Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Transport Assessment

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Chambers Wharf

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 20: Chambers Wharf

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20.1 Introduction

20.1.1 This site-specific *Transport Assessment* (*TA*) presents the findings of the assessment of the transport issues of the Thames Tideway Tunnel project at the Chambers Wharf site located within the London Borough (LB) of Southwark.

20.1.2 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.

20.1.3 The works at Chambers Wharf include a main site and highway works site in Bevington Street, defined by the limits of land to be acquired or used (LLAU) and would cover areas of 2.8 hectares and 0.02 hectares, respectively. The main site is situated partly on previously developed land (which has recently been cleared in preparation for development) and partly on adjacent foreshore.

20.1.4 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.

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

20.1.6 The *TA* structure is as follows:

a. Section 20.2 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 20.3 outlines the assessment methodology used for the *TA* for the construction and operational phases.

c. Section 20.4 details the baseline conditions on the transport network surrounding the site, including survey data analysis and accident analysis.

d. Section 20.5 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 20.6 provides the assessment of the operational phase of the project.

f. Section 20.7 summarises the *TA* findings.

20.2 Proposed development

20.2.1 Chambers Wharf is a redevelopment site within the LB of Southwark as shown in Figure 20.2.1 in the Chambers Wharf Transport Assessment Figures.

20.2.2 The site is located in a residential area with six to eight storey residential buildings to the west of the site and two to four storey residential buildings to the east of the site. St. Michael's Roman Catholic College and St Joseph's RC Primary School are located to the southwest of the site with further residential dwellings to the southeast.

20.2.3 The western edge of the site is formed by the rear of Luna House and Axis Court. Luna House fronts the river with Axis Court located to its rear fronting East Lane. The eastern edge of the site is bounded by Loftie Street and the southern edge by Chambers Street. Riverside Primary School is located on Bevington Street to the southeast of the site.

20.2.4 The Chambers Wharf site would be a main tunnel drive site and a reception site for both the main tunnel drive from Kirtling Street and the long connection tunnel from Greenwich Pumping Station with construction anticipated to last for six years.

Construction

20.2.5 The construction site would be located on land to the north of Chambers Street, adjacent to the River Thames. In order to provide working areas, a temporary cofferdam would be constructed within the river adjacent to the site and would also occupy a section of the foreshore.

20.2.6 Construction at the Chambers Wharf site is anticipated to last for six years. There would be five phases of construction phase 1 - covering site set up, phase 2 -shaft construction, phase 3 - tunnelling, phase 4 - secondary lining and phase 5 - site demobilisation. During all phases of construction one construction phase highway layout would apply. The highway layout during construction phases plans are provided in the Chambers Wharf Transport Assessment Figures.

20.2.7 *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 20 Appendix E.

20.2.8 Vehicle access to and from the site would take place from Chambers Street which would be reached via Bevington Street from Jamaica Road (A200), the latter being part of the Transport for London Road Network (TLRN).

20.2.9 There would also be an increase in the number of lorries passing along Bevington Street. Although footways in Bevington Street would not be diverted, the design includes provision for protection to pedestrians by incorporating a new pedestrian refuge on Bevington Street to the south of the junction with Chambers Street.

20.2.10 Given the nature of the local streets and the anticipated volume of construction traffic, the proposals include the provision of an alternative

signed route for cyclists avoiding Chambers Street. The diversion route would run from Bermondsey Wall West via other local roads (George Row, John Felton Road, East Lane, Scott Lidgett Crescent, Janeway and Farncombe Streets) to connect to Bermondsey Wall East.

20.2.11 A total of 15 on-street parking bays on Bevington Street in close proximity to the junction with Chambers Street would be temporarily restricted to create passing bays and manoeuvring room for two-way construction vehicle movements during the construction phase. In addition, nine on-street parking bays would be temporarily restricted at the eastern end of Chambers Street. These bays would not be relocated during the periods for which the restriction is in place.

20.2.12 During construction cofferdam fill (both import and export), shaft, main tunnel and other excavated material (export) and main tunnel secondary lining aggregates (import) would be transported by barge. For the assessment it has been assumed that 90% of the materials would be taken by river. This allows for periods when the river is unavailable and material unsuitable for river transport. All other material would be transported by road.

20.2.13 Parking for approximately 15 essential maintenance/ operational vehicles would be provided on site. No worker parking would be provided.

20.2.14 Construction details for the site relevant to the construction transport assessment are summarised in Table 20.2.1.

Table 20.2.1 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 and duration (in peak month of Site Year 1 of construction)	110 movements per day (55 lorry trips) For three months
Assumed peak period of construction barge movements	Site Year 6 of construction
Assumed average peak daily construction barge movements (in peak month of Site Year 6 of construction)	6 movements per day (3 barge trips)
Typical types of lorry requiring access (comprising rigid-bodied, flatbed and articulated vehicles)	Excavation lorries Aggregate lorries Cement tanker lorries

Description	Assumption
	Ready mix mixer lorries Steel reinforcement lorries Tunnel precast concrete lining lorries Office delivery lorries Plant and equipment lorries Temporary construction material lorries including pipe/track/oils/greases 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

20.2.15 Figure 20.2.2 in the Chambers Wharf Transport Assessment Figures shows the primary construction routes for the Chambers Wharf site. These have been discussed with both Transport for London (TfL) and the local highway authority.

20.2.16 The Chambers Wharf site would be located north of Chambers Street in the LB of Southwark. Chambers Street is approximately 260m from Jamaica Road (A200) which is the nearest part of the TLRN. Connections between Jamaica Road (A200) and Chambers Street can be made via Bevington Street or George Row.

20.2.17 The main junctions along the construction traffic route in the immediate vicinity of the Chambers Wharf site are Jamaica Road (A200) / Bevington Street and Jamaica Road (A200) / Rotherhithe Tunnel (A101) / Brunel Road (B205).

20.2.18 During all construction phases vehicles would use Bevington Street to travel between Jamaica Road (A200) and Chambers Street. Vehicles would enter and leave the site on Chambers Street using a right turn in, left turn out arrangement.

20.2.19 Vehicles arriving at the site would approach on the TLRN from the south via Jamaica Road (A200) and return in the opposite direction.

20.2.20 The exact routing of construction traffic depends on the origins and destinations of construction materials, which are shown indicatively in the *Project-wide TA*.

Proposed construction flows

Construction vehicles and barges

20.2.21 Vehicle lorry movements would take place during the standard day shift of ten hours on weekdays (08:00 to 18:00) and five hours on Saturdays (08:00 to 13:00).

20.2.22 A limited number of extensions to working hours may be required to cover certain construction activities at the Chambers Wharf site such as major

concrete pours. The site would also require continuous working hours when the tunnelling construction activities are taking place. These underground works would occur on a continuous 24 hour cycle seven days a week. However, construction vehicle movements would be limited to the hours stated in paragraph 20.2.21 other than in exceptional circumstances.

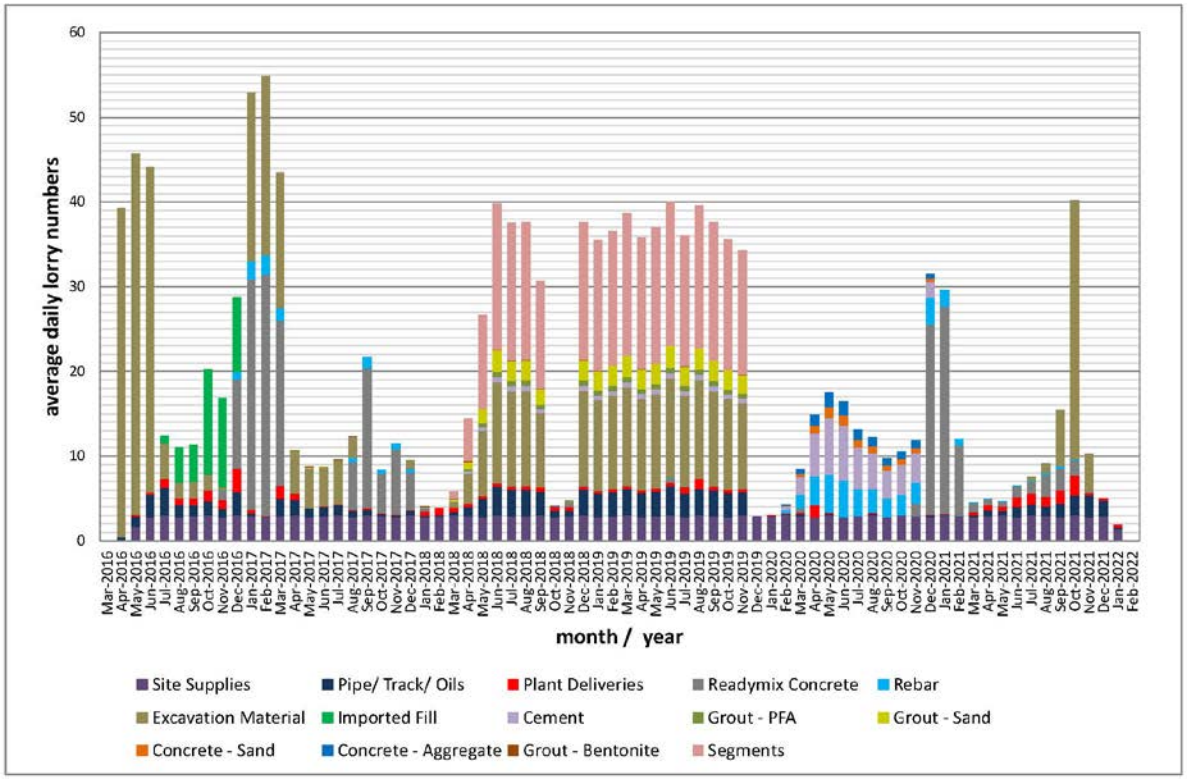
20.2.23 In exceptional circumstances HGV and abnormal load movements could occur up to 22:00 on weekdays for large concrete pours and later at night on agreement with the LB of Southwark.

20.2.24 Site-specific peak construction assessment years have been identified. The histograms in Plate 20.2.1 and Plate 20.2.2 show that the peak site-specific activity for construction lorries at the Chambers Wharf site would occur in Site Year 1 of construction. The peak activity for construction barges at this site would occur in Site Year 6 of construction.

20.2.25 This *TA* assesses these site-specific peak construction years. As detailed in Table 20.2.1, there would be an estimated 110 average peak daily construction lorry vehicle movements in the peak month of Site Year 1 of construction. Plate 20.2.1 shows how the number of vehicular movements would vary throughout the construction period. Plate 20.2.2 indicates the variation in the number of construction barge movements during construction and that there would be an estimated six daily construction barge movements in the peak month in Site Year 6 of construction.

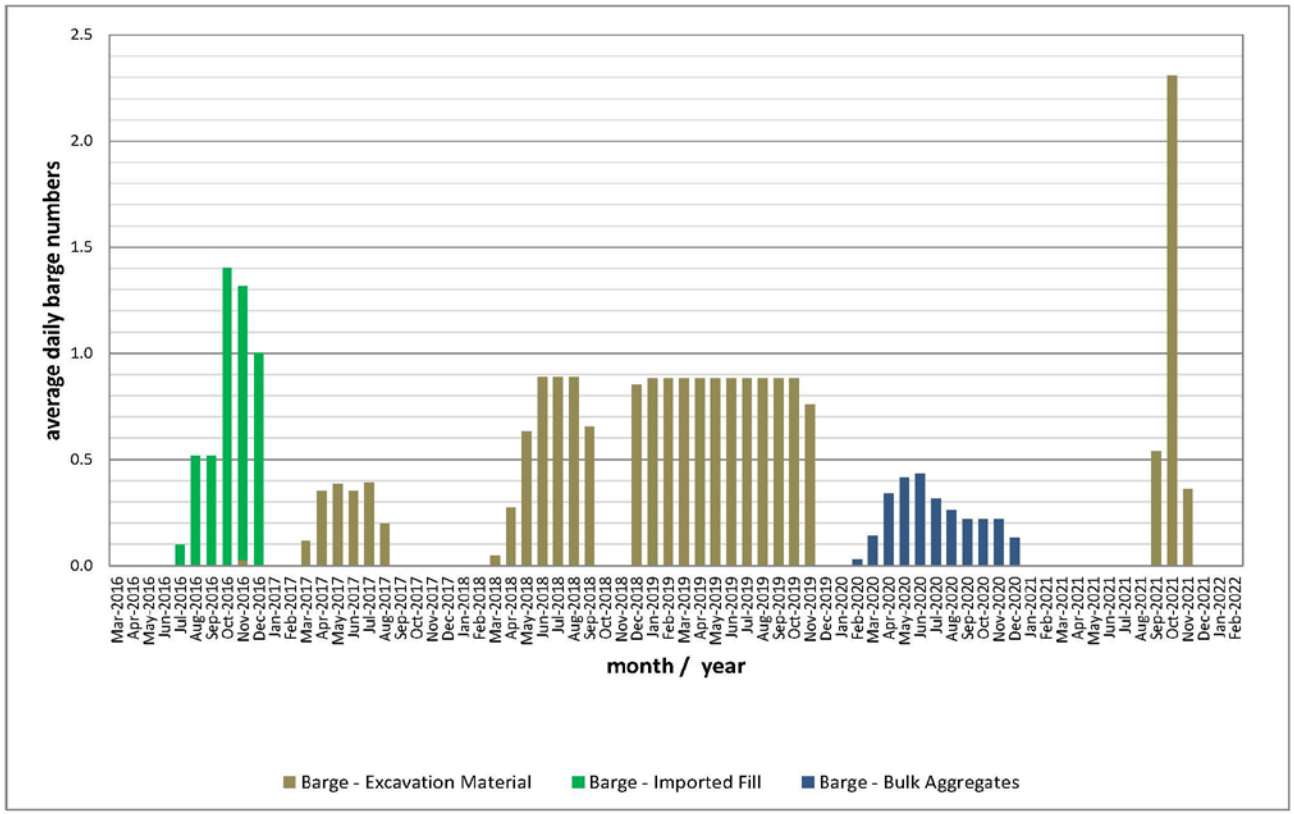
20.2.26 The assessment is based on 10% of the daily number of lorry journeys occurring in the peak hours, which has been agreed with TfL as a reasonable approach. It is recognised that it may be desirable to reduce the number of construction lorry movements in peak hours and the mechanisms for addressing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

Plate 20.2.1 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 20.2.2 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.

20.2.27 As the *Project-wide TA* (as contained within Section 3) 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.

20.2.28 The 07:00 to 09:00 and 17:00 to 19:00 periods identified from the local traffic surveys are busier on the network in the weekday than those encountered at the weekends (this is discussed in Section 20.4). 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.

20.2.29 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.

20.2.30 Other construction vehicle movements associated with site operations and contractor activities would be cars and light goods vehicles (LGVs). The construction worker vehicle movements expected to be generated by the Chambers Wharf site are shown in Table 20.2.3.

Construction workers

20.2.31 The construction site is expected to require a maximum workforce of 165 workers on site at any one time. The number and type of workers is shown in Table 20.2.2. It is noted that the table shows the maximum total number of workers required (289); however, as a result of shift patterns the maximum workforce on site would be 165 during the dayshift (08:00-18:00).

Table 20.2.2 Maximum estimated construction worker numbers

Contractor					Client	
Staff*		Labour**			Staff***	
08:00-18:00	18:00-08:00	08:00-15:00	15:00-23:00	23:00-08:00	08:00-18:00	18:00-08:00
60	15	60	60	45	45	4

**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.*

20.2.32 The mode split outlined in Table 20.2.3 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 Chambers Wharf site. The Census data indicates that the predominant mode of travel for journeys to work in this area is public transport.

20.2.33 There would be no parking provided within the site boundary for workers. As parking on surrounding streets is also restricted, and measures to reduce car use would be incorporated into site-specific *Travel Plans*, it is highly unlikely that workers would travel by car. The Census mode shares have therefore been adjusted in Table 20.2.3 to reflect increased levels of non-car use by workers at this site. This forms the basis of the assessment.

20.2.34 It should be noted that the figures quoted in Table 20.2.3 allow for a change over of the day shift and the night shift movements during the AM peak hour. The PM peak allows for departures of staff not working shift patterns.

Table 20.2.3 Transport mode split

Mode	Percentage of trips to site	Equivalent number of worker trips (based on 165 maximum worker trips)	
		AM peak hour (08:00-09:00)	PM peak hour (17:00-18;00)
Bus	16%	27	17
National Rail	32%	52	33
Underground	28%	47	30
Car driver	<1%*	0	0
Car passenger	<1%*	0	0
Cycle	4%	6	4
Walk	15%	25	16
River	1%	1	1
Other (taxi/motorcycle)	4%	6	4
Total	100%	165	105

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

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

20.2.35 As indicated in Table 20.2.3, it is assumed that the predominant mode of travel for journeys to work in this area is public transport. Further, it is assumed that the primary public transport services used to access the area are London Underground via Bermondsey Station on Jamaica Road (A200) and bus via the bus stops on Jamaica Road (A200).

Vehicle movements summary

20.2.36 The total anticipated number of construction-related vehicle movements in the peak month of activity at this site is set out in Table 20.2.4.

Table 20.2.4 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%*	110	0	11	11	0
Other construction vehicle movements**	134	6	6	6	6
Worker vehicle movements***	nominal	0	0	0	0
Total	**244**	**6**	**17**	**17**	**6**

** 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.*

20.2.37 An average peak flow of 244 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.

20.2.38 Table 20.2.4 shows that in the AM and PM peak hours, the Chambers Wharf site would generate approximately 17 vehicle movements.

Code of Construction Practice

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

a. site specific *Traffic Management Plan*: 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 impact on the river and communicate this with the PLA, local borough and other stakeholders.

20.2.40 In addition to the general measures outlined within the *CoCP Part A*, the following measures have been incorporated into the *CoCP Part B* (Section 5) relating to the Chambers Wharf site:

a. the site security barrier would be positioned to allow a standard rigid tipper vehicle to be wholly off the road whilst awaiting barrier operation

b. the site gates would be solid panels and would remain closed at all times, as far as is practicable, unless agreed otherwise

c. all vehicles would access/egress the site from Jamaica Road (A200) via Bevington Street/Chambers Street

d. the site access would operate as right turn in, left turn out

e. parking along Chambers Street from the site entrance to Bevington Street would be temporarily restricted

f. sections of parking on Bevington Street at the junction with Chambers Street would be temporarily restricted

g. a new pedestrian refuge on Bevington Street 20m southwest of the junction of Bevington Street/Chamber Street would be provided to accommodate a safe pedestrian crossing

h. signage to inform pedestrians of safe routes and the presence of construction vehicles would be provided.

20.2.41 Based on current travel planning guidance including TfL's 'Travel Planning for new development in London (TfL, 2011)[1]', this development falls within the threshold for producing a *Strategic*

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

Framework Travel Plan. A *Draft Project Framework Travel Plan* has been prepared based on the TfL ATTrBuTE guidance[iii]. The *Draft Project Framework Travel Plan* addresses project-wide travel planning measures, including the need for a project-wide Travel Plan Manager, initial travel surveys during construction and a monitoring framework. It also contains requirements and guidelines for the development of site-specific *Travel Plans*. The site-specific travel planning measures of relevance to the *Draft Project Framework Travel Plan* are as follows:

a. information on existing transport networks and travel initiatives for the Chambers Wharf site including shuttle bus services for staff and labour

b. a mode split established for the Chambers Wharf 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

20.2.42 Embedded design measures which are not outlined in the *CoCP* but are of relevance to the transport assessment at the Chambers Wharf site include the provision of a pedestrian refuge on Bevington Street immediately south of the junction with Chambers Street to assist pedestrians crossing at this location.

Operation

20.2.43 In the operational phase the highway layout and car parking provision would be reinstated to the existing (baseline) layout. The site would be accessed from Loftie Street for maintenance visits.

20.2.44 The 24 on-street parking spaces that are proposed to be temporarily restricted on Chambers Street and Bevington Street during construction would be reinstated after the construction phases have been completed. The proposed pedestrian refuge on Bevington Street would be removed as part of the reinstatement works in order for the on-street bays on Bevington Street to be re-provided.

20.2.45 During operation it is anticipated that there would be no significant changes to the transport infrastructure and operation within the local area because maintenance trips to the site would be infrequent and short term. However, the physical aspects of

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

access to the site for maintenance have been considered in relation to:

a. car parking

b. highway layout and operation

20.2.46 There would be potential for some operational issues to arise as a result of the short-term changes to the physical aspects of access to the site for maintenance. These have only 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 the LB of Southwark and TfL.

20.2.47 Access would be required for a light commercial vehicle on a three to six monthly maintenance schedule. During ten-yearly inspections, space to locate two large cranes and associated support vehicles within the site area would be required. The cranes would facilitate lowering and recovery of tunnel inspection vehicles and to provide duty/standby access for personnel.

20.2.48 During operation, maintenance vehicles would approach the site via Jamaica Road (A200) and Bevington Street with a permanent vehicle access being provided from Loftie Street. The highway layout during operation plans are provided in Chambers Wharf Transport Assessment Figures.

20.3 Assessment methodology

Engagement

20.3.1 An extensive scoping and technical engagement process has been undertaken. All consultee comments relevant to this site are presented in Volume 20 of the *Environmental Statement.*

20.3.2 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

20.3.3 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 Chambers Wharf, the LB of Southwark has been consulted. The comments which have arisen relating directly to Chambers Wharf have been recorded and responded to accordingly.

20.3.4 The key technical issues raised have been addressed as far as is practicable at this stage within this *TA*, *Project-wide TA* and the

Environmental Statement, in consultation with both TfL and the LB of Southwark.

20.3.5 The key issues arising from the stakeholder engagement are:

a. the use of routes to the west for HGVs would be opposed due to the 18 tonne weight limit on Tower Bridge

b. there is a rolling programme of closures along St Thomas Road which may need to be considered

c. the proposals should ensure that the construction works do not impede the TLRN/SRN

d. consideration of the protection of pedestrian routes and/ or diversion of them to safeguard against HGV movements

e. any necessary parking suspension/relocation should be identified and provision made for school time drop-off and pick-up

f. barges should be utilised to a greater extent than was proposed in the phase two consultation on the project

g. all proposed site accesses, traffic management arrangements, diversionary routes (for vehicles, pedestrians and cyclists) etc must all be designed and appropriately assessed (safety audit) so as to minimise the risk of accidents.

Construction

20.3.6 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.

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

Construction assessment area

20.3.8 The assessment area for the Chambers Wharf site includes the immediate site access route from Jamaica Road (A200) via Bevington Street and Chambers Street. The junctions of Jamaica Road (A200) / St James's Road / Bevington Street, Bevington Street / Scott Lidgett Crescent, Bevington Street / Chambers Street and Tooley Street (A200) / Druid Street / Jamaica Road (A200) have also been assessed.

20.3.9 These roads and junctions have been assessed for highway, cycle and pedestrian changes. The Thames Path has been included within the assessment due to its proximity to the site. Effects on the local bus services within 640m of the site and rail services within 960m of the site have also been assessed.

20.3.10 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).

20.3.11 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

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

20.3.13 The site-specific peak construction traffic year at Chambers Wharf is Site Year 1 of construction.

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

20.3.15 In relation to the use of barges to transport construction materials, the assessment year represents the year in which the greatest number of daily barge movements would occur, which is Site Year 6 of construction at the Chambers Wharf site.

Highway network modelling

20.3.16 The assessment for each site takes account of construction vehicle movements associated with the Chambers Wharf site, 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 at Chambers Wharf.

20.3.17 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.

20.3.18 The HAMs have been developed by TfL using GLA employment and population forecasts, which are based on the employment and housing projections set out in the *London Plan 2011* (GLA, 2011)[2]. As a result the assessment inherently takes into account a level of future growth and development across London.

20.3.19 For future year assessments for the Chambers Wharf site, the TfL East London HAM (ELHAM) has been used to test the strategic highway network impacts associated with this site. Construction traffic associated with other Thames Tideway Tunnel project sites using routes in this area has been included in the ELHAM scenarios.

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

20.3.21 ELHAM provides factors for the increase in vehicle-kilometres in the borough between the ELHAM base and forecast years (2008/9 and 2021 respectively). The relevant growth factor for the LB of Southwark was applied to the traffic data collected in 2011 in the vicinity of the Chambers Wharf site to produce base case traffic flows for the purposes of local highway modelling.

20.3.22 Construction lorry and operational vehicle movements associated with the Chambers Wharf site for the site-specific peak month were added to the 2021 base case flows to provide the development case flows for local modelling.

20.3.23 This approach provides a robust assessment case 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

20.3.24 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 typical hours of 08:00 to 18:00, this would be agreed in advance with TfL and the local highway authority.

20.3.25 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.

20.3.26 As para 20.3.24 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.

20.3.27 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).

20.3.28 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.

20.3.29 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

20.3.30 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.

20.3.31 Given the level of transport activity associated with the Thames Tideway Tunnel project during the operational phase, only the localised transport issues around the Chambers Wharf site have

been assessed. Other Thames Tideway Tunnel project sites would not affect the area around Chambers Wharf in the operational phase and therefore they have not been considered in the assessment.

Operational assessment area

20.3.32 The assessment area for the operational assessment remains the same as for the construction assessment as set out in para. 20.3.8 and 20.3.9.

Operational assessment year

20.3.33 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 transport activity associated with the operational phase would be very low, there is no requirement to assess any other year beyond that date.

20.4 Baseline

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

Policy review

20.4.2 The site is located within the LB of Southwark; the relevant national, regional and local policy documents have been reviewed and included in Section 20 Appendix A.

Existing land use

20.4.3 Chambers Wharf comprises a vacant site on the northern side of Chambers Street with part of the site fronting onto the River Thames. Previous buildings on the site have been demolished in preparation for development with hoardings erected around the site on Loftie Street, Chambers Street and to the rear of Luna House and Axis Court on East Lane.

20.4.4 The northern part of the site has an area of decking over the foreshore erected on piles with the existing river wall running underneath.

20.4.5 The closest residential areas are Luna House and Axis Court adjacent to the western site hoarding and Fountain Green Square adjacent to the eastern site hoarding.

Existing access

20.4.6 The site currently has two access points provided for vehicle use. There is site hoarding erected around the site boundary with access gates provided from Chambers Street and Loftie Street. Pedestrian and cycle access is not currently permitted through the site.

