework – Core Strategy (RB of Kensington and Chelsea, 2010)

A.4.2 The LDF was adopted in December 2010, replacing the existing Unitary Development Plan. The focus of the framework is to *"set out the vision, objectives and detailed spatial strategy for future development in the Royal Borough up to 2028 along with specific strategic policies and targets, development management policies and site allocations".*

A.4.3 In relation to transport, it is the council's wish to improve the opportunities for residents to take up sustainable modes, by making them safe, easy and attractive.

A.4.4 **Policy CT1 – Improving alternatives to car use** sets out how the council plans to make using public transport, walking and cycling more attractive. There are a number of ways that this will be achieved, including:

a. Requiring that developments prove they will not adversely affect congestion or on-street parking;

b. Ensuring that developments incorporate measures to improve road safety;

c. Insisting that developers of large developments submit a transport assessment; and

d. Requesting that sites in close proximity to the Thames explore the potential to utilise freight delivery by water.

A.4.5 **Policy CR1 – Street Network** states that the council requires a well connected, inclusive and legible network of streets to be maintained and enhanced; this will be achieved by:

a. Requiring new links and the removal of barriers that disconnect access for pedestrians, cyclists and people with limited mobility.

A.4.6 **Policy CR3 – Street and Outdoor Life** makes it clear that *"The Council will require opportunities to be taken within the street environment to create 'places' that support outdoor life, inclusive to all, adding to their attractiveness and vitality".* This will be achieved by:

a. Maintaining a free, safe and secure passage for pedestrians; and

b. Requiring that the occasional use of parks, gardens and open spaces for special events will be well-managed, and that in the duration, frequency and scale of the event has no adverse impact upon the road network.

A.4.7 **Policy CR4 – Streetscape** details the council's commitment to providing and maintaining a very high quality streetscape. In order to deliver this, the council will:

a. Require all work to, or affecting the public highway, to be carried out in accordance with the Council's adopted Streetscape Guidance;

b. Require all redundant or non-essential street furniture to be removed;

c. Retain and maintain historic street furniture, where it does not adversely impact on the safe functioning of the street;

d. Require that where there is an exceptional need for new street furniture that it is of high quality design and construction, and placed with great care, so as to relate well to the character and function of the street; and

e. Resist pavement crossovers and forecourt parking.

A.4.8 **Policy CR7 – Servicing** lays out the council's stance on servicing provision for new development. In particular it should not give rise to traffic congestion, conflict with pedestrians or be detrimental to residential amenity. The council will require:

a. Sufficient on-site servicing space that can accommodate the number and type of vehicles that will be generated without manoeuvring on the highway;

b. A servicing management plan for all sites with on-site servicing space;

c. Where developments cannot provide on-site servicing areas, they must demonstrate that they do not cause an adverse effect on traffic congestion, pedestrian safety, residential amenity or bus routes; and

d. On-site servicing space and entrances to be sensitive to the character and appearance of the building and wider townscape and streetscape.

A.4.9 **Policy CL5 – Amenity** states that the council expects all development within the borough to achieve high standards of amenity. There should be

no significant impact due to increases in traffic, parking, noise, odours or vibration.

A.4.10 **Policy CE3 – Waste** requires that developments make use of rail and waterways to transport construction and other waste.

A.4.11 **Policy CE5 – Air Quality** makes it clear that the council will control the impact of development on air quality, including the impact of vehicles.

A.4.12 **Policy CE6 – Noise and Vibration** seeks to control and mitigate the impact of noise and vibration generating developments.

Unitary Development Plan (RB of Kensington and Chelsea, 2002)

A.4.13 The UDP was adopted in May 2002; it was replaced by the Core Strategy in December 2010, although a number of policies have been kept and therefore are still relevant.

A.4.14 The aim of the UDP is to provide a *"statutory planning framework for the local planning authority setting out the objectives, policies and proposals for the use of land and buildings in the area for 10 years"*. The council outlines its general strategic policy for transport as *"To seek a safe, efficient and environmentally acceptable transport system for the metropolitan area, whilst protecting the residential character, amenity and quality of the Royal Borough".*

A.4.15 **Policy STRAT 35 – To support an effective London-wide control of night-time and weekend lorry movement.**

A.4.16 **Policy CD5 – To seek to protect and enhance the established area of residential moorings at Battersea Reach** states that floating structures for transport purposes may be considered appropriate.

A.4.17 **Policy TR20 – To resist the loss of off-street coach parking**. Due to congestion problems that coaches cause, the council is keen to restrict any on-street parking provision for them. As a result, it is intended that off-street coach parking be retained.

A.4.18 **Policy TR21 – To support restrictions on coach movements in local areas.** This policy is supported in two ways:

a. Restricting on-street coach parking in the entire borough; and

b. By further restricting lorry and coach parking during evenings and weekends.

A.4.19 **Policy TR32 – Normally, to maintain the number of pay and display parking spaces in areas where off-street parking for visitors is limited** states that in areas with limited off-street parking, pay and display parking spaces should be protected. Demand for off-street parking will be controlled through price.

A.4.20 **Policy TR40 – To resist the formation of new accesses on the Major Roads**, this is because:

a. "The movement of vehicles and pedestrians gaining access to the large number of commercial and residential sites adjacent to Major

Roads can create problems for the safe and smooth flow of traffic on these roads".

A.4.21 **Policy TR44 – Normally to resist development which would result in the net loss of on-street residents' parking** is intended to maintain a supply of on street parking, which the council considers to be vital.

A.4.22 **Policy LR20 – To require that existing means of access to the foreshore are safeguarded and supplemented where appropriate**, lays down several requirements:

a. Points of access to the foreshore should be protected and new ones encouraged; and

b. Existing or new points of access cannot be opened without consulting the Harbourmaster.

Supplementary Planning Document (SPD) – Air Quality (RB of Kensington and Chelsea)

A.4.23 The Air Quality SPD sets out the council's requirements for development to reduce emissions within the borough. It was adopted in June 2009 and highlights a number of important strategies that contribute to reducing emissions.

A.4.24 The transport guidance in the Air Quality SPD mainly focuses on a number of measures to discourage high polluting vehicles and to encourage the use of more sustainable modes, including:

a. Walking and cycling strategies to encourage greater levels of walking and cycling;

b. The use of planning conditions or S106 agreements to reduce traffic and therefore emissions;

c. Expecting developers where possible to utilise or provide facilities for transporting passengers and/ or freight by water; and

d. Requiring developers to reduce emissions from construction vehicles, usually by requiring a particular euro standard to be met.

Supplementary Planning Document (SPD) – Transport (RB of Kensington and Chelsea)

A.4.25 The Transport SPD adopted in December 2008, is intended to complement and expand upon the policies set out in the UDP and LDF. There are six sections addressing transport planning policy matters:

a. Provision for pedestrians, Cyclists and Motorcyclists;

b. Car parking policy and standards;

c. Access and servicing;

d. Transport assessments; and

e. Travel Plans.

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Appendix B: PTAL analysis

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PTAI Study Report File Summary

PTAI Run Parameters

PTAI Run 20121409180129
Description 20121409180129
Run by user PTAL web application
Date and time 14/09/2012 18:01

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: 526510, 177152

Mode	Stop	Route	Distance (metres)	Frequency (vph)	Weight	Walk time (mins)	SWT (mins)	TAT (mins)	EDF	AI
BUS	LOTS RD FERRET & FIRKIN	C3	335.26	8.0	1.0	4.19	5.75	9.94	3.02	3.02
BUS	KING'S ROAD/EDITH GROVE	22	427.16	10.0	0.5	5.34	5.0	10.34	2.9	1.45
BUS	KING'S ROAD/EDITH GROVE	11	427.16	8.0	0.5	5.34	5.75	11.09	2.71	1.35
BUS	GUNTER GROVE KINGS ROAD	328	407.85	9.0	0.5	5.1	5.33	10.43	2.88	1.44
BUS	BEAUFORT ST CHEYNE WALK	319	636.06	8.0	0.5	7.95	5.75	13.7	2.19	1.09
BUS	BEAUFORT ST CHEYNE WALK	19	636.06	10.0	0.5	7.95	5.0	12.95	2.32	1.16
BUS	BEAUFORT ST CHEYNE WALK	345	636.06	8.0	0.5	7.95	5.75	13.7	2.19	1.09
BUS	BEAUFORT ST CHEYNE WALK	49	636.06	7.5	0.5	7.95	6.0	13.95	2.15	1.08
LT	SAP Points Not Found									
NATIONAL_RAIL	IMPERIAL WHARF	CLAPHAM JUNCTION to STRATFORD	670.9	2.0	1.0	8.39	15.75	24.14	1.24	1.24
NATIONAL_RAIL	IMPERIAL WHARF	CLAPHAM JUNCTION to WILLESDEN JUNCTION	670.9	2.0	0.5	8.39	15.75	24.14	1.24	0.62

Total AI for this POI is 13.54.

PTAL Rating is 3.

Appendix C: Local modelling outputs

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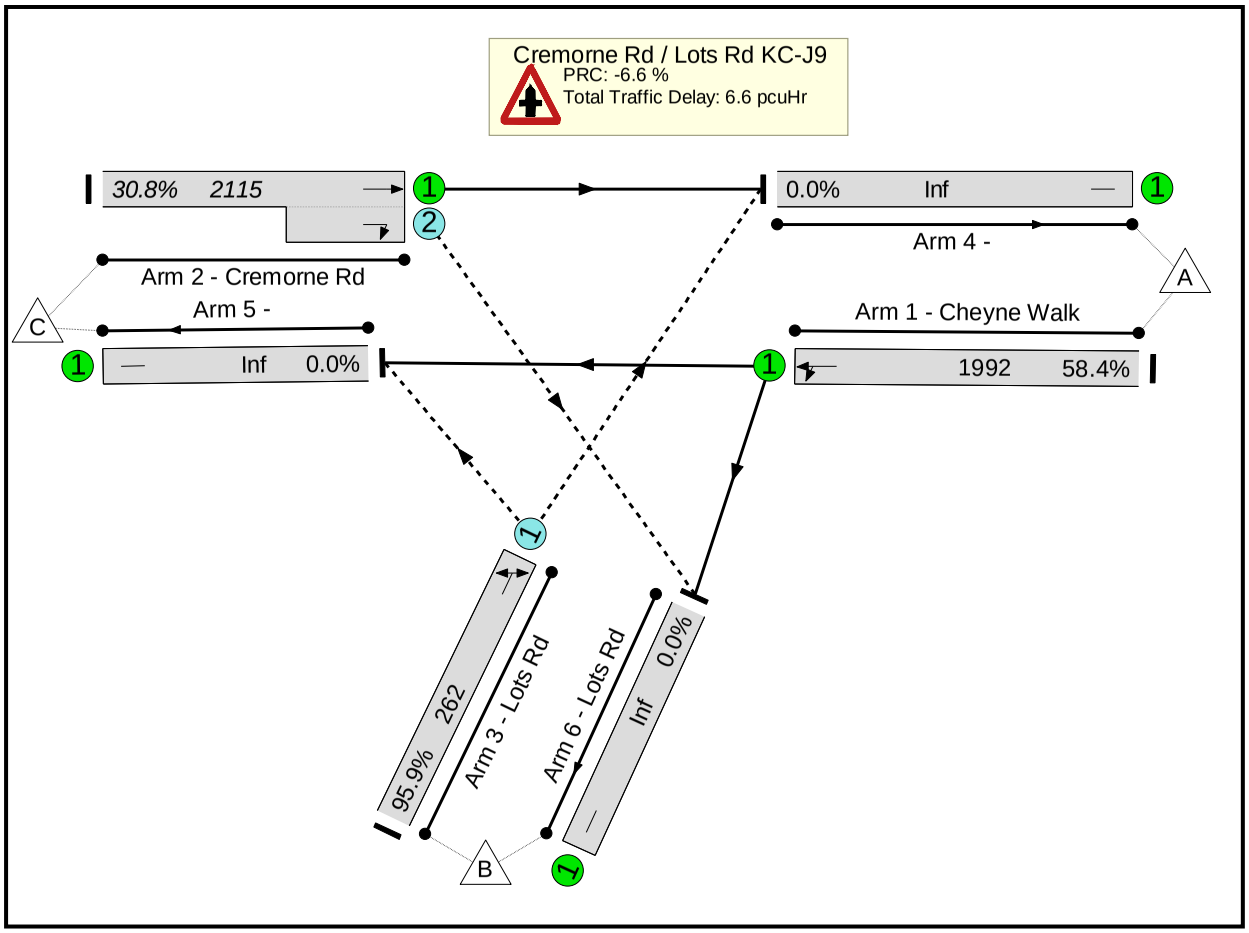
C.1 Baseline results, AM peak hour

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, existing priority layout

Network Layout Diagram



Network Results

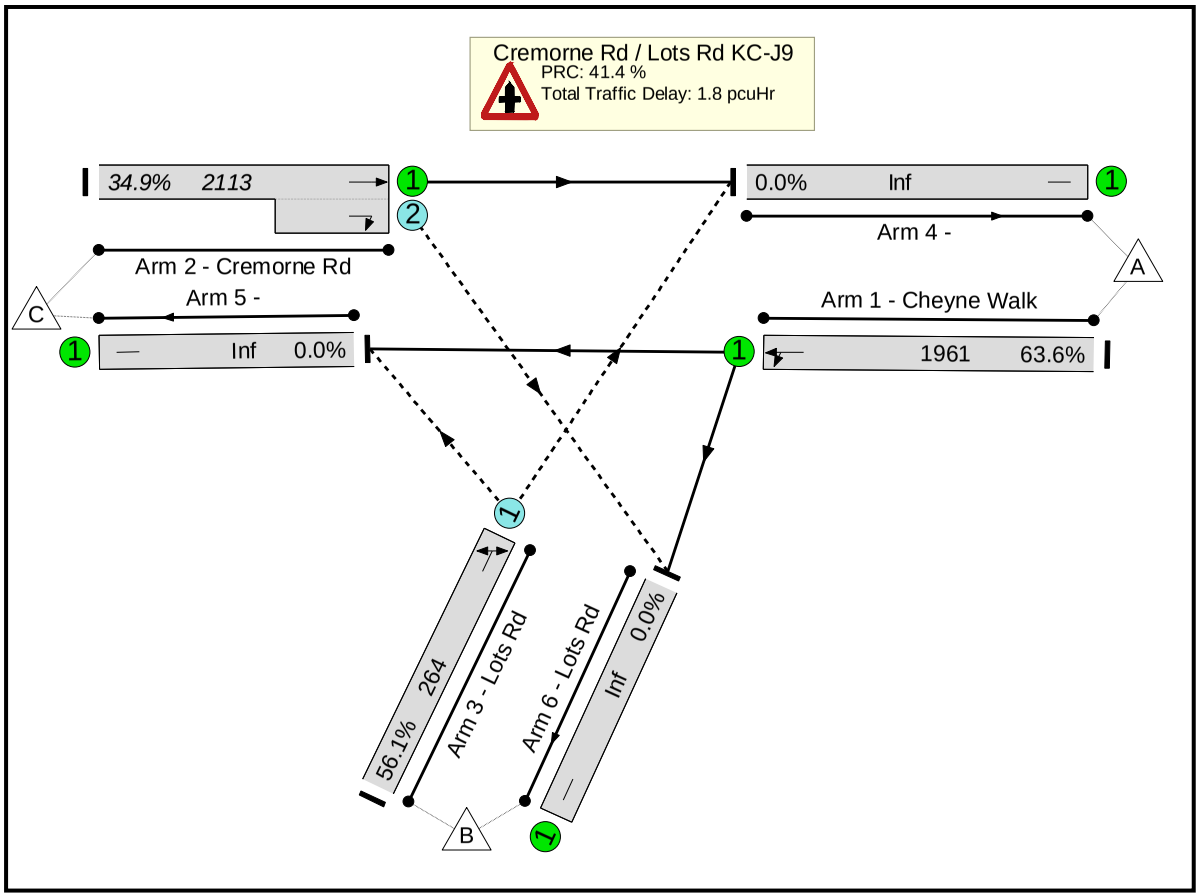
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**95.9%**	**251**	**0**	**0**	**6.6**	**-**	**-**
Cremorne Rd / Lots Rd KC-J9	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**95.9%**	**251**	**0**	**0**	**6.6**	**-**	**-**
1/1	Cheyne Walk Ahead Left	U	-		-	-	-	1163	1992	1992	58.4%	-	-	-	0.7	2.2	0.7
2/1+2/2	Cremorne Rd Ahead Right	U+O	-		-	-	-	651	2115:2005	2115	30.8%	0	0	0	0.2	1.2	0.2
3/1	Lots Rd Right Left	O	-		-	-	-	251	1908	262	95.9%	251	0	0	5.7	81.5	5.7

C1 PRC for Signalled Lanes (%): 0.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Cycle Time (s): 90
PRC Over All Lanes (%): -6.6 Total Delay Over All Lanes(pcuHr): 6.60

C.2 Baseline results, PM peak hour

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, existing priority layout

Network Layout Diagram



Network Results

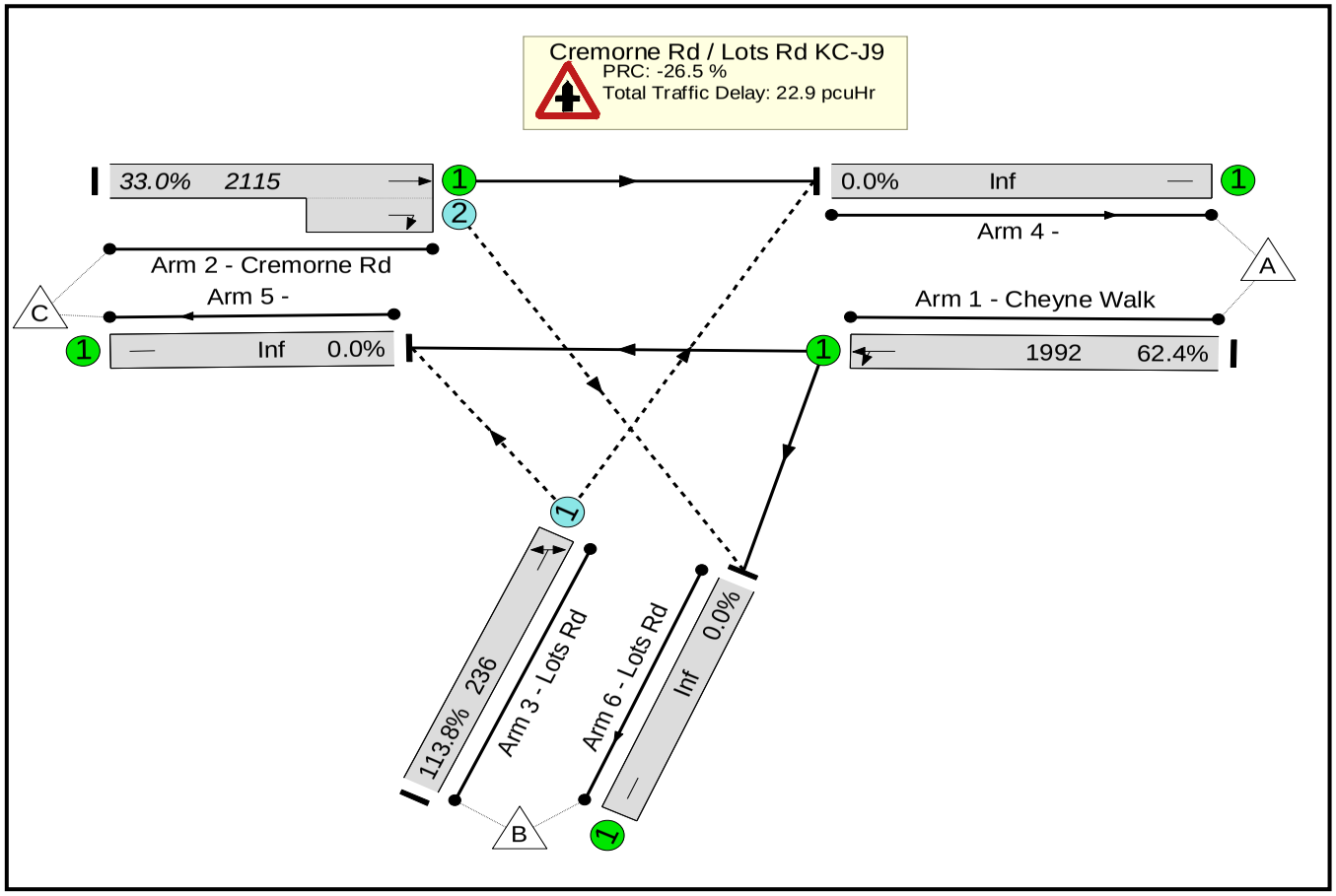
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**63.6%**	**153**	**0**	**0**	**1.8**	**-**	**-**
Cremorne Rd / Lots Rd KC-J9	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**63.6%**	**153**	**0**	**0**	**1.8**	**-**	**-**
1/1	Cheyne Walk Ahead Left	U	-		-	-	-	1248	1961	1961	63.6%	-	-	-	0.9	2.5	0.9
2/1+2/2	Cremorne Rd Ahead Right	U+O	-		-	-	-	737	2115:1823	2113	34.9%	5	0	0	0.3	1.3	0.3
3/1	Lots Rd Right Left	O	-		-	-	-	148	1897	264	56.1%	148	0	0	0.6	15.4	0.6

C1 PRC for Signalled Lanes (%): 0.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Cycle Time (s): 90
PRC Over All Lanes (%): 41.4 Total Delay Over All Lanes(pcuHr): 1.77

C.3 Construction base case results, AM peak hour

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, existing priority layout

Network Layout

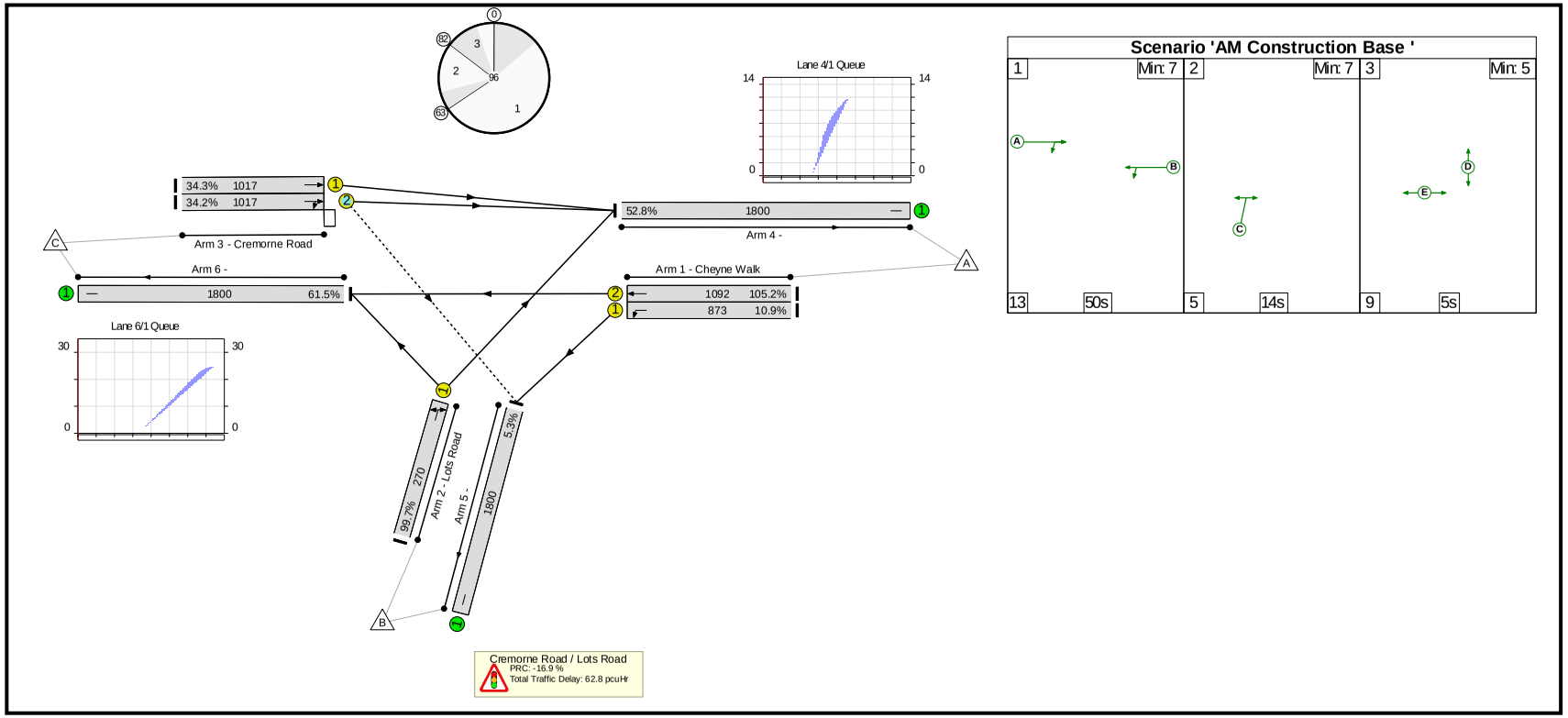


Network Results

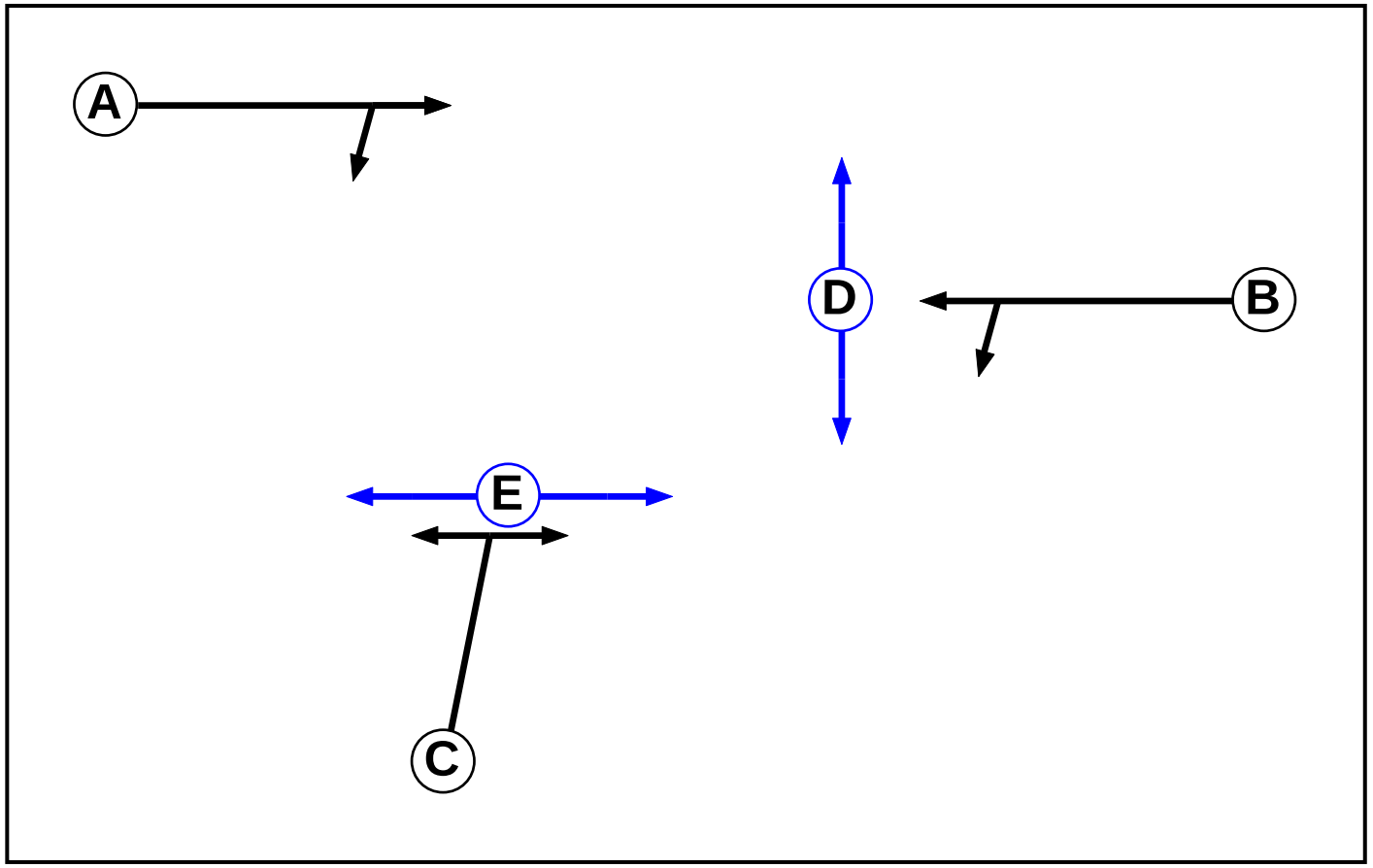
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**113.8%**	**236**	**0**	**0**	**22.9**	**-**	**-**
Cremorne Rd / Lots Rd KC-J9	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**113.8%**	**236**	**0**	**0**	**22.9**	**-**	**-**
1/1	Cheyne Walk Ahead Left	U	-		-	-	-	1244	1992	1992	62.4%	-	-	-	0.8	2.4	0.8
2/1+2/2	Cremorne Rd Ahead Right	U+O	-		-	-	-	697	2115:2005	2115	33.0%	0	0	0	0.2	1.3	0.2
3/1	Lots Rd Right Left	O	-		-	-	-	269	1908	236	113.8%	236	0	0	21.8	291.8	39.9
			C1		PRC for Signalled Lanes (%):			0.0		Total Delay for Signalled Lanes (pcuHr):			0.00		Cycle Time (s):	90	
					PRC Over All Lanes (%):			-26.5		Total Delay Over All Lanes(pcuHr):			22.88				