Pedestrian network and facilities

20.4.7 The existing pedestrian network is illustrated on Figure 20.4.1 in the Chambers Wharf Transport Assessment Figures. The key pedestrian network related to the Chambers Wharf site comprises:

a. Chambers Street providing an east-west link between George Row to the west and Bevington Street to the east

b. Bevington Street providing a north-south link between the eastern end of Chambers Street to the north and Jamaica Road (A200) to the south

c. George Row providing a north-south link between the western end of Chambers Street and Jamaica Road (A200)

d. Jamaica Road (A200) providing an east-west link between Tooley Street (A200) to the west and Lower Road (A200) to the east with Bermondsey Underground station along its length.

20.4.8 The Thames Path (a Public Right of Way) routes along the footways of Chambers Street in the vicinity of the site as shown in Plate 20.4.1. To the east of the site the Thames Path runs along Loftie Street, and then follows Bermondsey Wall East. To the west of the site it follows East Lane and Bermondsey Wall West.

Plate 20.4.1 Thames Path along Chambers Street

20.4.9 Chambers Street, a two-way road, has footways of between 3.2m and 3.5m width for almost all of its length, providing an east-west link for pedestrians between the junction with Bevington Street and the junction with George Row. There is no footway on the northern side of Chambers Street between the junction with Loftie Street and Cold Stores. This is shown in Plate 20.4.2.

Plate 20.4.2 Footway along Chambers Street (bordering the site)

20.4.10 Bevington Street has footways of between 2m and 2.5m in width on both sides of the road. The road provides a northeast-southwest link between Bermondsey Wall East and Jamaica Road (A200). A signalised pedestrian crossing over Bevington Street is provided at the junction of Bevington Street, Jamaica Road (A200) and St James's Road.

20.4.11 George Row provides a north-south link between Bermondsey Wall West and Jamaica Road (A200). Footways of between 2.5m and 5.3m width are provided on both sides of George Row with dropped kerbs provided where the road meets Scott Lidgett Crescent, John Felton Road, Wolseley Street and Chambers Street.

20.4.12 Jamaica Road (A200) to the south of the site provides a continuous link to Lower Road (A200), Brunel Road (B205), and Rotherhithe Tunnel (A101) to the east, and Tooley Street (A200) and Druid Street (A200) to the west. A signalised staggered pedestrian crossing is sited outside Bermondsey Underground station, allowing pedestrians to cross Jamaica Road (A200).

20.4.13 There are also pedestrian crossings on all approaches to the junction of Jamaica Road (A200) / West Lane / Southwark Park Road, except the western (Jamaica Road) approach. A further pedestrian crossing is provided at the junction of Jamaica Road (A200) and Abbey Street. A pelican crossing is located to the east of the Jamaica Road (A200) / Dockhead junction.

20.4.14 At the junction of Jamaica Road (A200) / Tooley Street (A200) / Druid Street (A200) / Shad Thames, pedestrian crossings are provided on all the approaches to the junction. At the Jamaica Road (A200) / Brunel Road (B205) / Lower Road (A200) roundabout, there are zebra crossings on all the approaches to the roundabout.

Cycle network and facilities

20.4.15 The existing cycle network and facilities in the vicinity of the site are described below and shown on Figure 20.4.1 in the Chambers Wharf Transport Assessment Figures and Plate 20.4.3.

20.4.16 The main cycle route within the area is National Cycle (NCN) Route 4 which runs between London and Fishguard via Reading, Bath, Bristol, Newport, Swansea, Carmarthen, Tenby, Haverfordwest and St. Davids. The route is fully open and signed though it has not been finalised in central London between Greenwich and Putney Bridge.

20.4.17 In the vicinity of the site NCN Route 4 (traffic free) runs along Chambers Street. The route continues to the east along Loftie Street and Bermondsey Wall East. To the west it continues along Wolseley Street and Dockhead.

20.4.18 There are bus lanes along Jamaica Road (A200) which can also be used for cycling. Advanced cycle stop lines are provided on all arms of the Jamaica Road (A200) / Bevington Street / St James' Road junction.

Plate 20.4.3 Cycle lane along Jamaica Road (A200)

Barclays Cycle Superhighways

20.4.19 The closest Barclays Cycle Superhighway (CS) to the site is CS7, approximately 2.6km to the west of the site, which routes between Merton and the City. The cycle route starts on the High Street in Colliers Wood and runs along the A24 Tooting High Street, Balham High Road, Clapham High Street, Kennington Park Road, Southwark Bridge Road, and Southwark Bridge with an approximate 45 minute journey from Merton to the City.

20.4.20 CS4 running between Woolwich and London Bridge (A206 – A200) is planned to be opened in 2015.

Barclays Cycle Hire Scheme

20.4.21 There is no Barclays Cycle Hire docking station within 640m walking distance of the site.

20.4.22 The closest docking station is on Curlew Street which is approximately 1km walking distance to the west of the site. This cycle docking station accommodates 21 spaces.

Cycle parking

20.4.23 Seven Sheffield cycle stands, which accommodate up to 14 bicycles, are provided approximately 240m walking distance from the site along Bermondsey Wall East, to the north and east of the junction with Farncombe Street.

20.4.24 Nine Sheffield cycle stands, capable of accommodating up to 18 bicycles, are provided on Major Road to west of Bermondsey Underground station approximately 540m walking distance from the site.

20.4.25 A further ten Sheffield cycle stands, accommodating up to 20 bicycles, are located on the southern footway of Jamaica Road (A200) to the east of Keeton's Road, approximately 570m walking distance from the site.

Public transport

Public Transport Accessibility Level

20.4.26 The Public Transport Accessibility Level (PTAL) of the site was calculated using TfL's approved PTAL methodology (TfL, 2010)[3] (analysis is included in Section 20 Appendix B). This assumes a walking speed of 4.8km/h and considers rail stations within a 12 minute walk (960m) of the Carnwath Road Riverside site and bus stops within an eight minute walk (640m).

20.4.27 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 on Figure 20.4.2 in the Chambers Wharf Transport Assessment Figures.

Bus services

20.4.28 A total of four day time and two night bus routes operate within walking distance of the site. The bus services are 47, 188, 381, C10, N47, and N381. Table 20.4.1 provides a summary of the daytime bus services and their frequencies during the weekday peaks.

20.4.29 These bus routes operate from the following bus stops:

a. St James's Road bus stop on Jamaica Road (A200) – eastbound and westbound, 440m walking distance south of the site

b. Bermondsey Station bus stop on Jamaica Road (A200) – eastbound and westbound, 430m walking distance southeast of the site

20.4.30 On average there are a total of 57 daytime bus services per hour in the AM peak and 55 bus services per hour in the PM peak within a 640m walking distance of the site.

20.4.31 There are approximately seven night-time bus services per hour Monday – Friday between 00:00 – 06:00 and nine bus services per hour on Saturdays between 00:00 – 06:00 (two-way direction) within 640m walking distance of the site.

Table 20.4.1 Existing local bus services weekday peak hour frequencies (number of buses per hour)

Bus number	Origin - destination	Nearest bus stop to Chambers Wharf site	Approximate walking distance from Chambers Wharf site (m)	Weekday peak hour two-way frequencies	
				AM peak (08:00-09:00)	PM peak (17:00-18:00)
47	Catford Bus Garage - Shoreditch	Bermondsey Station	430m	14	13
188	North Greenwich Station – Russell Square	Bermondsey Station	420m	16	16
381	Peckham Bus Station – County Hall	Bermondsey Station	420m	13	13
C10	Canada Water Bus Station – Victoria	Bermondsey Station	420m	14	13

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

London Underground

20.4.32 As shown on Figure 20.4.2 in the Chambers Wharf Transport Assessment Figures the closest London Underground station to the site is Bermondsey Underground station, located approximately 500m walking distance to the southeast of the Chambers Wharf site. It is served by the Jubilee Line.

20.4.33 Jubilee Line trains serving this station travel west to Stanmore and Wembley, and east to Greenwich and Stratford. In the AM and PM peaks the frequency of Jubilee Line trains is approximately one every three to five minutes providing 20-24 services per hour in each direction.

20.4.34 On average there are approximately 50 Underground services in total during the AM and PM peaks within 960m walking distance of the site.

20.4.35 Table 20.4.2 provides a summary of London Underground services and their frequencies during the weekday peaks.

National Rail

20.4.36 The closest National Rail station to the site is London Bridge, which is approximately 2km or 25 minutes walk from the site to the west.

20.4.37 London Bridge Station provides access to First Capital Connect, Southeastern and Southern train services and provides northbound services to Bedford, London Cannon Street, London Charing Cross, and London Victoria, and southbound services to Brighton, Uckfield, Tonbridge, Dartford, Horsham, Gravesend, Tunbridge Wells, Slade Green, Sevenoaks, Dover Priory, Reigate, Hastings, and Ramsgate.

20.4.38 In the AM peak hour there are approximately 124 services (51 northbound and 73 southbound) and in the PM peak hour there are approximately 123 services (40 northbound and 83 southbound).

20.4.39 Table 20.4.3 summarises the National Rail services and their frequencies during the weekday peaks.

Table 20.4.2 Existing London Underground weekday peak hour services and frequencies (number of services per hour)*

Line	Origin - destination	Approximate walking distance from Chambers Wharf site (m)	Weekday peak hour two-way frequencies	
			AM peak (08:00-09:00)	PM peak (17:00-18:00)
Jubilee Line	Stanmore - Stratford	500m	50	50

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

Table 20.4.3 Existing National Rail weekday peak hour services and frequencies (number of services per hour)

National Rail station	Origin - destination	Approximate walking distance from Chambers Wharf site (m)	Weekday peak hour two-way frequency	
			AM peak (08:00-09:00)	PM peak (17:00-18:00)
London Bridge	Bedford, London Charing Cross, London Cannon Street, London Victoria, Uckfield, Tonbridge, Dartford, Horsham, Gravesend, Tunbridge Wells, Slade Green, Sevenoaks, Brighton, Dover Priory, Reigate, Hastings, Ramsgate	2,000	124	123

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

River passenger services

20.4.40 The nearest river passenger services to the Chambers Wharf site are located at London Bridge City Pier. This pier is approximately 2km to the west on the south bank of the river and is served by Thames Clippers services. This pier is currently accessed from the Thames Path which runs along the south bank of the River Thames.

20.4.41 Thames Clippers services run between Embankment Pier in the west and Woolwich Arsenal Pier in the east.

20.4.42 Eastbound Thames Clippers services from London Bridge City Pier start at 07:14 and run until 23:26. Westbound services start at 06:42 and run until 22:51. The eastbound weekend services run between 09:51 and 23:26 and westbound weekend services run between 09:16 and 22:51.

20.4.43 In the weekday AM peak, the frequency of the westbound services is approximately one every ten to 20 minutes and during the PM weekday peak, the frequency of the services is approximately one every six to 25 minutes. The eastbound services run approximately one every ten to 20 minutes during the AM and PM weekday peaks.

River navigation and access

20.4.44 Within the vicinity of this site there is one pier, Cherry Garden Pier, 250m walking distance east of the site on the south bank. Although this pier is not visited by passenger services, City Cruises uses it as its operating base. Consequently, vessels move on and off the pier during the day.

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

20.4.46 It is estimated that the peak hour is between 15:00 and 16:00 hours, Monday to Friday. During this hour about 35 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 would only occur every ten to 12 days when the tide is at its highest. Table 20.4.4 shows the estimated passing traffic rate.

Taxis

20.4.47 Taxis (black cabs) can either be booked in advance, hailed on the street or located at designated taxi ranks. The nearest taxi ranks to the site are located 1.4km walking distance from the site on Tooley Street (More London), with four taxi spaces, and 1.6km walking distance from the site on Tooley Street (London Dungeon), with one taxi space.

Table 20.4.4 Aggregated typical river movement frequencies (number of passing craft per hour)

	Time of day																	
	0600 - 0700	0700 - 0800	0800 - 0900	0900 - 1000	1000 - 1100	1100 - 1200	1200 - 1300	1300 - 1400	1400 - 1500	1500 - 1600	1600 - 1700	1700 - 1800	1800 – 1900	1900 – 2000	2000 - 2100	2100 - 2200	2200 - 2300	2300 - 0000
Chambers Wharf site	1	5	6	6	9	13	12	21	17	35	17	13	10	6	6	3	2	1

Highway network and operation

20.4.48 The site is located on Chambers Street as shown in Figure 20.2.1 in the Chambers Wharf Transport Assessment Figures, approximately 350m from Jamaica Road (A200) which forms part of the TLRN. All construction vehicles would approach and exit the site via the signalised junction of Jamaica Road (A200) / St James's Road/ Bevington Street. During all phases of construction the construction vehicles would use Jamaica Road (A200), Bevington Street and Chambers Street to arrive at and depart from the site.

20.4.49 Chambers Street is a two-way road with a 30mph speed limit. The road runs from east to west joining Bevington Street in the east and George Row in the west.

20.4.50 Bevington Street is a two-way road with a 30mph speed limit. The road links to Bermondsey Wall East to the north and meets Jamaica Road (A200) at a signalised junction. Bevington Street has one lane on the approach to the junction with Jamaica Road (A200) and one lane on the exit from the junction.

20.4.51 George Row is a two-way road with a 30mph speed limit. The road links to Bermondsey Wall West to the north and meets Jamaica Road (A200) at a priority T-junction. George Row has one lane on the approach to the junction with Jamaica Road (A200) and one lane on the exit from the junction.

20.4.52 Jamaica Road (A200) forms part of the TLRN with one lane and a bus lane in both directions. A 30pmh speed limit applies. The road links to Lower Road (A200), Rotherhithe Tunnel (A101) and Brunel Road (B205) to the east and Tooley Street (A200), Druid Street (A200) and Tower Bridge Road (A100) to the west.

20.4.53 Rotherhithe Tunnel (A101), Tooley Street (A200), Druid Street (A200), and Tower Bridge Road (A100) all form part of the TLRN, and Lower Road (A200) forms part of the SRN.

20.4.54 Local highway modelling has been undertaken to determine the operation of the Jamaica Road (A200) / St James's Road/ Bevington Street junction in the baseline situation. This is discussed in paras. 20.4.97 to 20.4.104.

Parking

20.4.55 Figure 20.4.3 in the Chambers Wharf Transport Assessment Figures shows the locations of existing car parking within the vicinity of the site.

Existing on-street car and motorcycle parking

20.4.56 There is a mixture of car parking provision on the roads close to the site. The nearest roads to the site are Chambers Street, Bevington Street, and George Row.

20.4.57 Chambers Street has parking bays on both sides of the road. These are limited to residential permit holders only from Monday to Friday, 08:00-18:30. In addition there are seven general parking bays available along the road, which are free of charge to use.

20.4.58 Bevington Street has parking bays for much of its length. These bays are limited to residential permit holders only from Monday to Friday, 08:00-18:30. The exception to this is a section at the southern end which allows general parking free of charge for approximately nine cars for a maximum stay of one hour between 08:00-18:30 Monday to Friday.

20.4.59 George Row is similar to Bevington Street with residential parking bays along much of its length and the same parking restriction periods.

20.4.60 A blue badge holder parking bay is located along George Row. A further total of nine blue badge holder parking bays are located in the vicinity of the site on Emba Street, Jacob Street, Janeway Street, Wilson Grove, and Wolseley Street.

20.4.61 A motorcycle parking bay is located to the south of the George Row and Wolseley Street junction accommodating up to ten motorcycles without charge or time restriction. Further motorcycle parking bays are located along Dockhead and Mill Street, each accommodating up to four motorcycles with no time restrictions or charge.

20.4.62 Table 20.4.5 summarises the type of 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 20.4.10.

Table 20.4.5 Existing on-street car parking in the vicinity of Chambers Wharf

Road name	Type of parking and number of bays				
	Pay and display	Resident	Blue badge	Unrestricted	Short-term*
Bevington Street	0	44	0	0	0
Chambers Street	0	33	0	0	0
Bermondsey Wall West	0	7	0	0	0
Dockhead	0	11	0	0	2
East Lane	0	16	0	0	0
Emba Street	0	12	1	0	0
Farcombe Street	0	0	0	0	0
George Row	0	25	1	0	0
Jacob Street	0	10	2	0	0
Janeway Place	0	2	0	0	0

Road name	Type of parking and number of bays				
	Pay and display	Resident	Blue badge	Unrestricted	Short-term*
Janeway Street	0	15	1	0	0
John Felton Road	0	0	0	0	0
Lewellyn street	0	0	0	0	0
Loftie Street	0	6	0	0	0
Mill Street	0	6	0	0	0
Parker's Row	0	29	0	0	0
Scott Lidgett Crescent	0	28	0	1	0
Wilson Grove	0	24	3	0	0
Wolseley Street	0	27	2	0	0

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

Existing off-street / private car parking

20.4.63 The nearest private off-street car park to the site, Q-Park Butler's Wharf, is approximately 1.1km walking distance to the west of the Chambers Wharf site on Gainsford Street. The car park has 115 parking bays and nine disabled parking bays.

20.4.64 The car park is open 24 hours a day. The charges are set out in Table 20.4.6.

Table 20.4.6 Q-Park Butler's Wharf off-street parking charges

Duration	Charge
Up to 1 hour	£3.50
Up to 2 hour	£7.00
Up to 3 hour	£10.50
Up to 4 hour	£14.00
Up to 12 hour	£17.50
Up to 24 hour	£20.00

Coach parking

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

Car clubs

20.4.66 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.

20.4.67 There are several car club parking spaces within a 640m walking distance of the site, all operated by ZipCar. One of the car club parking bays is approximately 160m walking distance to the west of the site outside 67 George Row, near the junction with Chambers Street.

20.4.68 One is approximately 385m walking distance to the southwest of the site on Wolseley Street near to the junction with Mill Street. A third space is located on St James's Road near to the junction with Jamaica Road (A200) and on the opposite side of the road to The Gregorian Pub, located approximately 400m walking distance to the south of the site. A fourth space is located on Cherry Garden Street, near to the junction with Pottery Street, approximately 440m walking distance to the east of the site.

Servicing and deliveries

20.4.69 There is one loading bay on Bermondsey Wall East, approximately 400m walking distance from the site.

20.4.70 A combined loading and blue badge parking bay is located along Dockhead approximately 500m to the southwest of the site, to the north of the junction with Jamaica Road (A200). Waiting is restricted to 20 minutes for loading and a maximum stay of three hours for blue badge holders. Use of the bay is prohibited between 07:00 and 19:00 Monday to Saturday except for loading and blue badge holders.

Baseline survey data

Description of data

20.4.71 Baseline survey data were collected in three phases in May, July, and August 2011 to establish the existing transport movements in the area. Figure 20.4.4 in the Chambers Wharf Transport Assessment Figures shows the survey locations in the vicinity of the site.

20.4.72 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, saturation flows, degree of saturation and traffic signal timings. Parking surveys were undertaken to establish the availability and usage of parking, loading bays and motorcycle bays in the vicinity of the site. The third phase of surveys was conducted in August 2011 to establish the summer usage of the Thames Path.

20.4.73 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 suspensions would be necessary or where additional parking demand might be generated by the proposed development.

20.4.74 Traffic surveys were carried out on a weekday and a weekend to represent a weekly profile of traffic at particular locations.

20.4.75 The *Baseline Data Report* which is Appendix A to the *Project-wide TA*, presents the method for field survey data collection and data collected from other sources.

20.4.76 The surveys undertaken and their locations are summarised in Table 20.4.7.

Table 20.4.7 Survey types and locations

Survey type and location	Date
Junction turning movement survey (including pedestrian and cycle movements)	
A200 Tooley Street / Druid Street / Jamaica Road A200 Jamaica Road / Abbey Street A200 Jamaica Road / St James's Road / Bevington Street Bevington Street / Scott Lidgett Crescent Bevington Street / Chambers Street A200 Jamaica Road / B205 Brunel Road / A101 Rotherhithe Tunnel / A200 Lower Road (roundabout).	11 and 12 May 2011
Automatic Traffic Count (ATC)	
A200 Jamaica Road east of the junction with Keeton's Road	21 May – 10 June 2011
Pedestrian and cycle surveys	
Pedestrian crossing on Jamaica Road, west of the junction with Parker's Row	10 and 12 May 2011
Pedestrian crossing on Jamaica Road, west of the junction with George Row	
Thames Path to the east of Tower Bridge & north of Fulford Street.	
Parking surveys	
Bermondsey Wall East Bevington Street Cathay Street Chambers Street Cherry Garden Street Dockhead	12 May 2011

Survey type and location	Date
East Lane	
Elephant Lane	
Emba Street	
Farcome Street	
Flockton Street	
Fulford Street	
George Row	
Jacob Street	
Janeway Place	
Janeway Street	
John Felton Road	
Kenning Street	
Kings Stairs Close	
Lewellyn Street	
Loftie Street	
Marigold Street	
Mayflower Street	
Mill Street	
Paradise Street	
Parker's Row	
Pottery Street	
Railway Avenue	
Rotherhithe Street	
Rupack Street	
Scott Lidgett Crescent	
St Mary Church Street	
Tunnel Road	
West Lane	
Wilson Grove	
Wolseley Street	

20.4.77 Pedestrian and cyclist flow data from the surveys provided the baseline pedestrian and cycle data sets which are set out in Table 20.4.8 and Table 20.4.9 within this section.

20.4.78 Vehicular traffic flow data from the junction turning movement surveys provided the baseline vehicular traffic data sets which were input into the junction assessment models described in paras. 20.4.85 to 20.4.91.

20.4.79 The following ATC and junction surveys were undertaken along construction traffic routes to and from the Chambers Wharf site:

a. ATC on Jamaica Road (A200) east of the junction with Keeton's Road

b. junction survey at Bevington Street / Chambers Street junction

c. junction survey at Bevington Street / Scott Liggett Crescent junction

d. junction survey at Jamaica Road (A200) / St James's Road/ Bevington Street junction

e. junction survey at Jamaica Road (A200) / Abbey Street

Results of the surveys

20.4.80 The surveys inform the baseline situation in the area surrounding the Chambers Wharf site and are summarised in the following paras.

Pedestrians

20.4.81 Table 20.4.8 indicates the pedestrian flows surrounding the site during the AM, PM and weekend peak hours.

20.4.82 Pedestrian surveys around the site during the AM and PM peaks indicate that there is a tidal flow of pedestrians during the AM peak hour along the Thames Path close to the site boundary. The weekday surveys recorded approximately three eastbound pedestrian movements and 18 westbound in the AM peak. During the PM peak hour the survey recorded 16 eastbound and eight westbound pedestrian movements on the Thames Path.

20.4.83 At the junction with Jamaica Road (A200) and Bevington Street there is a relatively balanced flow of pedestrians crossing the Bevington Street arm during the AM peak hour, with approximately 130 in each direction. During the PM peak hour the flow is tidal in nature with approximately 124 people heading east and 44 travelling west.

Cyclists

20.4.84 Cycle surveys in the vicinity of the site show the existing usage of cycle routes. The cycle flows along Chambers Street and Jamaica Road (A200) at the junction with Bevington Street have been extracted from the traffic surveys and are summarised in Table 20.4.9. This shows relatively low but tidal flows along Chambers Street. During the AM peak hour east is the predominant direction of travel and west is the main direction in the PM peak hour. There are high flows of cyclists along Jamaica Road (A200) with the dominant directions being westbound in the AM peak hour and eastbound in the PM peak hour.

Table 20.4.8 Existing pedestrian flows

Footway	Direction	Weekday			Weekend
		AM peak hour (08:00-09:00)	Inter-peak hour (12:00-13:00)	PM peak hour (17:00-18:00)	(13:00-14:00)
Chambers Street	East	3	21	16	21
	West	18	24	8	18
Junction of Jamaica Road (A200) and Bevington Street crossing Bevington Street arm	East	129	43	124	52
	West	131	36	44	36

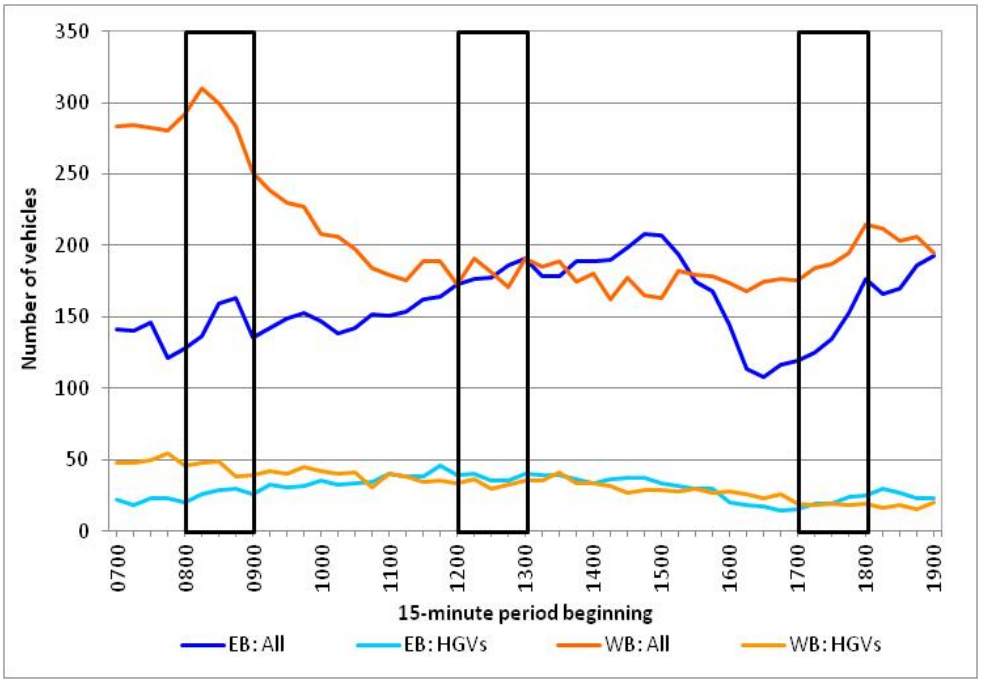
Table 20.4.9 Existing cycle flows

Road/route	Direction	Weekday			Weekend
		AM peak (08:00-09:00)	Inter-peak (12:00-13:00)	PM peak (17:00-18:00)	(13:00-14:00)
A200 Jamaica Road (A200)	Eastbound	56	28	379	55
	Westbound	587	33	47	35
Chambers Street	Eastbound	0	7	21	4
	Westbound	42	3	3	0

Traffic flows

20.4.85 ATC data collected as part of the surveys have been analysed to identify the existing traffic flows along Jamaica Road (A200). Weekday flows have been used as this is when the greatest impacts from the project are likely to be experienced. The weekday vehicle and HGV flows for a 12-hour period (07:00-19:00) are shown in Plate 20.4.4.

Plate 20.4.4 Existing weekday 15-minute traffic flows along Jamaica Road (ATC survey)



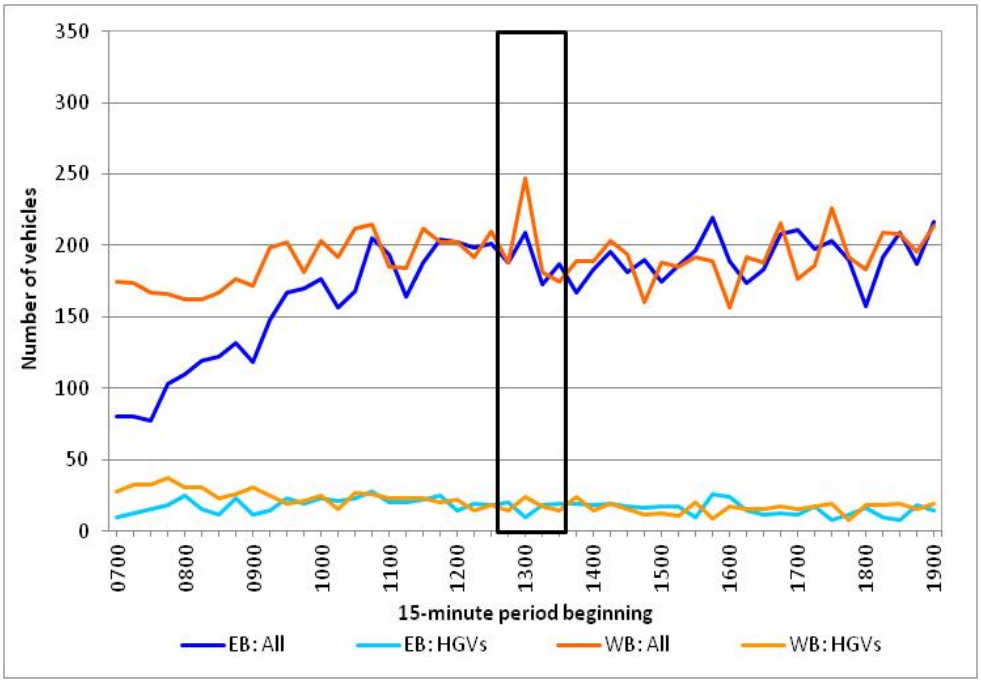
EB – East Bound, WB – West Bound. The black box represents the peak hour traffic flows used for the traffic assessment.

20.4.86 The weekday total vehicle and HGV flows show that the AM peak hour on Jamaica Road (A200) is the busiest hour with a maximum two-way flow of approximately 460 vehicles every 15 minutes. There are approximately 160 vehicles in the eastbound direction and 300 vehicles in the westbound direction. This equates to a total of approximately 1,770 vehicles per hour two-way in the AM peak hour.

20.4.87 In the PM peak hour, there is a total two-way flow of approximately 350 vehicles every 15 minutes along Jamaica Road (A200). The traffic flow is heavier in the eastbound direction with approximately 150 vehicles every 15 minutes. In the westbound direction the traffic flow is approximately 195 vehicles every 15 minutes. This equates to a total of approximately 1,275 vehicles per hour two-way in the PM peak hour.

20.4.88 Plate 20.4.5 indicates the Saturday profile which shows the peak hour to be between 12:30 and 13:30 with approximately 210 vehicles (eastbound) during the peak 15 minutes and approximately 250 vehicles in the westbound direction. The peak hourly flow equates to approximately 730 each in the eastbound and westbound directions equating to a total of approximately 1,460 vehicles per hour two-way.

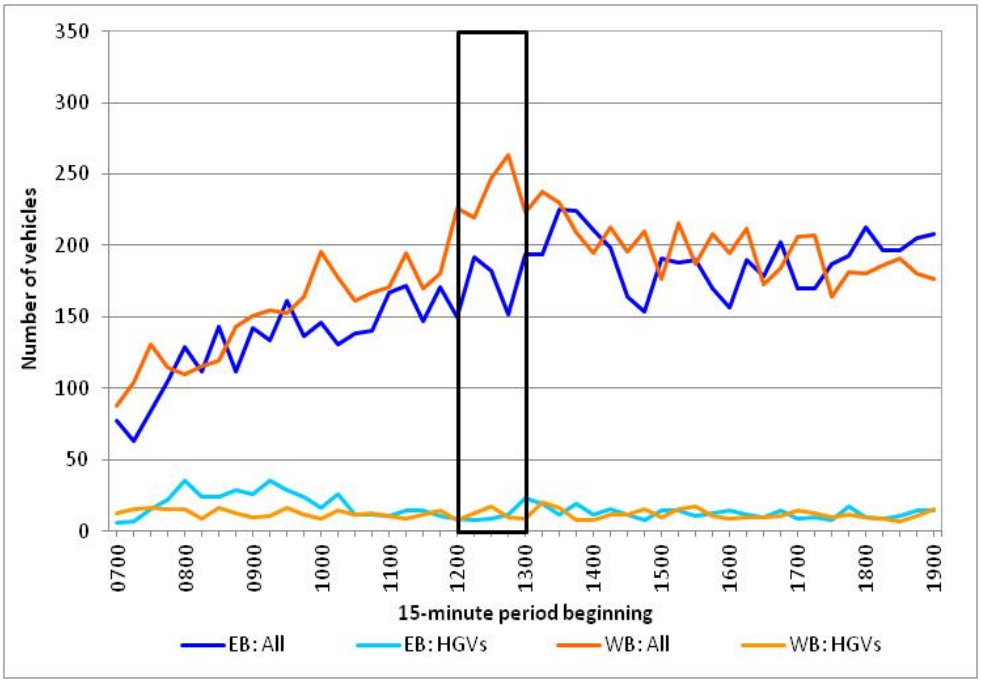
Plate 20.4.5 Existing Saturday 15-minute traffic flows on Jamaica Road (ATC survey)



EB – East Bound, WB – West Bound. The black box represents the peak hour traffic flows used for the traffic assessment.

20.4.89 As shown in Plate 20.4.6 the peak flow on a Sunday falls between 12:00 to 13:00 with a flow of approximately 260 vehicles (westbound) during the peak 15 minutes and approximately 185 vehicles in the eastbound direction. The peak hourly flow equates to approximately 675 and 955 vehicles in the eastbound and westbound direction respectively. This equates to a total of approximately 1,630 vehicles per hour two-way.

Plate 20.4.6 Existing Sunday 15-minute traffic flows on Jamaica Road (ATC survey)



EB – East Bound, WB – West Bound. The black box represents the peak hour traffic flows used for the traffic assessment.

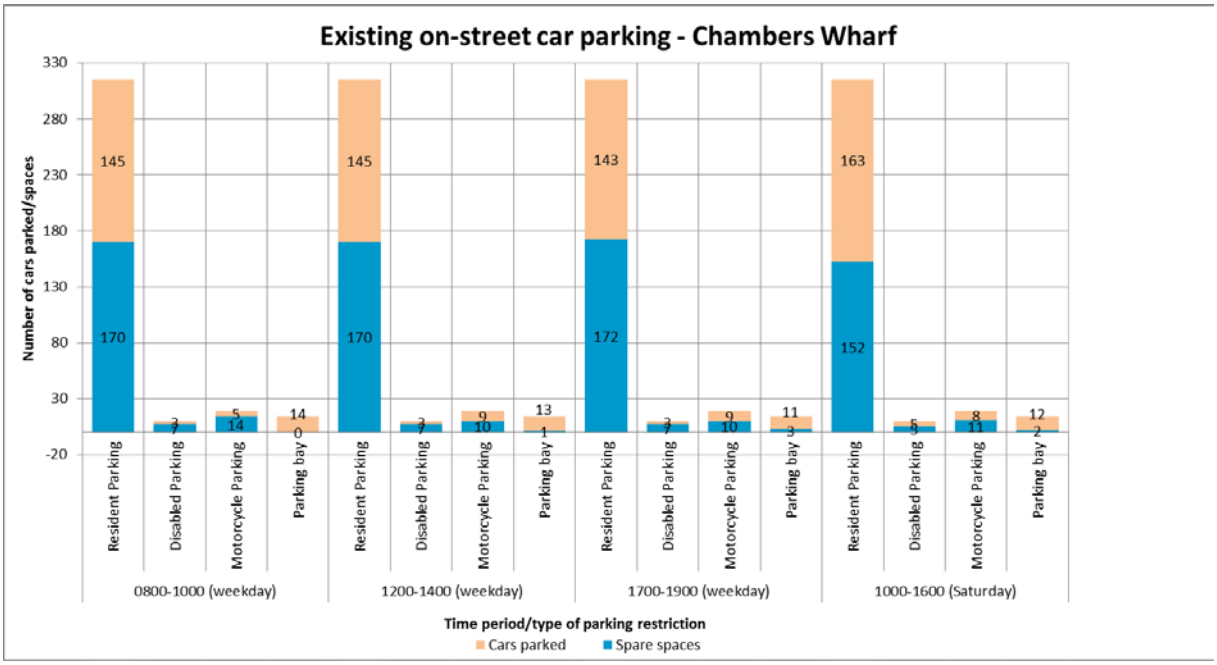
20.4.90 Traffic flow diagrams for the AM and PM peak hours indicate the traffic flow information collected during the ATC surveys and junction surveys in 2011 and are shown in Figures 20.4.5 and 20.4.6 in the Chambers Wharf Transport Assessment Figures.

20.4.91 The junction surveys indicate that there is a total traffic flow of 2,095 and 1,975 vehicles per hour in the AM and PM peak hours respectively using the junction of Jamaica Road (A200) / St. James's Road / Bevington Street. The dominant flows are 807 vehicles heading west along Jamaica Road (A200) in the AM peak hour and 606 vehicles travelling east along Jamaica Road (A200) in the PM peak hour.

Parking

20.4.92 Plate 20.4.7 shows a histogram of the car parking and motorcycle availability and usage in the area surrounding Chambers Wharf during the AM, inter-peak, PM peak hours on a weekday and during the weekend peak period.

Plate 20.4.7 Existing on-street car parking availability and usage



20.4.93 Table 20.4.10 indicates the parking capacity available around the Chambers Wharf site.

Table 20.4.10 Loading, motorcycle and 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
Bevington Street	Resident	44	38	39	40	35
Chambers Street	Resident	33	11	12	6	10
Bermondsey Wall East	Resident	7	3	3	5	2
	Loading	1	0	1	1	1
Dockhead	Resident	24	15	8	7	9
	Motorcycle	4	4	2	0	2
East Lane	Resident	16	7	4	6	6
Emba Street	Resident	12	5	4	5	5
	Disabled	1	1	1	0	1
George Row	Resident	25	10	11	15	11
	Disabled	1	0	1	1	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
	Motorcycle	10	9	8	8	9
Jacob Street	Resident	10	1	3	3	5
	Disabled	2	1	0	0	1
Janeway Place	Resident	2	2	2	1	1
Janeway Street	Resident	15	7	9	7	5
	Disabled	1	1	1	1	0
John Felton Road	Resident	4	3	3	4	3
Loftie Street	Resident	6	6	6	6	6
Mill Street	Resident	7	1	1	1	0
	Motorcycle	5	1	0	2	0
Parker's Row	Resident	29	19	15	19	19
Scott Lidgett Crescent	Resident	28	15	18	18	5
	Parking	14	0	1	3	2
	Loading	2	2	2	2	0
Wilson Grove	Resident	24	12	14	13	14
	Disabled	3	3	3	3	3
Wolseley Street	Resident	29	15	18	16	16
	Disabled	2	1	1	2	0

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

20.4.94 The results of the parking surveys indicate that resident parking bays in the vicinity of the site are moderately used during weekdays, with an average occupancy of approximately 45%. During Saturdays they are approximately 52% occupied.

20.4.95 Motorcycle bays in close proximity to the site were also surveyed and the results indicate that on average they are lightly used with between 26% and 46% occupancy during weekdays. On Saturdays the average occupancy is approximately 42%.

20.4.96 Surveys were also undertaken to establish the availability of loading bays to understand existing occupancy and capacity. Results indicate there is ample capacity as the loading bays located in close proximity to the site are not heavily used for the majority of the day.

Local highway modelling

20.4.97 For the assessment of the local highway network, a scope was discussed with TfL and the LB of Southwark to model the junction of Jamaica Road (A200), Bevington Street and St James's Road using the LinSig modelling package.

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

20.4.99 The signal timings used in the assessment have been obtained from the TfL Signal Timing Sheet for this junction.

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

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

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

20.4.103 As part of the scope local modelling is required for the adjacent junctions to the sites. A model was built for the junction of Jamaica Road (A200), St. James's Road and Bevington Street.

20.4.104 The weekday AM and PM peak hour baseline model queues for Jamaica Road (A200) were compared against observed queue lengths for the peak periods to validate the LinSig model and ensure reasonable representation of existing conditions.

20.4.105 Figure 20.4.5 and 20.4.6 in the Chambers Wharf Transport Assessment Figures show the traffic flows which were used for the baseline AM and PM peak hour assessments. They take the collected survey data into account.

Table 20.4.11 Baseline LinSig model outputs

Approach	Movement	Weekday							
		AM peak hour (08:00-09:00)				PM peak hour (17:00-18:00)			
		Flow (PCUs)	DoS	MMQ (PCUs)	Delay per PCU (Seconds)	Flow (PCUs)	DoS	MMQ (PCUs)	Delay per PCU (Seconds)
Jamaica Road (A200) west	Left Ahead	427	42%	9	21	644	58%	14	22
	Right	130	78%	6	94	170	102%	13	208
Bevington Street	Right Left Ahead	107	71%	4	88	78	51%	3	73
Jamaica Road (A200) east	Left Ahead	983	96%	36	59	762	67%	13	23
	Right	82	46%	3	66	50	28%	2	60
St James' Road	Right Left Ahead	365	112%	34	299	269	111%	23	288
		(PRC)		Total Delay (PCU Hours)		(PRC)		Total Delay (PCU Hours)	
Overall junction performance		-24.8%		57.61		-23.2%		43.39	

Note: 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.

20.4.106 Table 20.4.11 shows the modelling outputs for the baseline case. The results show that the Jamaica Road (A200) / St James's Road / Bevington Street junction overall operates above capacity in the AM peak hour and PM peak hour. The Jamaica Road (A200) east arm left and ahead movement is currently operating close to the theoretical capacity of 100% degree of saturation in the weekday AM peak hour and the St James's Road arm operates above the theoretical capacity in the AM peak hour.

20.4.107 During the PM peak hour the St James's Road arm is the busiest operating at 111% capacity. The validated model indicates that the AM peak hour is the busiest and that the longest queues occur on Jamaica Road (A200) east arm (left/ahead movement) and are in the order of 36 vehicles. In the PM peak the longest queue is on St James's Road arm with a queue of 23 vehicles. The delay to vehicles is most significant on the St James's Road arm in both peak hours with an average of 299 and 288 seconds delay per vehicle in the AM and PM peak hours respectively.

20.4.108 The LinSig junction model output shows that total junction delay is 57.61 PCU Hours in the AM peak period assessed and 43.39 PCU Hours in the PM peak period assessed. These equate to 99 seconds per PCU in the AM peak period assessed and 79 seconds per PCU in the PM peak period assessed.

20.4.109 More detailed model outputs are indicated in Section 20 Appendix C which also supplies diagrams showing the lane structure used for the assessment of the junction.

Accident analysis

20.4.110 Details of the road traffic accidents within the vicinity of the site have been obtained from TfL and have been reviewed to determine whether there are particular problems or trends on the local highway network. Data on accidents over a five year period from April 2006 until March 2010 have been analysed.

20.4.111 A total of three serious accidents and 34 slight accidents occurred in the immediate vicinity of the study area over the five year accident data analysed. There were no fatal accidents.

20.4.112 Two of the serious accidents occurred at junctions on Jamaica Road (A200) south of the Chambers Wharf site. Of the five year accident data analysed, the largest number of road traffic accidents occurred at the junction of Jamaica Road (A200) / Bevington Street / St James's Road, with one serious accident and 13 slight accidents.

20.4.113 There were a total of two accidents along George Row with one accident that occurred at the junction with Wolseley Street and the other at the junction with John Felton Road.

20.4.114 The accident at the junction with Wolseley Street was recorded as slight involving two cars and resulted from careless driving. The accident at the junction with John Felton Road was recorded as serious and involved a Light Goods Vehicle (LGV) and a motorcycle. The accident resulted from drivers failing to look properly and driving recklessly. Of the total accidents, six others involved LGVs which led to slight accidents.

20.4.115 Six of the total accidents involved pedestrians, three of which occurred at the junction of Jamaica Road (A200) / Bevington Street / St James's Road and involved minors. The other three pedestrian accidents occurred on Jamaica Road (A200) away from junctions. Goods vehicles were not involved in any of the pedestrian accidents.

20.4.116 In the case of the majority of accidents within the study area, not looking properly, failing to judge another person's path or speed and reckless driving were the main causes of accidents. None of the accidents were considered to be due to road geometry or failure of infrastructure.

20.4.117 Table 20.4.12 and Figure 20.4.7 in the Chambers Wharf Transport Assessment Figures indicate the accidents that have occurred within the vicinity of the site.

Table 20.4.12 Accident severity from 2006 to 2011

Location	Slight	Serious	Fatal	Total
Jamaica Road (A200) between the junction with Bevington Street and the junction with Abbey Street	7	0	0	7
Chambers Street	0	0	0	0
Bevington Street	0	0	0	0
George Row	0	0	0	0
Bevington Street / Chambers Street junction	0	0	0	0
Bevington Street / Scott Lidgett Crescent junction	2	0	0	2
George Row/Wolseley Street junction	1	0	0	1
George Row/John Felton Road junction	0	1	0	1
Jamaica Road/George Row junction	4	0	0	4
Jamaica Road/Bevington Street/St James's Road junction	13	1	0	14
Jamaica Road/Abbey Street (B202) junction	7	1	0	8
Total	**34**	**3**	**0**	**37**

20.4.118 Of the six pedestrian-injury accidents, all occurred on the roads expected to be used by construction vehicles within the study area. Inspection of the data showed that three of these occurred at junctions with signalised pedestrian crossing facilities, with the remaining accidents occurring at locations without signal control. Of the 11 cyclist-injury accidents, all occurred on the roads expected to be used by construction vehicles within the study area. Figure 20.4.8 in the Chambers Wharf Transport Assessment Figures shows pedestrian and cyclists accidents by severity.

20.4.119 In the context of the construction HGV movements associated with the Chambers Wharf site, the accident risk to these modes of travel would be managed by providing pedestrian and cyclist awareness training for commercial drivers associated with the construction works as set out in the *CoCP*. For sections of road affected by roadworks, the risk to all road users would be managed by the contractor(s) in accordance with the provisions made under the Traffic Signs Manual Chapter 8 - Traffic Safety Measures and Signs for Road Works (DfT, 2009)[4].

20.4.120 Section 20 Appendix D provides a full analysis of accidents within the local area surrounding the Chambers Wharf site.

20.5 Construction assessment

20.5.1 This *TA* for the Chambers Wharf 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.

20.5.2 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 project, whether from the Chambers Wharf site or from other sites.

Construction base case

20.5.3 As described in Section 20.3 above, the construction assessment year for transport issues in relation to this site is Site Year 1 of construction in relation to construction road traffic and Site Year 6 of construction in relation to construction river traffic.

Pedestrians and cyclists

20.5.4 There are no proposals to change the pedestrian network in the vicinity of the site by Site Year 1 of construction and the network will continue to operate as indicated in the baseline description in Section 20.4.

20.5.5 There are proposals to introduce Barclays Cycle Superhighway route CS4 in 2015. The facility will introduce a dedicated cycle route between Woolwich and London Bridge and the route will pass along Jamaica Road (A200) and will be within 350m walking distance of the Chambers Wharf site.

Public transport

20.5.6 In terms of the public transport network, it is expected that as a result of the TfL *London Underground Upgrade Plan* (TfL, 2010)[5], compared to the current baseline, capacity will increase by approximately 33% and journey times reduce by approximately 22% on the Jubilee Line.

20.5.7 The ongoing improvement works associated with the National Rail Thameslink programme will introduce changes to station entrances and concourses at London Bridge and other stations, and alterations to rail service patterns which will increase rail passenger capacity in the area. The works are underway at all stations, with the final improvements at London Bridge expected to be complete by 2018.

20.5.8 Due to the traffic growth in the construction base case compared to baseline situation, bus journey times along Jamaica Road (A200) and within the wider area will be affected. The effect on journey times is detailed under the highway operation and network assessment (paras. 20.5.19 to 20.5.24 and will result in an additional road network delay of a maximum of approximately 72 seconds in the AM peak hour and six seconds in the PM peak hour at the junction of Jamaica Road (A200), Bevington Street and St James's Road on the Jamaica Road east arm ahead movements.

20.5.9 It is anticipated that patronage on public transport services may change between the baseline situation and Site Year 1 of construction. Future patronage changes on bus, 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 case scenario is addressed 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

20.5.10 The underlying pattern of river use has not substantially changed in recent years, but the Mayor of London and TfL 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 2011* (GLA, 2011)[6]. Consequently it is possible that the nature and number of vessel movements on the River Thames might change over time.

20.5.11 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 Chambers Wharf site. For this assessment, therefore, the construction base case has been assumed to be the same as the baseline position.

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

Highway network and operation

20.5.13 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 Chambers Wharf site in Site Year 1 of construction without the Thames Tideway Tunnel project. The scope of

this analysis has been discussed with the LB of Southwark and agreed with TfL.

20.5.14 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 2011*(GLA, 2011)[7]. 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*.

20.5.15 For the Chambers Wharf site, ELHAM has been used. The relevant growth factor for this site are described in para. 20.5.19. They were applied to the survey flows undertaken in 2011 to produce flows for the base and development cases.

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

Committed developments

20.5.17 The construction base case takes into account new developments that would be complete or under construction within the vicinity of the site by Site Year 1 of construction at Chambers Wharf. The committed developments in the immediate vicinity of the site are:

a. Chambers Wharf development Phase 1

b. the redevelopment of St Michael's RC College

20.5.18 The strategic and local highway modelling has taken these committed developments into consideration.

Local highway modelling

20.5.19 The growth factors for the LB of Southwark based on ELHAM have been discussed with TfL and the LB of Southwark and applied equally to all of the baseline traffic flow movements. The growth factors are:

a. Weekday AM Peak growth factor – +3.8%

b. Weekday PM Peak growth factor – +4.4%

20.5.20 Para 20.3.11 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.

20.5.21 The resulting construction base case LinSig model indicates that there will be an increase in queue lengths and average delays, compared to the baseline conditions. Table 20.5.1 shows the construction base case model outputs.

Table 20.5.1 Construction base case LinSig model outputs

Approach	Movement	Weekday							
		AM peak hour (08:00-09:00)				PM peak hour (17:00-18:00)			
		Flow (PCUs)	DoS	MMQ (PCUs)	Delay per PCU (Seconds)	Flow (PCUs)	DoS	MMQ (PCUs)	Delay per PCU (Seconds)
Jamaica Road (A200) west	Left Ahead	444	44%	9	22	676	73%	16	29
	Right	135	81%	6	100	179	92%	9	119
Bevington Street	Right Left Ahead	112	74%	5	92	82	46%	3	59
Jamaica Road (A200) east	Left Ahead	1022	102%	51	107	800	82%	16	33
	Right	85	48%	3	66	53	26%	1	50
St James' Road	Right Left Ahead	379	111%	33	284	282	92%	9	95
		(PRC)		Total Delay (PCU Hours)		(PRC)		Total Delay (PCU Hours)	
Overall junction performance		-23.6%		72.24		-2.1%		29.05	

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.

2. Assessment has assumed that traffic signal optimisation has been undertaken as detailed in Project-wide TA

20.5.22 Results indicate that the junction overall will continue to operate above capacity in the AM peak hour and the PM peak hour. In the AM peak hour the greatest degree of saturation would be on the St James's Road arm with 111%. During the PM peak hour the greatest degree of saturation would be on the St James's Road and Jamaica Road (A200) eastbound right turn arms with 92%.

20.5.23 In addition it is anticipated that there will be changes to average delay to vehicles in the construction base case compared to the baseline conditions. The greatest delay during the AM peak hour would be on St James's Road with 284 seconds per PCU. During the PM peak the greatest delay would be on the Jamaica Road (A200) eastbound right turn arms with 119 seconds per PCU.

20.5.24 The LinSig junction model output shows that total junction delay is 72.24 PCU Hours in the AM peak period assessed and 29.05 PCU Hours in the PM peak period assessed. These equate to 120 seconds per PCU in the AM peak period assessed and 51 seconds per PCU in the PM peak period assessed.

Construction development case

20.5.25 This section summarises the findings of the assessment undertaken for the peak year of construction lorry and barge activity at the Chambers Wharf site (Site Year 1 of construction for construction road traffic and Site Year 6 of construction for construction river traffic).

Pedestrian routes

20.5.26 It has been anticipated that all worker trips would finish or begin their journey to and from the site by foot. As a result the 165 worker trips generated by the site in the AM peak hour have been added to the construction base case pedestrian flows during the AM peak hour. In the PM peak hour the number of workers travelling to and from the site would be lower.

20.5.27 Given this moderate increase in pedestrian numbers against baseline usage, an extension to the length of the pedestrian phase at the junction of Jamaica Road (A200), Bevington Street and St. James's Road is not required. In addition, as the assessment assumes that all construction workers would travel in the peak hours, the increase in pedestrian numbers against baseline usage during the peak hours due to construction workers walking is considered to be a conservative estimate because, due to the site working start and finish times, many workers would be travelling outside of peak network hours.

20.5.28 Additionally, a pedestrian refuge would be introduced on Bevington Street to segregate vehicles and pedestrians to the south of the junction with Chambers Street. The pedestrian refuge would not add to typical pedestrian journey times, but would offer a safer environment for people wishing to cross the road at this location. It would be designed to the appropriate standards including the provision of guardrailing.

20.5.29 Given the need to cross Chambers Street in any event, the provision of the additional pedestrian refuge in Bevington Street and the introduction of

appropriate signage, conditions for pedestrians in the area in terms of journey time and safety would not be substantially altered by the construction proposals.