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, signalised layout

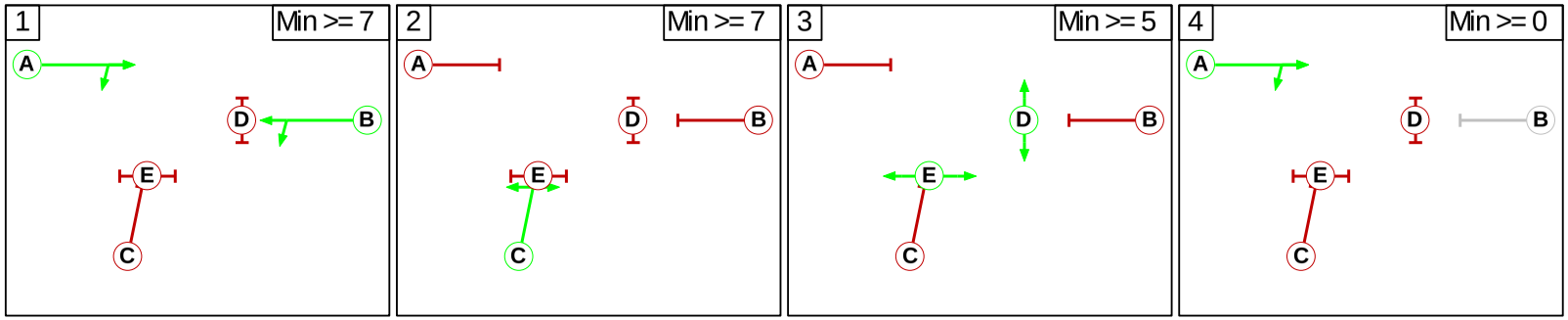
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C
3	D E
4	A

Phase Intergreens Matrix

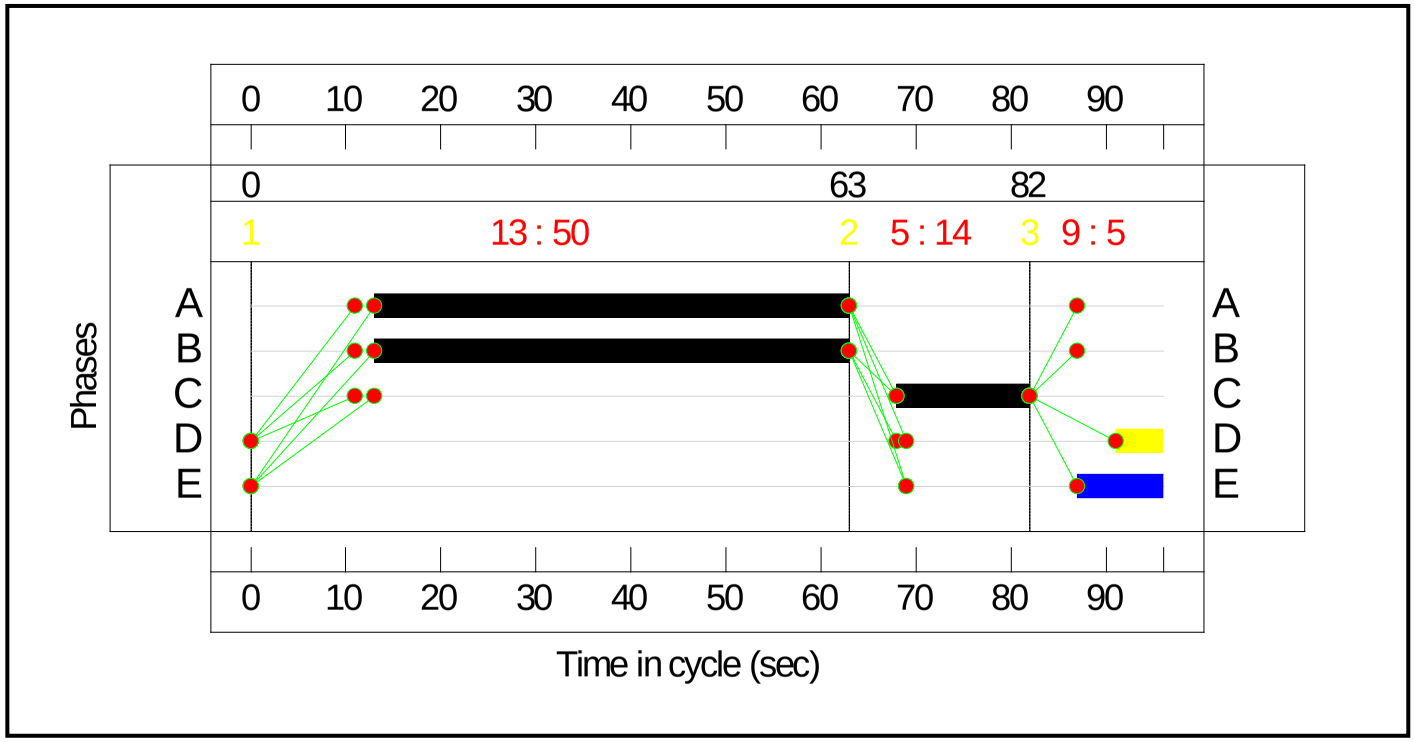
		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		-	5	6	6
	B	-		5	5	6
	C	5	5		9	5
	D	11	11	11		-
	E	13	13	13	-	

Traffic Flows, Desired

Desired Flow:

		Destination			
		A	B	C	Tot.
Origin	A	0	95	1149	1244
	B	254	0	15	269
	C	697	0	0	697
	Tot.	951	95	1164	2210

Signal Timings Diagram



Network Results

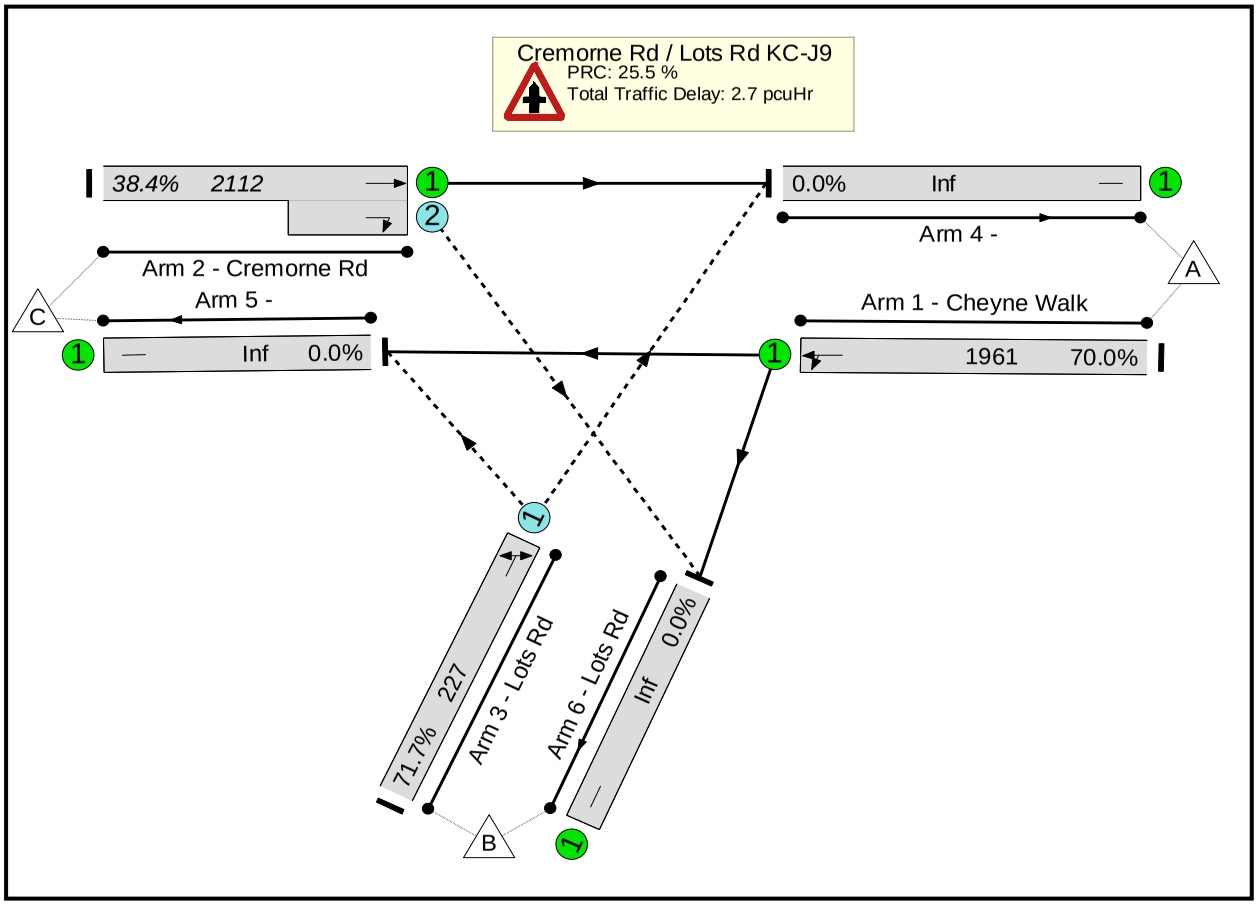
Item	Lane Description	Lane Type	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Construction Base Case layout	-	-	-	-	-	-	**105.2%**	**62.8**	-	-
Cremorne Road / Lots Road	-	-	-	-	-	-	**105.2%**	**62.8**	-	-
1/1	Cheyne Walk Left	U	50	95	1644	873	10.9%	0.4	13.5	1.3
1/2	Cheyne Walk Ahead	U	50	1149	2055	1092	105.2%	46.1	144.5	68.7
2/1	Lots Road Right Left	U	14	269	1727	270	99.7%	11.0	147.4	15.1
3/1	Cremorne Road Ahead	U	50	349	1915	1017	34.3%	1.5	15.6	5.6
3/2	Cremorne Road Ahead Right	O	50	348	1915	1017	34.2%	1.5	15.6	5.5
4/1		U	-	951	1800	1800	52.8%	0.9	3.4	12.3
5/1		U	-	95	1800	1800	5.3%	0.0	1.1	0.0
6/1		U	-	1164	1800	1800	61.5%	1.4	4.6	25.6

C1 PRC for Signalled Lanes (%): -16.9 Total Delay for Signalled Lanes (pcuHr): 60.50 Cycle Time (s): 96
PRC Over All Lanes (%): -16.9 Total Delay Over All Lanes(pcuHr): 62.84

C.4 Construction base case results, PM peak hour

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, existing priority layout

Network Layout



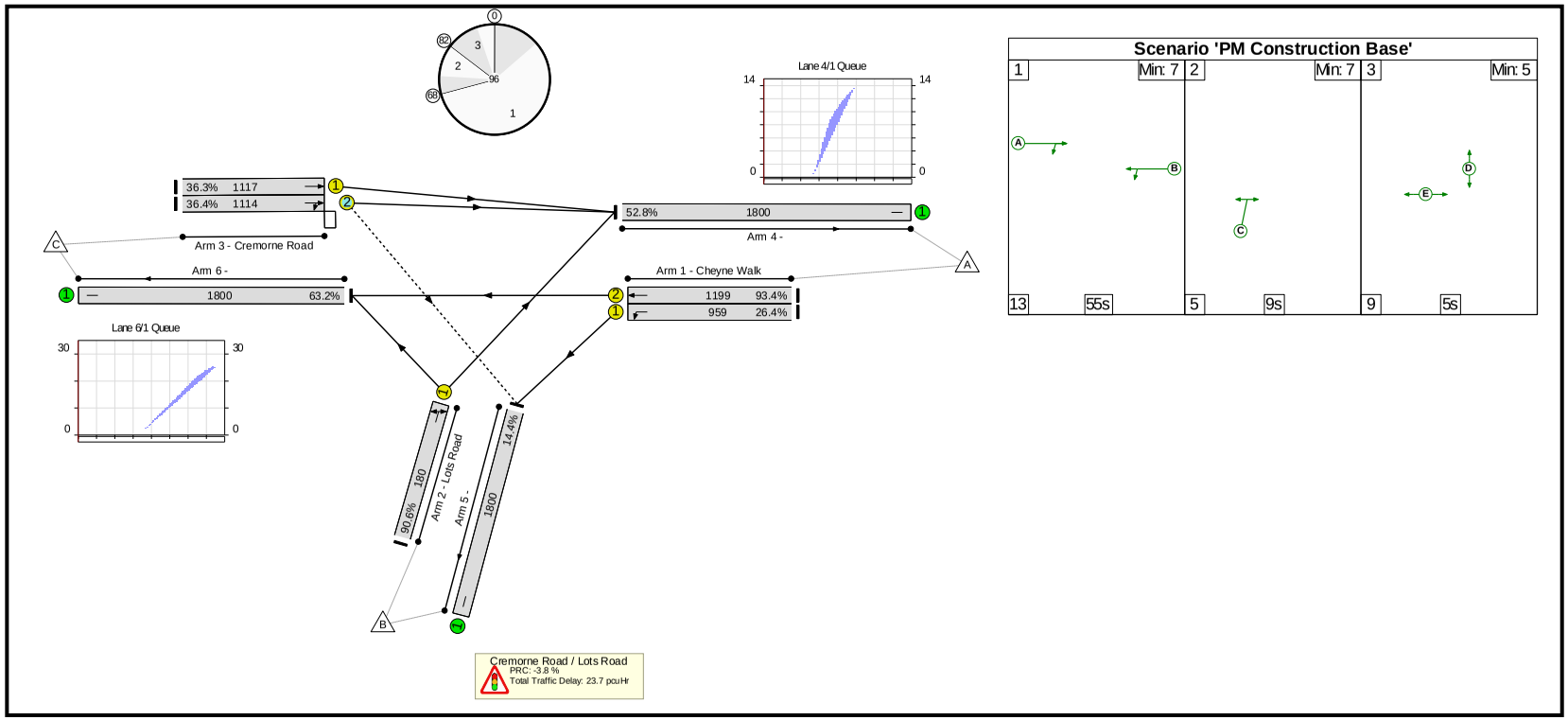
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.7%**	**169**	**0**	**0**	**2.7**	**-**	**-**
Cremorne Rd / Lots Rd KC-J9	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**71.7%**	**169**	**0**	**0**	**2.7**	**-**	**-**
1/1	Cheyne Walk Ahead Left	U	-		-	-	-	1373	1961	1961	70.0%	-	-	-	1.2	3.0	1.2
2/1+2/2	Cremorne Rd Ahead Right	U+O	-		-	-	-	811	2115:1823	2112	38.4%	6	0	0	0.3	1.4	0.3
3/1	Lots Rd Right Left	O	-		-	-	-	163	1896	227	71.7%	163	0	0	1.2	27.0	1.2

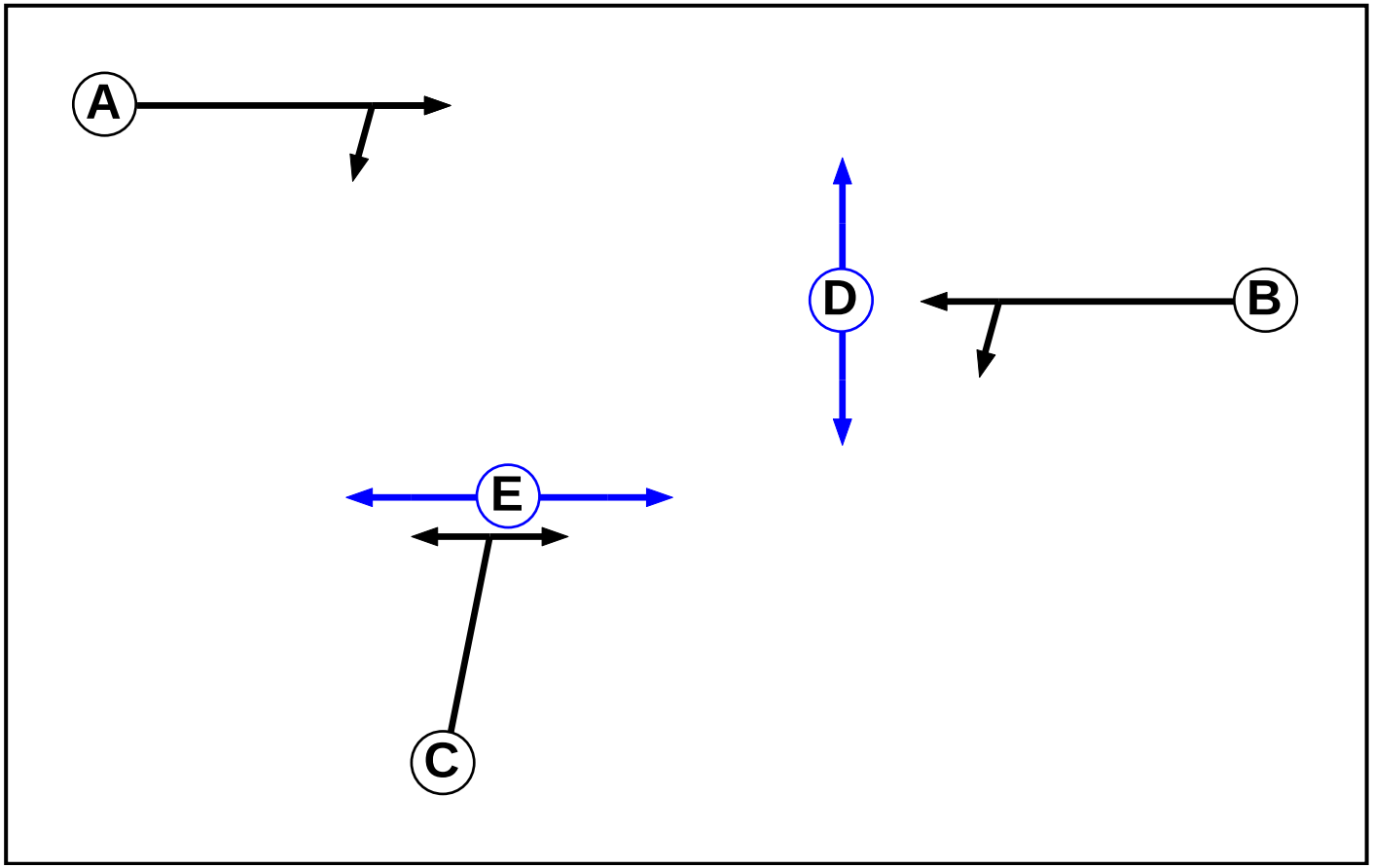
C1 PRC for Signalled Lanes (%): 0.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Cycle Time (s): 90
PRC Over All Lanes (%): 25.5 Total Delay Over All Lanes(pcuHr): 2.70

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, signalised layout

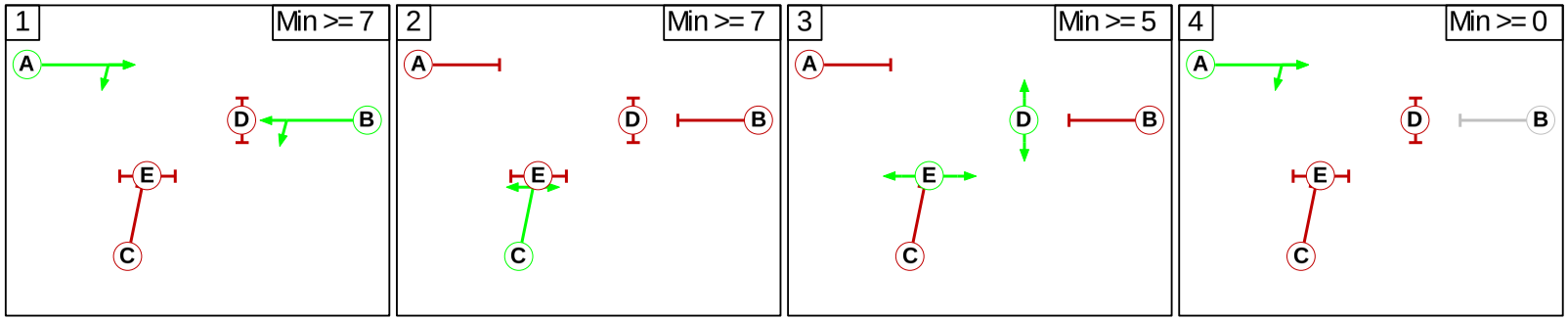
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C
3	D E
4	A

Phase Intergreens Matrix

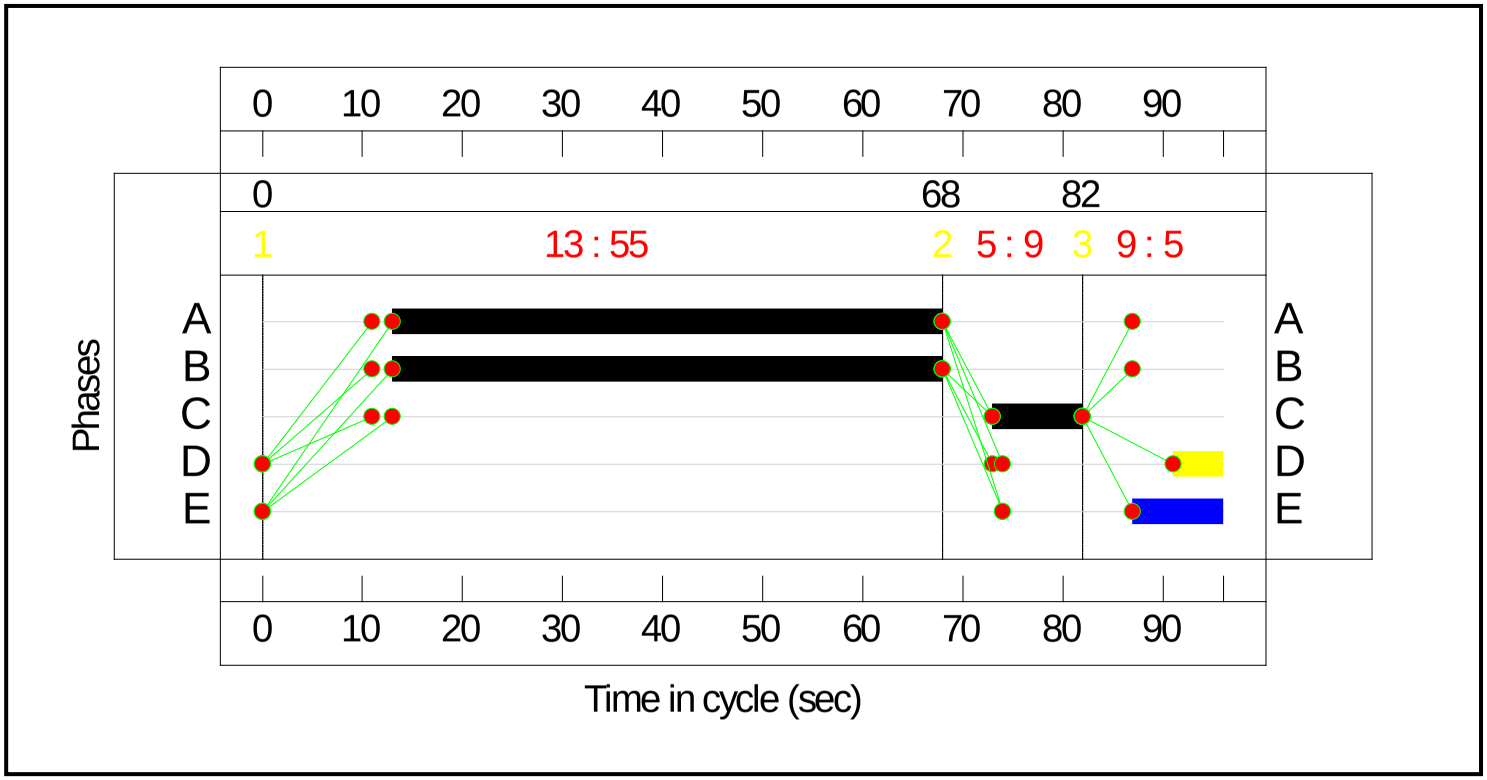
		Starting Phase				
		A	B	C	D	E
Terminating Phase	A		-	5	6	6
	B	-		5	5	6
	C	5	5		9	5
	D	11	11	11		-
	E	13	13	13	-	

Traffic Flows, Desired

Desired Flow:

		Destination			
		A	B	C	Tot.
Origin	A	0	253	1120	1373
	B	146	0	17	163
	C	805	6	0	811
	Tot.	951	259	1137	2347