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

Cycle routes

20.5.31 The existing cycle route along Chambers Street (part of the Thames Path) would be affected by the works. Given the level of construction traffic and nature of the surrounding streets, a local recommended alternative route would be provided for cyclists to reduce the potential for conflicts with construction vehicles. The alternative cycle route is shown in Figure 20.5.1 of the Chambers Wharf Transport Assessment Figures.

20.5.32 The proposed diversion is outlined in Section 20.2, and would add approximately 400m to the Thames Path route. Cyclists currently using the Thames Path route on Chambers Street would experience an increase in journey time of approximately 2 minutes 25 seconds as a result of the alternative route proposed in the vicinity of the site.

20.5.33 It is also worth noting that CS4 is expected to be in place by 2015 which would provide alternative designated cycle facilities along Jamaica Road (A200) to the south of the site. For cyclists wishing to travel from east to west, CS4 is likely to offer the shortest route in terms of journey time and would also provide an alternative route to the Thames Path.

20.5.34 Measures set out in the *CoCP* described in paras. 20.2.39 and 20.2.40 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 Chambers Wharf site, the risk to all road-users would be managed by the contractor(s) in accordance with the provisions made under the Traffic Signs Manual Chapter 8 - Traffic Safety Measures and Signs for Road Works. This would include compliance with TfL guidance (*Cyclists at Roadworks – Guidance* (DfT, 1999)[9]) to ensure safe passage for cyclists.

20.5.35 During the construction period, the operation and layout of the road network would change. This change would comprise the construction of a temporary pedestrian refuge on Bevington Street to the south of the junction with Chambers Street. A minimum carriageway width of either 4m (where HGVs can safely overtake cyclists) or 3.25m (where HGVs cannot overtake cyclists) would be retained for traffic in each direction. Where necessary, carriageway widths of less than 3.25m would be agreed with the LB of Southwark prior to execution of any works.

Bus routes and patronage

20.5.36 No bus services run immediately past the site. However, additional construction vehicles serving Chambers Wharf may affect some bus routes and bus journey times on Jamaica Road (A200). The effect on journey times is identified in the LinSig modelling outlined in the highway operation and network assessments, which suggests that there would be no change to bus journey times on Jamaica Road (A200) over that in the construction base case. In the context of the local area and general journey times for bus services, this is not considered a significant change for bus users.

20.5.37 It is expected that approximately 27 and 17 additional two-way worker bus trips would be made during the AM and PM peak hours respectively. The area is served by a large number of bus routes with multiple origins and destinations, providing a total of 57 buses within 640m walking distance during the AM peak hour and 55 buses in the PM peak hour. On this basis the additional worker trips made by bus in the peak hours 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.

20.5.38 Given the nearest National Rail station is approximately 2km to the west, it is possible that workers travelling by National Rail would also complete their journey by bus. This would add another 52 journeys by bus in the AM peak hour producing a total of 79 additional bus trips in the AM peak hour. This equates to less than two additional journeys per bus. In the PM peak hour, an additional 33 journeys made by National Rail could be started by bus, which would produce a total of 50 additional bus journeys. This equates to less than one additional journey per bus in the PM peak hour.

20.5.39 In both cases, if National Rail passengers were to use buses in the vicinity of the site to finish or start their journeys, the increase in demand would still be capable of being accommodated on the base case bus services. In practice workers travelling by National Rail may also choose to use Underground services between London Bridge and Bermondsey stations.

London Underground and patronage

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

20.5.41 It is anticipated that there would be a total of 47 and 30 construction workers using London Underground services to access the site during construction during the AM and PM peak hours respectively. This equates to less than one person per train during the AM and PM peak hours, based on a frequency of 44 services during the peak hours, and could be easily accommodated within existing capacity.

20.5.42 If all workers travelling by National Rail were to use Underground services to Bermondsey station to complete their journeys, this could increase the number of additional Underground journeys by 99 and 63 journeys in the AM and PM peak hours respectively. This equates to between two and three additional passengers per Underground service in each of these

peak hours which is not significant and could also be accommodated within existing capacity.

National Rail and patronage

20.5.43 It is anticipated that construction at Chambers Wharf would result in 52 additional person trips on National Rail services in the AM peak hour and 33 additional journeys in the PM peak hour.

20.5.44 This represents less than one additional person per train, based on a total of around 120 services in the two peak hours from the nearest National Rail station at London Bridge and therefore the additional demand could be accommodated on base case National Rail services.

River services and patronage

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

20.5.46 During construction, it is expected that 1% of construction workers and labourers would use the river services to access the construction site, which would result in less than one construction worker per boat service.

River navigation and access

20.5.47 During construction it is anticipated that 90% of cofferdam fill (import and export), 90% of shaft, main tunnel and other excavated material (export) and 90% of main tunnel secondary lining aggregates (import) would be transported by barge. The peak number of barge movements would occur in Site Year 6 of construction with an average of six barge movements a day (three in each direction).

20.5.48 It is anticipated that barges ranging between 350T and 1500T would be used at this site. Barges would be hauled by tugs which typically haul two smaller barges or one larger barge at a time where possible and depending on tides and mooring conditions. This means that there would be two to three tug movements in each direction (four to six in total) per day at this site.

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

20.5.50 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 Chambers Wharf. This is reported separately outside of the *Environmental Statement* and *TA* and accompanies the application for development consent.

Parking

20.5.51 It is proposed that the site would be accessed from Chambers Street via Bevington Street. Fifteen parking spaces on Bevington Street and nine at the eastern end of Chambers Street would require temporary restriction during the construction period to facilitate the movement of construction vehicles. There would be no re-provision of these parking bays elsewhere.

20.5.52 The construction phase highway layout plans are provided in the Chambers Wharf Transport Assessment Figures and summarise the proposed restrictions on parking bays associated with the construction works at the Chambers Wharf site.

20.5.53 Although 24 parking spaces on Bevington Street and Chambers Street would be subject to temporary restriction during construction, without reprovision elsewhere, surveys indicate that there would be sufficient spare capacity in the surrounding area to accommodate the displaced parking demand. The on-street car parking occupancy on roads in the vicinity of the site would increase from 47% to 50%.

20.5.54 As it is likely that 24 hour working would occur at this site, it would be possible for workers to use the residential parking bays at the weekend or in evenings as parking restrictions would not apply. However, there would be no on-site parking for workers and measures within the *Draft Project Framework Travel Plan* and site-specific *Travel Plan* would be aimed at discouraging workers from driving to the site in order to avoid creating additional pressure on parking in the vicinity.

Highway assessment

Highway layout

20.5.55 The construction phase highway layout plans are provided in the Chambers Wharf Transport Assessment Figures and show the highway layout during the construction works at the Chambers Wharf site. The site would be accessed using a 'right in, left out' arrangement from Chambers Street. The swept path movement drawings are contained in the Chambers Wharf Transport Assessment Figures and show that the construction vehicles would be able to safely enter and leave the site.

Highway network

20.5.56 Construction lorry movements would be limited to the day shift only (08:00 to 18:00), even when longer working hours are in place on the site. In exceptional circumstances HGV and abnormal load movements could occur up to 22:00 for large concrete pours and later at night by agreement with the LB of Southwark.

20.5.57 Table 20.2.4 in Section 20.2 shows the vehicle movement assumptions for the local peak traffic periods based on the peak months of construction activity at this site.

20.5.58 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.

20.5.59 The assignment of construction lorry trips has been undertaken using OmniTrans software[iv], which enables a fixed assignment to be created for

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

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 Chambers Wharf site, or with other Thames Tideway Tunnel project sites, that would use routes in the vicinity of the Chambers Wharf site. Figure 20.5.2 in the Chambers Wharf Transport Assessment Figures shows the OmniTrans plot for the local road network around the Chambers Wharf site.

20.5.60 Assuming that 90% of cofferdam fill (import and export), 90% of shaft, main tunnel and other excavated material (export) and 90% of main tunnel secondary lining aggregates (import) is taken by barge with all other material by road, a typical peak flow of 244 vehicle movements a day is expected during the months of greatest activity during Site Year 1 at this site.

20.5.61 The busiest peak in the AM and PM period for each type of movement has been combined in the development case and assessed against the peak hour operation of the highway network. In reality, not all peaks for these movements 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.

20.5.62 Changes to the highway network during construction and the additional construction traffic generated by the project may lead to local changes in traffic flow and capacity. Local modelling has been undertaken to assess the effect on the highway operation resulting from these changes.

20.5.63 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). The construction development case model includes the optimisation of traffic signal timings in order to maximise capacity and minimise overall delay at this junction.

20.5.64 A summary of the construction assessment results from the LinSig model for the weekday AM and PM peak hours is presented in Table 20.5.2 and Table 20.5.3.

Table 20.5.2 Construction development case LinSig model outputs (AM peak)

Approach	Arm	Flow (PCUs)	Weekday								
			AM peak hour (08:00-09:00)								
			DoS			MMQ (PCUs)			Delay per PCU (Seconds)		
			Base case	Devt case	Change	Base case	Devt case	Change	Base case	Devt case	Change
Jamaica Road (A200) west	Left Ahead	446	44%	44%	0%	9	9	0	22	22	0
	Right	135	81%	81%	0%	6	6	0	100	100	0
Bevington Street	Right Left Ahead	126	74%	83%	+9%	5	6	+1	92	110	+18
Jamaica Road (A200) east	Left Ahead	1022	102%	102%	0%	51	51	0	107	107	0
	Right	98	48%	55%	+7%	3	4	+1	66	70	+4
St James' Road	Right Left Ahead	379	111%	111%	0%	33	33	0	284	284	0
			(PRC)						Total Delay (PCU Hours)		
Overall junction performance			-23.6%	-23.6%	0%				72.24	73.59	+1.35

Notes: 1. MMQ represents Mean Maximum Queue (pcu) for the busiest-case 15 minute modelled period. Queue lengths are presented in Passenger Car Units (PCUs) where one pcu represents one vehicle length. DoS represents Degree of Saturation, Delay represents the mean delay per vehicle. PRC represents overall Practical Reserve Capacity. Total delay represents the total delay at the junction. 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 and pedal cycles are 0.4 PCUs. Thames Tideway Tunnel project 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 Project Wide TA.

Table 20.5.3 Construction development case LinSig model outputs (PM peak)

Approach	Arm	Flow (PCUs)	Weekday								
			PM peak hour (17:00-18:00)								
			DoS			MMQ (PCUs)			Delay per PCU (Seconds)		
			Base case	Devt case	Change	Base case	Devt case	Change	Base case	Devt case	Change
Jamaica Road (A200) west	Left Ahead	678	73%	73%	0%	16	16	0	29	29	0
	Right	179	92%	92%	0%	9	9	0	119	119	0
Bevington Street	Right Left Ahead	96	46%	54%	+8%	3	3	0	59	63	+4
Jamaica Road (A200) east	Left Ahead	800	82%	82%	0%	16	16	0	33	33	0
	Right	64	26%	31%	+5%	1	2	+1	50	51	+1
St James' Road	Right Left Ahead	282	92%	92%	0%	9	9	0	95	95	0
			(PRC)						Total Delay (PCU Hours)		
Overall junction performance			-2.1%	-2.1%	0%				29.05	29.58	+0.53

Notes: 1. MMQ represents Mean Maximum Queue (pcu) for the busiest-case 15 minute modelled period. Queue lengths are presented in Passenger Car Units (PCUs) where one pcu represents one vehicle length. DoS represents Degree of Saturation, Delay represents the mean delay per vehicle. PRC represents overall Practical Reserve Capacity. Total delay represents the total delay at the junction. 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 and pedal cycles are 0.4 PCUs. Thames Tideway Tunnel project 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 Project Wide TA.

20.5.65 The construction base case model indicates that the junction will be operating above capacity in the AM peak hour and within capacity in the PM peak hour without the Thames Tideway Tunnel project proposals.

20.5.66 The results of the LinSig modelling for the construction assessment indicate, that there would be little change between the construction base case and construction development case as a result of the additional construction traffic serving the Chambers Wharf site. The greatest increase in degree of saturation would be experienced on Bevington Street, with an increase of 9% in the AM peak hour and 8% in the PM peak hour.

20.5.67 The additional road network delay during the AM peak hour would be a maximum of 18 seconds on Bevington Street in the AM peak hour. During the PM peak hour Bevington Street would experience a maximum increase in delay of four seconds. Overall the increases in delay would be minimal and are not expected to have any significant impact on operation of the local highway network or the TLRN in particular.

20.5.68 The LinSig junction model output shows that total junction delay is 73.59 PCU Hours in the AM peak period assessed and 29.58 PCU Hours in the PM peak period assessed. These equate to 121 seconds per PCU in the AM peak period assessed and 51 seconds per PCU in the PM peak period assessed.

Construction mitigation

20.5.69 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 20.5.4.

Table 20.5.4 Chambers Wharf design measures

Phase	Issues	Design measures
Construction	Creation of site access point	Creation of a gated access for the right-turn in / left turn-out movement for construction traffic.
	Addressing pedestrian safety	Creation of a pedestrian refuge along Bevington Street 20m south west of the junction of Bevington Street / Chambers Street to accommodate safe pedestrian crossing. Signage to inform pedestrians of safe routes and the presence of construction vehicles.
	Interface between construction vehicle	Introduction of temporary parking restrictions along Bevington Street and Chambers Street to

Phase	Issues	Design measures
	movements and parking	accommodate construction vehicle movements.
	Movement of construction traffic flows on the local highway network	Traffic signal optimisation at the junction of Jamaica Road (A200)/ St James's Street/ Bevington Street to improve pedestrian crossing times and junction capacity.
Operation	Creation of access point	Provision of new dropped kerb at access point, including traffic management (removable bollard or similar) for maintenance vehicles To accommodate ten-yearly visits of larger maintenance vehicles

20.5.70 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

20.5.71 The assessment outcomes reported earlier are based on the *Transport Strategy*, as outlined in this section and in Vol 20 of the *Environmental Statement*. In that scenario, the number of construction vehicle movements generated by Chambers Wharf in the peak year of construction would be approximately 23 movements in each of the AM and PM peak hours which would use the junction of Jamaica Road (A200), St James's Road and Bevington Street and Bevington and Chambers Streets to access the site.

20.5.72 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 movements would be approximately 63 vehicles in the AM and PM peak hours respectively. This would be an increase of 46 construction vehicles in the AM and PM peak hours compared with that for the *Transport Strategy*.

20.5.73 A summary of the construction assessment results from the LinSig model for the junction of Jamaica Road (A200), St James's Road and Bevington Street in the weekday AM and PM peak hours using the sensitivity test figures is presented in Table 20.5.5 and Table 20.5.6.

Table 20.5.5 Construction development case LinSig model outputs, sensitivity test (AM peak)

Approach	Arm	Sensitivity test (PCUs)	Weekday								
			AM peak hour (08:00-09:00)								
			DoS			MMQ (PCUs)			Delay per PCU (Seconds)		
			EIA	Sensitivity test	Change	EIA	Sensitivity test	Change	EIA	Sensitivity test	Change
Jamaica Road (A200) west	Left Ahead	446	44%	52%	+8%	9	9	0	22	24	+2
	Right	135	81%	65%	-16%	6	4	-2	100	62	38
Bevington Street	Right Left Ahead	178	83%	94%	+11%	6	9	+3	110	130	+20
Jamaica Road (A200) east	Left Ahead	1022	102%	117%	+15%	51	106	+55	107	325	+218
	Right	148	55%	67%	+12%	4	5	+1	70	61	-9
St James's Road	Right Left Ahead	379	111%	119%	+8%	33	41	+8	284	374	+90
			PRC						Total Delay (PCU Hours)		
Overall junction performance			-23.6%	-32.2%	-8.6%				73.59	146.75	+73.16

Notes: 1. MMQ represents Mean Maximum Queue (pcu) for the busiest-case 15 minute modelled period. Queue lengths are presented in Passenger Car Units (PCUs) where one pcu represents one vehicle length. DoS represents Degree of Saturation, Delay represents the mean delay per vehicle. PRC represents overall Practical Reserve Capacity. Total delay represents the total delay at the junction. 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 and pedal cycles are 0.4 PCUs. Thames Tideway Tunnel project 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 Project WideTA.

Table 20.5.6 Construction development case LinSig model outputs, sensitivity test (PM peak)

Approach	Arm	Sensitivity test (PCUs)	Weekday								
			PM peak hour (17:00-18:00)								
			DoS			MMQ (PCUs)			Delay per PCU (Seconds)		
			EIA	Sensitivity test	Change	EIA	Sensitivity test	Change	EIA	Sensitivity test	Change
Jamaica Road (A200) west	Left Ahead	678	73%	80%	+7%	16	16	0	29	34	+35
	Right	179	92%	86%	-6%	9	7	-2	119	92	-27
Bevington Street	Right Left Ahead	148	54%	78%	-24%	3	5	+2	63	80	+17
Jamaica Road (A200) east	Left Ahead	800	82%	88%	+6%	16	17	+1	33	39	+6
	Right	116	31%	53%	+22%	2	3	+1	51	53	+2
St James's Road	Right Left Ahead	282	92%	86%	-6%	9	7	-2	95	73	-22
			PRC						Total Delay (PCU Hours)		
Overall junction performance			-2.1%	2.7%	+4.8%				29.58	31.39	+1.81

Notes: 1. MMQ represents Mean Maximum Queue (pcu) for the busiest-case 15 minute modelled period. Queue lengths are presented in Passenger Car Units (PCUs) where one pcu represents one vehicle length. DoS represents Degree of Saturation, Delay represents the mean delay per vehicle. PRC represents overall Practical Reserve Capacity. Total delay represents the total delay at the junction. 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 and pedal cycles are 0.4 PCUs. Thames Tideway Tunnel project 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 Project Wide TA.

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

20.5.75 In the AM and PM peak hours the project would result in a further increase in degrees of saturation on all arms of the junction compared with that in the environmental impact assessment (EIA) scenario.

20.5.76 In the construction development case sensitivity test, the road network delay as a result of the additional construction traffic compared with the *Transport Strategy* would be an increase of a maximum of three minutes 38 seconds per vehicle in the AM peak hour on the Jamaica Road (A200) westbound left and ahead movement. During the PM peak hour the greatest increase to delay would be a maximum of 35 seconds per vehicle on the on the Jamaica Road (A200) eastbound left and ahead movement.

20.5.77 The LinSig junction model output shows that total junction delay is 147 PCU Hours in the AM peak period assessed and 31.5 PCU Hours in the PM peak period assessed. These equate to 229 seconds per PCU in the AM peak period assessed and 52 seconds per PCU in the PM peak period assessed.

20.5.78 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 a large proportion of the construction materials required at this site. If the sensitivity test scenario did occur over a prolonged period, which is unlikely for the reasons given in Section 20.4, the design measures which have been embedded directly in the design of the project and are listed in Table 20.5.4 would remain appropriate and there would be no need for further mitigation measures.

20.6 Operational assessment

20.6.1 This section summarises the findings of the assessment undertaken for Year 1 of operation at the Chambers Wharf site.

20.6.2 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 20.2. This has been discussed with the LB of Southwark and TfL.

Operational base case

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

20.6.4 As explained in para. 20.2.45 the elements of the transport network that would be affected during operation are highway layout, operation and parking. For the purposes of the operational base case, it is anticipated that the highway layout and parking will be as indicated in the construction base case.

Operational development case

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

20.6.6 As outlined in Section 20.2 during the operational phase car parking and the highway layout in the vicinity of the Chambers Wharf site would be reinstated to the current (baseline) layout.

20.6.7 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 other support vehicles required for access to the shaft and tunnel every ten years.

20.6.8 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.

20.6.9 The highway layout during operation plans are provided in the Chambers Wharf Transport Assessment Figures and indicate the operational phase permanent works.

20.6.10 When maintenance activity takes place during the operational phase, pedestrians would not be diverted 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.

Parking

20.6.11 No change is expected to car parking in the vicinity of the site, compared to the base case, as a result of the operational phase of the proposed development at the Chambers Wharf site.

20.6.12 Parking spaces subject to temporary suspension during the construction period would be reinstated and the proposed pedestrian refuge on Bevington Street, which will have impacts on on-street parking, would be removed.

20.6.13 When large vehicles are required to service the site, approximately five parking bays on Chambers Street would have to be temporarily restricted to ensure the vehicles have sufficient space to manoeuvre into the site. This temporary restriction would be on an infrequent basis and would occur approximately every ten years.

Highway layout and operation

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

20.6.15 During ten-yearly inspections, space to locate two large cranes and other support vehicles within the site area would be required. The cranes would facilitate lowering and recovery of tunnel inspection vehicles and to provide duty/standby access for personnel.

20.6.16 As a result of the highway layout changes during the operational phase (detailed in Section 20.2) an assessment has been undertaken to ensure that the highway layout provided is adequate for the large vehicles required to access the site during the operational phase. Swept paths have been undertaken for the largest vehicles including 11.36m mobile cranes, a 10m rigid vehicle and a 10.7m articulated vehicle. The operational phase swept path movement drawings are contained in the Chambers Wharf Transport Assessment Figures and show safe access/ egress at the site for the operational phase.

20.6.17 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.

20.6.18 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 Chambers Wharf.

20.7 Summary of Transport Assessment findings

20.7.1 The key outcomes of this TA are indicated in Table 20.7.1.

Table 20.7.1 Chambers Wharf transport assessment results

Phase	Mode of transport	Key findings
Construction	Pedestrians	Pedestrian routes would not be altered by the construction works. In order to improve pedestrian safety a pedestrian refuge would be provided on Bevington Street.
	Cyclists	Cyclists would experience a delay of approximately 2 minutes 25 seconds as a result of the alternative route to the existing Thames Path cycle route from Chambers Street to other local roads. The alternative route would reduce the potential for conflicts between cyclists and construction vehicles.
	Bus patronage and operators	Up to 27 worker trips would be made by bus (increasing to 79 if workers travelling to/from National Rail stations are assumed to complete their journeys by bus) during construction each day. The additional demand could be accommodated on base case services. No additional delay to bus services would be anticipated on Jamaica Road (A200) due to construction-related highway network delays.
	London Underground and National Rail patronage	Up to 47 additional trips would be made on London Underground services during the peak hours (increasing to 99 if workers travelling to/from National Rail stations are assumed to complete their journeys by Underground). Approximately 52 and 33 worker trips would be made on National Rail during the AM and PM peak hours. The additional demand 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.
	River navigation	There would be approximately six barge movements a day during Site Year 6 of construction which is not expected to create a significant change to existing river navigation.

Phase	Mode of transport	Key findings
	Parking	Nine on-street car parking bays along Chambers Street and 15 on Bevington Street would require temporary restriction during the construction phases. Sufficient capacity exists in surrounding parking provision to accommodate displaced demand.
	Highway network and operation	Approximately 244 additional daily movements (vehicles of a mix of sizes) would be produced by the construction works at Chambers Wharf in site year 1 of construction. The Jamaica Road (A200) / Bevington Street / St James's Road junction will be operating above capacity in the AM peak hour and in the PM peak hour in the construction base case. The addition of the Thames Tideway Tunnel project traffic (anticipated to be 17 two-way vehicle movements during the peak hours) would create minor reductions in capacity and increases in queues and delays. A maximum additional delay of approximately 18 seconds would be anticipated on Bevington Street during the AM peak hour.
Operation	Parking	A maximum of five parking bays may require temporary suspension when large vehicles require access to the site, approximately once every ten years.
	Highway layout and operation	Some 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] TfL, Travel Planning for new development in London, Transport for London (2011).

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

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

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

[5] TfL. *London Underground Upgrade Plan.* Available at: http://www.tfl.gov.uk/assets/downloads/corporate/our-upgrade-plan-london-underground-february-2011.pdf

[6] Greater London Authority. See citation above.

[7] Greater London Authority. See citation above.

[8] HM Government, Equality Act 2010 – Guidance, 2010.

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

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Thames Tideway Tunnel
Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Transport Assessment

Doc Ref: **7.10.17**

Chambers Wharf

Appendices

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

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Transport Assessment

Section 20 Appendices: Chambers Wharf

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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 Chambers Wharf. 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 London Borough (LB) of Southwark.

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. The 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 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 London Borough of Southwark (LBS) has a number of planning documents that are used to set out their strategy for development and make decisions on planning applications. This consists of Development Plan Documents which cover the Core Strategy and the Southwark Plan (saved policies). Both reflect regionally focused policies from the London Plan and are referred to where appropriate

Southwark Core Strategy, April 2011

A.4.2 The core strategy is a planning document that sets out how Southwark will change up to 2026 to be the type of place set out in our sustainable community strategy (Southwark 2016).

A.4.3 Key transport policies within the core strategy are associated with **Strategic Policy 2 – Sustainable Transport**. These objectives are detailed below.

a. SO 1C: Be healthy and active;

b. SO 2A: Created mixed communities;

c. SO 2B: Promote sustainable use of resources;

d. SO 2E: A liveable public realm; and

e. SO 5A: Developing in growth areas.

A.4.4 LBS Strategic transport policy will encourage walking, cycling and the use of public transport rather than travel by car. This in turn will help create safe, attractive, vibrant and healthy places to live and work by reducing congestion, traffic and pollution.

Southwark Plan, (Adopted July 2007)

A.4.5 The Southwark Plan is the framework for all land use and development in Southwark and forms part of the Development Plan alongside the Core Strategy. Some of the Southwark policies were 'saved' and some of them

have been superseded by policies in the Core Strategy which was adopted on April 2011.

A.4.6 Local transport policies that are part of the Southwark Plan include:

a. **Policy 5.1**: **Locating developments** - States that "the location of development throughout the borough must be appropriate to the size and trip-generating characteristics of the development."

b. **Policy 5.2: Transport impacts** - States that "where a development proposal is likely to have significant transport implications applicants will be asked to submit a transport assessment (TA), which includes a travel plan with their application. A transport assessment will form part of the sustainability assessment."

c. **Policy 5.3: Walking and cycling** - Planning permission will be granted where.

   i There is adequate provision for pedestrians and cyclists within the development, and where practicable within the surrounding area; and/or

   ii There is good design, location and access arrangements, including restrictions on parking, and the promotion of walking and cycling, with particular emphasis on disabled people and the mobility impaired; and/or

   iii The development creates or contributes towards more direct, safe and secure walking and cycling routes, integrating with surrounding networks where possible, furthering the delivery of the London Cycle Network Plus and strategic walking routes (including the Jubilee Walkway and the Thames Path); and

   iv There is provision of convenient, secure and weatherproof cycle parking to the minimum cycle parking standards set out in Tables 15.3 and 15.4 in Appendix 15.

d. Policy 5.4: Public Transport improvements.

e. Policy 5.5: Transport development area.

f. **Policy 5.6**: **Car parking -** States that "all developments requiring car parking should minimise the number of spaces provided. Maximum standards are set out in Appendix 15."

g. **Policy 5.7**: **Parking standards for disabled people and the mobility impaired** – States that "developments (subject to site constraints) must provide adequate parking for disabled people and the mobility impaired."

h. **Policy 5.8**: **Other parking**

Sustainable Transport: Supplementary Planning Document (SPD)

A.4.7 This SPD provides further information and guidance to policies in the Southwark Plan. It also provides advice on what information you need to provide in an application for development.