Signal Timings Diagram



Network Results

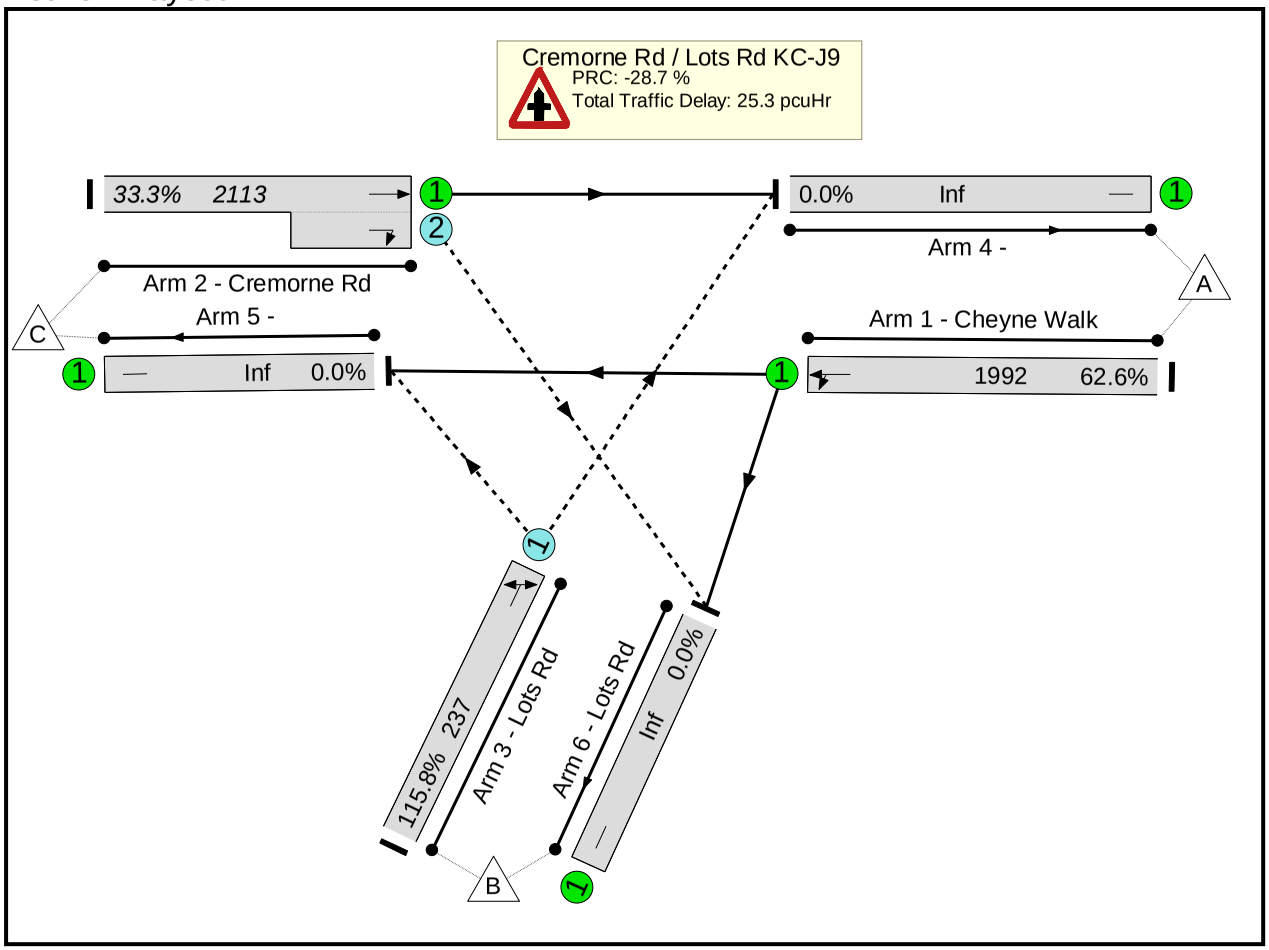
Item	Lane Description	Lane Type	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Construction Base Case layout	-	-	-	-	-	-	**93.4%**	**23.7**	-	-
Cremorne Road / Lots Road	-	-	-	-	-	-	**93.4%**	**23.7**	-	-
1/1	Cheyne Walk Left	U	55	253	1644	959	26.4%	0.9	12.4	3.5
1/2	Cheyne Walk Ahead	U	55	1120	2055	1199	93.4%	11.8	38.1	33.2
2/1	Lots Road Right Left	U	9	163	1727	180	90.6%	5.4	118.3	7.7
3/1	Cremorne Road Ahead	U	55	406	1915	1117	36.3%	1.5	13.1	5.9
3/2	Cremorne Road Ahead Right	O	55	405	1910	1114	36.4%	1.5	13.7	5.9
4/1		U	-	951	1800	1800	52.8%	1.0	3.8	14.1
5/1		U	-	259	1800	1800	14.4%	0.1	1.2	0.1
6/1		U	-	1137	1800	1800	63.2%	1.5	4.7	26.2

C1 PRC for Signalled Lanes (%): -3.8 Total Delay for Signalled Lanes (pcuHr): 21.10 Cycle Time (s): 96
PRC Over All Lanes (%): -3.8 Total Delay Over All Lanes(pcuHr): 23.65

C.5 Construction development case results, AM peak hour

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, existing priority layout

Network Layout



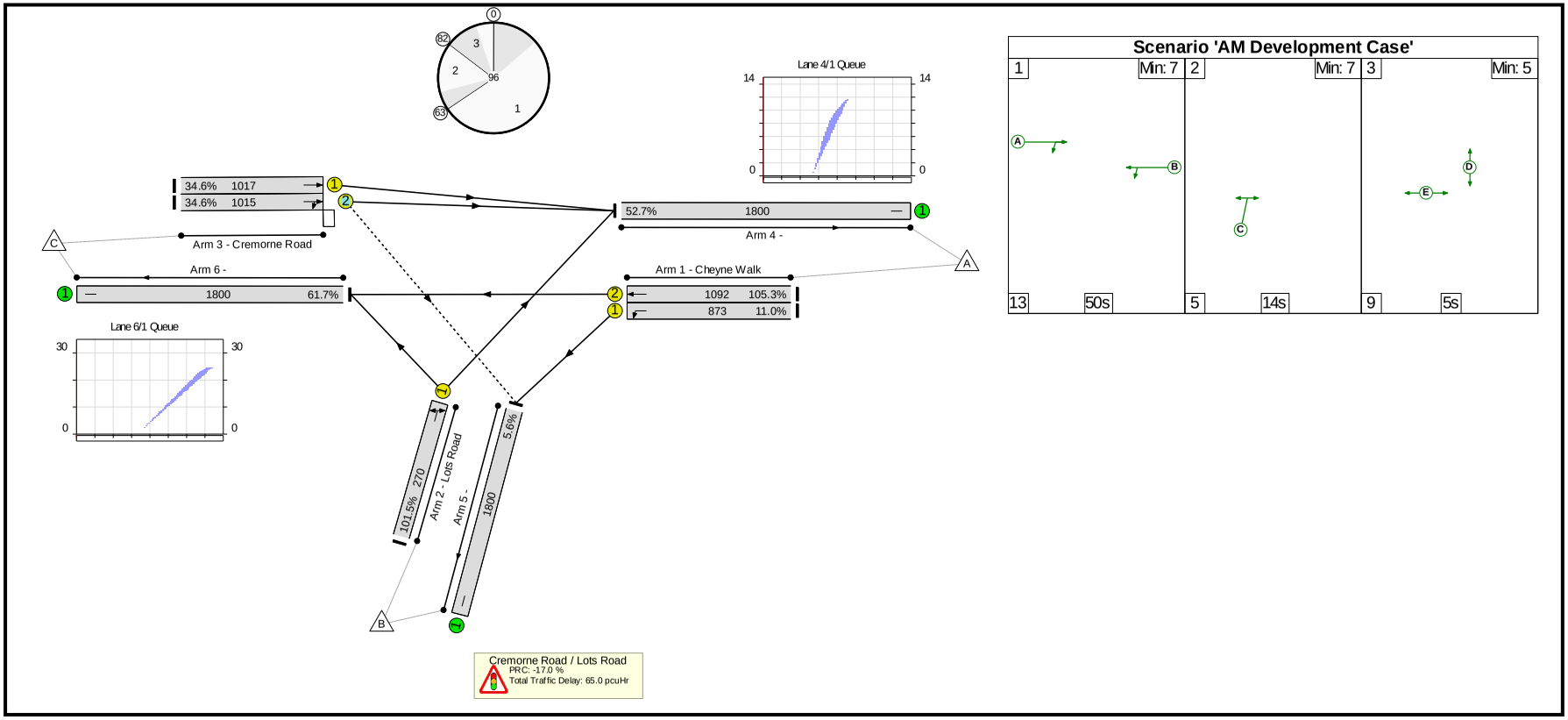
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	-	-	-		-	-	-	-	-	-	**115.8%**	**242**	**0**	**0**	**25.3**	-	-
Cremorne Rd / Lots Rd KC-J9	-	-	-		-	-	-	-	-	-	**115.8%**	**242**	**0**	**0**	**25.3**	-	-
1/1	Cheyne Walk Ahead Left	U	-		-	-	-	1246	1992	1992	62.6%	-	-	-	0.8	2.4	0.8
2/1+2/2	Cremorne Rd Ahead Right	U+O	-		-	-	-	703	2115:1823	2113	33.3%	5	0	0	0.2	1.3	0.2
3/1	Lots Rd Right Left	O	-		-	-	-	274	1905	237	115.8%	237	0	0	24.2	317.6	42.4

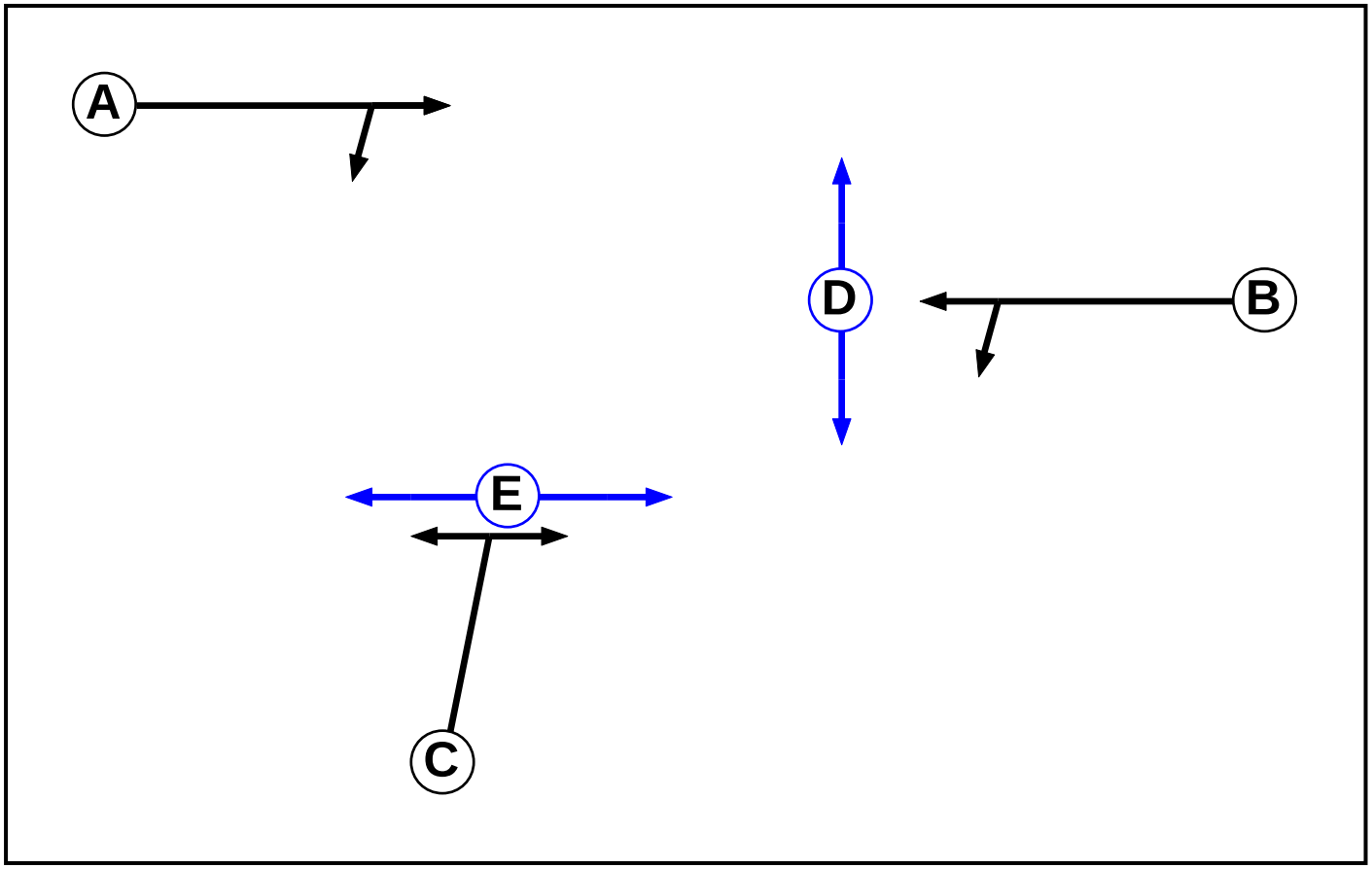
C1 PRC for Signalled Lanes (%): 0.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Cycle Time (s): 90
PRC Over All Lanes (%): -28.7 Total Delay Over All Lanes(pcuHr): 25.26

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, signalised layout

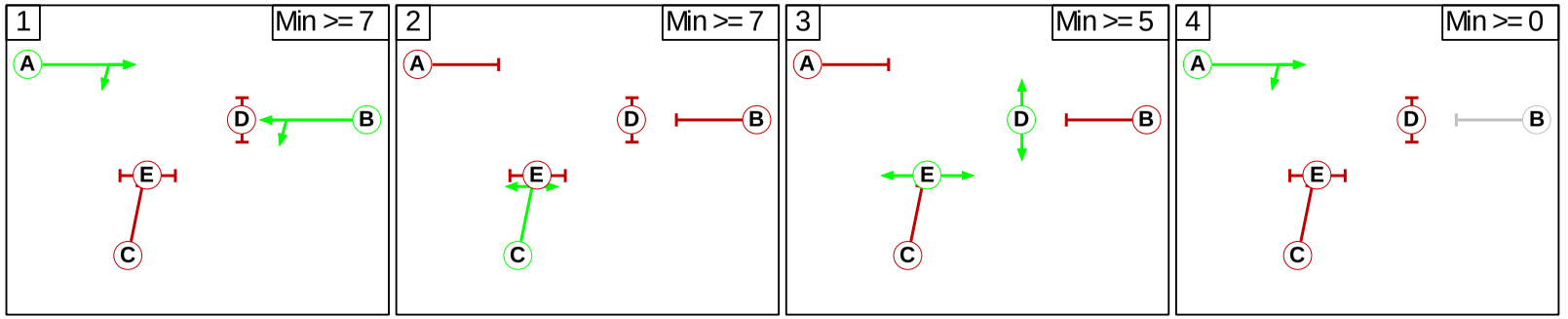
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C
3	D E
4	A

Phase Intergreens Matrix

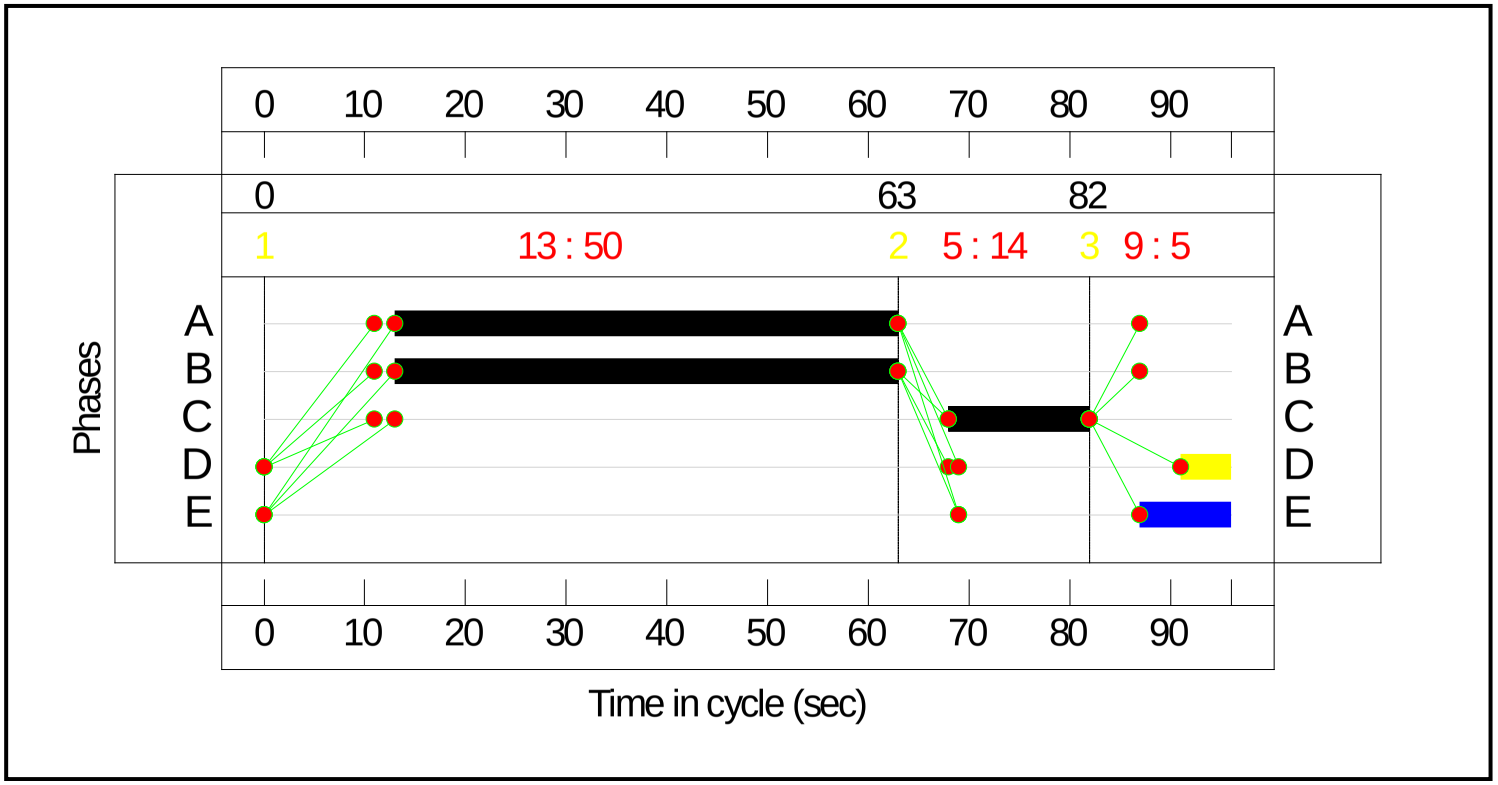
	Starting Phase					
Terminating Phase		A	B	C	D	E
	A		-	5	6	6
	B	-		5	5	6
	C	5	5		9	5
	D	11	11	11		-
	E	13	13	13	-	

Traffic Flows, Desired

Desired Flow:

	Destination				
Origin		A	B	C	Tot.
	A	0	96	1150	1246
	B	255	0	19	274
	C	698	5	0	703
	Tot.	953	101	1169	2223

Signal Timings Diagram



Network Results

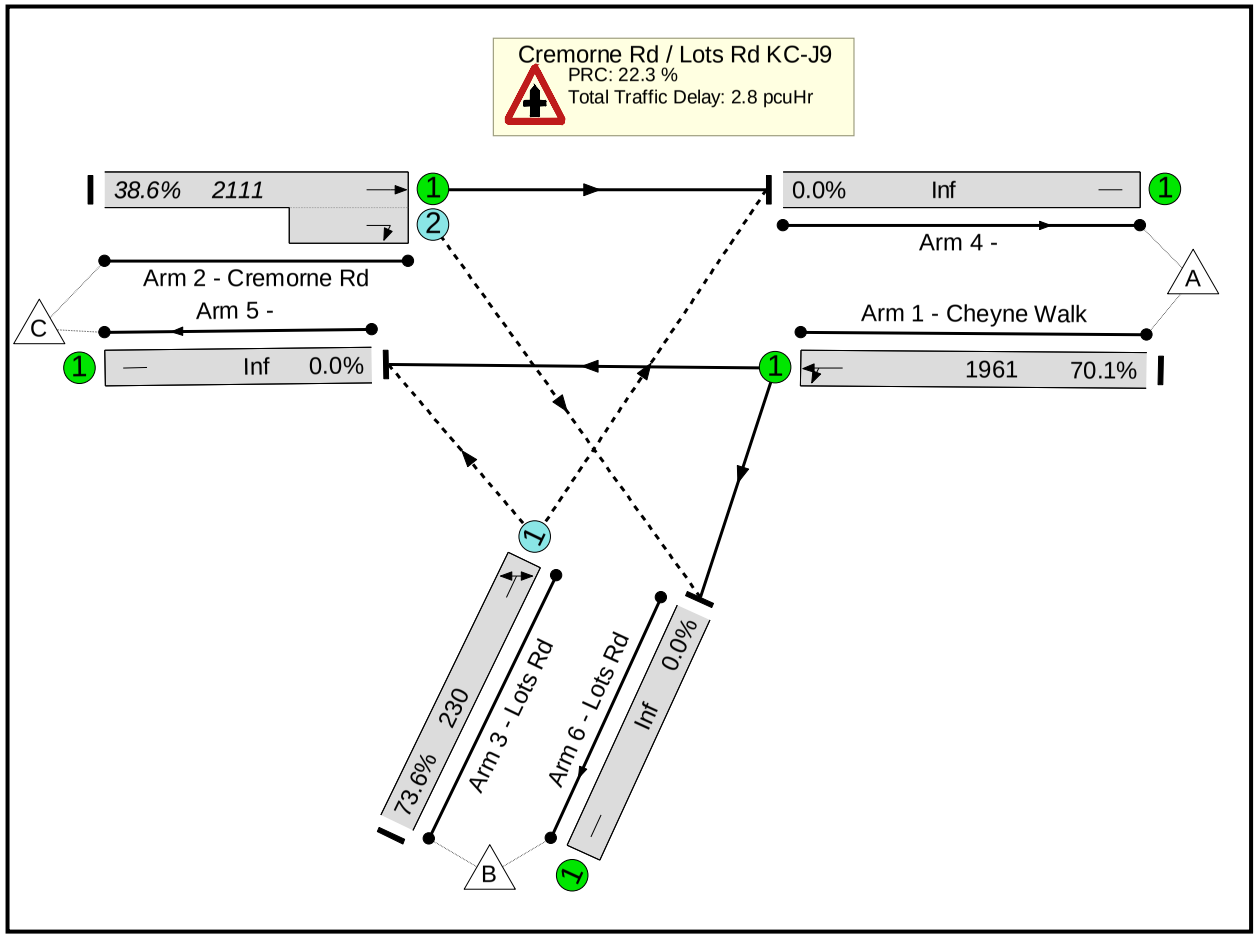
Item	Lane Description	Lane Type	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Construction Base Case layout	-	-	-	-	-	-	**105.3%**	**65.0**	-	-
Cremorne Road / Lots Road	-	-	-	-	-	-	**105.3%**	**65.0**	-	-
1/1	Cheyne Walk Left	U	50	96	1644	873	11.0%	0.4	13.5	1.3
1/2	Cheyne Walk Ahead	U	50	1150	2055	1092	105.3%	46.6	145.8	69.1
2/1	Lots Road Right Left	U	14	274	1727	270	101.5%	12.6	165.5	16.8
3/1	Cremorne Road Ahead	U	50	352	1915	1017	34.6%	1.5	15.6	5.6
3/2	Cremorne Road Ahead Right	O	50	351	1910	1015	34.6%	1.6	16.2	5.6
4/1		U	-	953	1800	1800	52.7%	0.9	3.4	12.3
5/1		U	-	101	1800	1800	5.6%	0.0	1.1	0.0
6/1		U	-	1169	1800	1800	61.7%	1.4	4.6	25.6

C1 PRC for Signalled Lanes (%): -17.0 Total Delay for Signalled Lanes (pcuHr): 62.63 Cycle Time (s): 96
PRC Over All Lanes (%): -17.0 Total Delay Over All Lanes(pcuHr): 64.98

C.6 Construction development case results, PM peak hour

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, existing priority layout

Network Layout Diagram



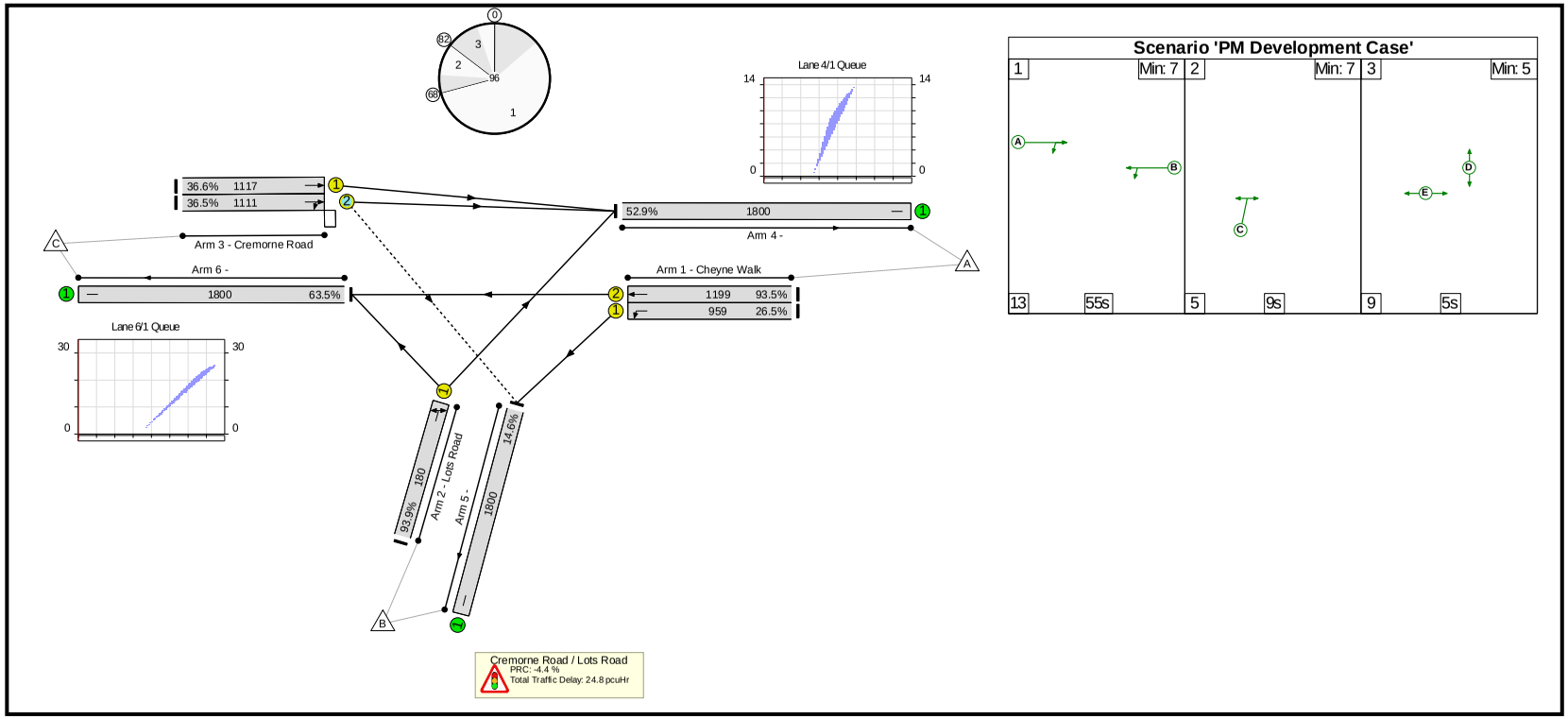
Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.6%**	**178**	**0**	**0**	**2.8**	**-**	**-**
Cremorne Rd / Lots Rd KC-J9	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.6%**	**178**	**0**	**0**	**2.8**	**-**	**-**
1/1	Cheyne Walk Ahead Left	U	-		-	-	-	1375	1961	1961	70.1%	-	-	-	1.2	3.1	1.2
2/1+2/2	Cremorne Rd Ahead Right	U+O	-		-	-	-	815	2115:1823	2111	38.6%	9	0	0	0.3	1.4	0.3
3/1	Lots Rd Right Left	O	-		-	-	-	169	1889	230	73.6%	169	0	0	1.3	28.4	1.3