A.4.8 The objectives of the SPD are to provide:

a. Guidance so all development is easily accessible and encourages people to walk, cycle and use public transport;

b. Guidance for new development so that it reduces congestion and pollution within Southwark; and

c. Clear guidance about possible reasons for approval and refusal of planning applications for development.

A.4.9 The Sustainable Transport SPD provides more information on Southwark Plan polices 5.1-5.8 as detailed in the section above and provides further information relevant to London Plan Policies.

Appendix B: PTAL analysis

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PTAI Study Report File Summary

PTAI Run Parameters

PTAI Run 20121409180538
Description 20121409180538
Run by user PTAL web application
Date and time 14/09/2012 18:05

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: 534257, 179728

Mode	Stop	Route	Distance (metres)	Frequency (vph)	Weight	Walk time (mins)	SWT (mins)	TAT (mins)	EDF	AI
BUS	JAMAICA RD ST JAMES'S RD	381	396.4	5.75	0.5	4.96	7.22	12.17	2.46	1.23
BUS	JAMAICA RD ST JAMES'S RD	188	396.4	8.0	1.0	4.96	5.75	10.71	2.8	2.8
BUS	JAMAICA RD ST JAMES'S RD	47	396.4	6.0	0.5	4.96	7.0	11.96	2.51	1.25
BUS	JAMAICA RD ST JAMES'S RD	C10	396.4	6.0	0.5	4.96	7.0	11.96	2.51	1.25
LU LRT	Bermondsey	Jubilee Line Wembley Park to Stratford	569	4.4	0.5	7.11	7.57	14.68	2.04	1.02
LU LRT	Bermondsey	Jubilee Line Stratford to Willesden Green	569	4.4	0.5	7.11	7.57	14.68	2.04	1.02
LU LRT	Bermondse y	Jubilee Line Stratford to Stanmore	569	17.8	1.0	7.11	2.44	9.55	3.14	3.14
NR	SAP Points Not Found									

Total AI for this POI is 11.71.
PTAL Rating is 3.

Appendix C: Local modelling outputs

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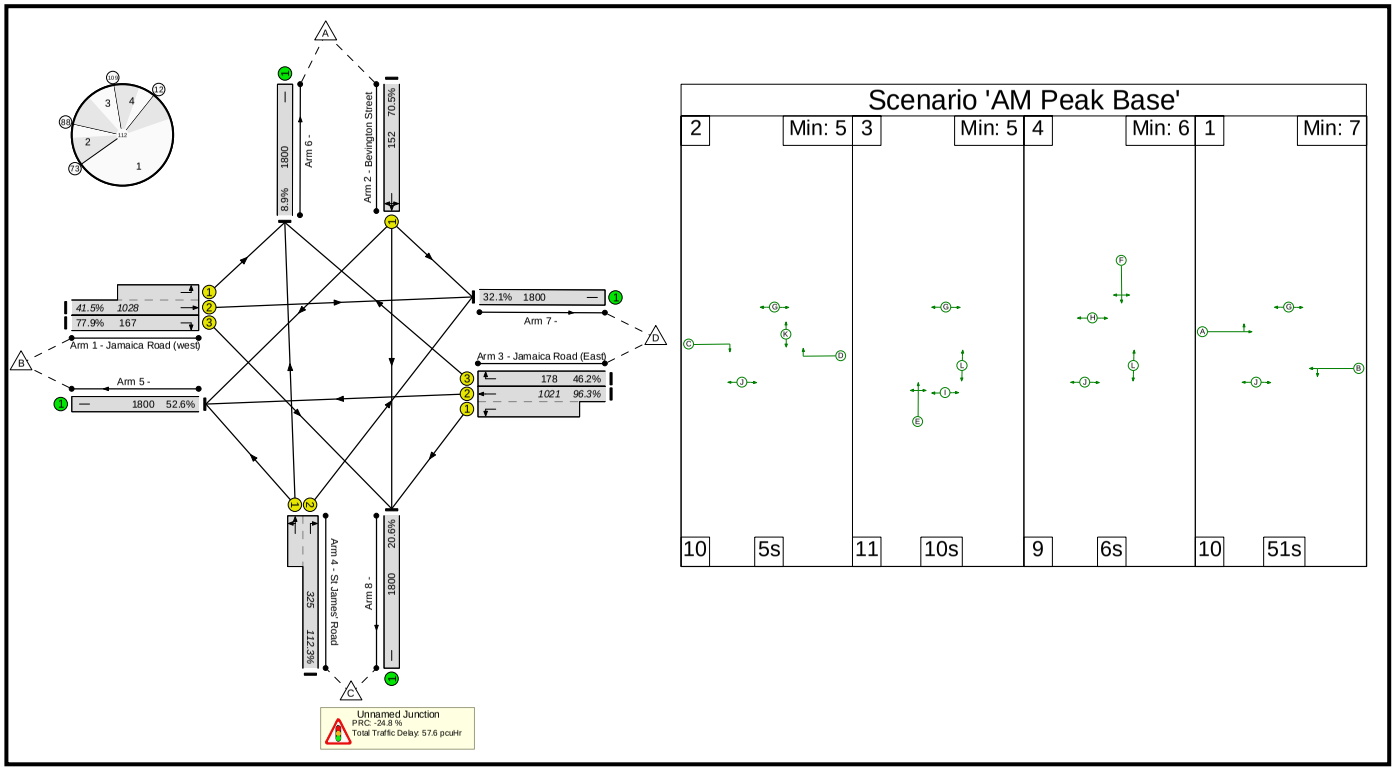
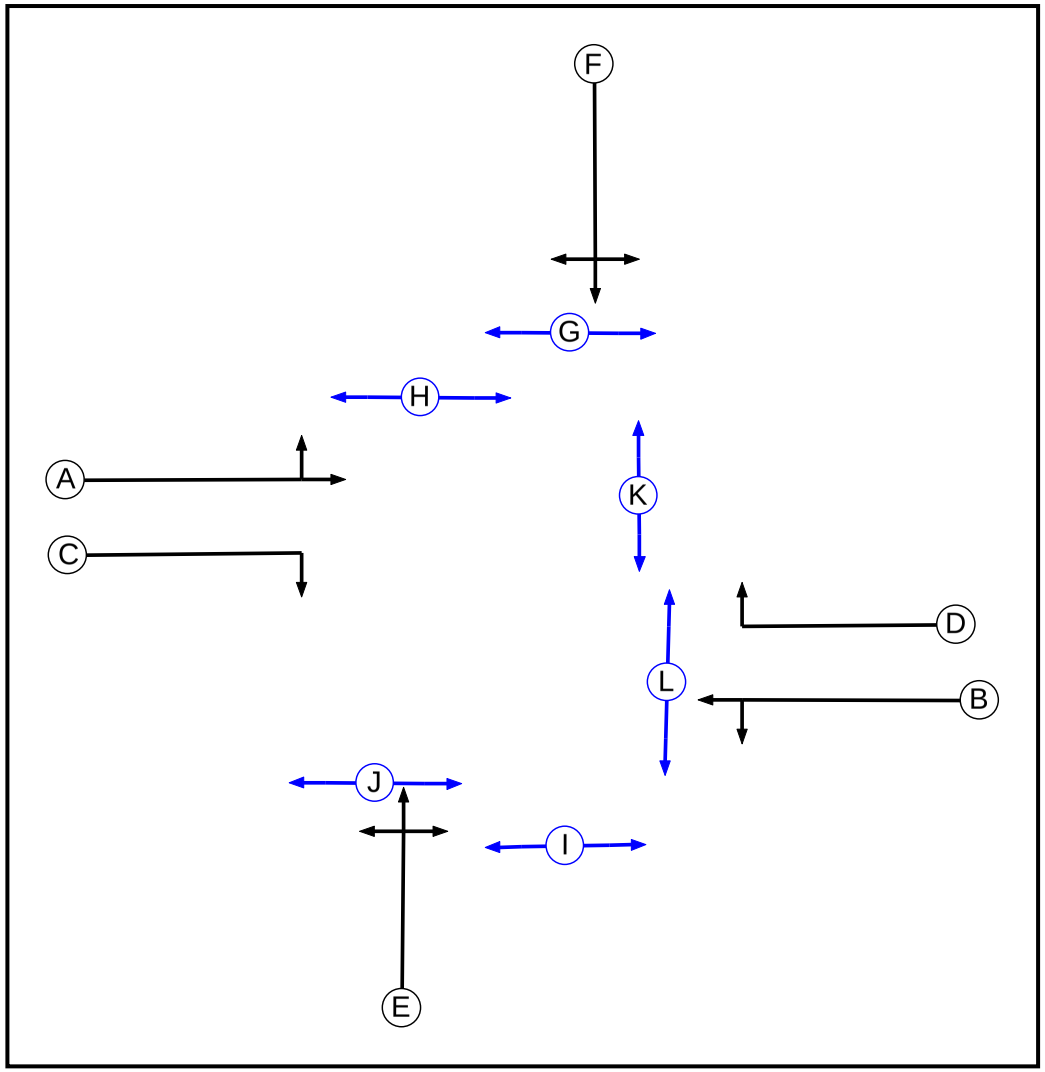
C.1 Baseline results, AM peak hour

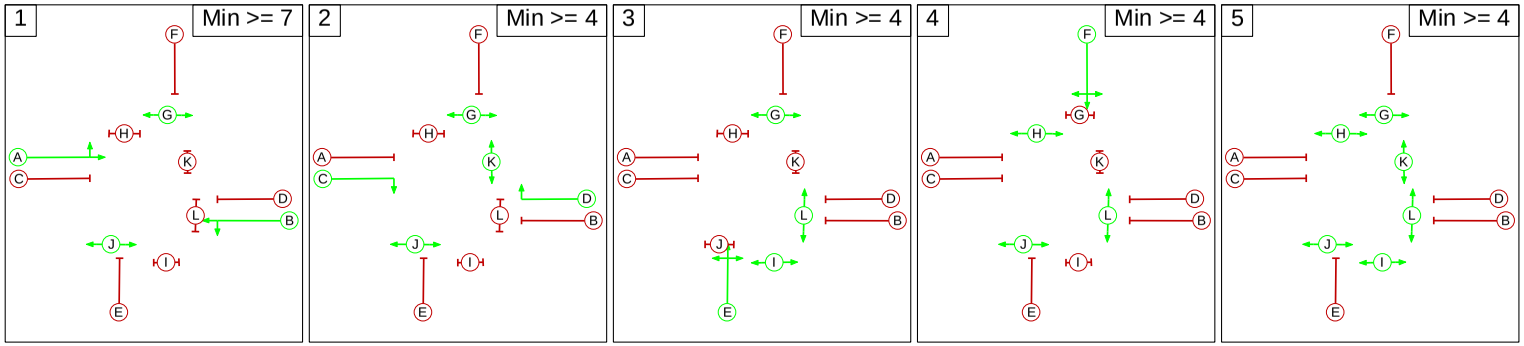
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B G J
2	C D G J K
3	E G I L
4	F H J L
5	G H I J K L

Phase Intergreens Matrix#

		Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K	L
Terminating Phase	A		-	-	6	5	6	-	8	-	-	9	-
	B	-		5	-	7	5	-	-	9	-	-	6
	C	-	5		-	5	5	-	-	11	-	-	-
	D	7	-	-		5	5	-	11	-	-	-	6
	E	6	5	6	5		6	-	9	-	6	10	-
	F	5	6	5	5	7		6	-	10	-	9	-
	G	-	-	-	-	-	8		-	-	-	-	-
	H	8	-	-	8	8	-	-		-	-	-	-
	I	-	8	8	-	-	8	-	-		-	-	-
	J	-	-	-	-	8	-	-	-	-		-	-
	K	8	-	-	-	8	8	-	-	-	-		-
	L	-	10	-	10	-	-	-	-	-	-	-	

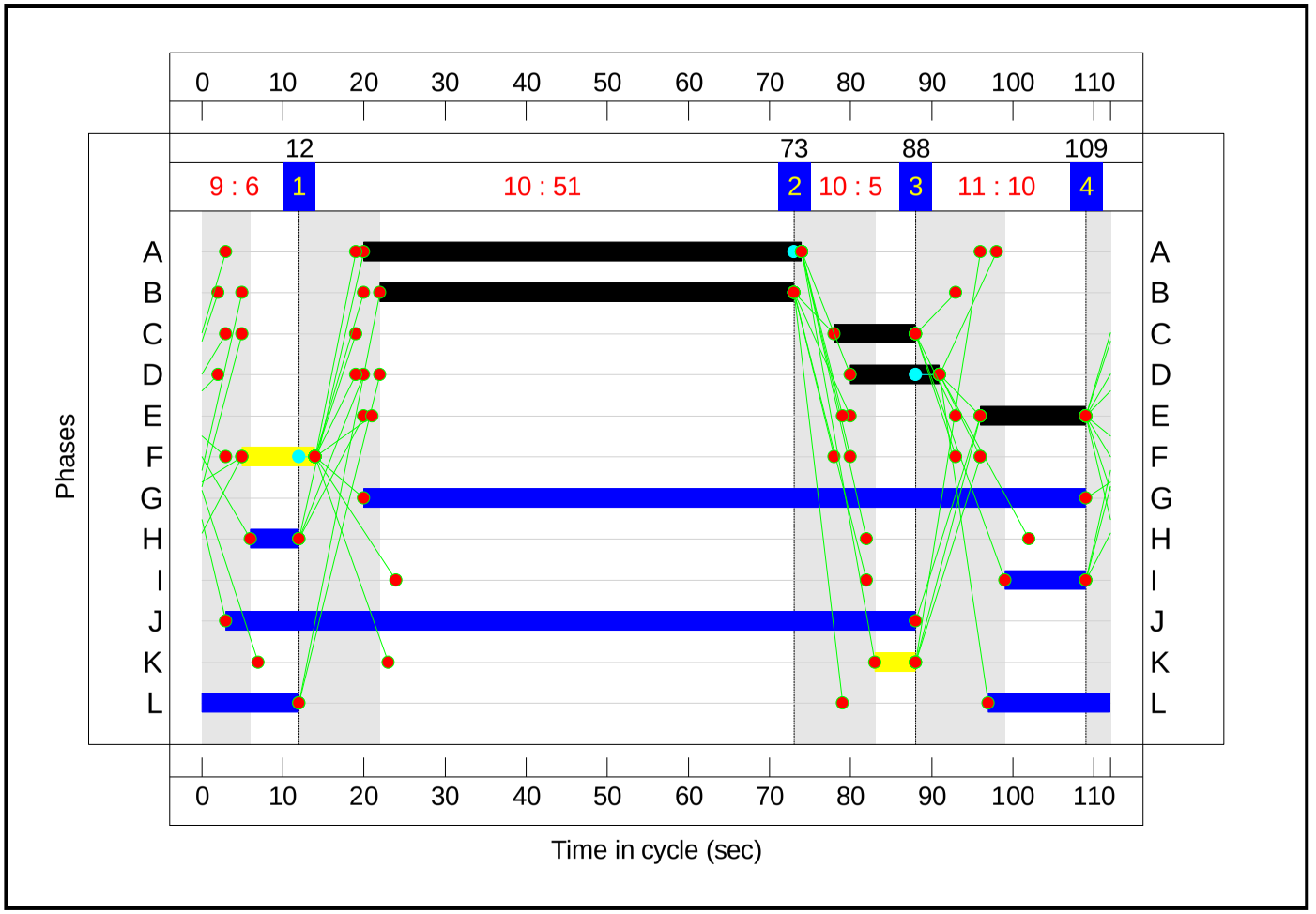
Traffic Flows, Desired

		Destination				
		A	B	C	D	Tot.
Origin	A	0	18	65	24	107
	B	11	0	130	416	557
	C	75	136	0	154	365
	D	82	807	176	0	1065
	Tot.	168	961	371	594	2094

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	18	65	24	107
	B	11	0	130	416	557
	C	75	136	0	154	365
	D	82	807	176	0	1065
	Tot.	168	961	371	594	2094

Signal Timings Diagram



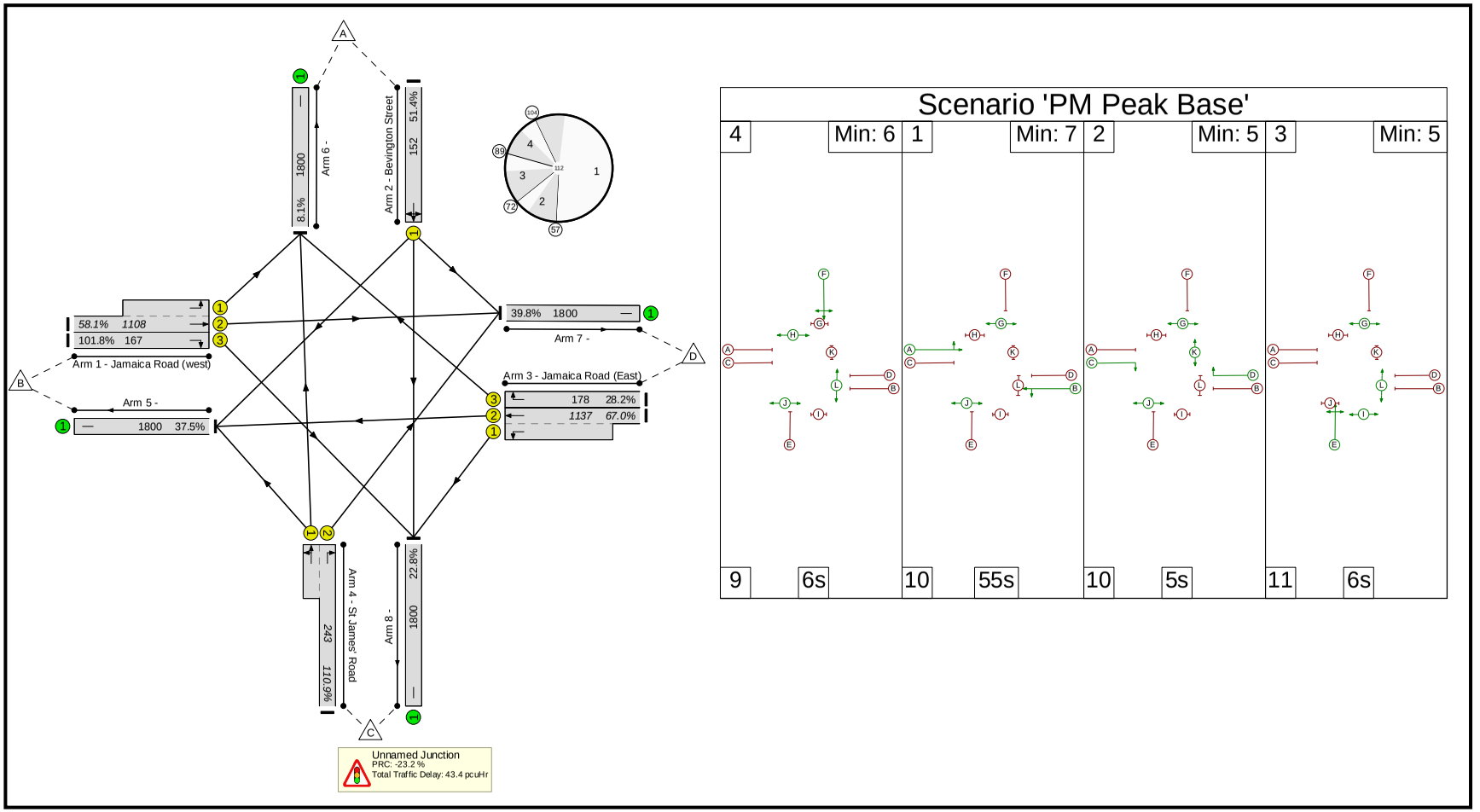
Network Results

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	-	-	-		-	-	-	-	-	-	**112.3%**	**0**	**0**	**0**	**57.6**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**112.3%**	**0**	**0**	**0**	**57.6**	-	-
1/2+1/1	Jamaica Road (west) Left Ahead	U	A		1	54	-	427	2095:1819	1028	41.5%	-	-	-	2.5	21.0	8.6
1/3	Jamaica Road (west) Right	U	C		1	10	-	130	1700	167	77.9%	-	-	-	3.4	94.1	5.6
2/1	Bevington Street Right Left Ahead	U	F		1	9	-	107	1700	152	70.5%	-	-	-	2.6	87.8	4.3
3/2+3/1	Jamaica Road (East) Ahead Left	U	B		1	51	-	983	2045:1773	1021	96.3%	-	-	-	16.2	59.4	35.5
3/3	Jamaica Road (East) Right	U	D		1	11	-	82	1657	178	46.2%	-	-	-	1.5	65.7	2.8
4/2+4/1	St James' Road Left Ahead Right	U	E		1	13	-	365	1905:1657	325	112.3%	-	-	-	30.3	299.3	33.6
5/1		U	-		-	-	-	961	1800	1800	52.6%	-	-	-	0.6	2.4	15.6
6/1		U	-		-	-	-	168	1800	1800	8.9%	-	-	-	0.0	1.1	0.0
7/1		U	-		-	-	-	594	1800	1800	32.1%	-	-	-	0.2	1.5	2.8
8/1		U	-		-	-	-	371	1800	1800	20.6%	-	-	-	0.1	1.3	0.1

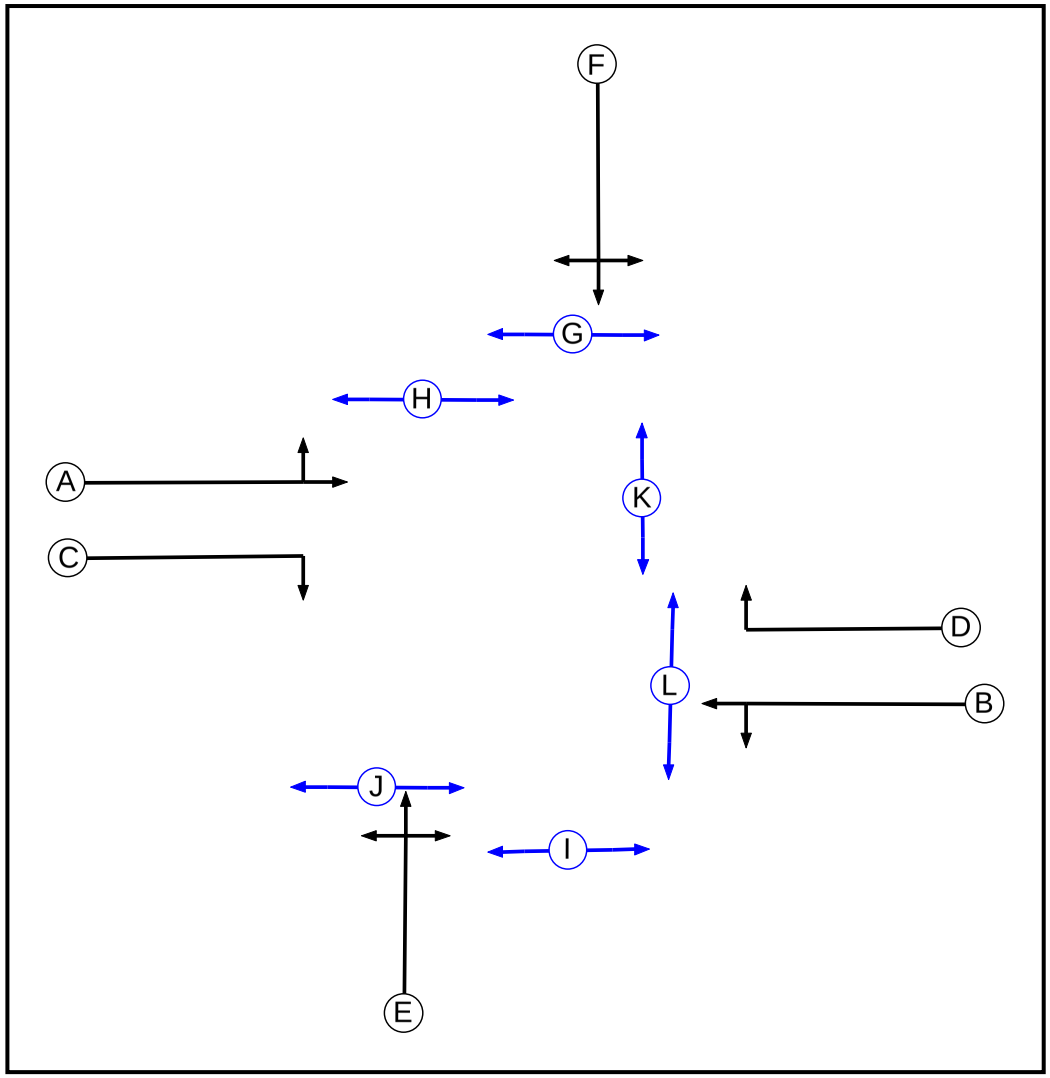
C1 PRC for Signalled Lanes (%): -24.8 Total Delay for Signalled Lanes (pcuHr): 56.57 Cycle Time (s): 112
PRC Over All Lanes (%): -24.8 Total Delay Over All Lanes(pcuHr): 57.61