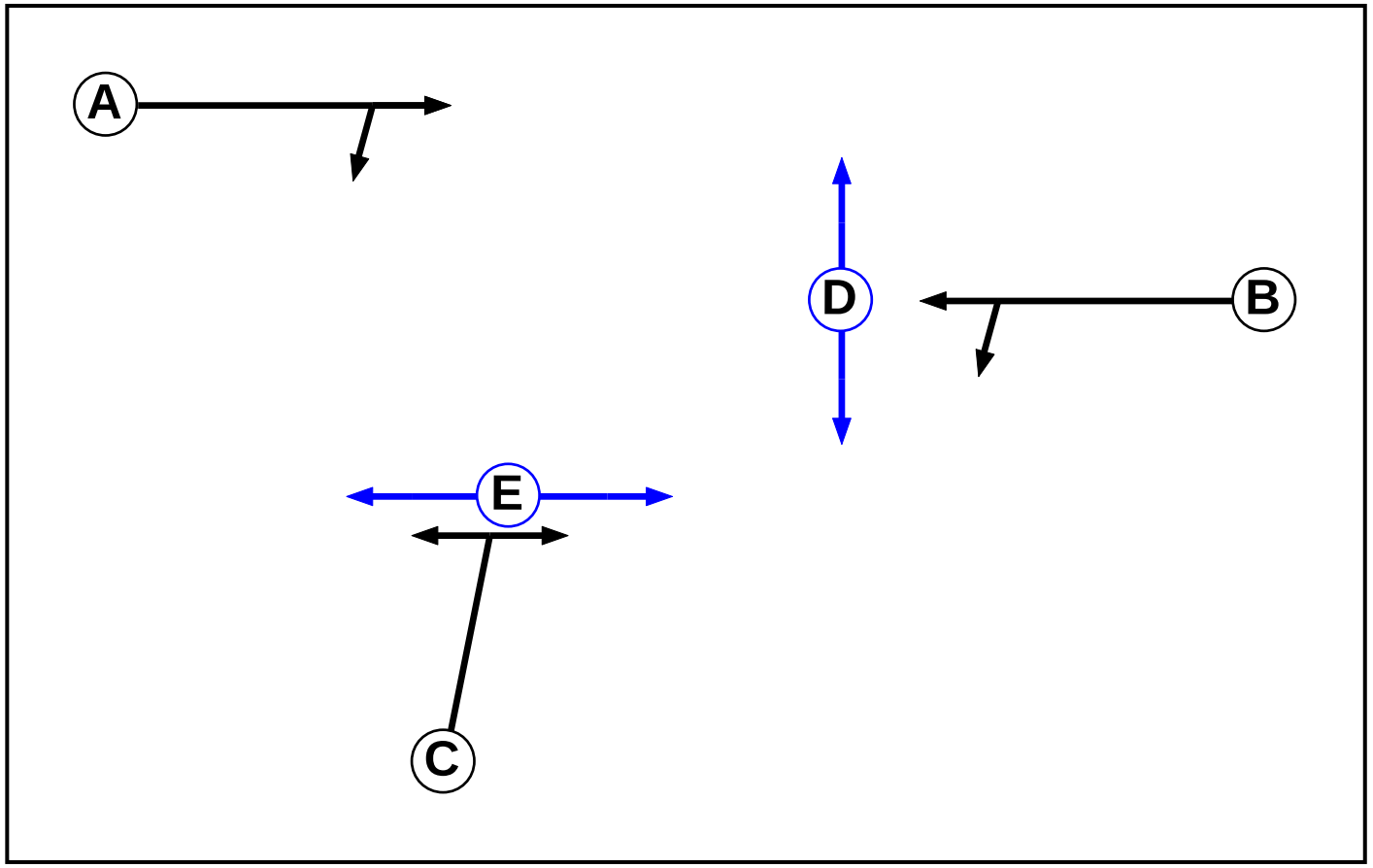
C1 PRC for Signalled Lanes (%): 0.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Cycle Time (s): 90
PRC Over All Lanes (%): 22.3 Total Delay Over All Lanes(pcuHr): 2.82

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, signalised layout

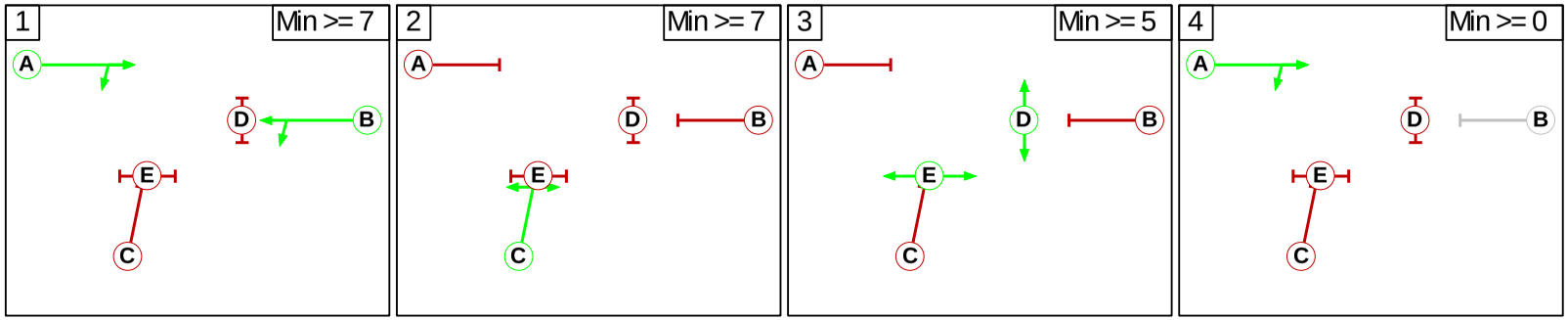
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B
2	C
3	D E
4	A

Phase Intergreens Matrix

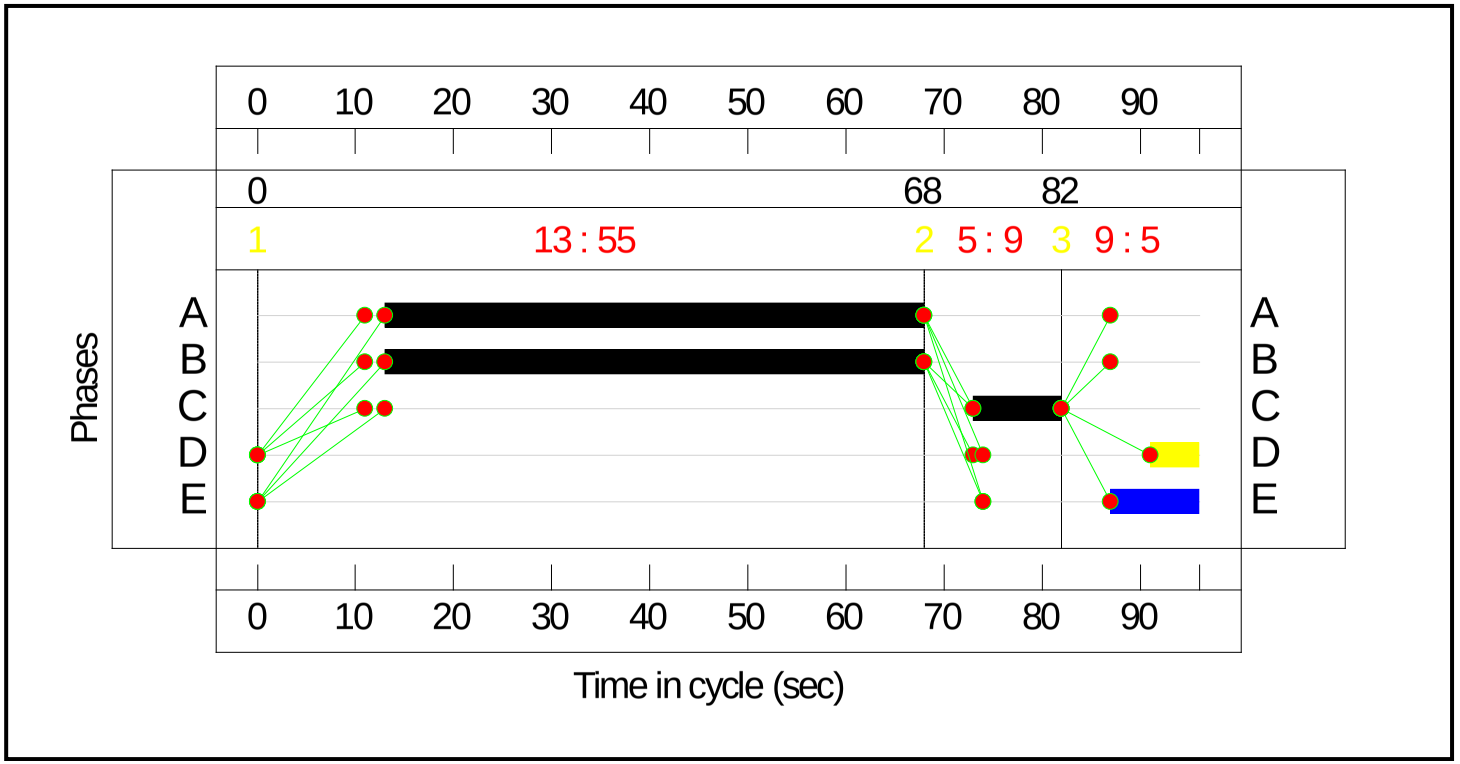
	Starting Phase					
		A	B	C	D	E
Terminating Phase	A		-	5	6	6
	B	-		5	5	6
	C	5	5		9	5
	D	11	11	11		-
	E	13	13	13	-	

Traffic Flows, Desired

Desired Flow:

		Destination			
		A	B	C	Tot.
Origin	A	0	254	1121	1375
	B	147	0	22	169
	C	806	9	0	815
	Tot.	953	263	1143	2359

Signal Timings Diagram



Network Results

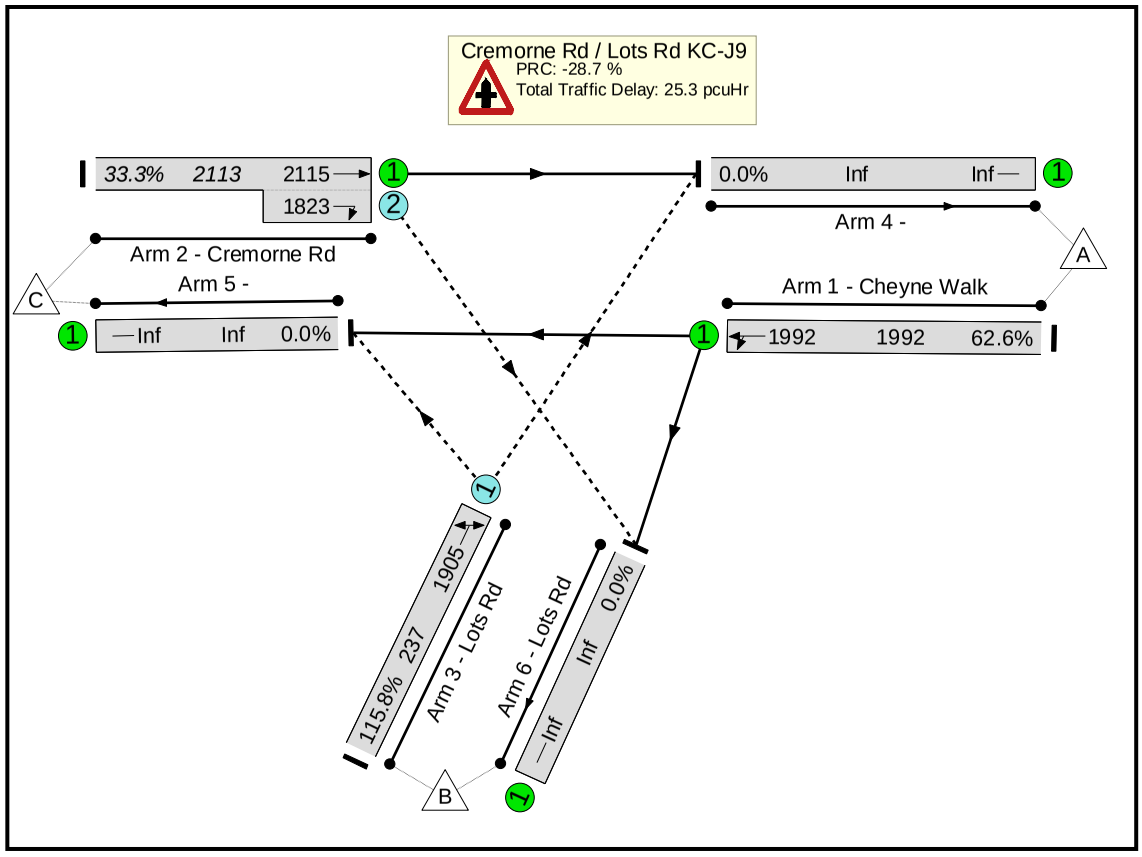
Item	Lane Description	Lane Type	Total Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network: Construction Base Case layout	-	-	-	-	-	-	**93.9%**	**24.8**	-	-
Cremorne Road / Lots Road	-	-	-	-	-	-	**93.9%**	**24.8**	-	-
1/1	Cheyne Walk Left	U	55	254	1644	959	26.5%	0.9	12.4	3.5
1/2	Cheyne Walk Ahead	U	55	1121	2055	1199	93.5%	11.9	38.3	33.6
2/1	Lots Road Right Left	U	9	169	1727	180	93.9%	6.3	134.8	8.8
3/1	Cremorne Road Ahead	U	55	409	1915	1117	36.6%	1.5	13.1	6.0
3/2	Cremorne Road Ahead Right	O	55	406	1908	1111	36.5%	1.6	14.0	5.9
4/1		U	-	953	1800	1800	52.9%	1.0	3.8	14.1
5/1		U	-	263	1800	1800	14.6%	0.1	1.2	0.1
6/1		U	-	1143	1800	1800	63.5%	1.5	4.7	26.2

C1 PRC for Signalled Lanes (%): -4.4 Total Delay for Signalled Lanes (pcuHr): 22.20 Cycle Time (s): 96
PRC Over All Lanes (%): -4.4 Total Delay Over All Lanes(pcuHr): 24.78

C.7 Construction development case results, sensitivity test, AM peak hour

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, existing priority layout

Network Layout Diagram



Network Results

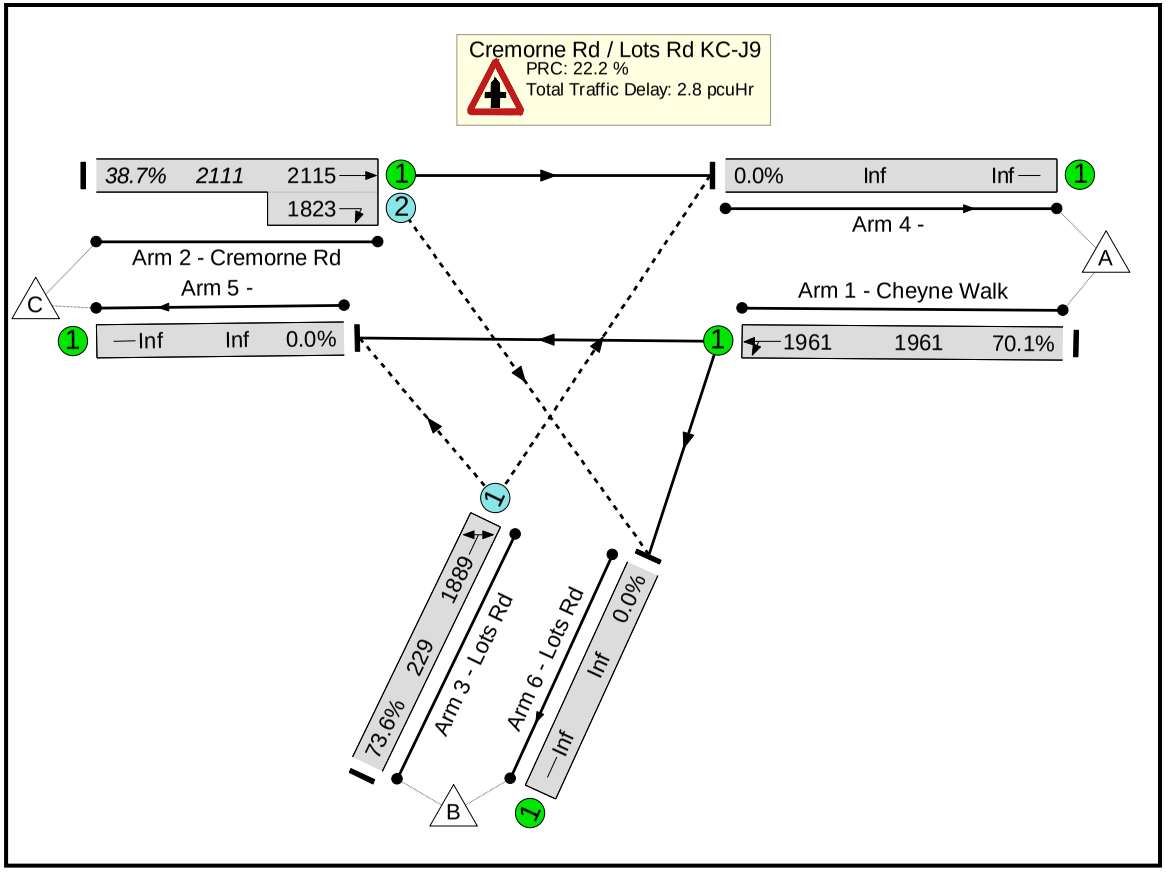
Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**115.8%**	**242**	**0**	**0**	**25.3**	**-**	**-**
Cremorne Rd / Lots Rd KC-J9	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**115.8%**	**242**	**0**	**0**	**25.3**	**-**	**-**
1/1	Cheyne Walk Ahead Left	U	-		-	-	-	1246	1992	1992	62.6%	-	-	-	0.8	2.4	0.8
2/1+2/2	Cremorne Rd Ahead Right	U+O	-		-	-	-	703	2115:1823	2113	33.3%	5	0	0	0.2	1.3	0.2
3/1	Lots Rd Right Left	O	-		-	-	-	274	1905	237	115.8%	237	0	0	24.2	317.6	42.4

C1 PRC for Signalled Lanes (%): 0.0 Total Delay for Signalled Lanes (pcuHr): 0.00 Cycle Time (s): 90
PRC Over All Lanes (%): -28.7 Total Delay Over All Lanes(pcuHr): 25.26

C.8 Construction development case results, sensitivity test, PM peak hour

Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction, existing priority layout

Network Layout Diagram



Network Results

Item	Lane Description	Lane Type	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Mean Max Queue (pcu)
Network	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.6%**	**179**	**0**	**0**	**2.8**	**-**	**-**
Cremorne Rd / Lots Rd KC-J9	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**73.6%**	**179**	**0**	**0**	**2.8**	**-**	**-**
1/1	Cheyne Walk Ahead Left	U	-		-	-	-	1375	1961	1961	70.1%	-	-	-	1.2	3.1	1.2
2/1+2/2	Cremorne Rd Ahead Right	U+O	-		-	-	-	816	2115:1823	2111	38.7%	10	0	0	0.3	1.4	0.3
3/1	Lots Rd Right Left	O	-		-	-	-	169	1889	229	73.6%	169	0	0	1.3	28.5	1.3

C1	PRC for Signalled Lanes (%):	0.0	Total Delay for Signalled Lanes (pcuHr):	0.00	Cycle Time (s):	90
	PRC Over All Lanes (%):	22.2	Total Delay Over All Lanes(pcuHr):	2.82		

Appendix D: Accident analysis

D.1 Existing highway safety analysis

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

D.1.2 Data on accidents for the most recent five-year period from April 2006 until March 2011 has been analysed for the following junctions and surrounding roads:

a. Lots Road
b. Cremorne Road (A3220)
c. Cheyne Walk (A3220) between the junctions with Blantyre Street and Lots Road
d. Ashburnham Road (A3220)
e. Edith Grove (A3220)
f. King's Road (A308) between the junctions with Edith Grove (A3220) and Gunter Grove (A3220)
g. Lots Road / Ashburnham Road junction
h. Lots Road / Tadema Road junction
i. Lots Road / Upcerne Road junction
j. Lots Road / Chelsea Harbour Drive mini-roundabout
k. Cheyne Walk (A3220) / Blantyre Street junction
l. Lots Road / Cheyne Walk (A3220) / Cremorne Road (A3220) junction
m. Cremorne Road (A3220) / Edith Grove (A3220) junction
n. Cremorne Road (A3220) / Ashburnham Road (A3220) junction
o. Ashburnham Road (A3220) / Tadema Road junction
p. King's Road (A308) / Fernshaw Road junction
q. Kings Road (A308) / Tadema Road (A3220) / Gunter Grove (A3220) junction
r. Kings Road (A308) / Edith Grove (A3220) junction.

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 and the severity of the accidents are indicated in Table D.1.

Table D.1 Accident severity 2006 to 2011

Location	Slight	Serious	Fatal	Total
Lots Road	5	0	0	5
Cremorne Road (A3220)	2	0	1	3
Cheyne Walk (A3220)*	2	2	0	4
Ashburnham Road (A3220)	2	0	0	2
Edith Grove (A3220)**	1	0	0	1
King's Road (A308)***	2	0	0	2
Lots Road / Ashburnham Road junction	1	1	0	2
Lots Road / Tadema Road junction	3	0	0	3
Lots Road / Upcerne Road junction	1	0	0	1
Lots Road / Chelsea Harbour Drive mini-roundabout	1	0	0	1
Cheyne Walk (A3220) / Blantyre Street junction	11	0	0	11
Lots Road / Cheyne Walk (A3220) / Cremorne Road (A3220) junction	13	3	0	16
Cremorne Road (A3220) / Edith Grove (A3220) junction	7	1	0	8
Cremorne Road (A3220) / Ashburnham Road (A3220) junction	2	0	0	2
Ashburnham Road (A3220) / Tadema Road junction	4	0	0	4
King's Road (A308) / Fernshaw Road junction	5	0	0	5
King's Road (A308) / Tadema Road (A3220) / Gunter Grove (A3220) junction	21	3	0	24
King's Road (A308) / Edith Grove (A3220) junction	16	4	0	20
Total	**99**	**14**	**1**	**114**

** Cheyne Walk (A3220) between the junctions with Blantyre Street and Lots Road.*
***Edith Grove (A3220) between the junction with King's Road (A308) and the junction with Cremorne Road (A3220) and Cheyne Walk (A3220)*
**** King's Road (A308) between the junctions with Edith Grove (A3220) and Gunter Grove (A3220).*

D.1.5 A total of 114 road traffic accidents have occurred in the area of interest. Of these accidents, 99 were classified as slight, 14 as serious, and one as fatal.

Lots Road

D.1.6 Lots Road provides an east-west link between Cheyne Walk (A3220) and Cremorne Road (A3220) to the east and Harbour Avenue to the west. The north-western section of Lots Road also provides a north-south link between King's Road (A308) and Gunter Grove (A3220) to the north and Harbour Avenue to the south.

D.1.7 There were a total of 12 accidents along this road and the junctions associated. Of the total accidents, one was classified as serious which involved a motorcycle and a car. The accident caused by the road users not looking properly, driving recklessly and making poor manoeuvres.

D.1.8 The remaining 11 accidents were recorded as slight with six accidents occurring at or near to the minor junctions along Lots Road and the remaining five accidents occurring away from junctions.

D.1.9 None of the slight accidents involved pedestrians or goods vehicles; however, five involved a bicycle colliding with cars except one which collided with a motorcycle.

D.1.10 The slight accidents that occurred along Lots Road and the junctions associated were mainly caused by not looking properly, the driver vision being affected due to stationary or parked vehicles, and the slippery road due to weather.

D.1.11 In total one accident occurred along Lots Road to the north of the mini-roundabout with Chelsea Harbour Drive. The accident was classified as slight and involved a car and a bicycle and caused by the road users not looking properly.

Cremorne Road (A3220)

D.1.12 Cremorne Road (A3220) is a single carriageway with a 30mph speed limit and no weight restrictions. The road leads to Ashburnham Road (A3220) to the north before becoming Gunter Grove (A3220) as it continues northwards, and to the south it leads to Cheyne Walk (A3220).

D.1.13 Cremorne Road (A3220) between the junction with Lots Road and the junction with Edith Grove (A3220) is a two-way single carriageway which runs northwest-southeast to the northeast of the site.

D.1.14 From the junction with Edith Grove (A3220) to the junction with Ashburnham Road (A3220), Cremorne Road (A3220) is one-way in the northbound direction only, leading into Gunter Grove (A3220).

D.1.15 Of the 13 accidents that occurred along Cremorne Road (A3220), eight occurred at the junction with Edith Grove (A3220) and two at the junction with Ashburnham Road (A3220). The remaining three accidents occurred along Cremorne Road (A3220) away from the junctions.

D.1.16 One fatal accident occurred along Cremorne Road (A3220) in which a car and a pedestrian were involved. The accident was caused by both the car driver and the pedestrian not looking properly.

D.1.17 There was one serious accident that occurred along Cremorne Road (A3220) at the junction with Edith Grove (A3220). The accident involved one car in which the driver lost control mainly because of careless driving and making poor manoeuvres around a sharp corner. Despite this accident being as a result of road layout, it is indicated that the driver was reckless or in hurry and as a result did not drive with due care and attention; therefore, the accident was not solely as a result of geometric layout.

D.1.18 The remaining 11 accidents recorded as slight in which one involved a pedestrian hit by a medium goods vehicle (MGV). The accident mainly caused by not looking properly. Four accidents involved pedal cycles, one hit by a light goods vehicle (LGV) and the rest were hit by cars. These accidents mainly caused by not looking properly, and passing too close to cyclists.

D.1.19 Of the remaining slight accidents occurred along Cremorne Road (A3220) and the junctions associated, one accident involved a heavy goods vehicle (HGV) hitting another motor vehicle, and the other accident involved a LGV and two cars. These accidents predominately caused by not looking properly and making poor manoeuvres.

D.1.20 The remaining slight accidents involved cars, taxis and a motorcycle which mainly happened because of following too close, not looking properly, travelling too fast, and sudden breaking. None of the slight accidents were influenced by the road geometry.

Cheyne Walk (A3220)

D.1.21 Cheyne Walk (A3220) is a two-way single carriageway road with a 30mph speed limit and no weight restrictions. The road leads to Chelsea Embankment (A3212) to the east and Cremorne Road (A3220) to the west. Cheyne Walk (A3220) within the study area is between the junctions with Blantyre Street and Lots Road.

D.1.22 In total, 15 accidents occurred along Cheyne Walk (A3220) and the junction associated. 11 accidents happened at the junction with Blantyre Street, and the remaining four accidents happened away from junctions.

D.1.23 Of the 15 accidents, 13 accidents were categorised as slight and two as serious. The two serious accidents happened along Cheyne Walk (A3220) to the east of the junction with Lots Road and Cremorne Road (A3220).

D.1.24 One of the serious accidents involved a pedestrian hit by a LGV on the zebra crossing located to the east of the Cremorne Road (A3220) / Cheyne Walk (A3220) / Lots Road junction. The accident was mainly caused by failing to look properly and passing too close to pedestrian. The other serious accident involved two cars and a HGV which was caused by driving carelessly. None of the serious accidents were influenced by the road geometry.

D.1.25 Of the 13 slight accidents happened along Cheyne Walk (A3220), 11 accidents happened at the junction with Blantyre Street and the remaining two accidents occurred away from junctions. The accidents predominately

caused by the road users not looking properly, failing to judge another person's path or speed and driving recklessly.

D.1.26 Of the total slight accidents, two accidents involved pedestrians, one hit by a car, and the other was hit by a motorcycle. These two accidents predominately caused by reckless driving and not looking properly.

D.1.27 Five of the slight accidents involved bicycles, three hit by LGVs, one by a car, and one by a motorcycle. These accidents mainly caused by not looking properly and failing to judge another person's path or speed.

D.1.28 Of the remaining slight accident, one involved a LGV hitting a car. The accident was caused by not looking properly and making poor manoeuvres. The rest of the slight accidents involved cars, a bus/coach, and a motorcycle, and mainly happened because of not looking properly and loss of control. None of the slight accidents were influenced by the road geometry.

D.1.29 A further 16 accidents occurred at the junction of Cheyne Walk (A3220) / Cremorne Road (A3220) / Lots Road. Of the total accidents, three were recorded as serious. One of the accidents involved a car and caused by the car driver losing control due to fatigue and reckless driving.

D.1.30 The other serious accident involved a car and a motorcycle in which the motorcycle rider lost control and hit the car. The other serious accident also involved a car and a motorcycle in which the car driver turned and collided with the oncoming motorcycle. The accident caused by failing to look properly, and the driver and the rider's vision being affected due to a stationary or parked vehicle. None of the three serious accidents were influenced by the road geometry.

D.1.31 The remaining 13 accidents were classified as slight, mainly happened because of failing to look properly, and failing to judge another person's path or speed.

D.1.32 Of these slight accidents, two accidents involved pedestrians, one hit by a car and the other hit by a taxi. These two accidents mainly caused by aggressive driving and failing to look properly.

D.1.33 Four of the slight accidents involved pedal cycles, one hit by a LGV and the rest were hit by cars. These accidents happened as a result of not looking properly, failing to judge another person's path or speed, passing too close to cyclist and poor manoeuvre.

D.1.34 Of the remaining slight accidents, three were involved LGVs colliding with motorcycles and a car which mainly caused by failing to judge another person's path or speed.

D.1.35 The remaining slight accidents involved cars and a motorcycle and mainly caused by not looking properly and failing to judge another person's path or speed. Not of the slight accidents were influenced by the road geometry.

Ashburnham Road (A3220)

D.1.36 Ashburnham Road (A3220) runs to the north of the site. This is a one-way road (northbound) with two lanes which leads to Kings Road (A308) and

Gunter Grove (A3220) to the north and Cremorne Road (A3220) to the south.

D.1.37 In total, six accidents happened along Ashburnham Road (A3220) and the junction with Tadema Road which is the only junction along Ashburnham Road (A3220) and all were classifies as slight. Of the total six accidents, four accidents occurred at its junction with Tadema Road and two accidents happened along the road away from the junction.

D.1.38 One of the accidents involved a HGV colliding with a car, and two accidents involved LGVs colliding with pedal cycles. These accidents mainly caused by not looking properly and making poor manoeuvres.

D.1.39 The remaining accidents involved cars and a motorcycle which were also caused by not looking properly and making poor manoeuvres. Of the accidents occurred along Ashburnham Road (A3220) none of them involved pedestrians.

Edith Grove (A3220)

D.1.40 Edith Grove (A3220) runs to the north of the site and is a one-way road in the southbound direction with two lanes. The road links to Cremorne Road (A3220) to the south and King's Road (A308) to the north. Edith Grove (A3220) within the study area is between the junction with King's Road (A308) and the junction with Cremorne Road (A3220) and Cheyne Walk (A3220).

D.1.41 Of the five year accident data analysed, only one accident happened along Edith Grove (A3220) and it was classified as slight. The accident involved a car and a motorcycle and it was caused by the car driver not looking properly and failing to signal.

King's Road (A308)

D.1.42 King's Road (A308) provides an east-west link between King's Road (A3217) to the east and New King's Road (A308) to the west. King's Road is a two-way dual-carriageway with 30mph speed limit. King's Road (A308) within the study area is between the junction with Edith Grove (A3220) and the junction with Gunter Grove (A3220) and Ashburnham Road (A3220).

D.1.43 In total, 51 accidents occurred along King's Road (A308) in the local area and the junctions associated. Those junctions included within this analysis are as follow:

a. King's Road (A308) / Fernshaw Road junction;

b. King's Road (A308) / Tadema Road (A3220) / Gunter Grove (A3220) junction; and

c. King's Road (A308) / Edith Grove (A3220) junction.

D.1.44 Of the total accidents happened along King's Road (A308) in the local area, 20 accidents were at its junction with Edith Grove (A3220), 24 at its junction with Gunter Grove (A3220) and Ashburnham Road (A3220), and five at its junction with Fernshaw Road. The remaining two accidents occurred away from junctions.

D.1.45 In relation to the severity of these accidents, seven were classified as serious and the remaining 44 were classified as slight. Three of the serious accidents happened at King's Road (A308) / Tadema Road (A3220) / Gunter Grove (A3220) junction.

D.1.46 One of the serious accidents involved a pedestrian hit by a bus as he ran into path of the vehicle causing collision. The other serious accident involved two pedal cycles colliding in the junction. The accident happened as one of the cyclist disobeyed automatic traffic signal and he was travelling too fast for conditions. The other serious accident involved a car and a LGV and happened as the car driver stopped in traffic and was hit in rear by a LGV.

D.1.47 The remaining four serious accidents occurred at the junction of King's Road (A308) and Edith Grove (A3220). One of these accidents involved a pedestrian hit by a motorcycle. The other serious accidents involved motorcycles, taxis, and a LGV.

D.1.48 These accidents predominately caused by not looking properly, failing to judge another person's path or speed and driving recklessly. None of the serious accidents were influenced by the road geometry.

D.1.49 The 42 slight accidents occurred along King's Road (A308) and the junctions associated were mainly at the junctions and predominately caused by not looking properly, failing to judge another person's path or speed, driving carelessly, and making poor manoeuvre, and not as a result of the road geometry.

D.1.50 Of the total slight accidents, 11 accidents involved pedestrians who were hit by cars, motorcycles, a bus/coach, a LGV, and a HGV. Most of these accidents occurred at the junction of King's Road (A308) / Tadema Road (A3220) / Gunter Grove (A3220), and the junction of King's Road (A308) / Edith Grove (A3220). These accidents mainly caused by failing to look properly, wrong use of pedestrian crossing, and failing to judge vehicle's path or speed.

D.1.51 14 of the slight accidents involved bicycles collided with other vehicles including cars, LGVs, a MGV, and HGVs. About half of these accidents happened at the junction of King's Road (A308) / Tadema Road (A3220) / Gunter Grove (A3220), and the rest happened at the junction of King's Road (A308) / Edith Grove (A3220), and the junction of King's Road (A308) / Fernshaw Road. These accidents predominately caused by not looking properly, failing to judge another person's path or speed, and making poor manoeuvres.

D.1.52 Of the remaining slight accidents, six involved LGVs, MGVs, and HGVs colliding with other motor vehicles. Not looking properly, failing to judge another person's path or speed, and following too close were the main causes of these accidents. These accidents occurred at the junction of King's Road (A308) / Tadema Road (A3220) / Gunter Grove (A3220), and the junction of King's Road (A308) / Edith Grove (A3220).

D.1.53 The rest of the slight accidents involved cars, motorcycles, a bus/coach, and a taxi. These accidents mainly caused by not looking properly, failing

to judge another person's path or speed, and reckless driving. None of the slight accidents were influenced by the road geometry.

D.2 Summary and conclusions

D.2.1 Of the five years of accident data analysed, the largest number of road traffic accidents occurred at the junction of King's Road (A308) / Tadema Road (A3220) / Gunter Grove (A3220), the junction of King's Road (A308) / Edith Grove (A3220), and the junction of Lots Road / Cheyne Walk (A3220) / Cremorne Road (A3220). Most of the accidents which occurred at these three junctions were classified as slight with nine serious accidents.

D.2.2 One fatal accident that occurred within the assessment area happened along Cremorne Road (A3220) to the east of the junction with Edith Grove (A3220). The accident was caused by both the car driver and the pedestrian not looking properly and crossing into nearside of a passing car rather than as a result of the road geometry.

D.2.3 In total, 14 serious accidents occurred in the study area with the majority happened at the junction of King's Road (A308) / Tadema Road (A3220) / Gunter Grove (A3220), the junction of King's Road (A308) / Edith Grove (A3220), and the junction of Lots Road / Cheyne Walk (A3220) / Cremorne Road (A3220).

D.2.4 Not looking properly, reckless driving, and failing to judge another person's path or speed were the main causes of the serious accidents. Hence, the serious accidents which occurred within the study area did not happen as a result of the road geometry.

D.2.5 Of the total accidents, 32 accidents which occurred in the assessment area involved LGVs, MGVs, and HGVs. Of these accidents, 28 were slight accidents and the remaining four accidents were serious accidents. These accidents were predominately caused by both drivers and pedestrians not looking properly, poor manoeuvring, failing to judge the other person's path or speed, or reckless driving.

D.2.6 Of the five years of accident data analysed four of the accidents were considered to have occurred as a result of the road geometry. One accident at each of the junctions of Cremorne Road (A3220) and Edith Grove (A3220), and Ashburnham Road (A3220) and Tadema Road occurred at a result of the road layout (ie bend, hill, narrow carriageway). Of the remaining two accidents, one happened at the Lots Road / Chelsea Harbour Drive mini-roundabout and one at the Cheyne Walk (A3220) / Cremorne Road (A3220) / Lots Road junction. These two accidents were caused while some roadworks were in place. These temporary situations led to a contraflow.

Appendix E: Road Safety Audits

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Thames Water Utilities Limited

Thames Tideway Tunnel - Cremorne Wharf

Stage 1 Road Safety Audit

Project Ref: 27016/066

Doc Ref: 001

15th February 2013

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Document Control Sheet

Project Name: **Thames Tideway Tunnel - Cremorne Wharf**

Project Ref: **27016/066**

Report Title: **Stage 1 Road Safety Audit**

Doc Ref: **001**

Date: **15th February 2013**

	Name	Position	Signature	Date
Prepared by:	Matthew Fleming	Technician Grade 1		15th February 2013
Reviewed by:	Simon Owen	Principal Technician		15th February 2013
Approved by:	Alan Fry	Divisional Director		15th February 2013
For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved
-	18.02.13	Client Issue	MF	SO	AF

Contents

Appendices

1 Introduction

1.1 Peter Brett Associates LLP have been commissioned to undertake a series of Stage 1 Road Safety Audits on proposals associated with the construction of the Thames Tideway Tunnel project in London.

1.2 This Audit has been undertaken on the highway aspects of the proposal at Cremorne Wharf, Kensington & Chelsea site and considers both the situation during the construction phase and post construction. At this location an existing brownfield plot will be developed as part of the enabling works.

1.3 The surrounding highway network is urban residential in nature, within a 30mph speed limit, is illuminated by a system of street lighting, with footways on both sides of the carriageway.

1.4 The scheme proposals that affect the existing highway consist of the following design aspects:-

- Construction Phases:-
  - Suspending some existing parking bays in Lots Road in order to accommodate the passage of large delivery vehicles accessing the site;
  - Implementing uncontrolled pedestrian crossing points in Lots Road.
- Operational Phase:-
  - Highway layout to be returned to its current layout i.e. parking bays reinstated and pedestrian diversion removed;
  - Access required by transit van every 6 months for maintenance;
  - 10 yearly maintenance required by rigid HGV / mobile crane.

1.5 The Audit Team Membership was as follows:-

Audit Team Leader:-

Matthew Fleming Peter Brett Associates, Taunton

Team member:-

Simon Owen Peter Brett Associates, Reading

The Audit Team are independent of the Design Team.

1.6 The Audit took place during December 2012 to February 2013. The Audit Team visited the site on 12th December 2012 between 14:30 and 15:30. The weather during the site visit was cold and overcast. The Audit comprises of an examination of the documents listed in Appendix A.

1.7 The Audit Team have not been made aware of any Departure from Standards identified with this proposed scheme. The Audit Team have not been provided with a specific Audit Brief but have received a number of documents that are describing the proposed works.

1.8 The Audit Team have received a document summarising the recorded collision data within the surrounding highway network for a 5 year period (April 2006 to March 2010). The Audit

Team have not been provided with the raw collision data, therefore, a full review and analysis of the recorded collisions cannot be undertaken as part of this Audit.

1.9 The Terms of Reference of this Audit are as described in Transport for London (TfL) Procedure SQA-0170. 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 designs to any other criteria. However, to clearly explain a safety problem or the recommendation to resolve a problem the Audit Team may, on occasion, have referred to a design standard without touching on technical Audit.

1.10 This Audit has a maximum shelf life of 2 years. Should the scheme not progress to the next stage in its development within this period it should be re-audited.

1.11 Problems identified in the report are indicated by location and are shown on the site reference plan in Appendix B.

2 Items Raised from this Stage 1 Road Safety Audit

Construction Phase

2.1 Problem

Location - Cremorne Road and Lots Road

Summary - Conflicts between road users.

The proposals indicate that heavy goods vehicles will be expected to leave Cremorne Road, proceed along Lots Road and enter the site. The junction of Cremorne Road and Lots Road was observed during the site visit to be busy with regular queuing back on all approaches leading to vehicles making manoeuvres untypical of those expected during normal operation of a priority junction.

The combination of large vehicles, inadequate space to accommodate 2-way vehicle flows past parking bays and the potentially obstructed visibility may not afford road users with adequate anticipation of the movements of other road users before committing to their manoeuvre. This increases the likelihood of vehicles being required to reverse, increasing the risk of conflicts with other road users.

In addition to the above the following points have been identified in relation to the proposed traffic/pedestrian management and the subsequent vehicular/pedestrian movements:

- Conflict between vehicles and cyclists
- Conflict between construction traffic and general traffic, when accessing and egressing the public highway
- Conflict between all vehicles and temporary traffic management street furniture
- Conflict between all vehicles and site operatives
- Conflict between opposing vehicles

Furthermore, the speed of the Design Vehicles undertaking the swept path analysis has been stated as 5 km/h. Whilst 5 km/h may be applicable for some of the movements shown this speed will not apply to all of them. Therefore, it is unclear whether all the swept paths indicated are realistic.

Recommendation

The Design Team should consider the following when determining the feasibility of vehicle movements and available carriageway space:

- Test all individual and vehicle combinations / simultaneous swept path movements through the temporary traffic management and site access/exit
- Safe passing width to temporary traffic management and both existing and temporary street furniture
- Safe passing width to construction working zones and parking bays
- Completing manoeuvres in one movement to clear carriageway
- The effect of slowing / turning manoeuvres on other vehicles in carriageway.

The interaction of temporary traffic management, safety fences/barriers and vehicular swept paths/routes must be carefully considered to reduce the potential for conflict between road users and between their surroundings. Attention must also be given to the reduction of visibility requirements for manoeuvring vehicles especially where those vehicles are expected to undertake taxing manoeuvres.

2.2 Problem

Location - Site Access

Summary - Pedestrian diversion route could put pedestrians at risk

In Phase 1, the proposals indicate that a section of footway along the site frontage is to be closed and safety hoarding erected and pedestrians diverted onto the opposite footway, across Ashburnham Road then back onto the southern side of Lots Road. The following points have been identified with the diversion and its application:

- The width of existing footways may be obstructed by pedestrian diversion signs
- The diversion route signs may be obstructed by existing trees resulting in pedestrians missing diversion signs and crossing the carriageway is places not envisaged by the engineer
- The proposed pedestrian crossing places over Lots Road are adjacent to existing parking bays which appear to have a high utilisation rate. The location of parked vehicles in these bays restricts the visibility of pedestrians waiting to cross and reduces their visibility from passing drivers/riders
- Inconsistent use of blister paving over the junction of Ashburnham Road may result in confusion of visually impaired pedestrians when crossing the road
- Location of existing letterbox could result in visually impaired pedestrians walking off line of the intended crossing point and pushchair/wheel chairs will have to proceed onto what would appear to be private land to get around
- Vehicle tyre marks across the junction radii of Ashburnham Road would indicate that larger vehicles negotiating the junction cannot do so without over running the pavement potentially putting vulnerable road users at risk
- The swept paths indicate that heavy goods vehicles making the left turn into the site will pass on the offside at the same location diverted pedestrians will be expected to cross over Lots Road possible putting them at risk
- No details of how pushchairs/wheelchairs will negotiate the kerb line either side of Lots Road have been included

During Phase 2 the pedestrian diversion will be removed and pedestrians will be able to walk across the front of the site exit. The existing layout of boundary walls would obscure a passing pedestrian from larger vehicles which could put them at risk.

Recommendation

Careful consideration should be given to the points raised and to the requirements of pedestrians through the intended diversion route making allowances to the mobility/visually impaired who might be expected to utilise the existing footway. Instances of potential confusion and conflict should be considered and appropriate measures utilised to minimise/eliminate where possible.

Construction and Operational Phase

2.3 Problem

Location - Site Access Lots Road

Summary - Movement of heavy goods vehicles at both site accesses

During all phase there will be HGV movements to/from the site. The following points have been identified in relation to the subsequent vehicular movements:

- Large vehicles are shown entering and egressing in forward gear however no details are shown indicating how the vehicle will manoeuvre on site. This could result in vehicles having to reverse out of the site which could put the vehicle in conflict with other road users.
- Vehicles are shown turning in close proximity to on street parking which in turn could reduce the visibility splay onto the main road.
- Vehicles entering and exiting the site are show doing so in very close proximity to parked vehicles, buildings and street furniture which may jeopardise the feasibility of these manoeuvres being carried out safely

Recommendation

The feasibility of the proposed movements of HGV's and other vehicles required to visit the site should consider all existing constraints in detail to ensure that vehicles can enter and exit the site safely whilst clearing Lots Road in one movement

2.4 Problem

Location - Zebra crossing at the junction of Cremorne Road and Edith Grove

Summary - Movement of heavy goods vehicles on local highway overrunning footway which could put pedestrians at risk

The existing north eastern Zebra crossing at the junction of Cremorne Road and Edith Grove has heavy goods vehicles wheel marks present running over the edge of the tactile paving and adjoining kerbs. In addition the aforementioned joining kerbs are breaking up as a result of frequent overrunning. The increase in frequent heavy goods vehicles generated by the site will increase the risk posed to waiting pedestrians.

Recommendation

It is recommended that the cause of the overrunning is identified and mitigating measures put in place to prevent vehicle/pedestrian conflict.

3 Audit Team Statement

We certify that we have examined the drawings and documents listed in Appendix A to this Road Safety Audit Report. The Road Safety Audit has been carried out within the sole purpose of identifying any feature that could be removed or modified in order to improve the safety of the scheme. The problems identified have been noted in this report together with associated suggestions for safety improvements that we recommend should be studied for implementation.

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

Audit Team Leader:

Name:	Matthew Fleming	Signed: 
Position:	Principal Engineer	Date: 15th February 2013
Organisation:	Peter Brett Associates	
Address:	Lakeside House Blackbrook Business Park Blackbrook Park Avenue Taunton TA1 2PX	

Audit Team Members:

Name:	Simon Owen	Signed: 
Position:	Senior Engineer	Date: 15th February 2013
Organisation:	Peter Brett Associates	
Address:	Caversham Bridge House Waterman Place Reading RG1 8DN	

Appendix A

Appendix A

Information Utilised in this Stage 1 Road Safety Audit:-

- Figure 12.2.1 – Transport – Site Location Plan;
- Figure 12.2.2 – Transport – Construction Traffic Routes;
- Figure 12.4.9 – Transport – Accident Locations;
- DCO-PP-11X-CREWD-130003 – Access Plan;
- DCO-PP-11X-CREWD-130007 – Permanent Works Layout;
- DCO-PP-11X-CREWD-130013 – Construction Phases – Phase 1 Site Setup, Shaft Construction & Tunnelling;
- DCO-PP-11X-CREWD-130014 – Construction Phases – Phase 2 Construction of other Structures;
- DCO-PP-11X-CREWD-130017 – Existing Highway Layout;
- DCO-PP-11X-CREWD-130018 – Highway Layout during Construction;
- DCO-PP-11X-CREWD-130019 – Permanent Highway Layout;
- DCO-PP-11X-CREWD-130020 – Highway Layout During Construction Vehicle Swept Path;
- DCO-PP-11X-CREWD-130021 – Permanent Highway Layout Vehicle Swept Path Analysis;
- 213601-01 – Facility and Amenity Map;
- Highway Mitigation Plans;
- Technical Note – Information for Chambers Wharf Stage 1 RSA;
- Technical Memorandum – Chambers Wharf – Accident Analysis;

NB Some of the above drawings indicate a note that states ‘See Schedule of Works’. The Audit Team have not been provided with this Schedule.

Appendix B

Appendix B

Site Reference Plans

27016/S1RSA1/CW1

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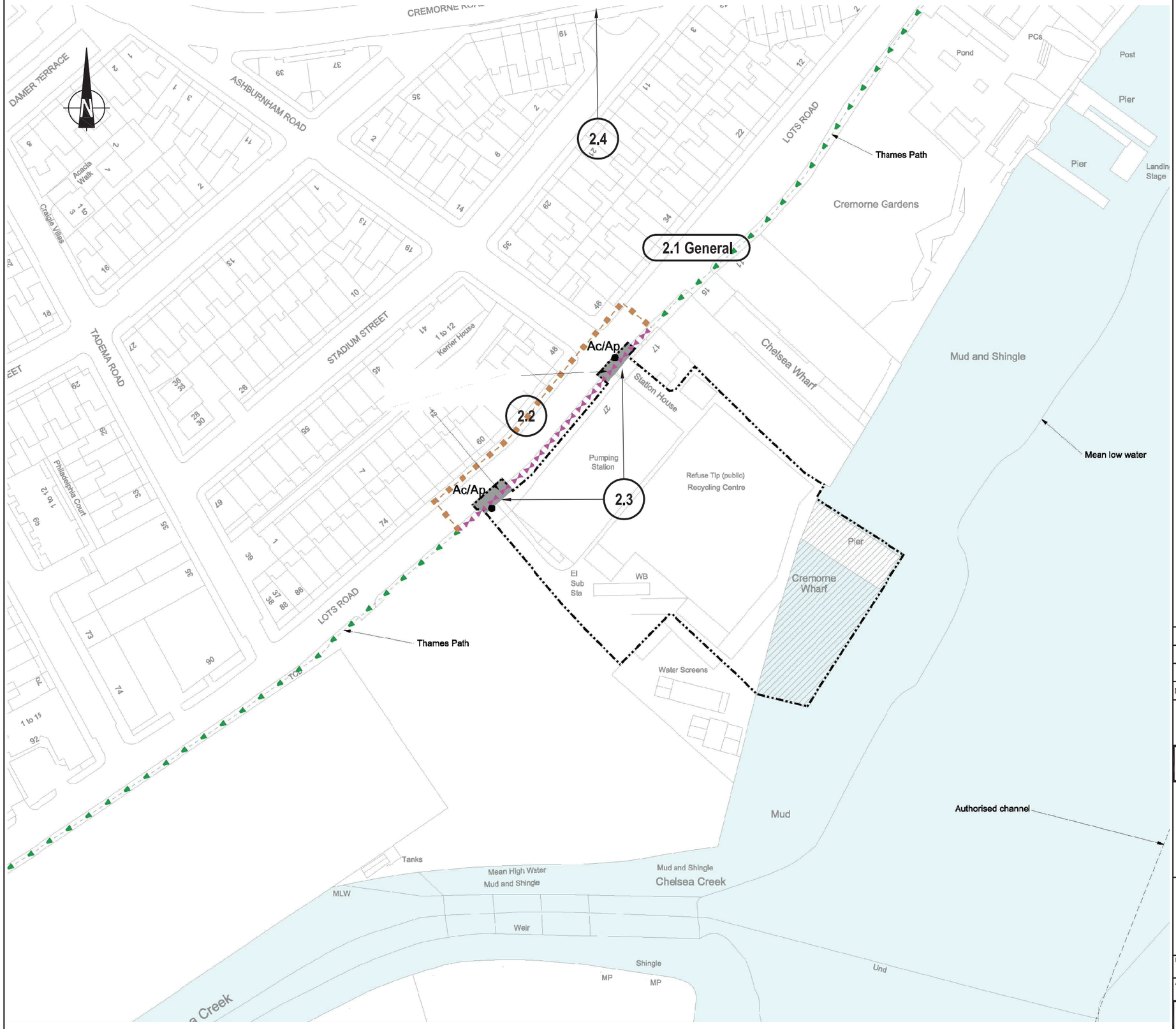

Mark	Revision	Drawn	Date	Chkd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status

STAGE 1 ROAD SAFETY AUDIT

THAMES TIDEWAY TUNNEL
CREMORNE WHARF DEPOT

SITE REFRENCE PLAN

Client

THAMES WATER UTILITIES LIMITED

Date of 1st Issue: 22.01.13	Drawn by: MF
A3 Scale: N.T.S.	Checked by: PE
Drawing Number: 27016/S1RSA1/CW1	Revision: -

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Technical Note

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Project title	Thames Tideway Tunnel	Job number	211146-04
cc		File reference	211146
Prepared by	F Jahanshahi	Date	15 February 2013
Subject	RSA Stage 1 - Designers response for Cremorne Wharf Depot		

1 Introduction

This report is the Designer's Response to the Stage 1 Road Safety Audit Report for Cremorne Wharf Depot completed in February 2013.