C.2 Baseline results, PM peak hour

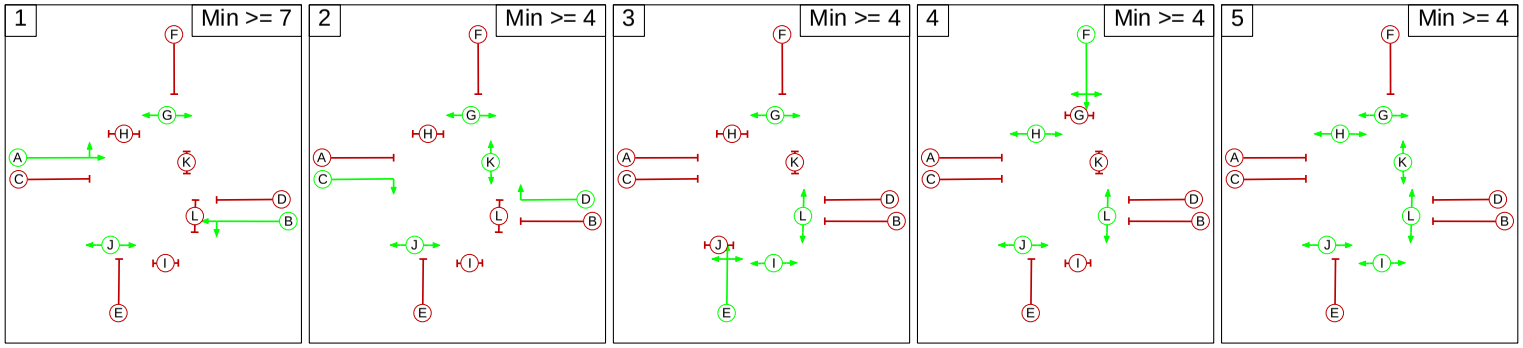
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B G J
2	C D G J K
3	E G I L
4	F H J L
5	G H I J K L

Phase Intergreens Matrix

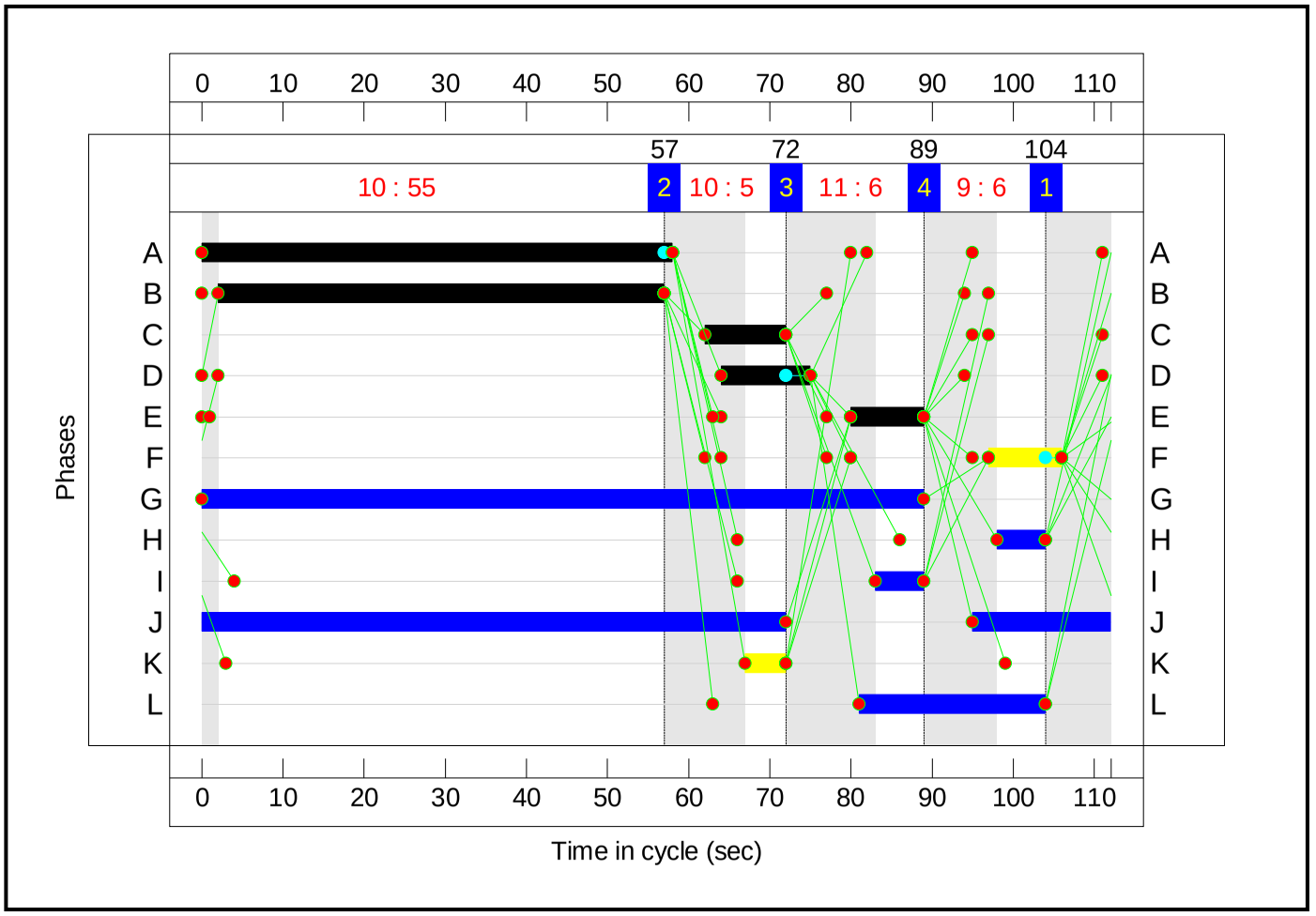
		Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K	L
Terminating Phase	A		-	-	6	5	6	-	8	-	-	9	-
	B	-		5	-	7	5	-	-	9	-	-	6
	C	-	5		-	5	5	-	-	11	-	-	-
	D	7	-	-		5	5	-	11	-	-	-	6
	E	6	5	6	5		6	-	9	-	6	10	-
	F	5	6	5	5	7		6	-	10	-	9	-
	G	-	-	-	-	-	8		-	-	-	-	-
	H	8	-	-	8	8	-	-		-	-	-	-
	I	-	8	8	-	-	8	-	-		-	-	-
	J	-	-	-	-	8	-	-	-	-		-	-
	K	8	-	-	-	8	8	-	-	-	-		-
	L	-	10	-	10	-	-	-	-	-	-	-	

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	22	43	13	78
	B	38	0	170	606	814
	C	64	100	0	105	269
	D	50	562	200	0	812
	Tot.	152	684	413	724	1973

Signal Timings Diagram



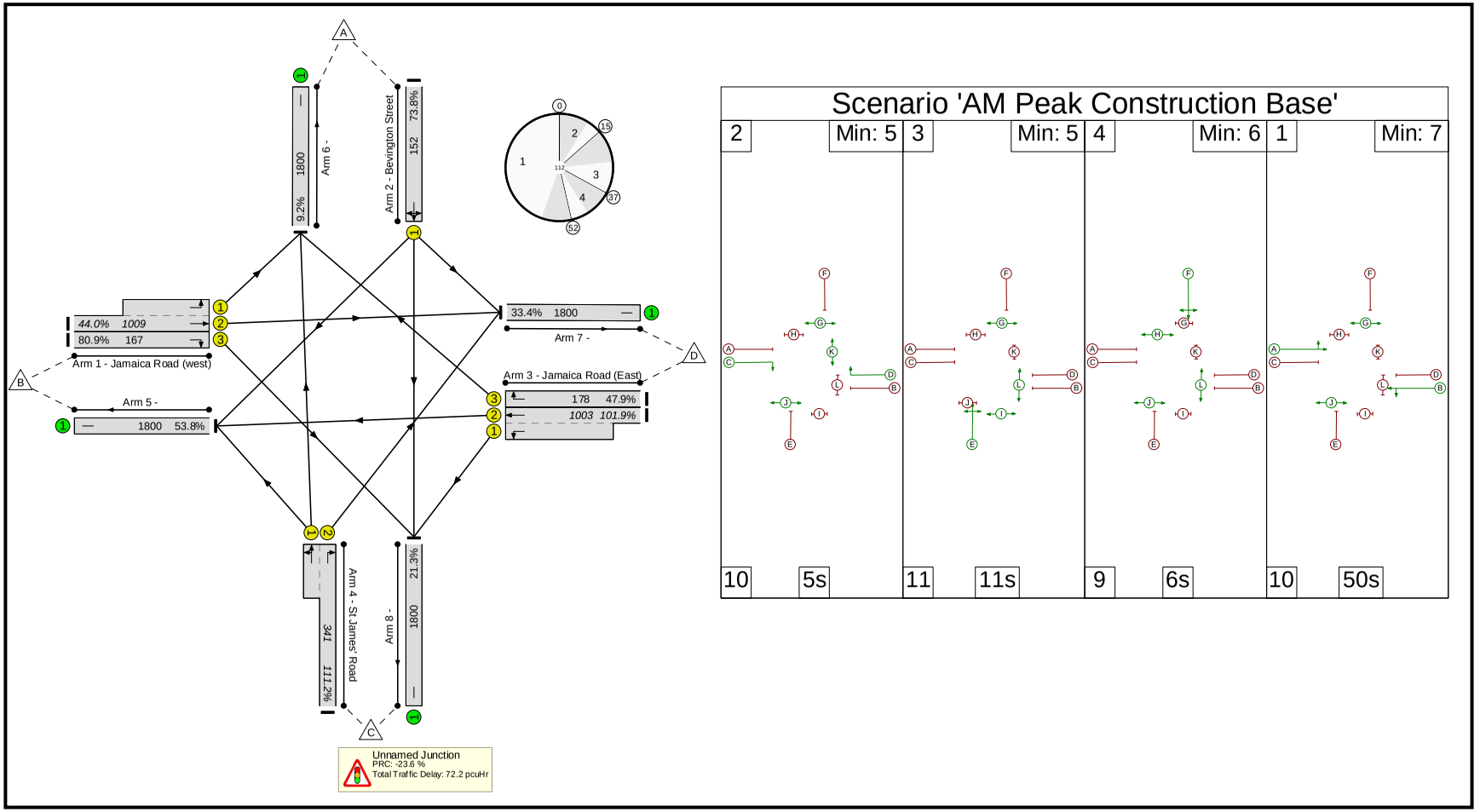
Network Results

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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**110.9%**	**0**	**0**	**0**	**43.4**	**-**	**-**
Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**110.9%**	**0**	**0**	**0**	**43.4**	**-**	**-**
1/2+1/1	Jamaica Road (west) Left Ahead	U	A		1	58	-	644	2095:1819	1108	58.1%	-	-	-	3.8	21.5	13.6
1/3	Jamaica Road (west) Right	U	C		1	10	-	170	1700	167	101.8%	-	-	-	9.8	208.3	12.7
2/1	Bevington Street Right Left Ahead	U	F		1	9	-	78	1700	152	51.4%	-	-	-	1.6	72.7	2.8
3/2+3/1	Jamaica Road (East) Ahead Left	U	B		1	55	-	762	2045:1773	1137	67.0%	-	-	-	4.9	23.2	13.0
3/3	Jamaica Road (East) Right	U	D		1	11	-	50	1657	178	28.2%	-	-	-	0.8	60.1	1.6
4/2+4/1	St James' Road Left Ahead Right	U	E		1	9	-	269	1905:1657	243	110.9%	-	-	-	21.5	288.1	23.3
5/1		U	-		-	-	-	684	1800	1800	37.5%	-	-	-	0.3	1.7	7.4
6/1		U	-		-	-	-	152	1800	1800	8.1%	-	-	-	0.0	1.1	0.0
7/1		U	-		-	-	-	724	1800	1800	39.8%	-	-	-	0.4	1.8	8.4
8/1		U	-		-	-	-	413	1800	1800	22.8%	-	-	-	0.1	1.3	0.1

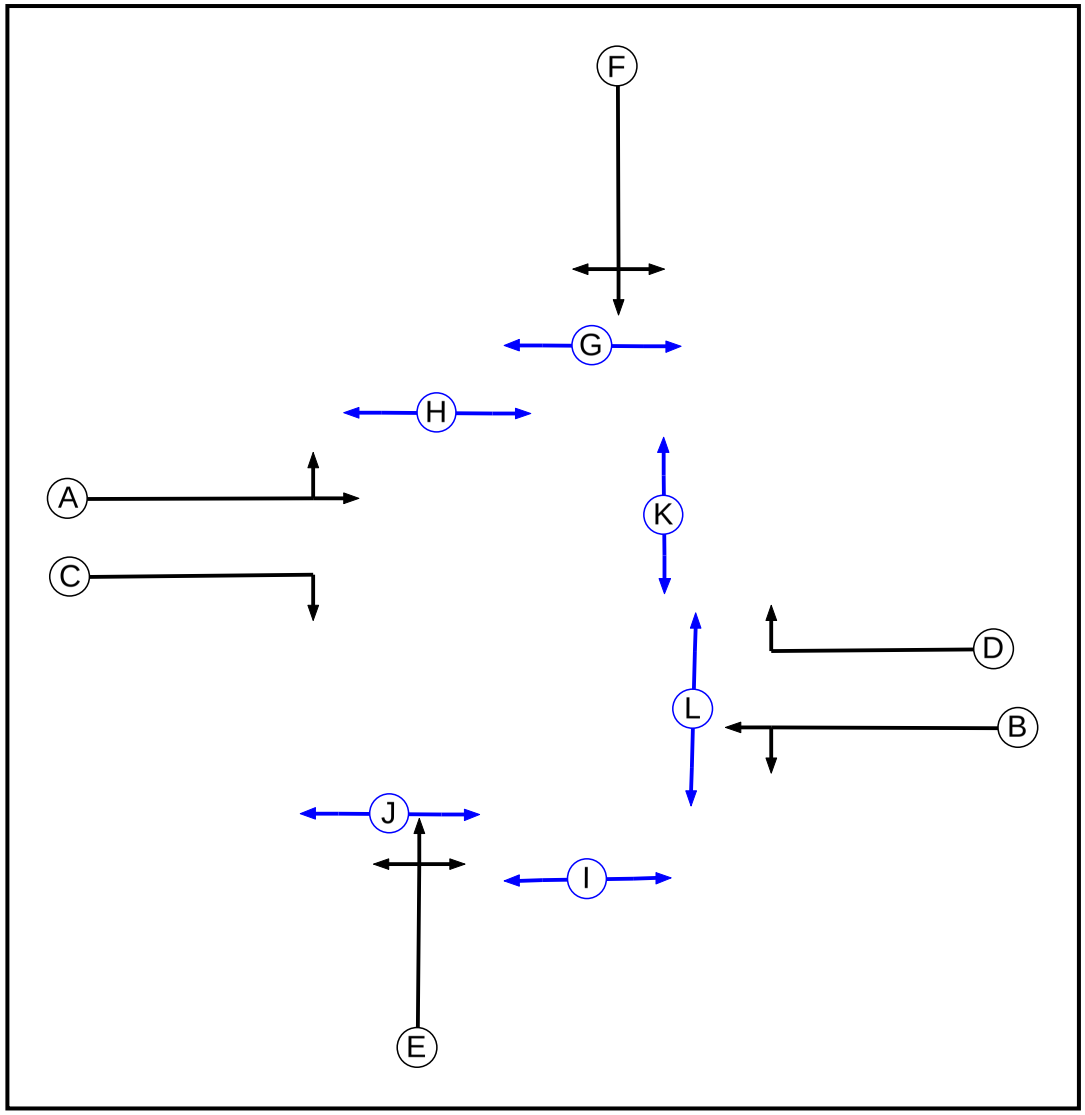
C1 PRC for Signalled Lanes (%): -23.2 Total Delay for Signalled Lanes (pcuHr): 42.53 Cycle Time (s): 112
PRC Over All Lanes (%): -23.2 Total Delay Over All Lanes(pcuHr): 43.39

C.3 Construction base case results, AM peak hour

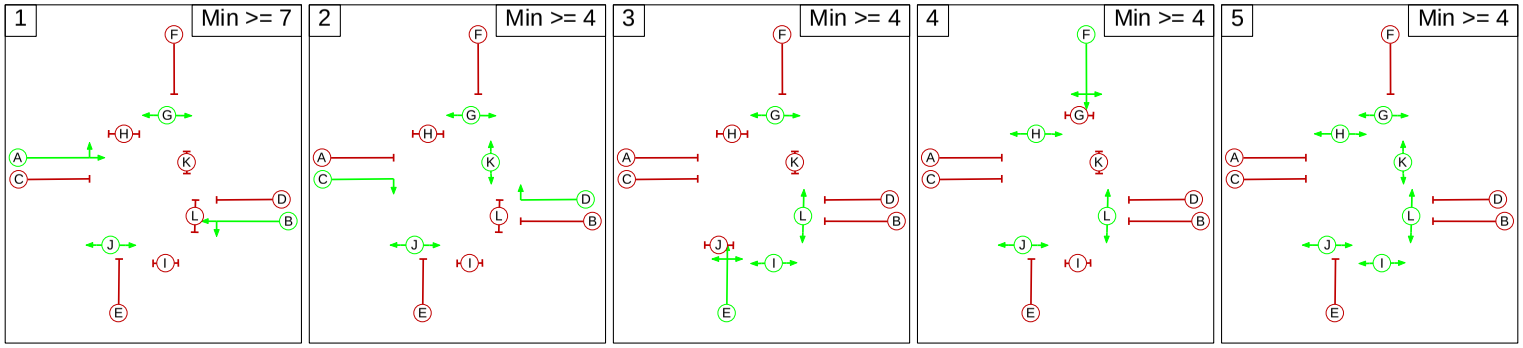
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B G J
2	C D G J K
3	E G I L
4	F H J L
5	G H I J K L

Phase Intergreens Matrix

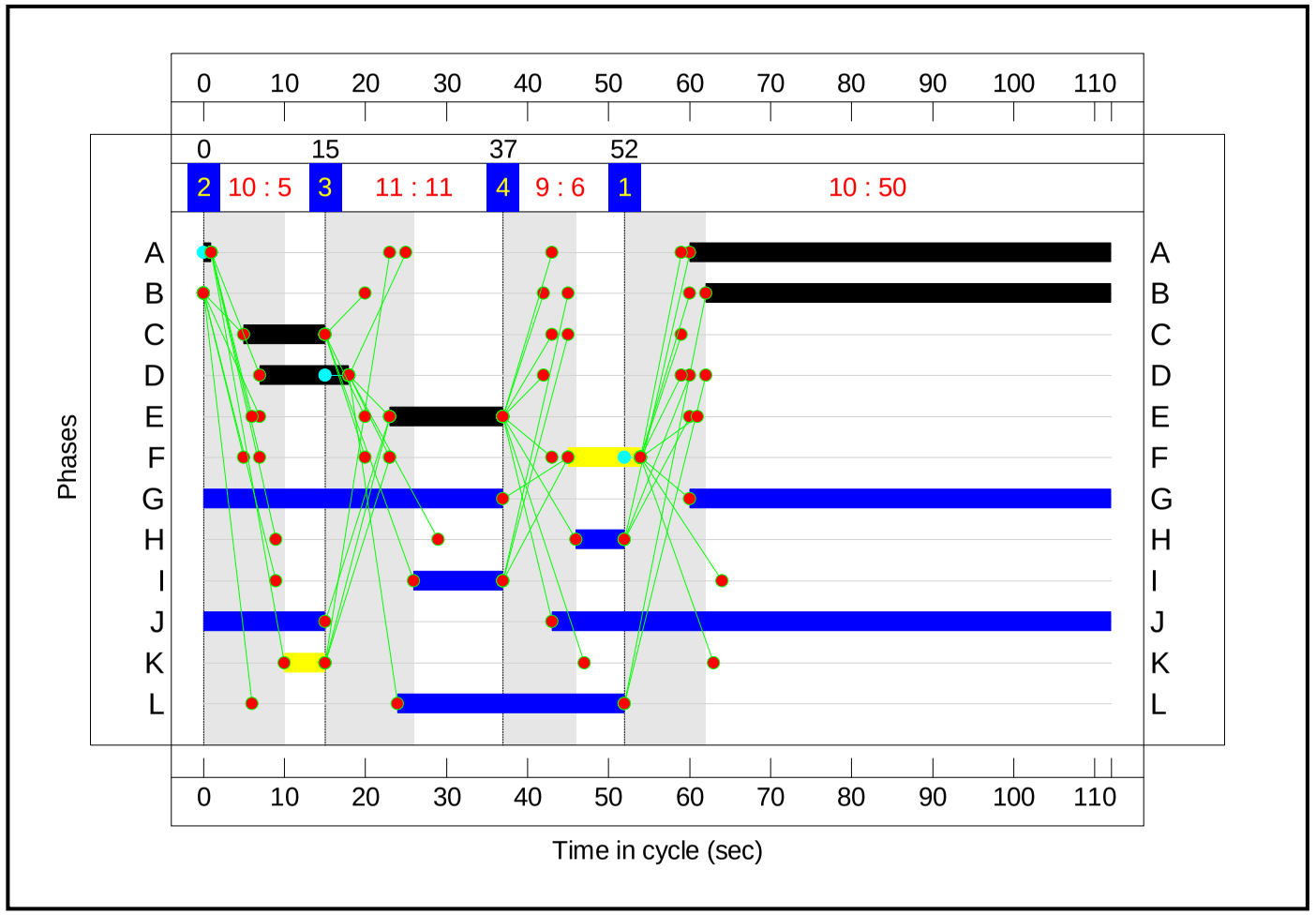
	Starting Phase												
Terminating Phase		A	B	C	D	E	F	G	H	I	J	K	L
	A		-	-	6	5	6	-	8	-	-	9	-
	B	-		5	-	7	5	-	-	9	-	-	6
	C	-	5		-	5	5	-	-	11	-	-	-
	D	7	-	-		5	5	-	11	-	-	-	6
	E	6	5	6	5		6	-	9	-	6	10	-
	F	5	6	5	5	7		6	-	10	-	9	-
	G	-	-	-	-	-	8		-	-	-	-	-
	H	8	-	-	8	8	-	-		-	-	-	-
	I	-	8	8	-	-	8	-	-		-	-	-
	J	-	-	-	-	8	-	-	-	-		-	-
	K	8	-	-	-	8	8	-	-	-	-		-
	L	-	10	-	10	-	-	-	-	-	-	-	

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	19	68	25	112
	B	11	0	135	433	579
	C	78	141	0	160	379
	D	85	839	183	0	1107
	Tot.	174	999	386	618	2177

Signal Timings Diagram



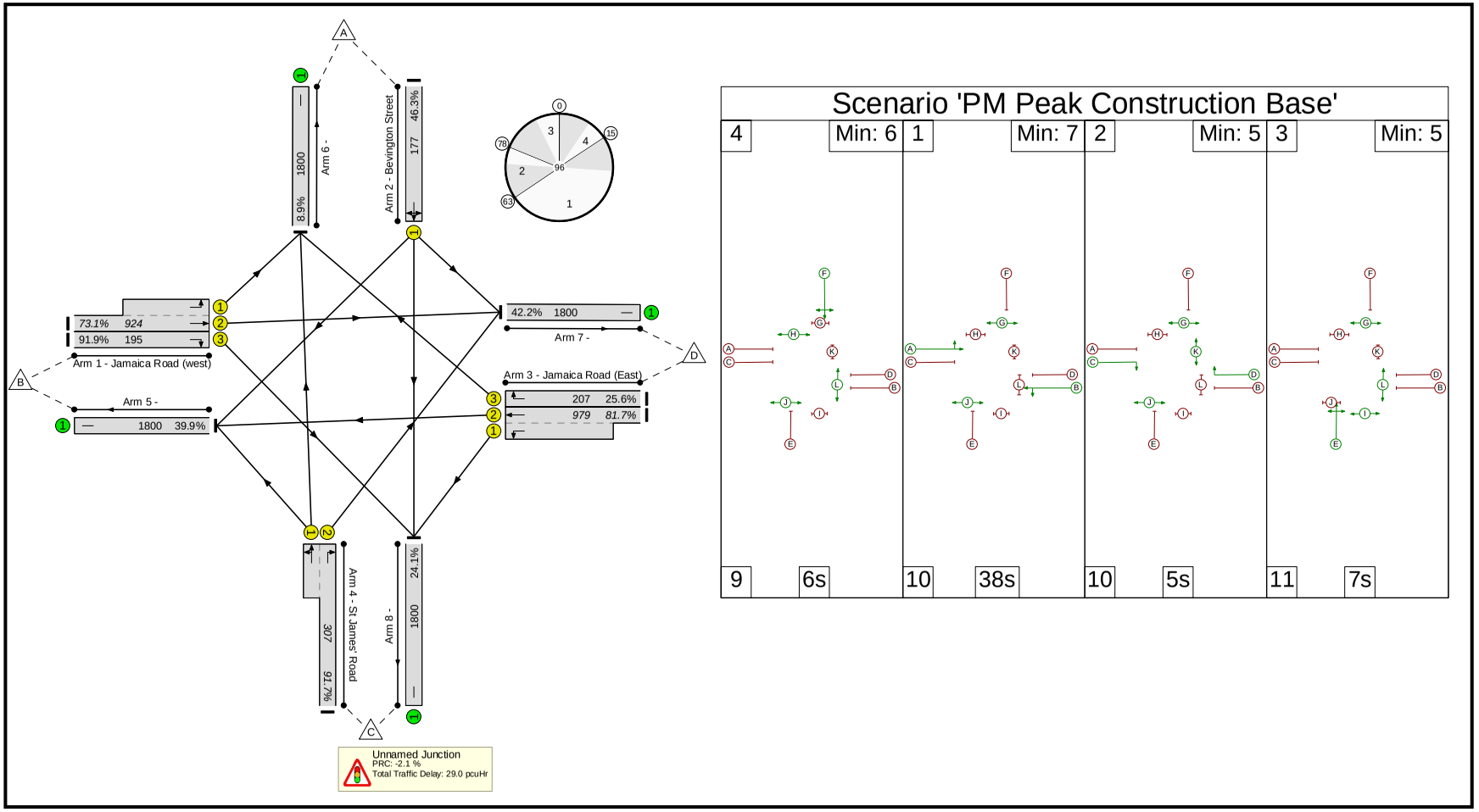
Network Results

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	-	-	-		-	-	-	-	-	-	**111.2%**	**0**	**0**	**0**	**72.2**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**111.2%**	**0**	**0**	**0**	**72.2**	-	-
1/2+1/1	Jamaica Road (west) Left Ahead	U	A		1	53	-	444	2095:1819	1009	44.0%	-	-	-	2.7	22.0	9.3
1/3	Jamaica Road (west) Right	U	C		1	10	-	135	1700	167	80.9%	-	-	-	3.7	99.8	6.0
2/1	Bevington Street Right Left Ahead	U	F		1	9	-	112	1700	152	73.8%	-	-	-	2.9	92.2	4.7
3/2+3/1	Jamaica Road (East) Ahead Left	U	B		1	50	-	1022	2045:1773	1003	101.9%	-	-	-	30.3	106.8	51.2
3/3	Jamaica Road (East) Right	U	D		1	11	-	85	1657	178	47.9%	-	-	-	1.6	66.3	2.9
4/2+4/1	St James' Road Left Ahead Right	U	E		1	14	-	379	1905:1657	341	111.2%	-	-	-	29.9	284.2	33.2
5/1		U	-		-	-	-	999	1800	1800	53.8%	-	-	-	0.7	2.4	15.6
6/1		U	-		-	-	-	174	1800	1800	9.2%	-	-	-	0.1	1.1	0.1
7/1		U	-		-	-	-	618	1800	1800	33.4%	-	-	-	0.3	1.5	3.8
8/1		U	-		-	-	-	386	1800	1800	21.3%	-	-	-	0.1	1.3	0.1