2 Responses to the items arising from the Stage 1 Road Safety Audit

2.1 Problem –

Location: *Cremorne Road and Lots Road*

Summary: *Conflicts between road users*

Description: The proposals indicate that heavy goods vehicles will be expected to leave Cremorne Road, proceed along Lots Road and enter the site. The junction of Cremorne Road and Lots Road was observed during the site visit to be busy with regular queuing back on all approaches leading to vehicles making manoeuvres untypical of those expected during normal operation of a priority junction.

The combination of large vehicles, inadequate space to accommodate 2-way vehicle flows past parking bays and the potentially obstructed visibility may not afford road users with adequate anticipation of the movements of other road users before committing to their manoeuvre. This increases the likelihood of vehicles being required to reverse, increasing the risk of conflicts with other road users.

In addition to the above the following points have been identified in relation to the proposed traffic/pedestrian management and the subsequent vehicular/pedestrian movements:

- Conflict between vehicles and cyclists
- Conflict between construction traffic and general traffic, when accessing and egressing the public highway

- Conflict between all vehicles and temporary traffic management street furniture
- Conflict between all vehicles and site operatives
- Conflict between opposing vehicles

Furthermore, the speed of the Design Vehicles undertaking the swept path analysis has been stated as 5 km/h. Whilst 5 km/h may be applicable for some of the movements shown this speed will not apply to all of them. Therefore, it is unclear whether the swept paths indicated are realistic.

Recommendation: The Design Team should consider the following when determining the feasibility of vehicle movements and available carriageway space:

- Test all individual and vehicle combinations / simultaneous swept path movements through the temporary traffic management and site access/exit
- Safe passing width to temporary traffic management and both existing and temporary street furniture
- Safe passing width to construction working zones and parking bays
- Completing manoeuvres in one movement to clear carriageway
- The effect of slowing / turning manoeuvres on other vehicles in carriageway.

The interaction of temporary traffic management, safety fences/barriers and vehicular swept paths/routes must be carefully considered to reduce the potential for conflict between road users and between their surroundings. Attention must also be given to the reduction of visibility requirements for manoeuvring vehicles especially where those vehicles are expected to undertake taxing manoeuvres.

Designer's response

Recommendations noted. The vehicle swept path analysis will be reviewed at detail design (stage 2) to ensure all manoeuvres, both individual and in combination, can be completed and suitable passing widths are provided at the work sites.

The speed of the design vehicles manoeuvring has been carried at in 5km/h. This is shown in the construction vehicle swept path analysis plan in the Cremorne Wharf Depot *Transport Assessment* figures.

2.2 Problem –

Location: *Site Access*

Summary: *Pedestrian diversion route could put pedestrians at risk*

Description: In Phase 1, the proposals indicate that a section of footway along the site frontage is to be closed and safety hoarding erected and pedestrians diverted onto the opposite footway, across Ashburnham Road then back onto the southern side of Lots Road. The following points have been identified with the diversion and its application:

- The width of existing footways may be obstructed by pedestrian diversion signs
- The diversion route signs may be obstructed by existing trees resulting in pedestrians missing diversion signs and crossing the carriageway is places not envisaged by the engineer

- The proposed pedestrian crossing places over Lots Road are adjacent to existing parking bays which appear to have a high utilisation rate. The location of parked vehicles in these bays restricts the visibility of pedestrians waiting to cross and reduces their visibility from passing drivers/riders. Inconsistent use of blister paving over the junction of Ashburnham Road may result in confusion of visually impaired pedestrians when crossing the road
- Location of existing letterbox could result in visually impaired pedestrians walking off line of the intended crossing point and pushchair/wheel chairs will have to proceed onto what would appear to be private land to get around
- Vehicle tyre marks across the junction radii of Ashburnham Road would indicate that larger vehicles negotiating the junction cannot do so without over running the pavement potentially putting vulnerable road users at risk
- The swept paths indicate that heavy goods vehicles making the left turn into the site will pass on the offside at the same location diverted pedestrians will be expected to cross over Lots Road possible putting them at risk
- No details of how pushchairs/wheelchairs will negotiate the kerb line either side of Lots Road have been included

During Phase 2 the pedestrian diversion will be removed and pedestrians will be able to walk across the front of the site exit. The existing layout of boundary walls would obscure a passing pedestrian from larger vehicles which could put them at risk

Recommendation: Careful consideration should be given to the points raised and to the requirements of pedestrians through the intended diversion route making allowances to the mobility/visually impaired who might be expected to utilise the existing footway. Instances of potential confusion and conflict should be considered and appropriate measures utilised to minimise/eliminate where possible.

Designer's response

Recommendation noted. The proposed closure and diversion of the pedestrians from the southern footway of Lots Road to the northern footway will be reviewed at detail design (stage 2).

2.3 Problem –

Location: *Site Access Lots Road*

Summary: *Movement of heavy goods vehicles at both site accesses*

Description: During all phase there will be HGV movements to/from the site. The following points have been identified in relation to the subsequent vehicular movements:

- Large vehicles are shown entering and egressing in forward gear however no details are shown indicating how the vehicle will manoeuvre on site. This could result in vehicles having to reverse out of the site which could put the vehicle in conflict with other road users.
- Vehicles are shown turning in close proximity to on street parking which in turn could reduce the visibility splay onto the main road.
- Vehicles entering and exiting the site are show doing so in very close proximity to parked vehicles, buildings and street furniture which may jeopardise the feasibility of these manoeuvres being carried out safely

Recommendation: The feasibility of the proposed movements of HGV's and other vehicles required to visit the site should consider all existing constraints in detail to ensure that vehicles can enter and exit the site safely whilst clearing Lots Road in one movement.

Designer's response

Recommendation noted. Detail design (stage 2) will review the swept path analysis further to ensure that the manoeuvres of the construction vehicles can be completed safely.

2.4 Problem –

Location: *Zebra crossing at the junction of Cremorne Road and Edith Grove*

Summary: *Movement of heavy goods vehicles on local highway overrunning footway which could put pedestrians at risk*

Description: The existing north eastern Zebra crossing at the junction of Cremorne Road and Edith Grove has heavy goods vehicles wheel marks present running over the edge of the tactile paving and adjoining kerbs. In addition the aforementioned joining kerbs are breaking up as a result of frequent overrunning. The increase in frequent heavy goods vehicles generated by the site will increase the risk posed to waiting pedestrians.

Recommendation: It is recommended that the cause of the overrunning is identified and mitigating measures put in place to prevent vehicle/pedestrian conflict.

Designer's response

Recommendation noted. The junction of Cremorne Road (A3220) and Edith Grove (A3220) will be revisited at detail design (stage 2) to identify the cause of the running of the heavy goods vehicles over the edge of the tactile paving and adjoining kerbs and to provide mitigation measures if required.

DOCUMENT CHECKING (not mandatory for File Note)

	Prepared by	Checked by	Approved by
Name	F Jahanshahi	G Wicks	S Jenkins
Signature			

Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Transport Assessment

Doc Ref: **7.10.09**

Cremorne Wharf Depot

Figures

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

Hard copy available in

Box **51** Folder **A**
January 2013

Thames Tideway Tunnel

Creating a cleaner, healthier River Thames

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Thames Tideway Tunnel

Transport Assessment

Section 12: Cremorne Wharf Depot figures

List of contents

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Plans

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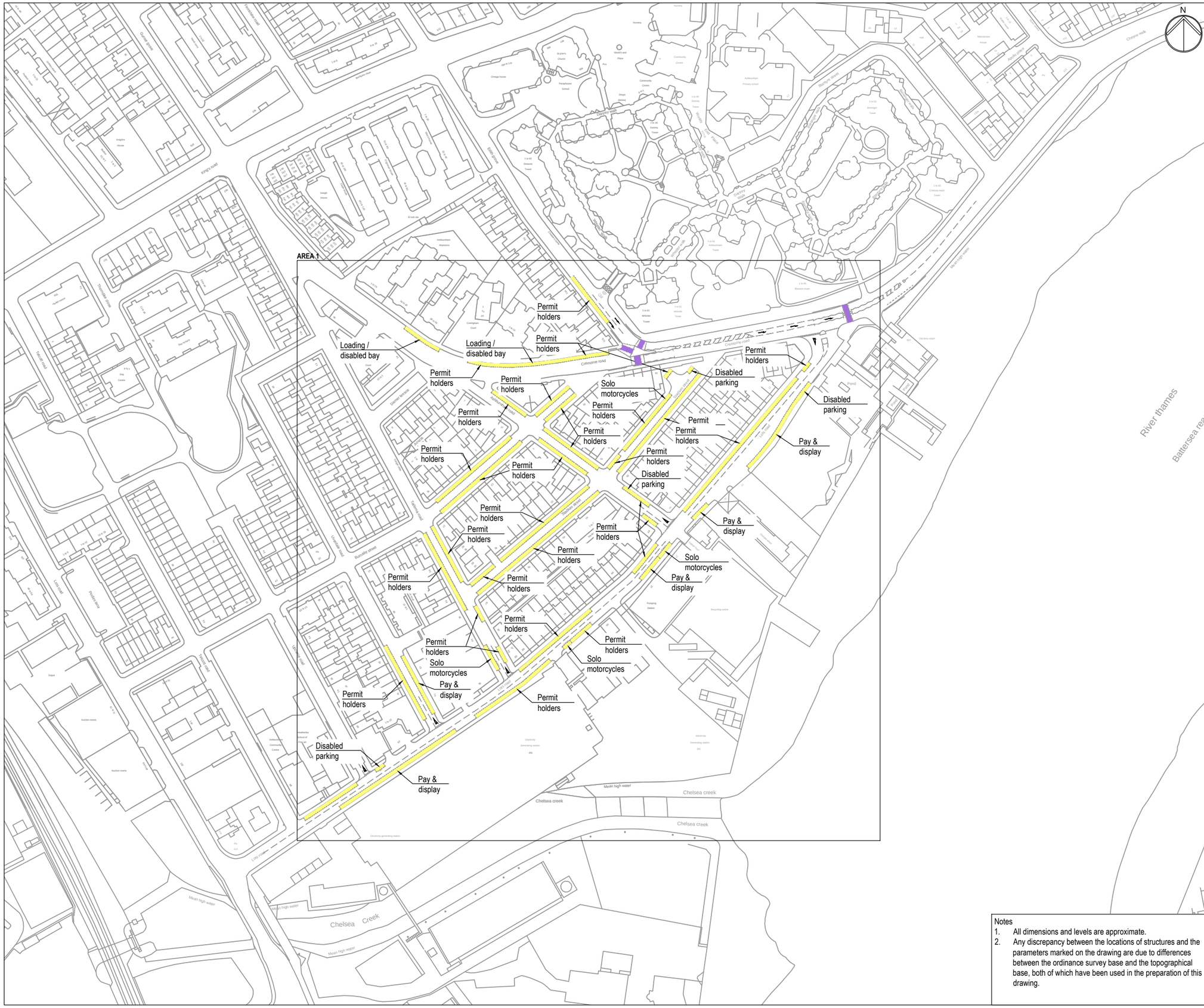
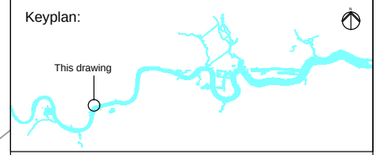
Cremorne Wharf Depot

THAMES TIDEWAY TUNNEL - SCHEDULE OF ASSOCIATED HIGHWAY WORKS

Drawing Number	Works Reference	Location	Item of Work	Date of Implementation
DCO-PP-11X-CREWD-130018	CREWD_C01	Lots Road, adjacent to site access	Suspension of two pay and display parking bays	TBC
	CREWD_C02	Lots Road, site access	Widening of existing access to accommodate 16.5m articulated vehicles	TBC
	CREWD_C03	Lots Road, site egress	Widening of existing egress to accommodate 16.5m articulated vehicles	TBC
	CREWD_C04	Lots Road, adjacent to site access	Suspension of 12m of residential parking bay (approximately 2 vehicle lengths)	TBC
	CREWD_C05	Lots Road, on approach to Cremorne Road / Cheyne Walk junction	Suspension of a single residential parking bay	TBC
DCO-PP-11X-CREWD-130019	CREWD_P01	Lots Road, adjacent to site access	Re-provision of two pay and display parking bays	TBC
	CREWD_P02	Lots Road, adjacent to site access	Re-provision of 12m of residential parking bay (approximately 2 vehicle lengths)	TBC
	CREWD_P03	Lots Road, on approach to Cremorne Road / Cheyme Walk junction	Re-provision of a single residential parking bay	TBC
	CREWD_P04	Lots Road, site egress	Kerb modification to reduce egress to pre-construction works layout	TBC



Keyplan:



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

Key

- On street parking
- Pedestrian crossing

On street parking

Loading / disabled bay
loading / disabled bay no stopping
mon - sat 8:00am - 7:00pm
except loading max 20mins
badge holders max stay 2 hours

Permit holders
resident permit holders only
mon - fri 8:30am - 10:00pm
sat 8:30am - 6:30pm

Pay & display
pay & display parking
maximum 4 hours
mon - sat 8:30am - 6:30pm

Solo motorcycles
solo motorcycles only

Disabled parking
disabled parking only

Disabled parking
blue badge holders only

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
Existing

10m 0 100m

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

FOR INFORMATION

Location

Cremorne Wharf Depot
RB Kensington and Chelsea

Document Information

Application for Development Consent

Existing highway layout

DCO-PP-11X-CREWD-130017
January 2013

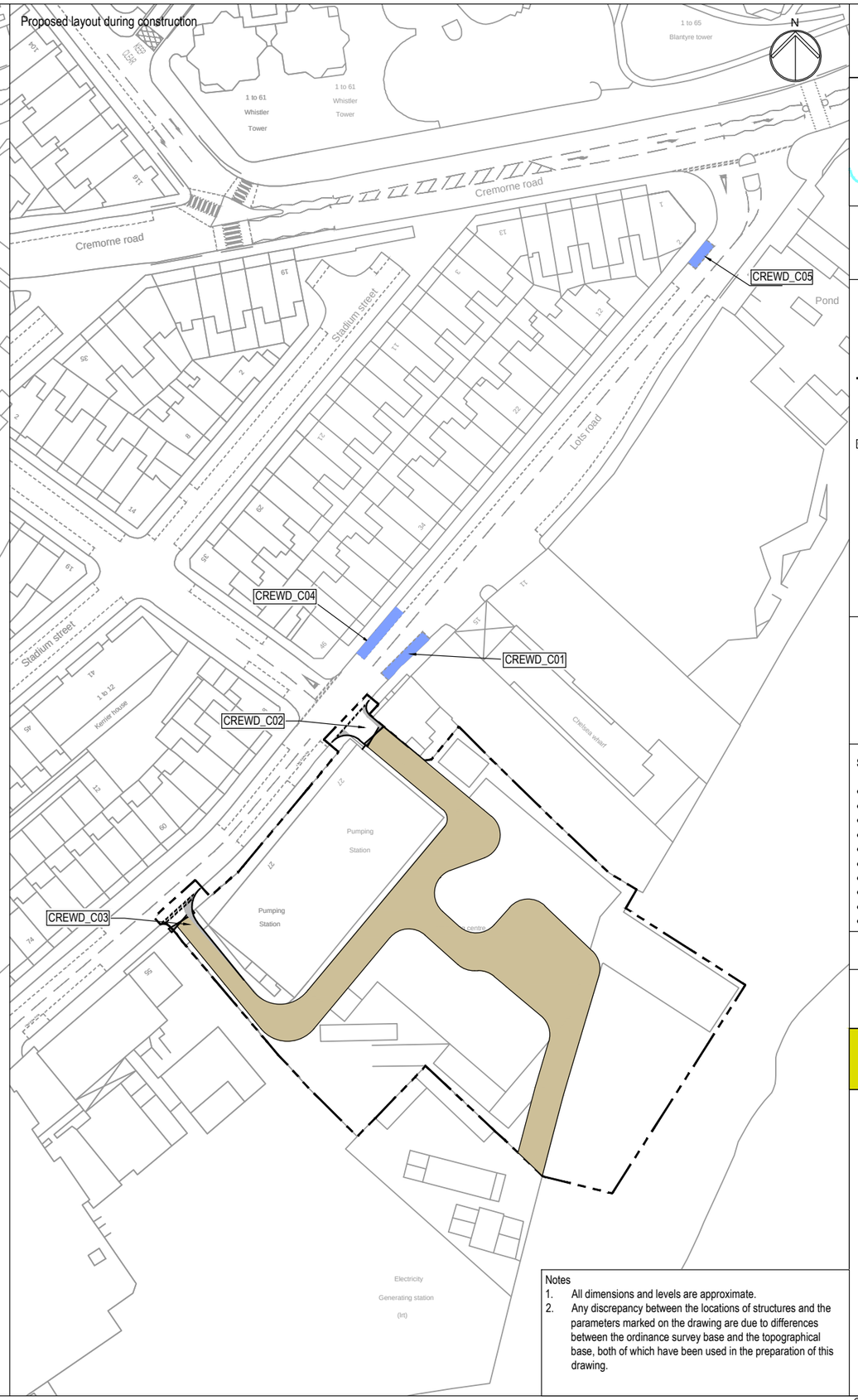
Notes
1. All dimensions and levels are approximate.
2. Any discrepancy between the locations of structures and the parameters marked on the drawing are due to differences between the ordinance survey base and the topographical base, both of which have been used in the preparation of this drawing.

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

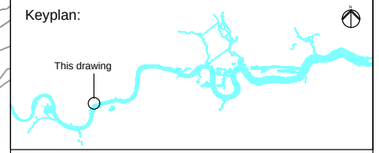
Existing highway layout

Proposed layout during construction



Notes
1. All dimensions and levels are approximate.
2. Any discrepancy between the locations of structures and the parameters marked on the drawing are due to differences between the ordinance survey base and the topographical base, both of which have been used in the preparation of this drawing.

Keyplan:



Coordinates are to be Ordance 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

Revised
- L.L.A.U.
- Removal of footway
- Temporary restriction to on street parking
- Illustrative on-site manoeuvring zone
- CREWD_C00 See schedule of works
- Hoarding line
- Site access

On street parking

Permit holder
permit holders only mon - fri 8:30am - 6:30pm
Solo motorcycle
solo motorcycles only at all times
Car club permit holders
car club permit holders at all times

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
Construction phase

10m 0 40m

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

ILLUSTRATIVE

Location
Cremorne Wharf Depot
RB Kensington and Chelsea

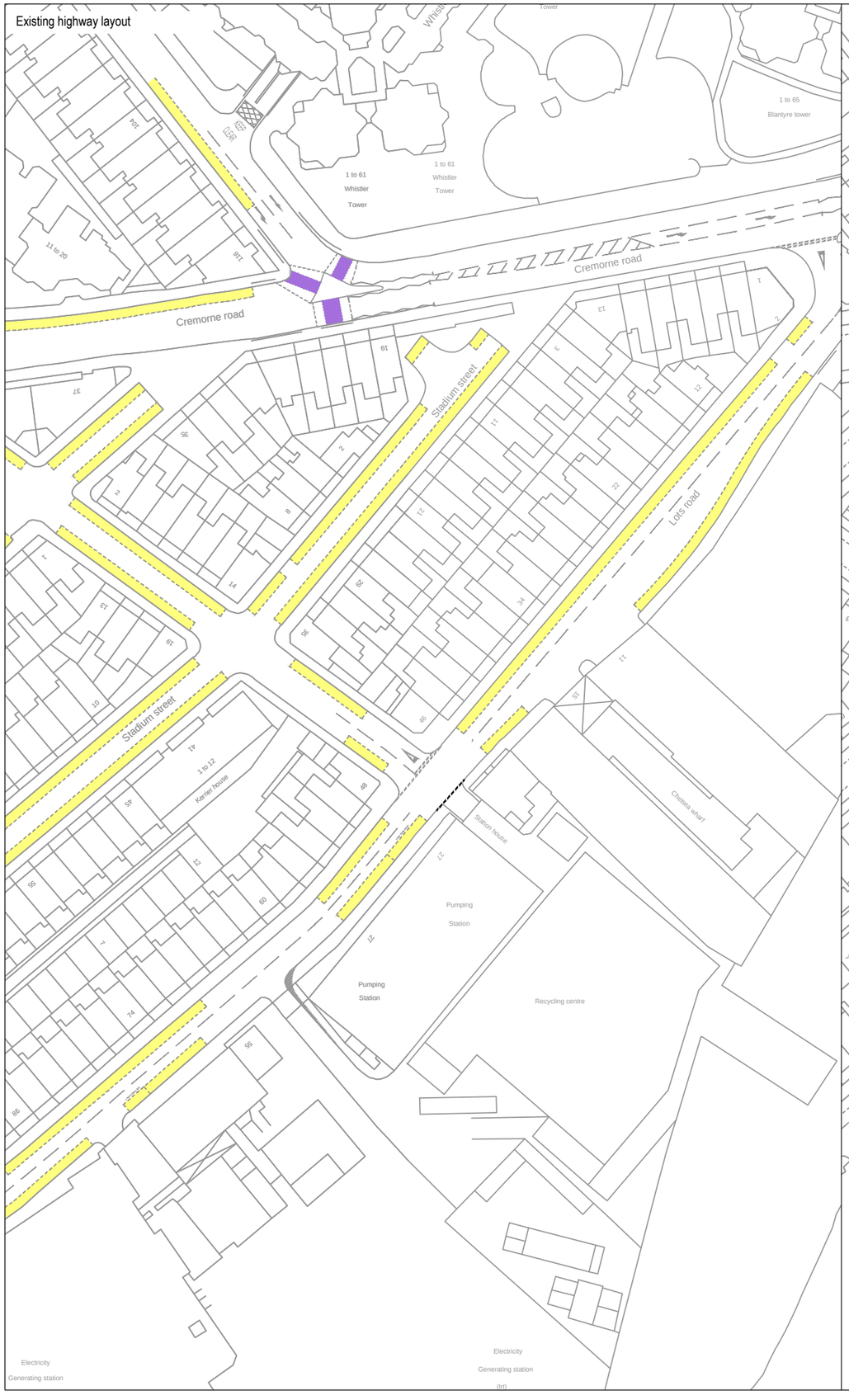
Document Information
Application for Development Consent
Highway layout during construction

DCO-PP-11X-CREWD-130018
January 2013

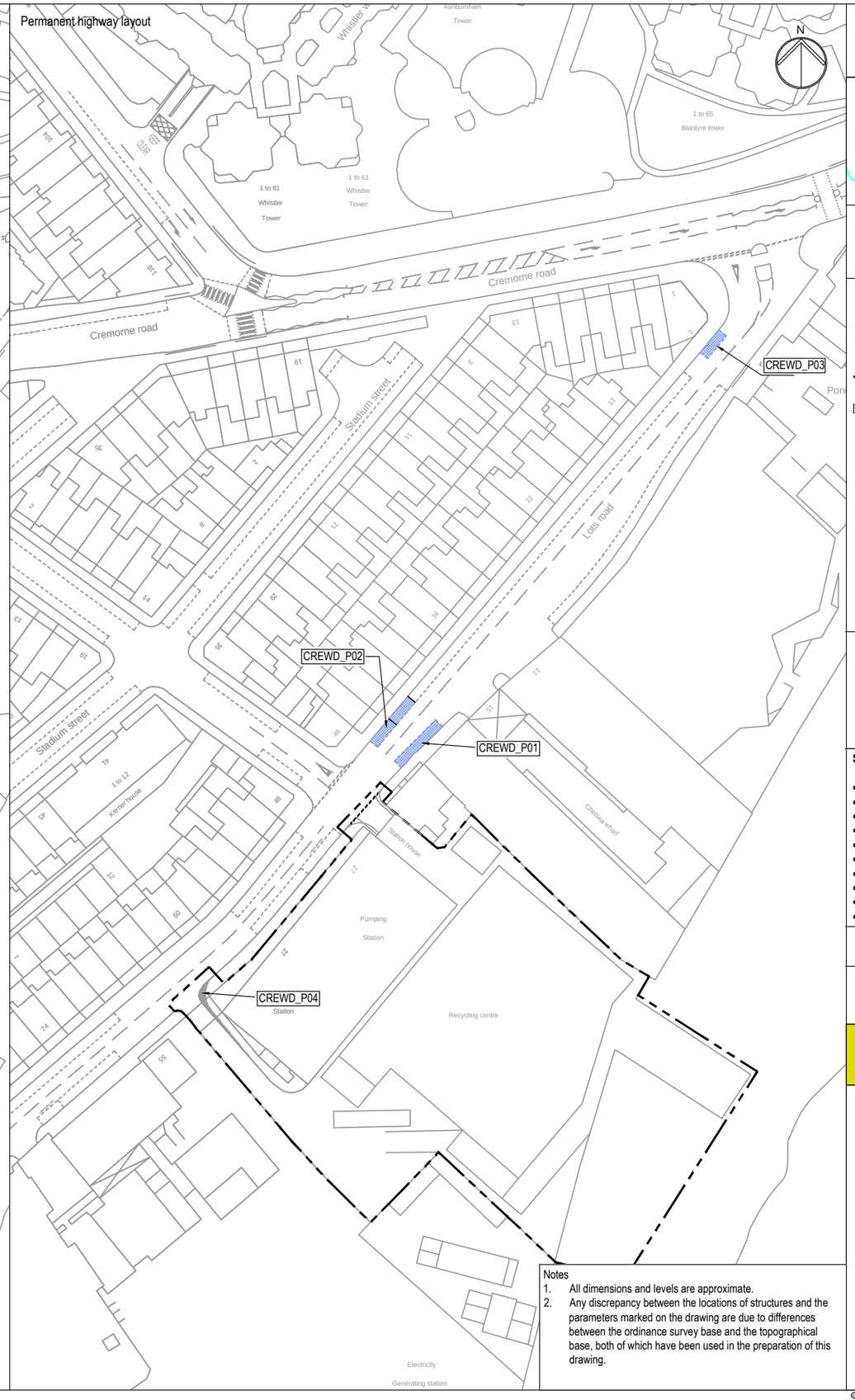
Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

Existing highway layout



Permanent highway layout



Notes
1. All dimensions and levels are approximate.
2. Any discrepancy between the locations of structures and the parameters marked on the drawing are due to differences between the ordinance survey base and the topographical base, both of which have been used in the preparation of this drawing.

Keyplan:

Coordinates are to be Ordance 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

Revised
- L.L.A.U.
- Reinstated on street parking
- CREWD_p00 See schedule of works
- Reinstatement of footway

On street parking

Permit holder
permit holders only mon - fri 8:30am - 6:30pm
Solo motorcycle
solo motorcycles only at all times
Car club permit holders
car club permit holders at all times

Standards

- Design manual for roads and bridges, Dft, 1992
- Traffic signs regulations & general directions, TSO, 2002
- Traffic signs manual, Dft, 2006
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- 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
Cremorne Wharf Depot
RB Kensington and Chelsea

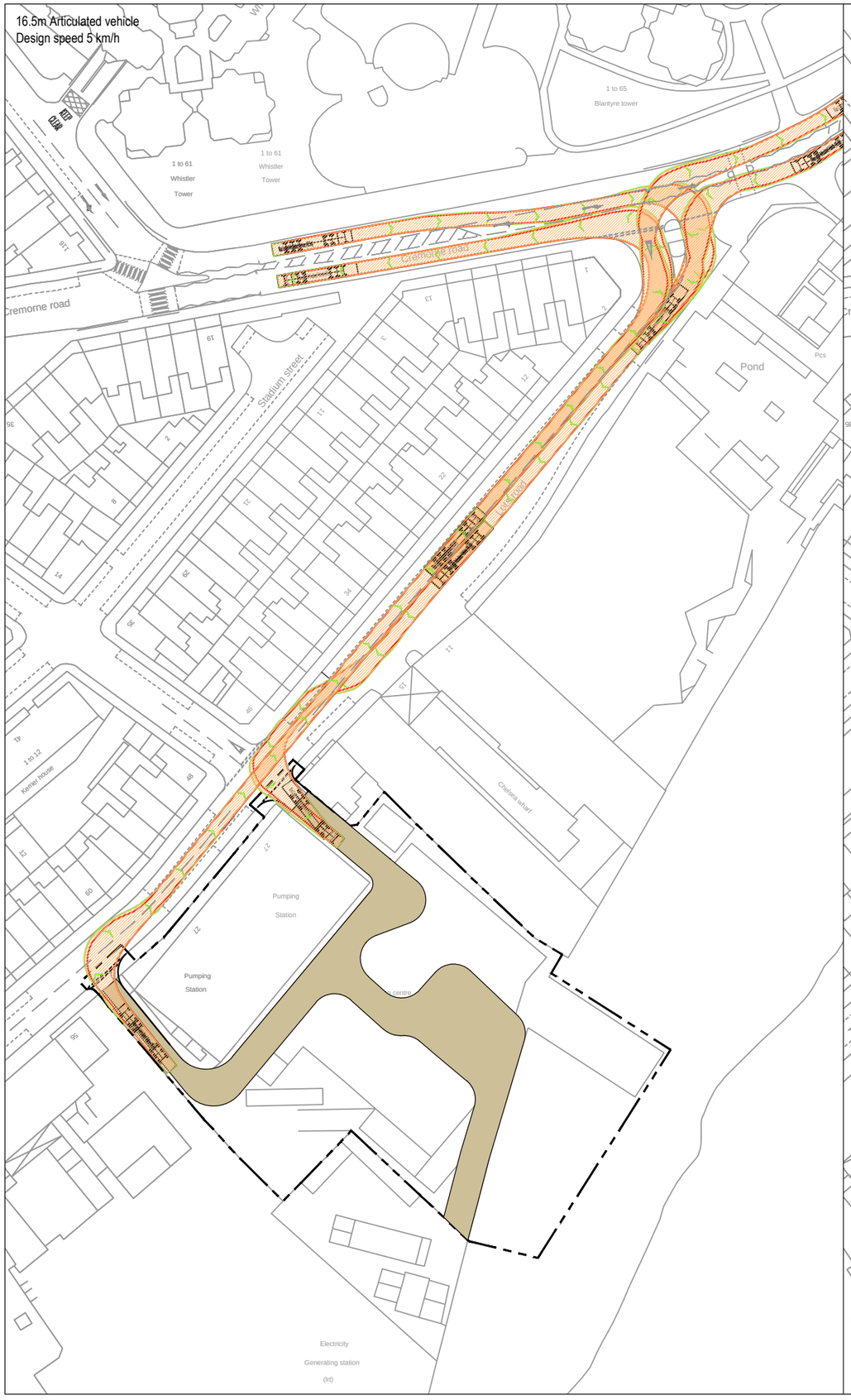
Document Information
Application for Development Consent
Permanent highway layout

DCO-PP-11X-CREWD-130019
January 2013

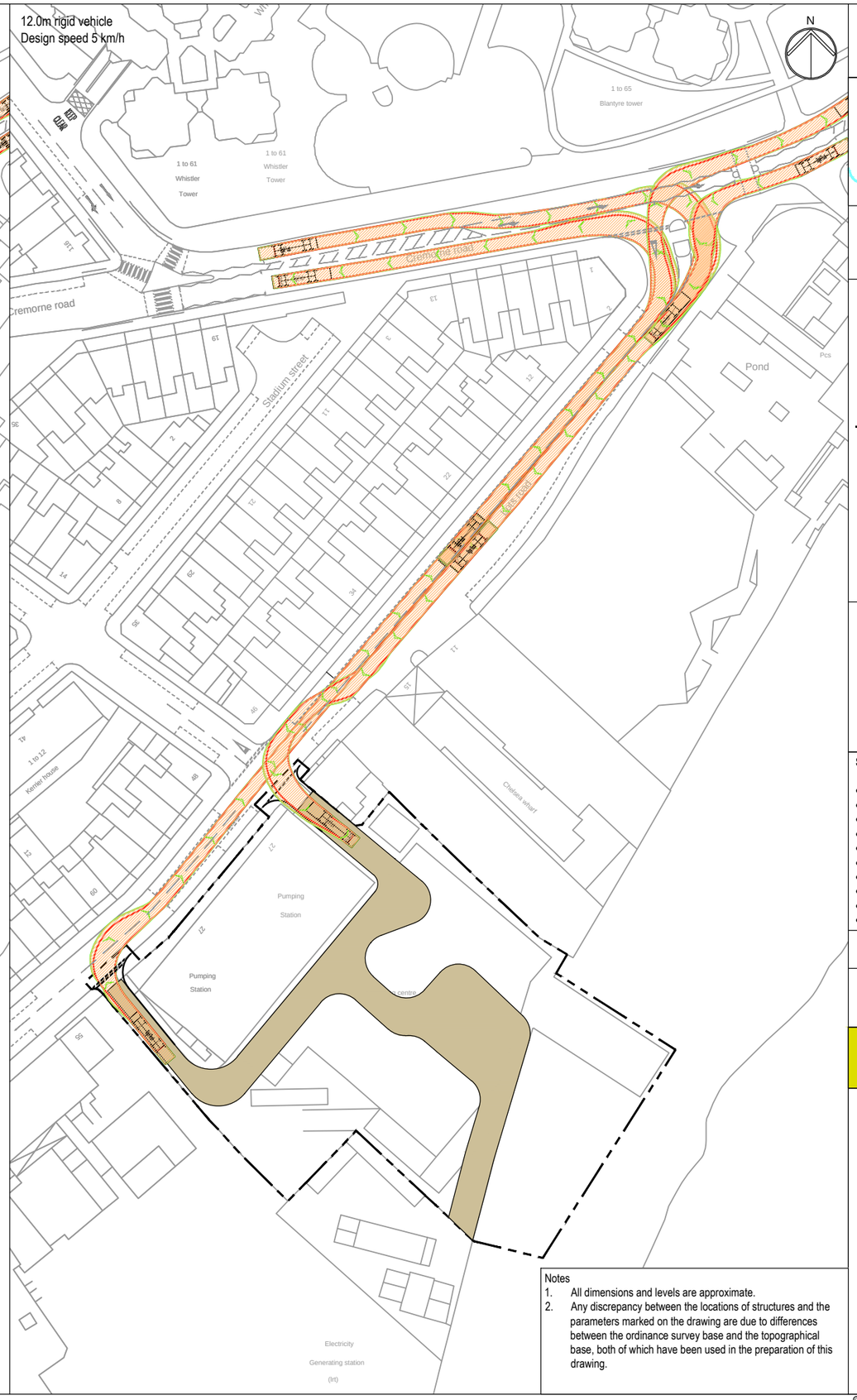
Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

16.5m Articulated vehicle
Design speed 5 km/h



12.0m rigid vehicle
Design speed 5 km/h



Keyplan:

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

Key

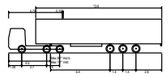
Revised

Illustrative on-site manoeuvring zone

Vehicle swept path analysis

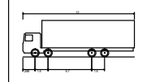
- Vehicle body outlines
- Vehicle chassis outline
- Vehicle swept path
- L.L.A.U. Temporary restriction to on street parking

16.5m articulated vehicle



Max Legal Articulated Vehicle (16.5m)	
Overall Length	16.500m
Overall Width	2.500m
Overall Body Height	3.932m
Min Body Ground Clearance	0.396m
Track Width	2.500m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	6.870m
Design Speed	5km/h

12.0m rigid vehicle



Rigid Truck	
Overall Length	12.000m
Overall Width	2.500m
Overall Body Height	3.932m
Min Body Ground Clearance	0.412m
Track Width	2.427m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	11.900m
Design Speed	5km/h

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
Construction phase

10m 0 40m

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

ILLUSTRATIVE

Location
Cremorne Wharf Depot
RB Kensington and Chelsea

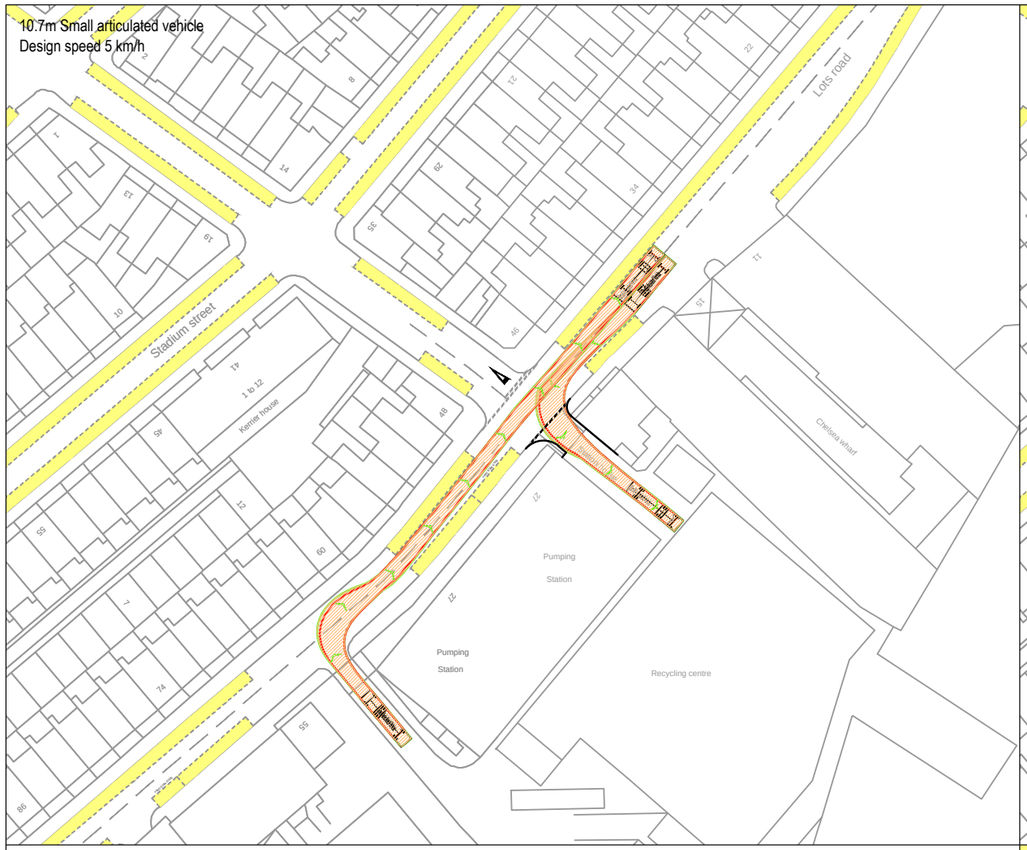
Document Information
Application for Development Consent
Highway layout during construction - Vehicle swept path analysis

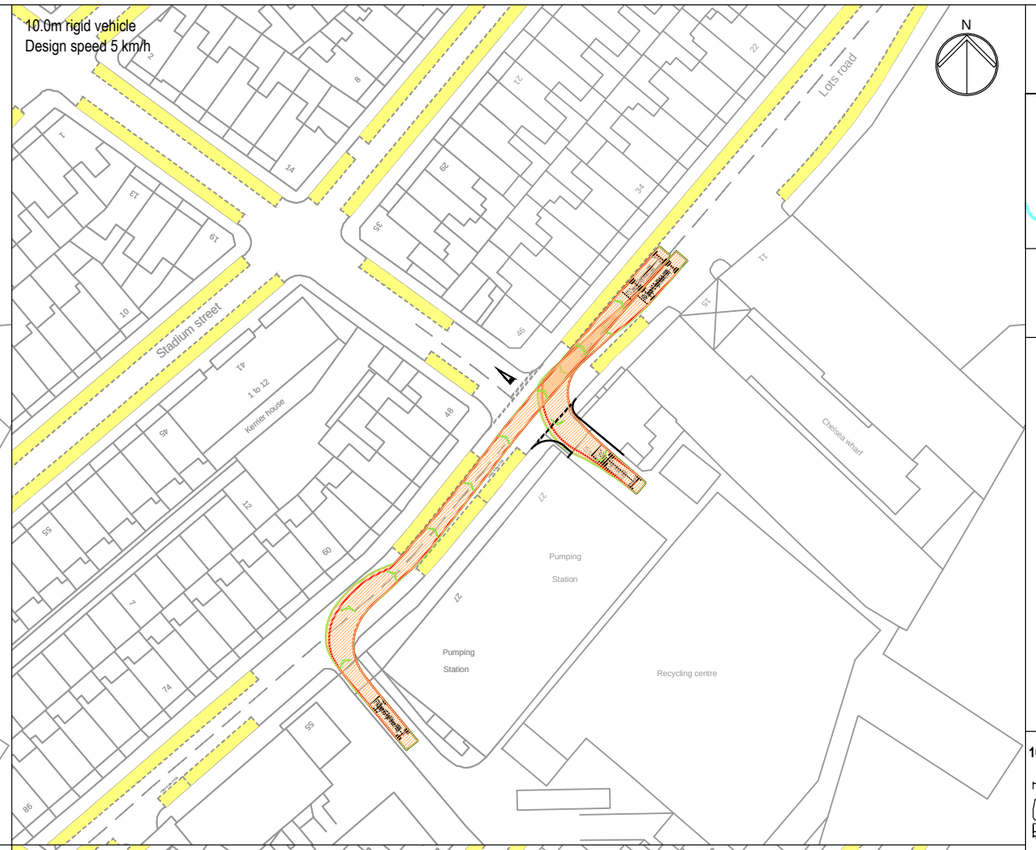
DCO-PP-11X-CREWD-130020
January 2013

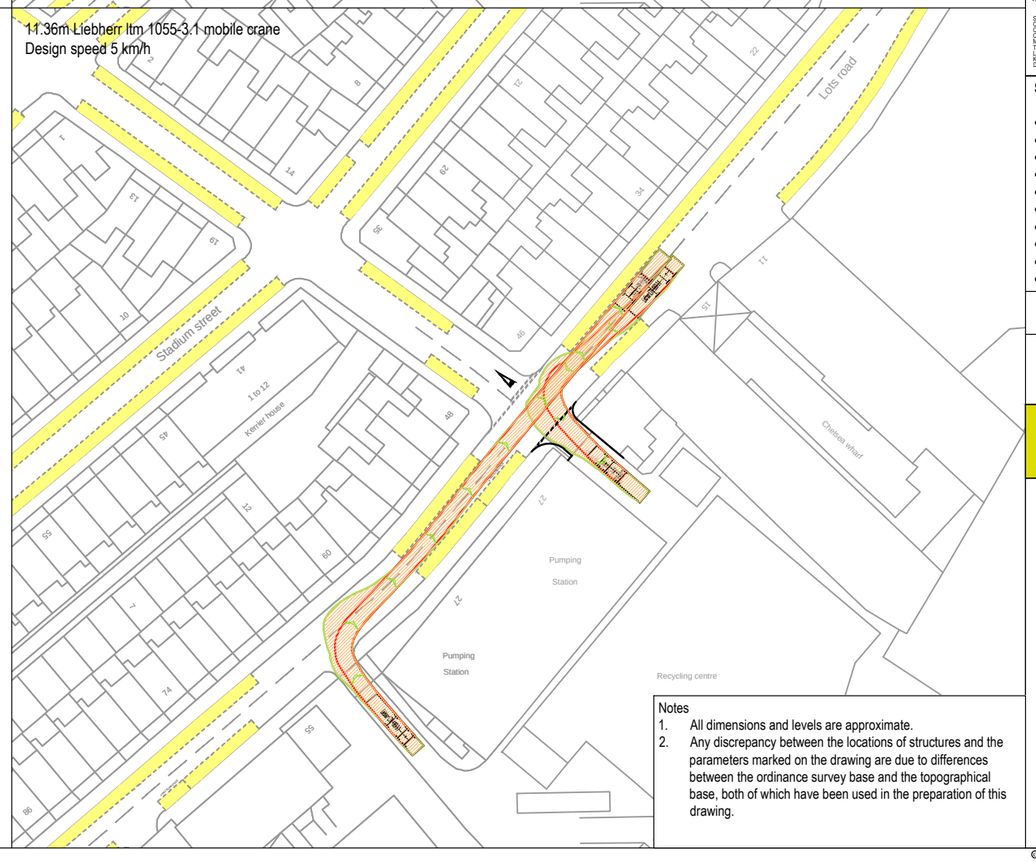
Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

Notes
1. All dimensions and levels are approximate.
2. Any discrepancy between the locations of structures and the parameters marked on the drawing are due to differences between the ordinance survey base and the topographical base, both of which have been used in the preparation of this drawing.

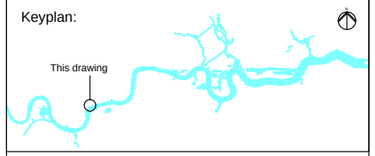






Notes
1. All dimensions and levels are approximate.
2. Any discrepancy between the locations of structures and the parameters marked on the drawing are due to differences between the ordinance survey base and the topographical base, both of which have been used in the preparation of this drawing.

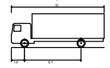
Keyplan:



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

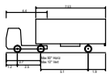
KEY
- Vehicle body outlines
- Vehicle chassis outline
- Vehicle swept path

10.0m Rigid vehicle



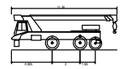
FTA Design HG Rigid Vehicle (1998)	
Overall Length	10.000m
Overall Width	2.500m
Overall Body Height	3.645m
Min Body Ground Clearance	0.440m
Track Width	2.470m
Lock to Lock Time	3.00 sec
Kerb to Kerb Turning Radius	11.000m
Design Speed	9km/h

10.7m Small articulated vehicle



Small Articulated Vehicle	
Overall Length	10.700m
Overall Width	2.360m
Overall Body Height	3.604m
Min Body Ground Clearance	0.362m
Track Width	2.240m
Lock to Lock Time	4.00 sec
Kerb to Kerb Turning Radius	5.740m
Design Speed	9km/h

11.36m Liebherr ltm 1055-3.1 mobile crane



Liebherr LTM 1055-3.1 Mobile Crane	
Overall Length	11.360m
Overall Width	2.500m
Overall Body Height	3.733m
Min Body Ground Clearance	0.353m
Track Width	2.820m
Lock to Lock Time	4.00 sec
Wall to Wall Turning Radius	8.170m
Design Speed	9km/h

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
Cremorne Wharf Depot
RB Kensington and Chelsea

Document Information
Application for Development Consent

Permanent highway layout -
Vehicle swept path analysis

DCO-PP-11X-CREWD-130021
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

Transport assessment figures

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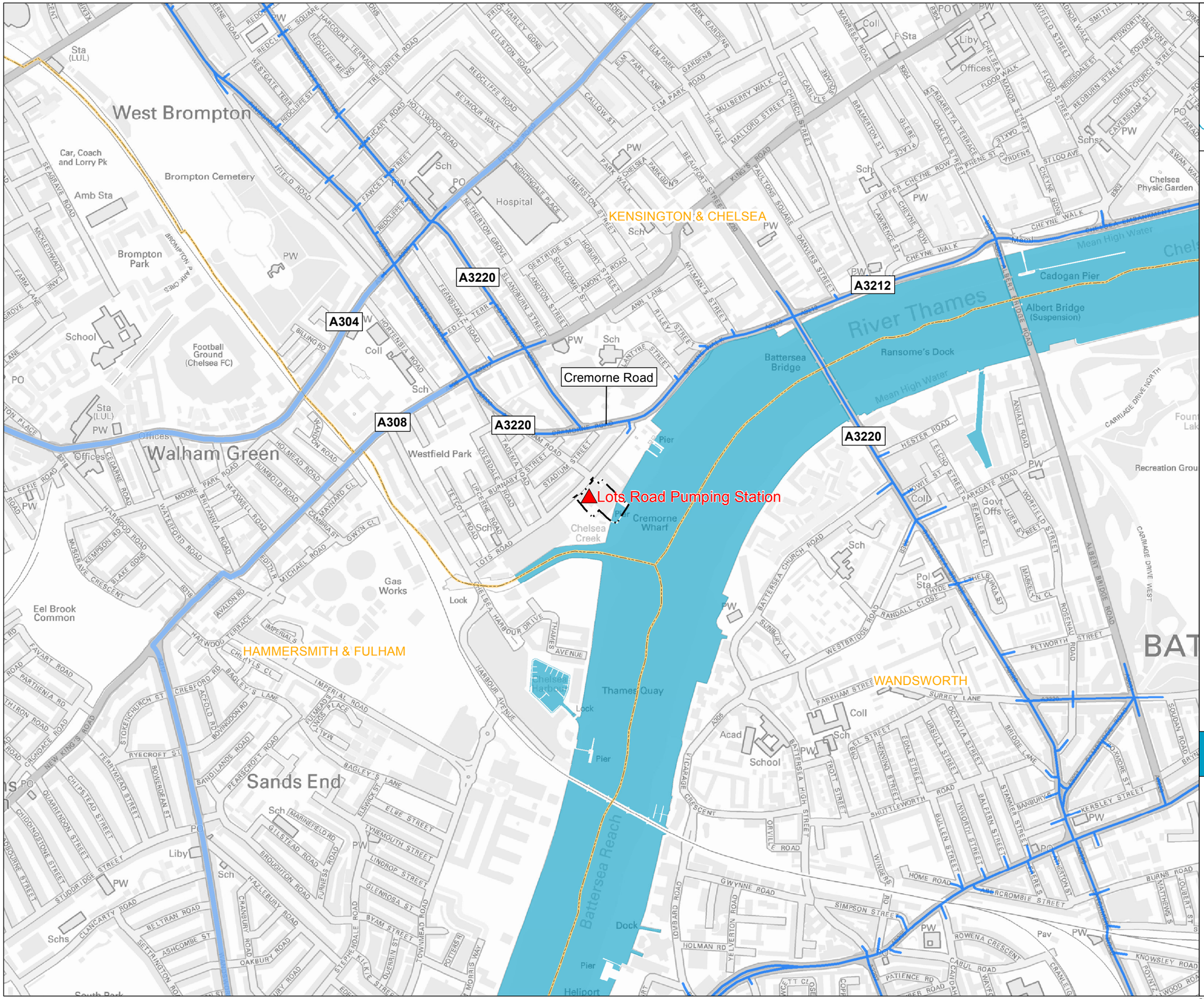

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Keyplan:

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

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

Document Information

Transport Assessment

Transport - site location plan

Figure 12.2.1

1PL03-TT-50611
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

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

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

Document Information

Transport Assessment

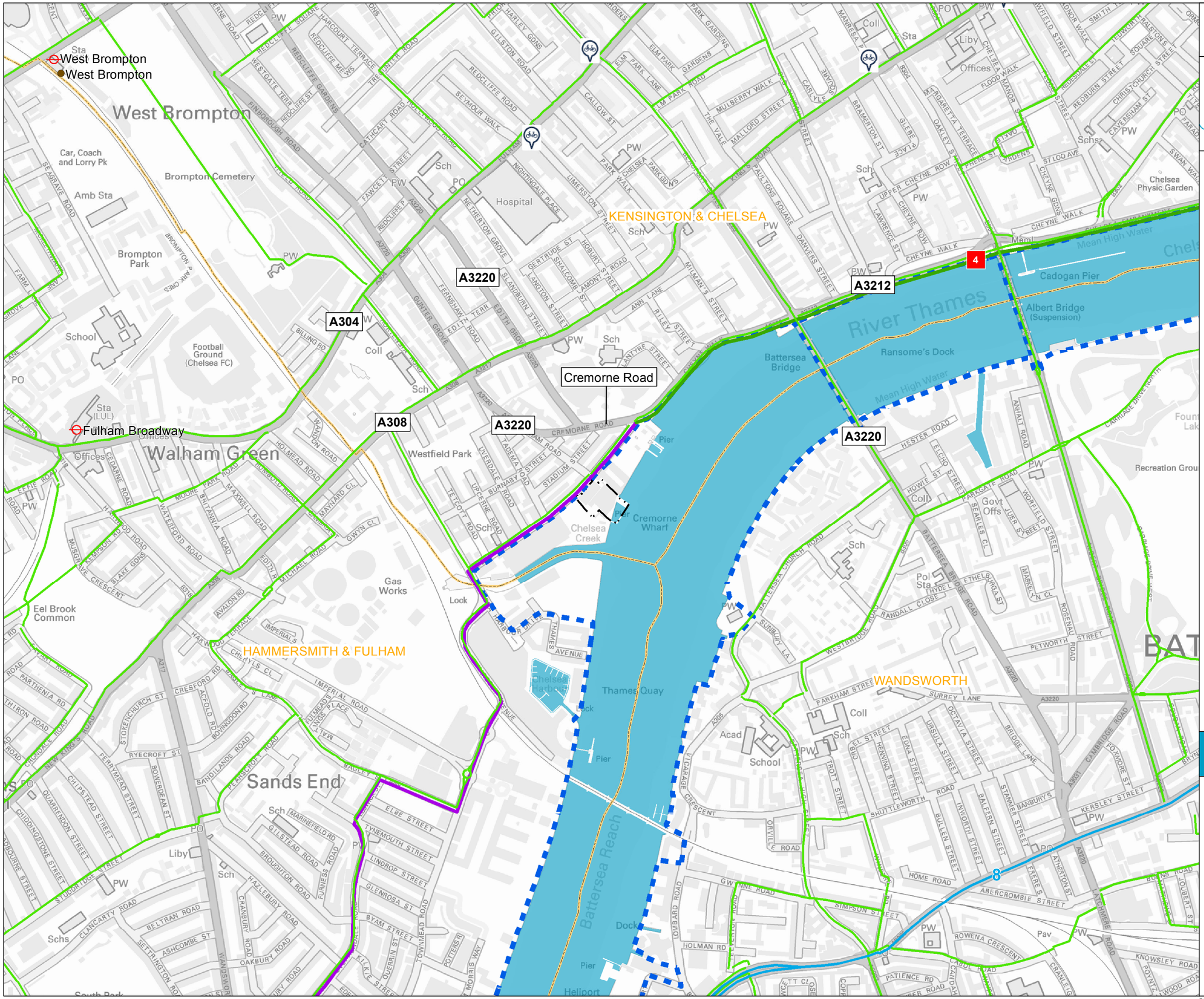
Transport - construction traffic routes

Figure 12.2.2

1PL03-TT-50603
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



Keyplan:

Key

- National Rail stations with cycle parking
- Underground stations with cycle parking
- Barclays cycle hire locations
- Cycle superhighwya (open)
- London cycle routes
- Thames path

National cycle network

Route Type

- Open Traffic Free
- Open on-road
- 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