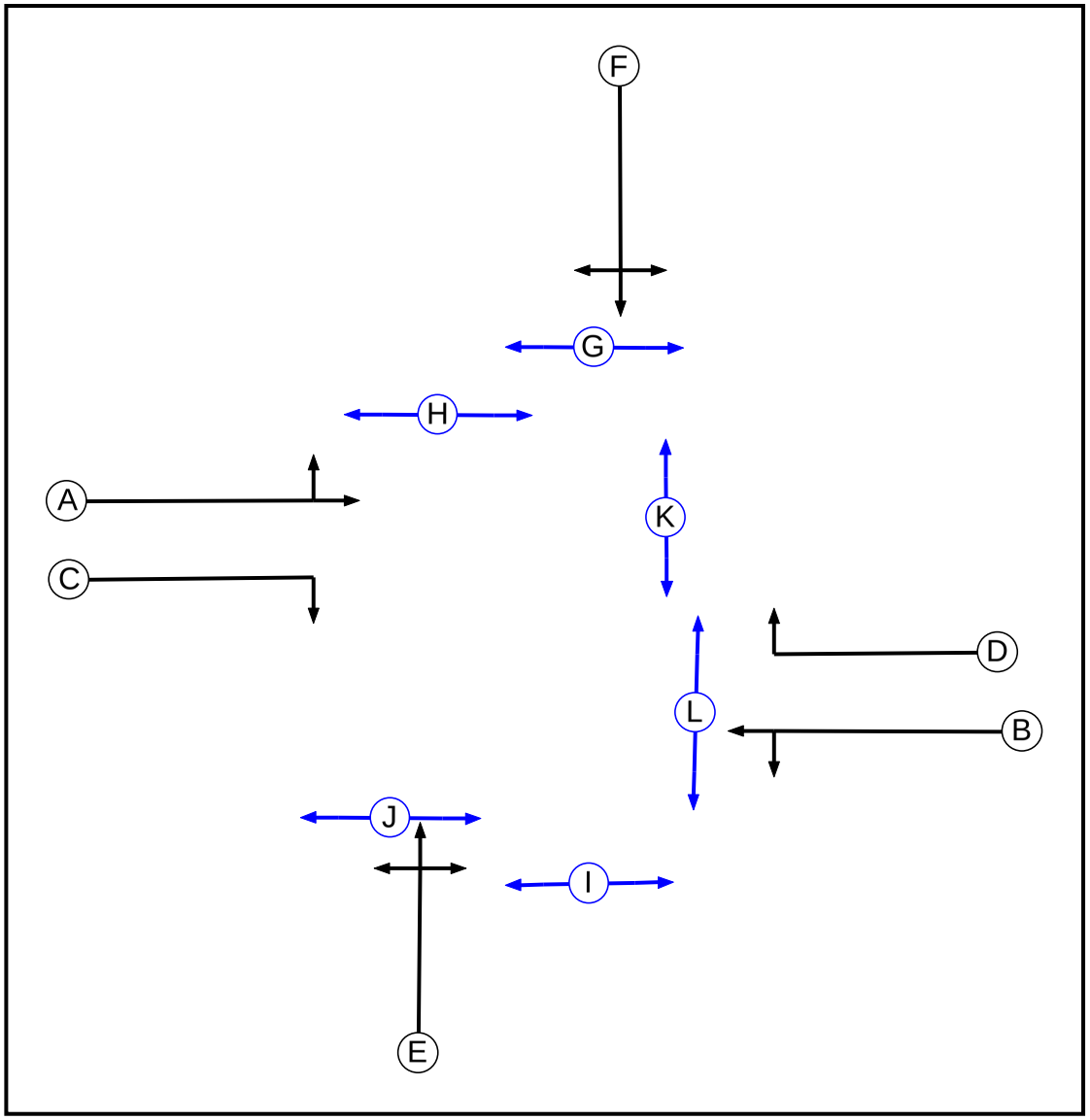
C1 PRC for Signalled Lanes (%): -23.6 Total Delay for Signalled Lanes (pcuHr): 71.14 Cycle Time (s): 112
PRC Over All Lanes (%): -23.6 Total Delay Over All Lanes(pcuHr): 72.24

C.4 Construction base case results, PM peak hour

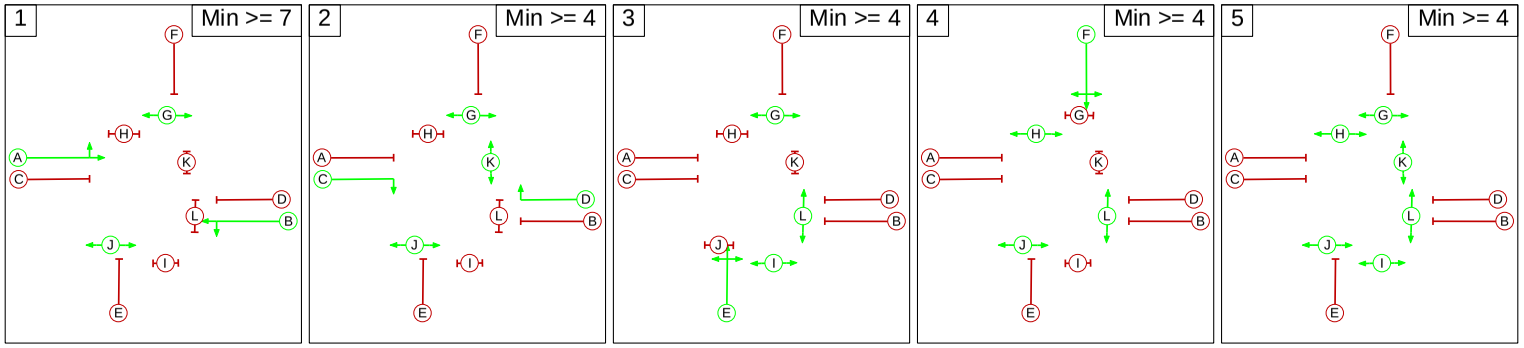
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B G J
2	C D G J K
3	E G I L
4	F H J L
5	G H I J K L

Phase Intergreens Matrix

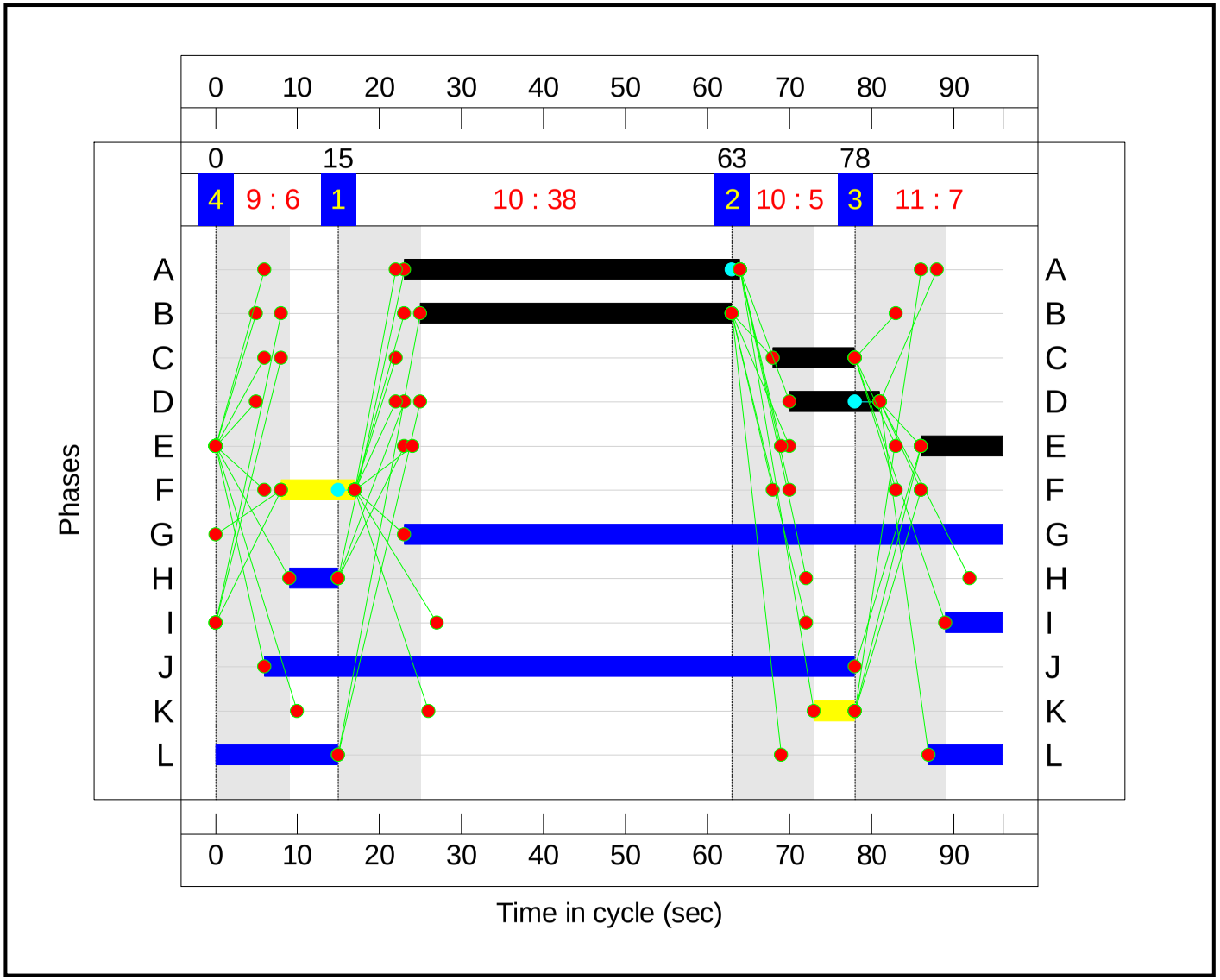
	Starting Phase												
Terminating Phase		A	B	C	D	E	F	G	H	I	J	K	L
	A		-	-	6	5	6	-	8	-	-	9	-
	B	-		5	-	7	5	-	-	9	-	-	6
	C	-	5		-	5	5	-	-	11	-	-	-
	D	7	-	-		5	5	-	11	-	-	-	6
	E	6	5	6	5		6	-	9	-	6	10	-
	F	5	6	5	5	7		6	-	10	-	9	-
	G	-	-	-	-	-	8		-	-	-	-	-
	H	8	-	-	8	8	-	-		-	-	-	-
	I	-	8	8	-	-	8	-	-		-	-	-
	J	-	-	-	-	8	-	-	-	-		-	-
	K	8	-	-	-	8	8	-	-	-	-		-
	L	-	10	-	10	-	-	-	-	-	-	-	

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	23	45	14	82
	B	40	0	179	636	855
	C	67	105	0	110	282
	D	53	590	210	0	853
	Tot.	160	718	434	760	2072

Signal Timings Diagram



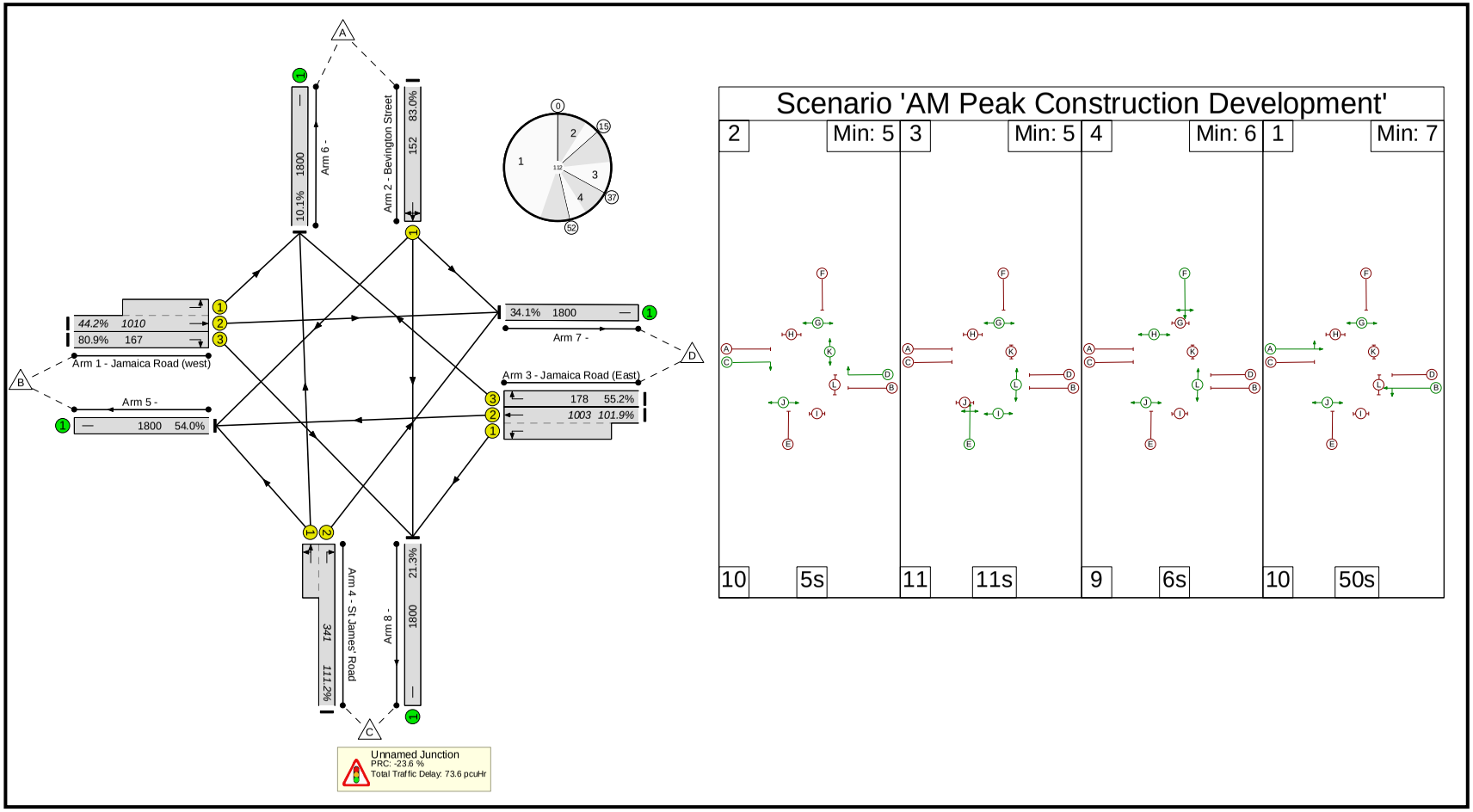
Network Results

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	-	-	-		-	-	-	-	-	-	**91.9%**	**0**	**0**	**0**	**29.0**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**91.9%**	**0**	**0**	**0**	**29.0**	-	-
1/2+1/1	Jamaica Road (west) Left Ahead	U	A		1	41	-	676	2095:1819	924	73.1%	-	-	-	5.4	29.0	15.5
1/3	Jamaica Road (west) Right	U	C		1	10	-	179	1700	195	91.9%	-	-	-	5.9	118.9	8.5
2/1	Bevington Street Right Left Ahead	U	F		1	9	-	82	1700	177	46.3%	-	-	-	1.3	59.3	2.5
3/2+3/1	Jamaica Road (East) Ahead Left	U	B		1	38	-	800	2045:1773	979	81.7%	-	-	-	7.2	32.5	16.0
3/3	Jamaica Road (East) Right	U	D		1	11	-	53	1657	207	25.6%	-	-	-	0.7	49.6	1.4
4/2+4/1	St James' Road Left Ahead Right	U	E		1	10	-	282	1905:1657	307	91.7%	-	-	-	7.4	94.5	8.7
5/1		U	-		-	-	-	718	1800	1800	39.9%	-	-	-	0.4	1.9	8.5
6/1		U	-		-	-	-	160	1800	1800	8.9%	-	-	-	0.0	1.1	0.0
7/1		U	-		-	-	-	760	1800	1800	42.2%	-	-	-	0.4	1.9	9.9
8/1		U	-		-	-	-	434	1800	1800	24.1%	-	-	-	0.2	1.3	0.2

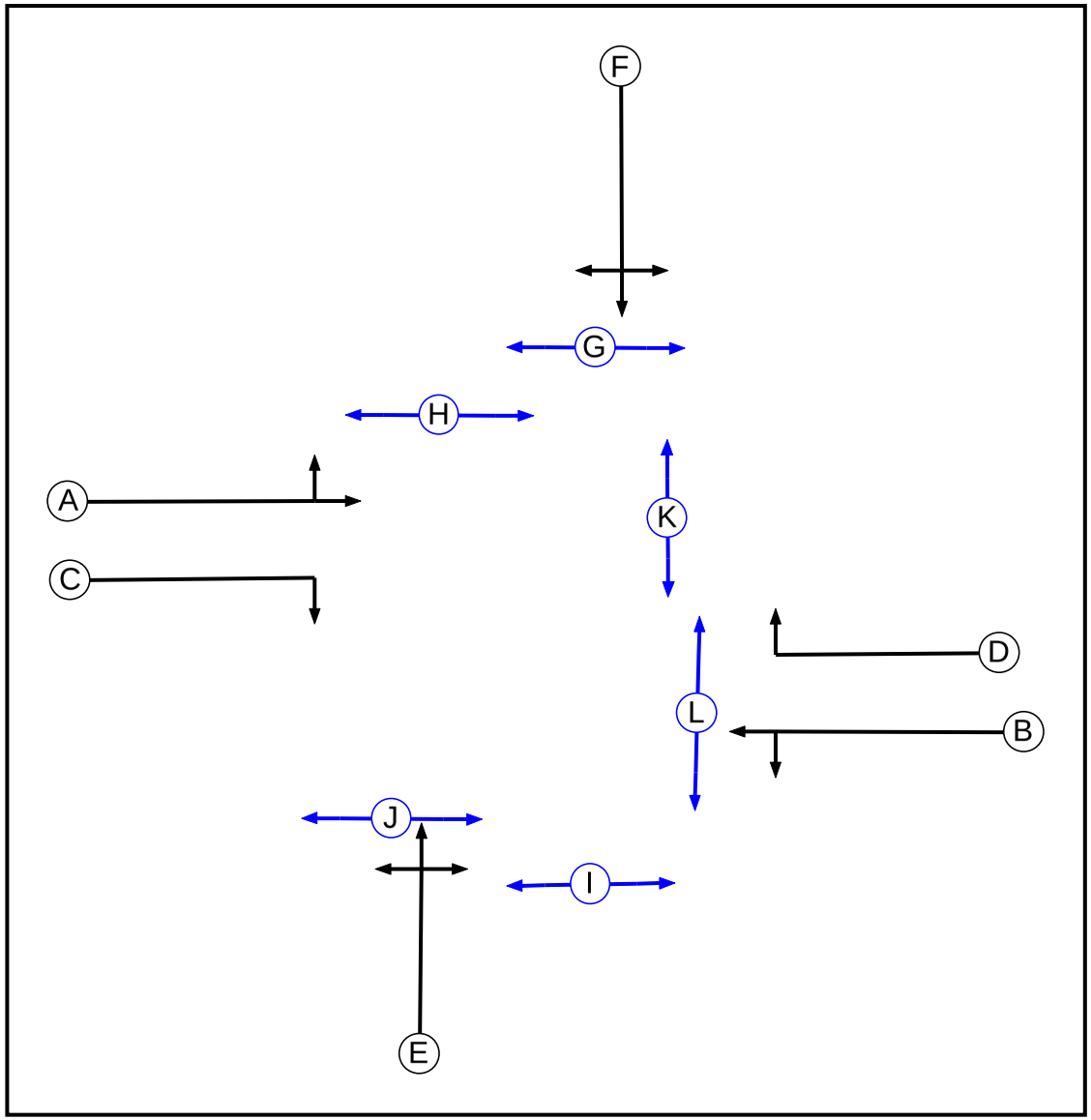
C1 PRC for Signalled Lanes (%): -2.1 Total Delay for Signalled Lanes (pcuHr): 28.06 Cycle Time (s): 96
PRC Over All Lanes (%): -2.1 Total Delay Over All Lanes(pcuHr): 29.05

C.5 Construction development case results, AM peak hour

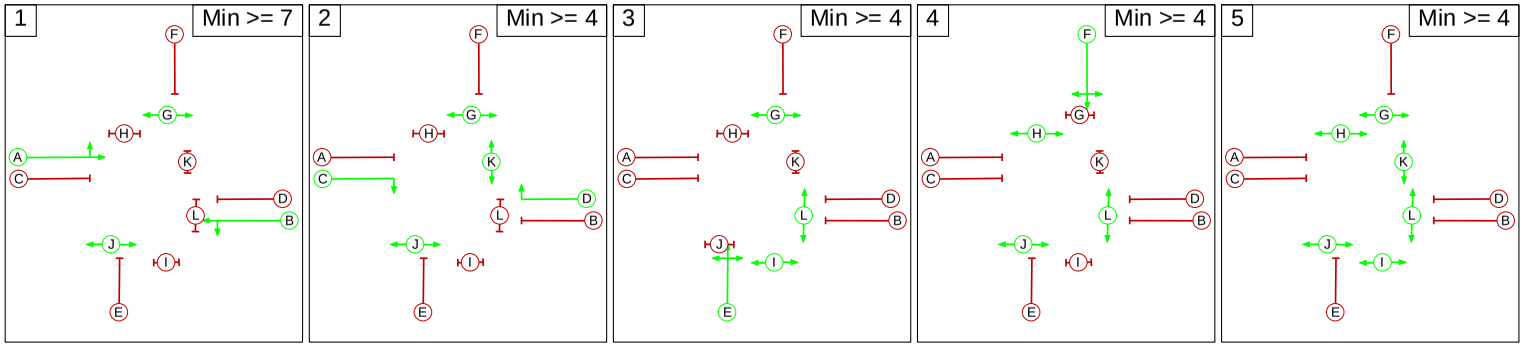
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B G J
2	C D G J K
3	E G I L
4	F H J L
5	G H I J K L

Phase Intergreens Matrix

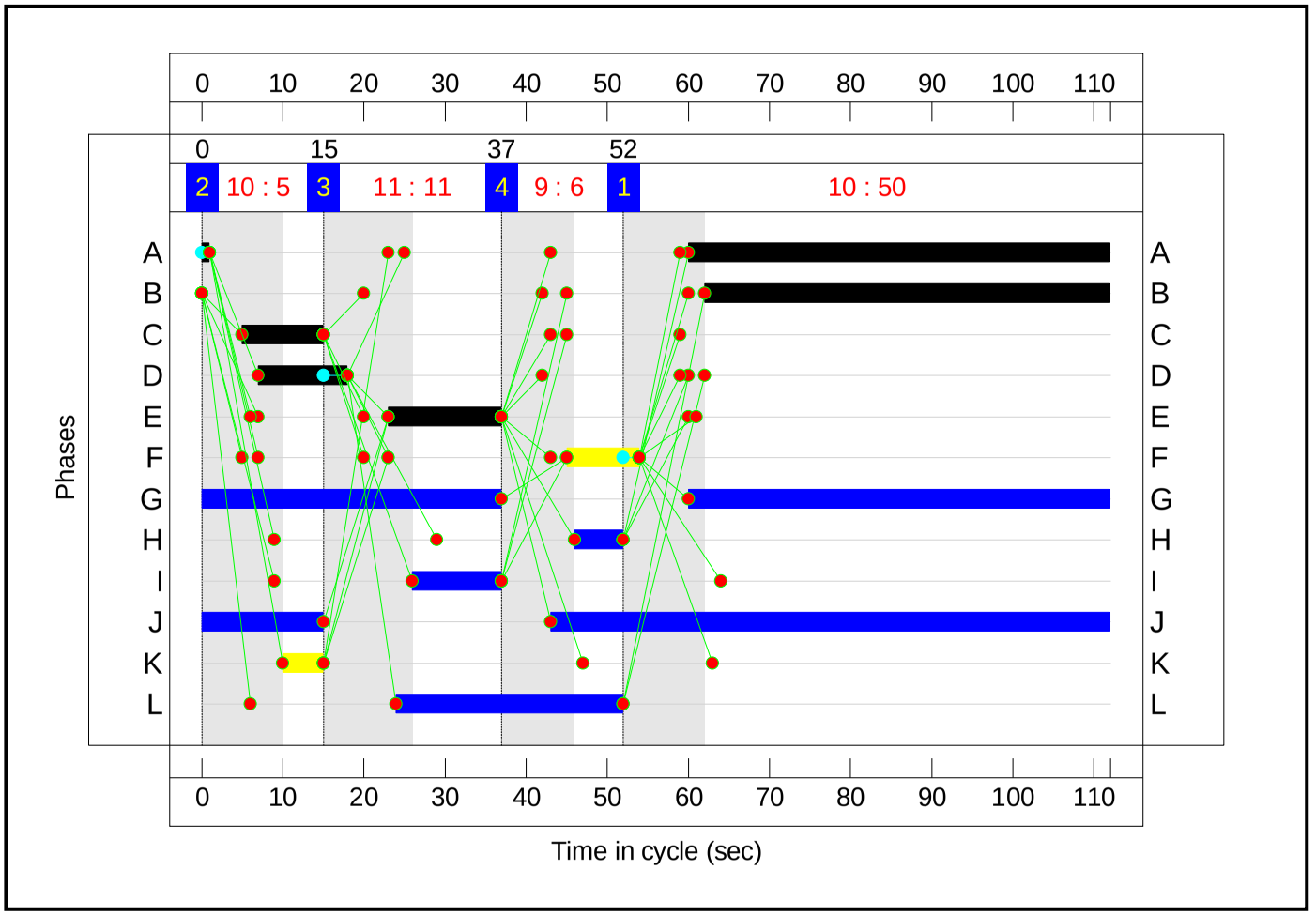
		Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K	L
Terminating Phase	A		-	-	6	5	6	-	8	-	-	9	-
	B	-		5	-	7	5	-	-	9	-	-	6
	C	-	5		-	5	5	-	-	11	-	-	-
	D	7	-	-		5	5	-	11	-	-	-	6
	E	6	5	6	5		6	-	9	-	6	10	-
	F	5	6	5	5	7		6	-	10	-	9	-
	G	-	-	-	-	-	8		-	-	-	-	-
	H	8	-	-	8	8	-	-		-	-	-	-
	I	-	8	8	-	-	8	-	-		-	-	-
	J	-	-	-	-	8	-	-	-	-		-	-
	K	8	-	-	-	8	8	-	-	-	-		-
	L	-	10	-	10	-	-	-	-	-	-	-	