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

Document Information

Transport Assessment

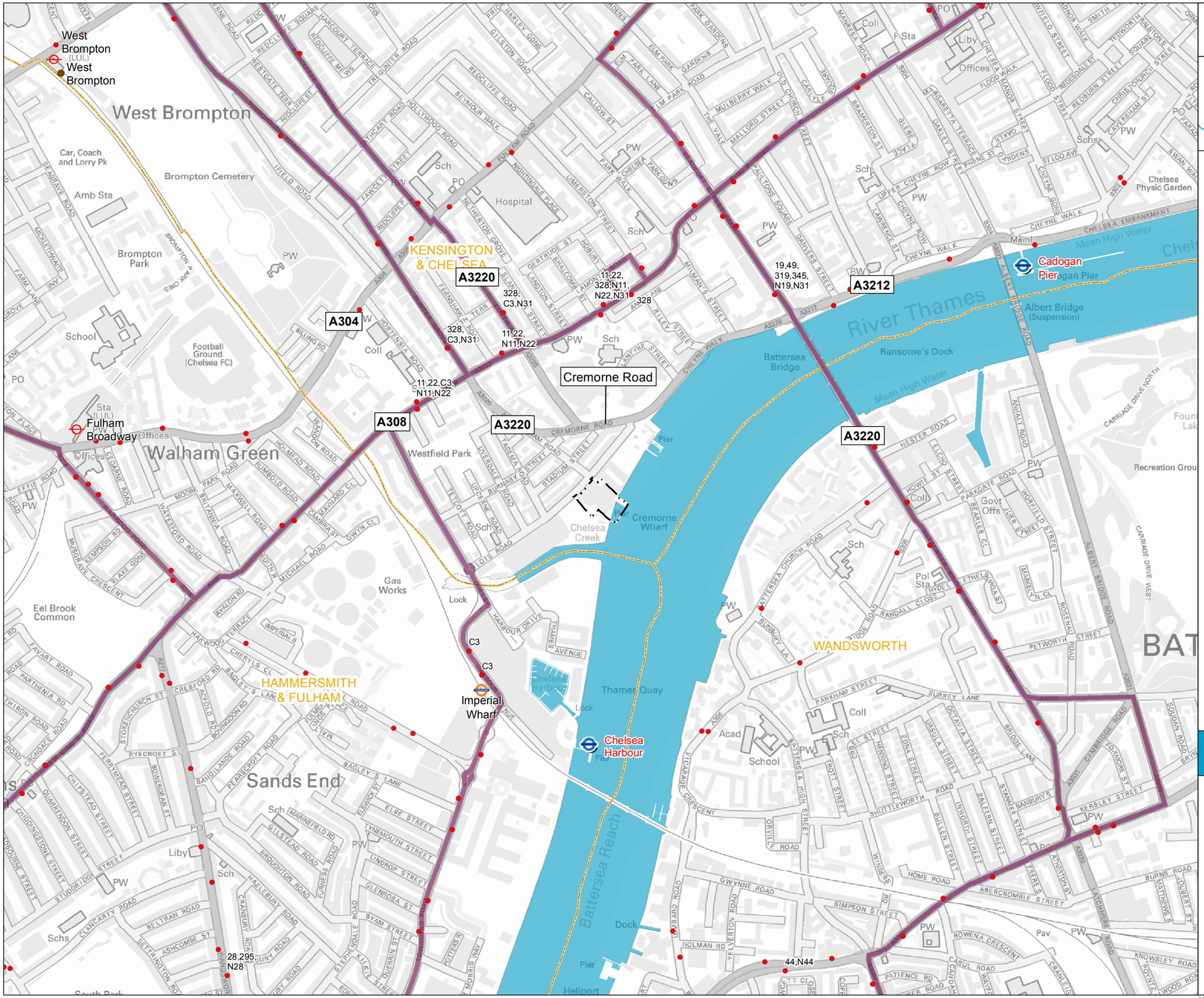
Transport - pedestrian and cycle network

Figure 12.4.1

1PL03-TT-50619
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



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Keyplan:

Key

- TFL bus stops
- National rail stations
- London underground stations
- London overground stations
- Pier locations
- 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

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

Document Information

Transport Assessment

Transport - public transport

Figure 12.4.2

1PL03-TT-50627
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

Keyplan:

Key

- Council parking
- Private car parking
- Coach Parking
- City Car
- Zip Car
- Controlled parking zones
- Limits of Land to be Acquired or Used
- Local authority boundary

Mon-Fri:8:30am-10pm;Sat:8:30am-13:30pm

Mon-Fri:8:30am-10pm;Sat:8:30am-6:30pm

110 55 0 110 m

Scale 1 : 7,500 at A3

FOR INFORMATION

Location

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

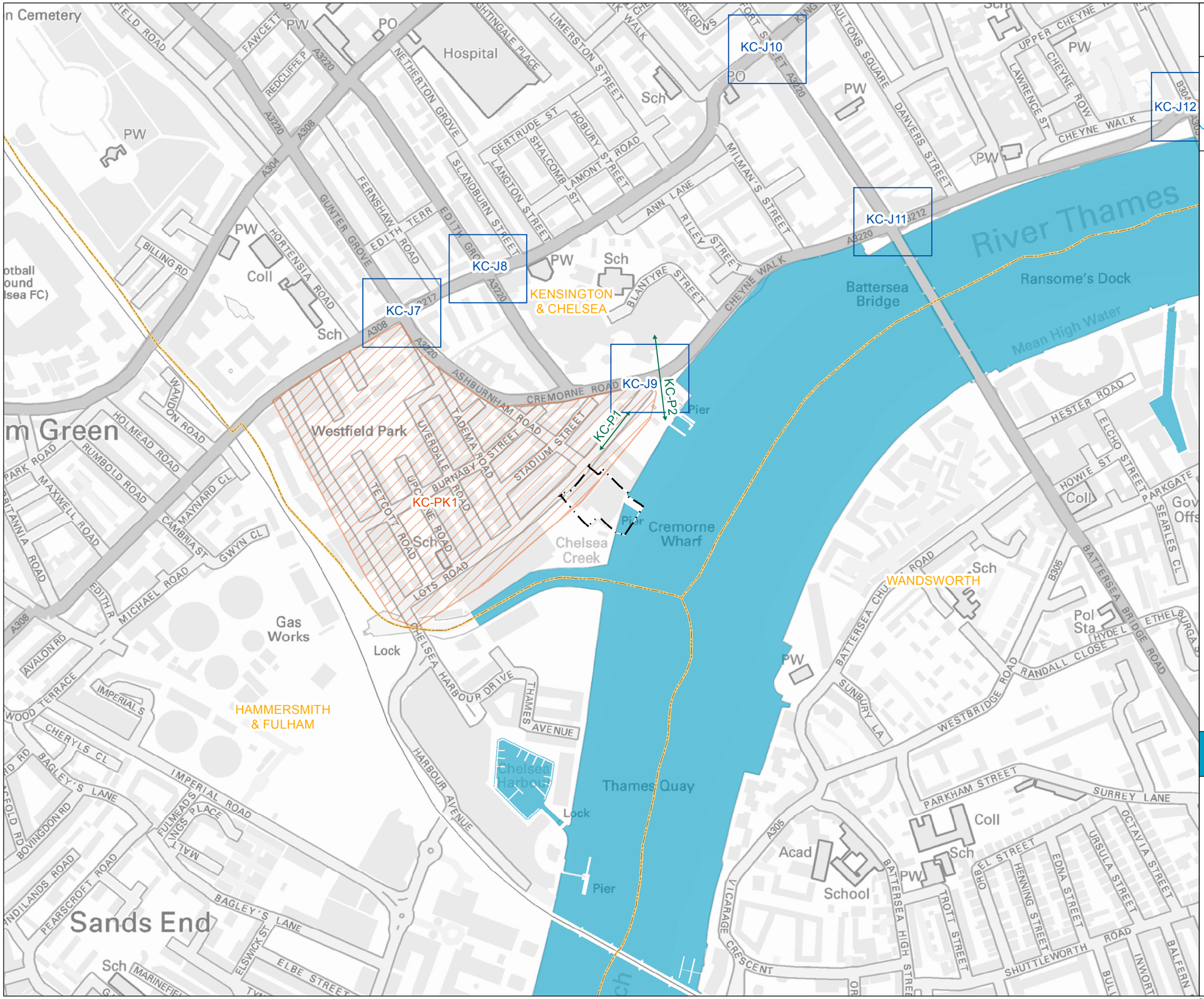
Document Information

Transport Assessment
Transport - parking

Figure 12.4.3
1PL03-TT-50635
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



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Keyplan:

Key

- Pedestiran 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

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

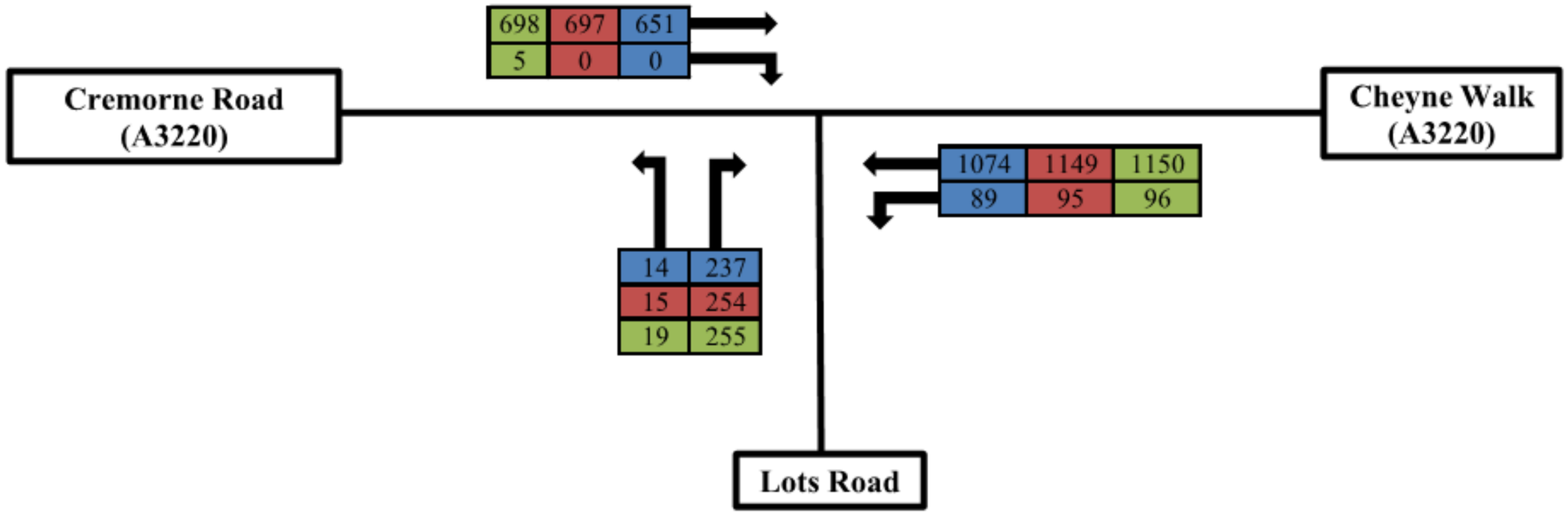
Document Information

Transport Assessment
Transport - survey locations

Figure 12.4.4
1PL03-TT-50643
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



Keyplan:

Key

- Base Traffic Flow
- Construction Base
- Development Case

FOR INFORMATION

Location

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

Document Information

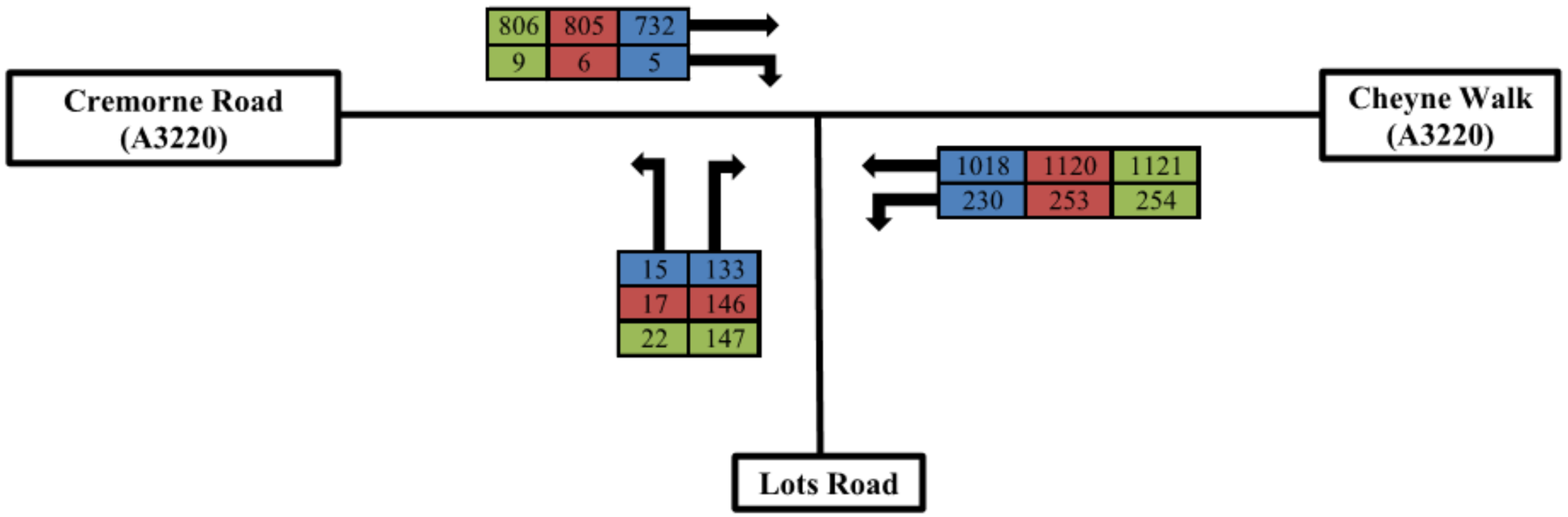
Transport Assessment

Transport - Baseline, Construction and Development case traffic flow (AM peak hour)
Figure 12.4.5

1PL03-TT-50902
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



Keyplan:

Key

- Base Traffic Flow
- Construction Base
- Development Case

FOR INFORMATION

Location

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

Document Information

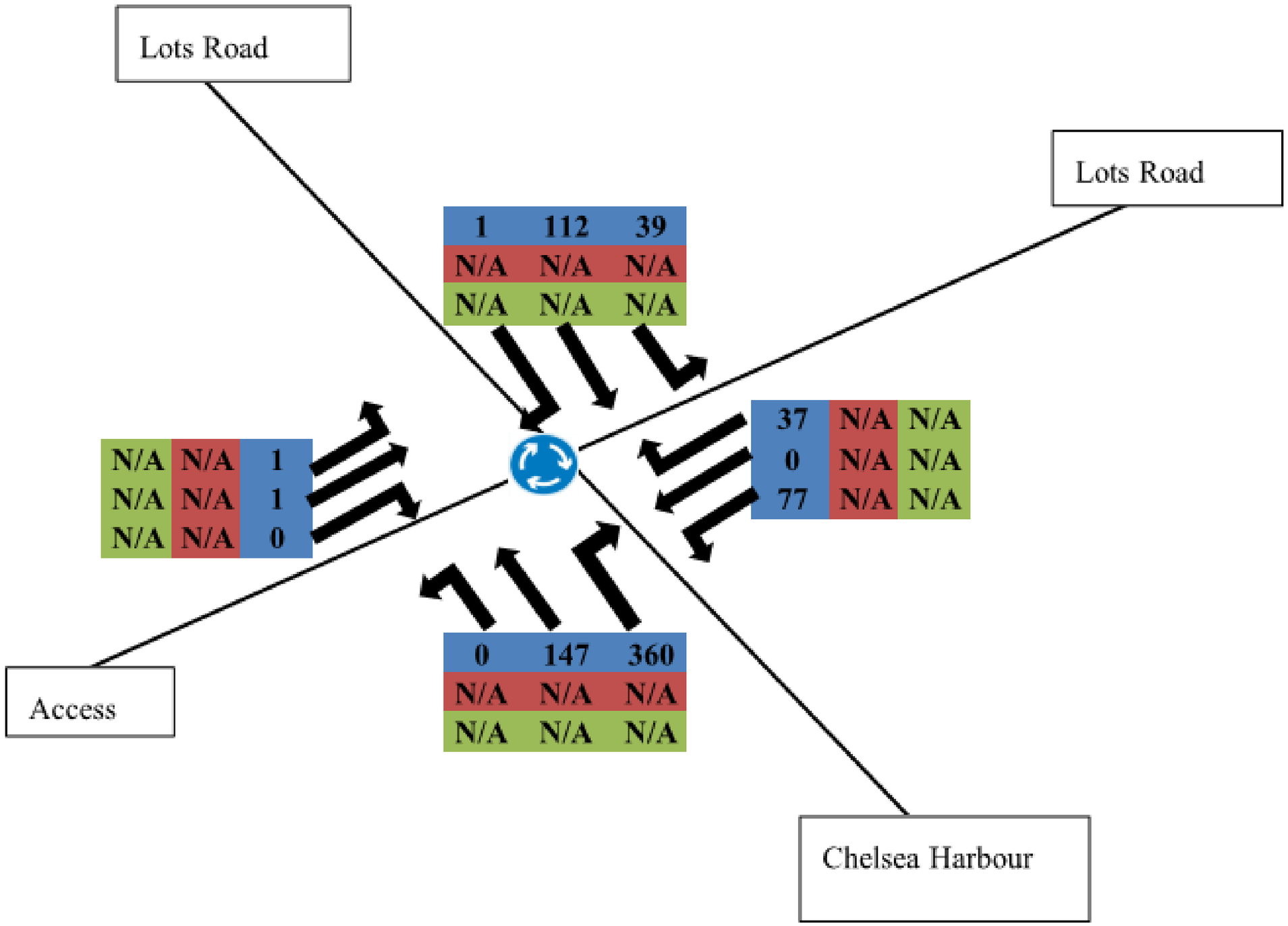
Transport Assessment

Transport - Baseline, Construction and Development case traffic flow (PM peak hour)
Figure 12.4.6

1PL03-TT-50926
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



Keyplan:

Key

- Base Traffic Flow
- Construction Base
- Development Case

FOR INFORMATION

Location

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

Document Information

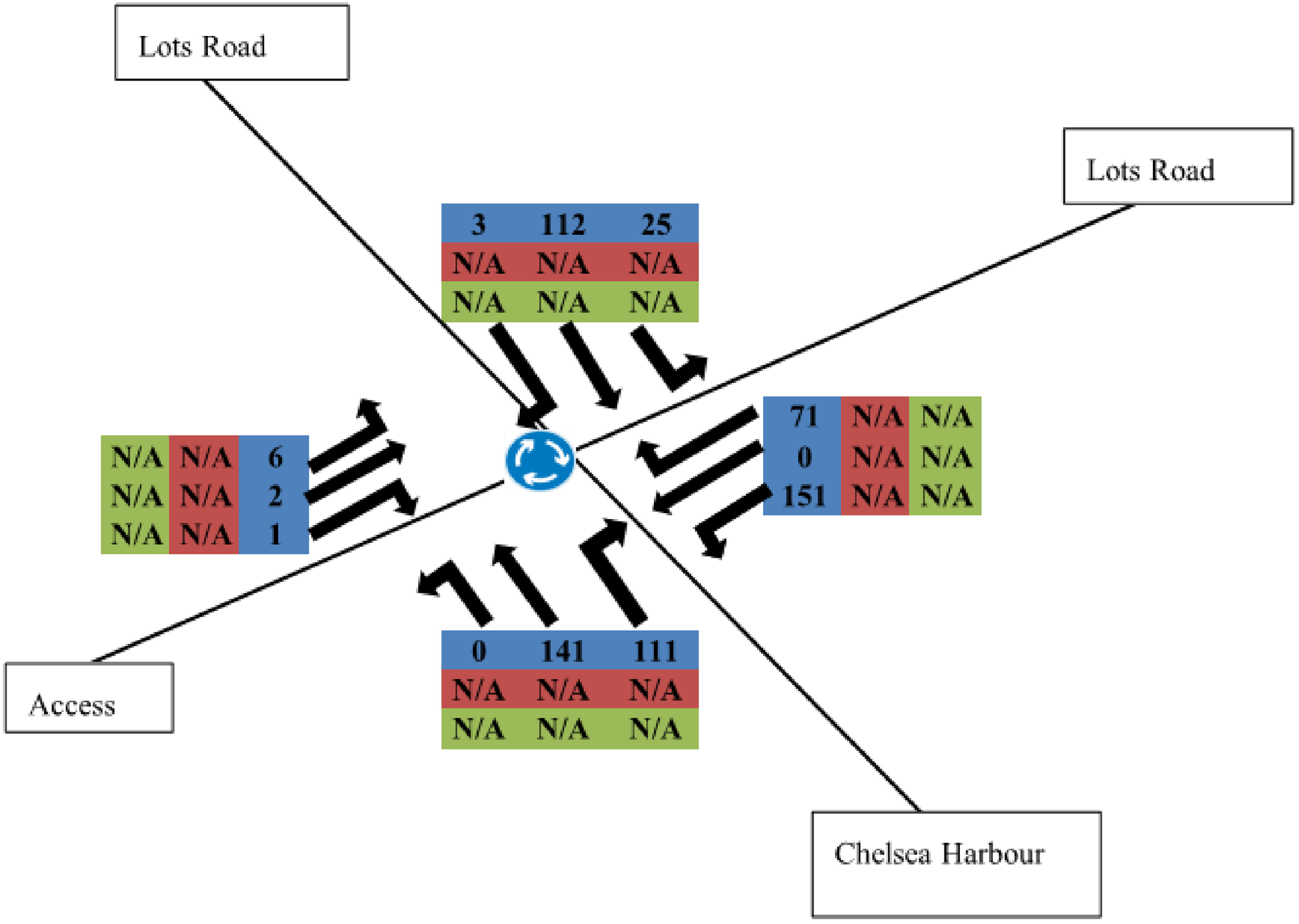
Transport Assessment

Transport – TfL Baseline Traffic Flow (AM peak hour)
Figure 12.4.7

1PL03-TT-509048
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



Keyplan:

Key

- Base Traffic Flow
- Construction Base
- Development Case

FOR INFORMATION

Location

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

Document Information

Transport Assessment

Transport – TfL Baseline Traffic Flow (PM peak hour)
Figure 12.4.8

1PL03-TT-50954
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

Keyplan:

Key

- Slight
- Serious
- Fatal
- 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

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

Document Information

Transport Assessment

Transport - accident locations

Figure 12.4.9

1PL03-TT-50747
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

Keyplan:

Key

Accidents

(Severity, Mode of travel)

- Slight, Pedestrian
- Slight, Pedal Cycle
- Serious, Pedestrian
- Serious, Pedal Cycle
- Fatal, 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

Cremorne Wharf Depot
Royal Borough of Kensington and Chelsea

Document Information

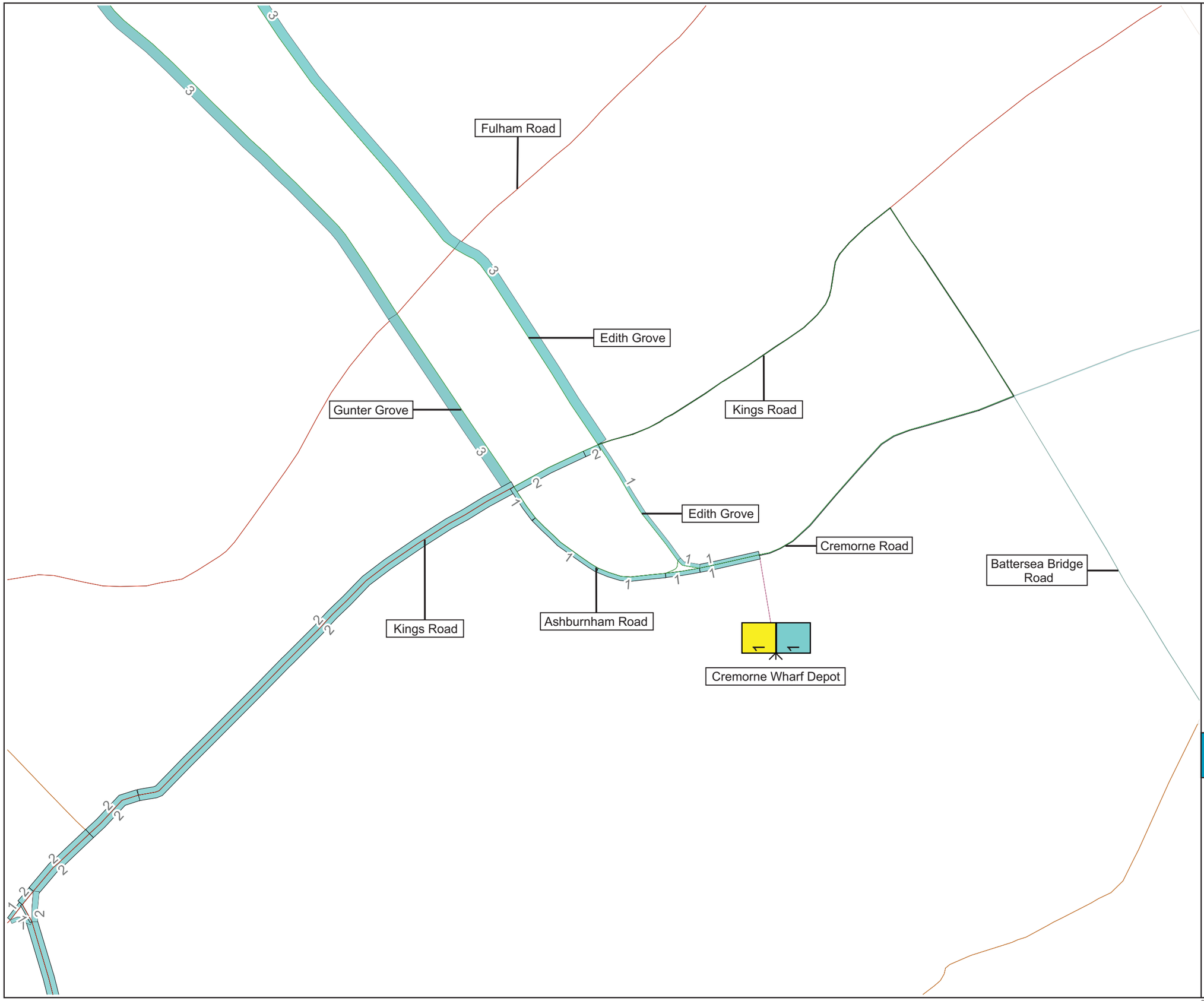
Transport Assessment

Transport - pedestrian and cyclist accidents by severity
Figure 12.4.10

1PL03-TT-50831
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



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

Cremorne Wharf Depot
Royal Borough of Kensington & Chelsea

Document Information

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

Figure 12.5.1

1PL03-TT-50877

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

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Thames Water Utilities Limited
Clearwater Court, Vastern Road, Reading RG1 8DB

DCO-DT-000-ZZZZZ-071009