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	21	68	37	126
	B	13	0	135	433	581
	C	78	141	0	160	379
	D	98	839	183	0	1120
	Tot.	189	1001	386	630	2206

Signal Timings Diagram



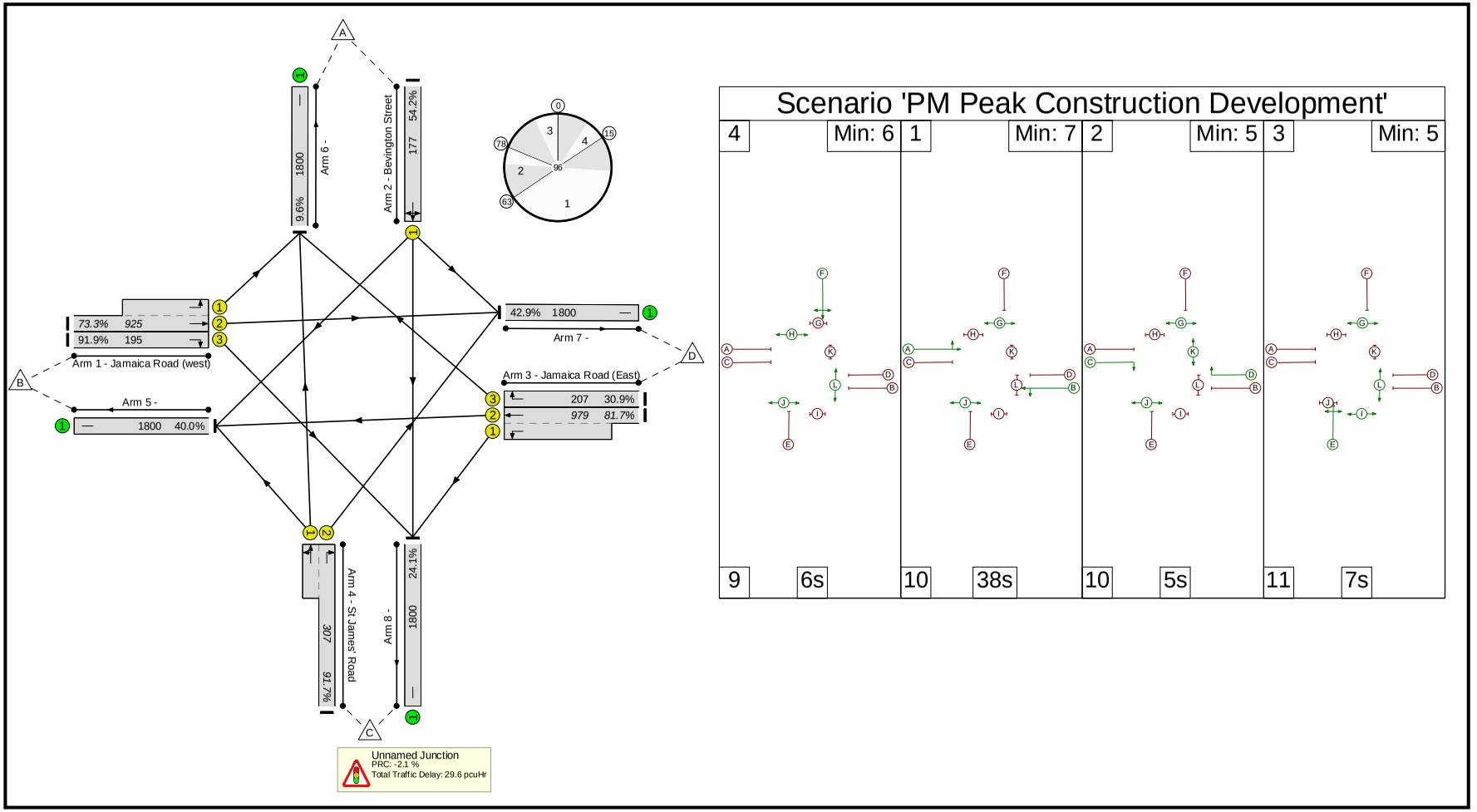
Network Results

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	-	-	-		-	-	-	-	-	-	**111.2%**	**0**	**0**	**0**	**73.6**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**111.2%**	**0**	**0**	**0**	**73.6**	-	-
1/2+1/1	Jamaica Road (west) Left Ahead	U	A		1	53	-	446	2095:1819	1010	44.2%	-	-	-	2.7	22.0	9.3
1/3	Jamaica Road (west) Right	U	C		1	10	-	135	1700	167	80.9%	-	-	-	3.7	99.8	6.0
2/1	Bevington Street Right Left Ahead	U	F		1	9	-	126	1700	152	83.0%	-	-	-	3.9	110.2	6.0
3/2+3/1	Jamaica Road (East) Ahead Left	U	B		1	50	-	1022	2045:1773	1003	101.9%	-	-	-	30.3	106.8	51.2
3/3	Jamaica Road (East) Right	U	D		1	11	-	98	1657	178	55.2%	-	-	-	1.9	69.8	3.5
4/2+4/1	St James' Road Left Ahead Right	U	E		1	14	-	379	1905:1657	341	111.2%	-	-	-	29.9	284.2	33.2
5/1		U	-		-	-	-	1001	1800	1800	54.0%	-	-	-	0.7	2.4	15.6
6/1		U	-		-	-	-	189	1800	1800	10.1%	-	-	-	0.1	1.1	0.1
7/1		U	-		-	-	-	630	1800	1800	34.1%	-	-	-	0.3	1.5	3.8
8/1		U	-		-	-	-	386	1800	1800	21.3%	-	-	-	0.1	1.3	0.1

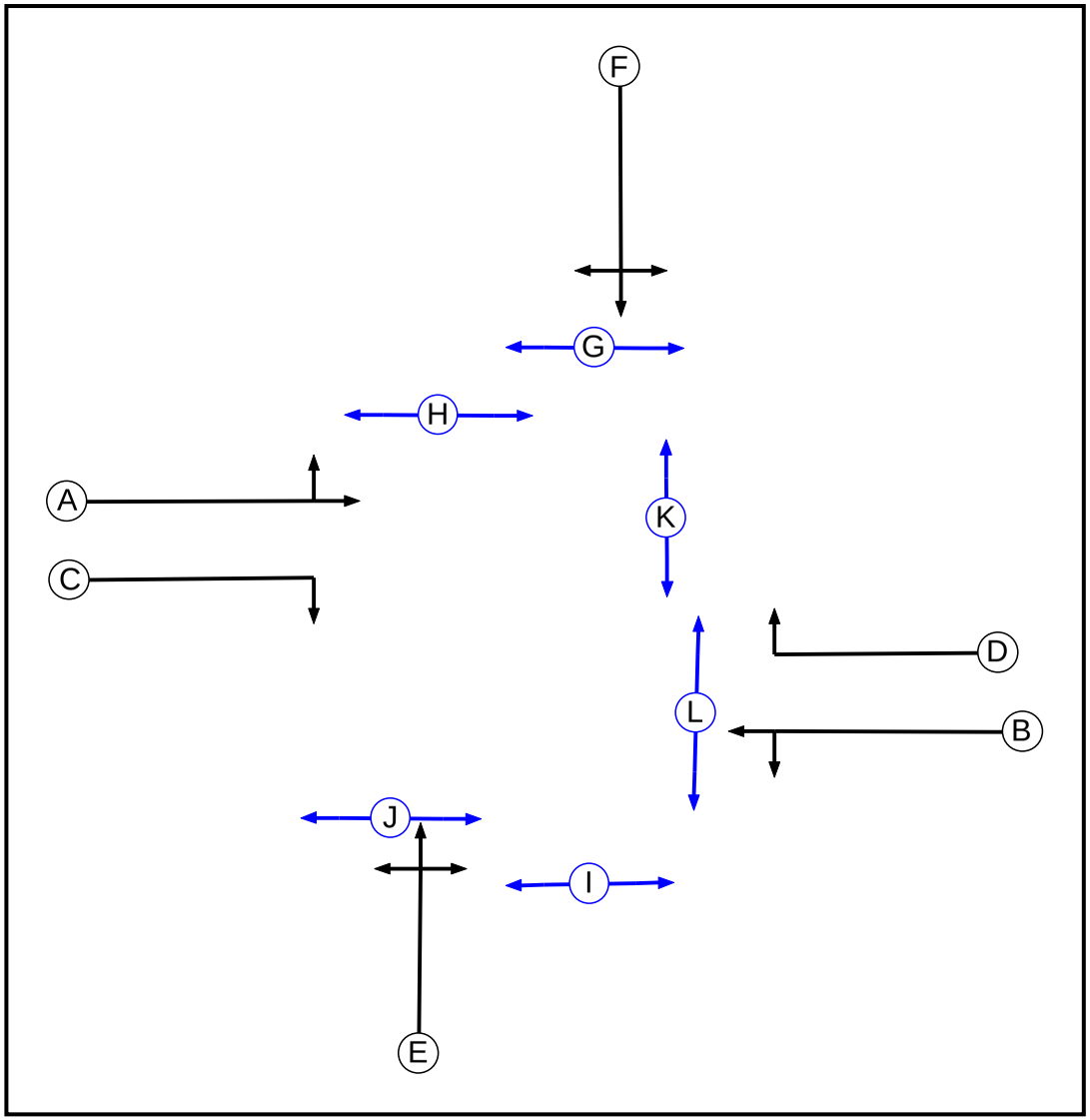
C1 PRC for Signalled Lanes (%): -23.6 Total Delay for Signalled Lanes (pcuHr): 72.47 Cycle Time (s): 112
PRC Over All Lanes (%): -23.6 Total Delay Over All Lanes(pcuHr): 73.59

C.6 Construction development case results, PM peak hour

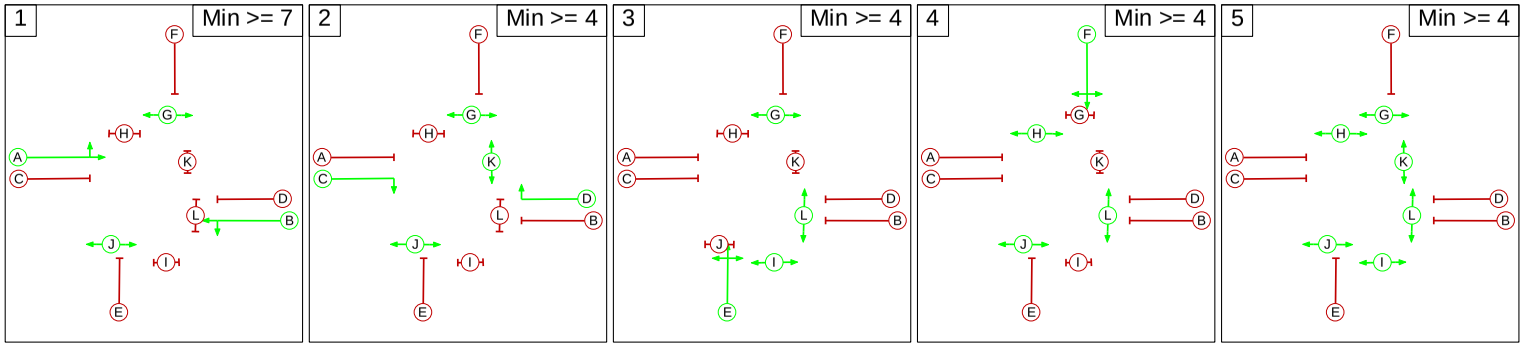
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B G J
2	C D G J K
3	E G I L
4	F H J L
5	G H I J K L

Phase Intergreens Matrix

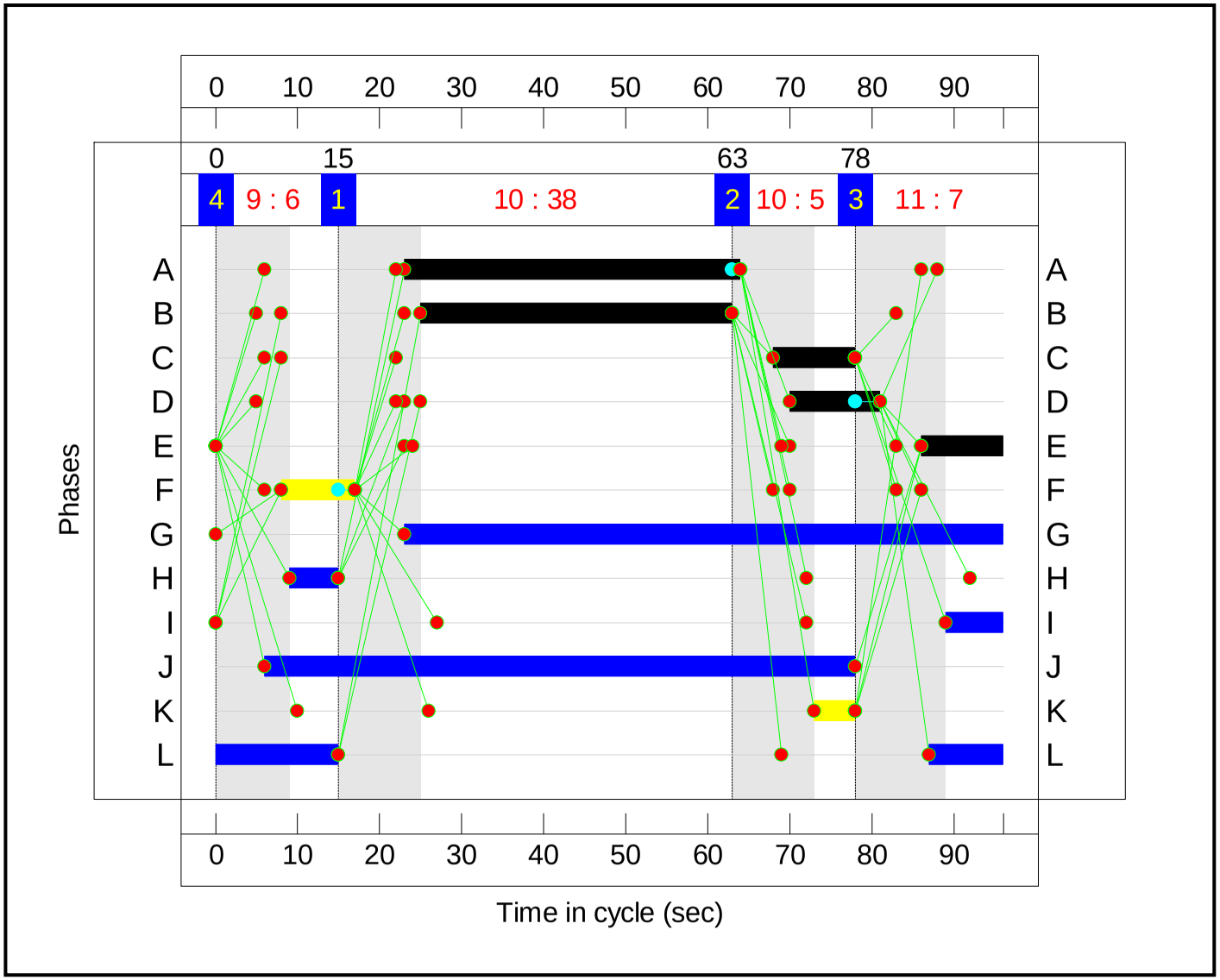
	Starting Phase												
Terminating Phase		A	B	C	D	E	F	G	H	I	J	K	L
	A		-	-	6	5	6	-	8	-	-	9	-
	B	-		5	-	7	5	-	-	9	-	-	6
	C	-	5		-	5	5	-	-	11	-	-	-
	D	7	-	-		5	5	-	11	-	-	-	6
	E	6	5	6	5		6	-	9	-	6	10	-
	F	5	6	5	5	7		6	-	10	-	9	-
	G	-	-	-	-	-	8		-	-	-	-	-
	H	8	-	-	8	8	-	-		-	-	-	-
	I	-	8	8	-	-	8	-	-		-	-	-
	J	-	-	-	-	8	-	-	-	-		-	-
	K	8	-	-	-	8	8	-	-	-	-		-
	L	-	10	-	10	-	-	-	-	-	-	-	

Traffic Flows, Desired

Desired Flow :

	Destination					
Origin		A	B	C	D	Tot.
	A	0	25	45	26	96
	B	42	0	179	636	857
	C	67	105	0	110	282
	D	64	590	210	0	864
	Tot.	173	720	434	772	2099

Signal Timings Diagram



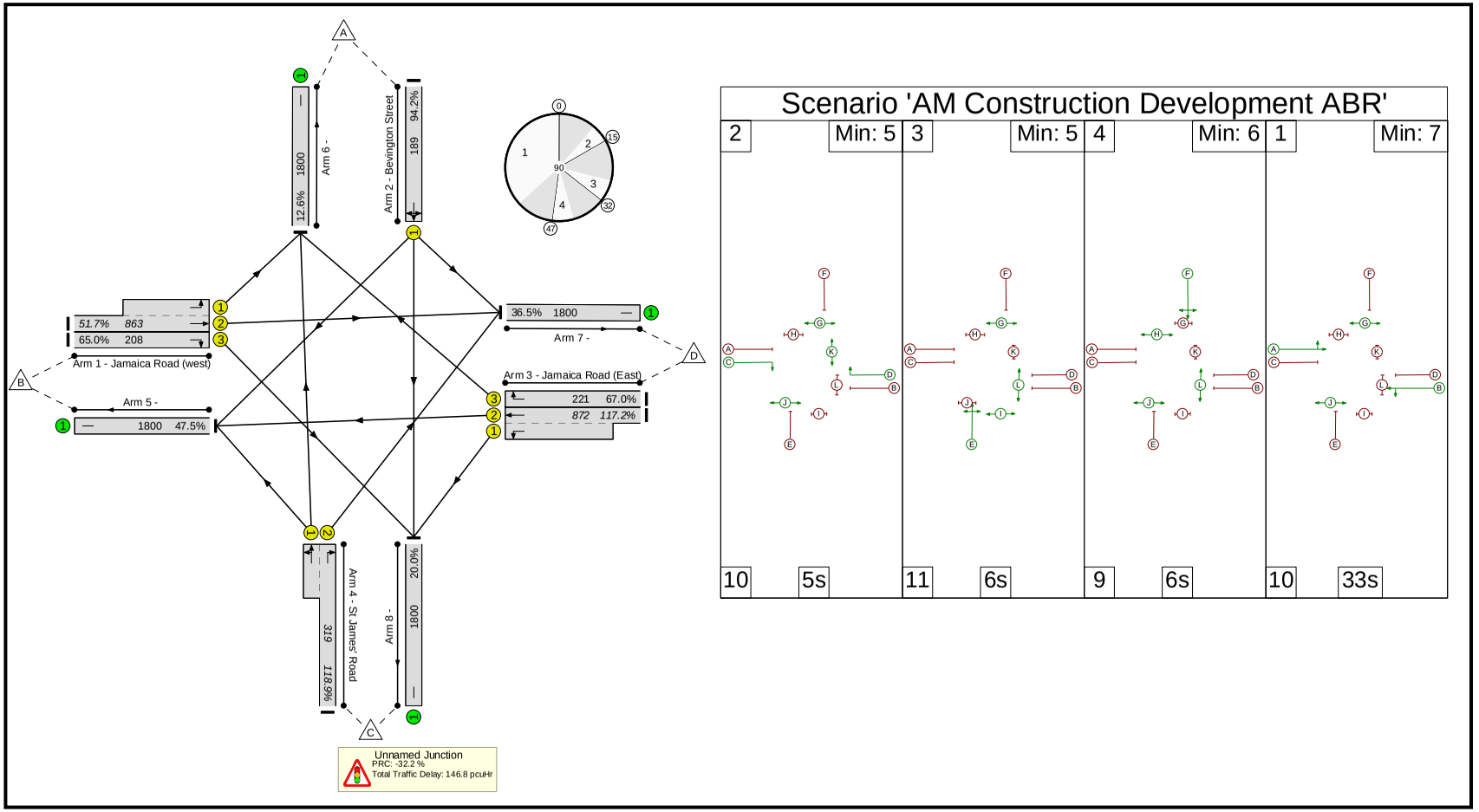
Network Results

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	-	-	-		-	-	-	-	-	-	**91.9%**	**0**	**0**	**0**	**29.6**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**91.9%**	**0**	**0**	**0**	**29.6**	-	-
1/2+1/1	Jamaica Road (west) Left Ahead	U	A		1	41	-	678	2095:1819	925	73.3%	-	-	-	5.5	29.1	15.7
1/3	Jamaica Road (west) Right	U	C		1	10	-	179	1700	195	91.9%	-	-	-	5.9	118.9	8.5
2/1	Bevington Street Right Left Ahead	U	F		1	9	-	96	1700	177	54.2%	-	-	-	1.7	62.7	3.0
3/2+3/1	Jamaica Road (East) Ahead Left	U	B		1	38	-	800	2045:1773	979	81.7%	-	-	-	7.2	32.5	16.0
3/3	Jamaica Road (East) Right	U	D		1	11	-	64	1657	207	30.9%	-	-	-	0.9	50.8	1.8
4/2+4/1	St James' Road Left Ahead Right	U	E		1	10	-	282	1905:1657	307	91.7%	-	-	-	7.4	94.5	8.7
5/1		U	-		-	-	-	720	1800	1800	40.0%	-	-	-	0.4	1.9	8.5
6/1		U	-		-	-	-	173	1800	1800	9.6%	-	-	-	0.1	1.1	0.1
7/1		U	-		-	-	-	772	1800	1800	42.9%	-	-	-	0.4	1.9	9.9
8/1		U	-		-	-	-	434	1800	1800	24.1%	-	-	-	0.2	1.3	0.2

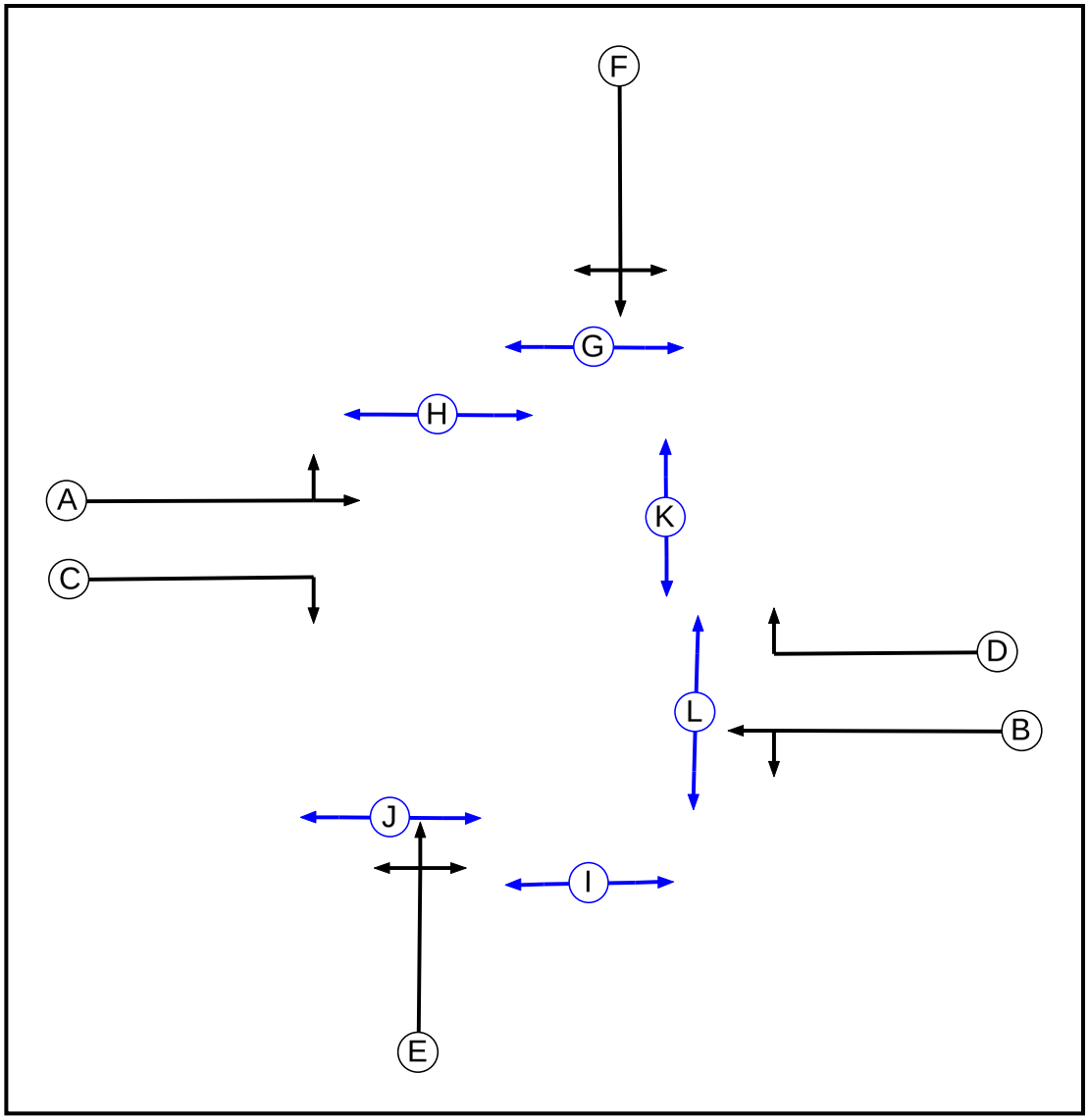
C1 PRC for Signalled Lanes (%): -2.1 Total Delay for Signalled Lanes (pcuHr): 28.58 Cycle Time (s): 96
PRC Over All Lanes (%): -2.1 Total Delay Over All Lanes(pcuHr): 29.58

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

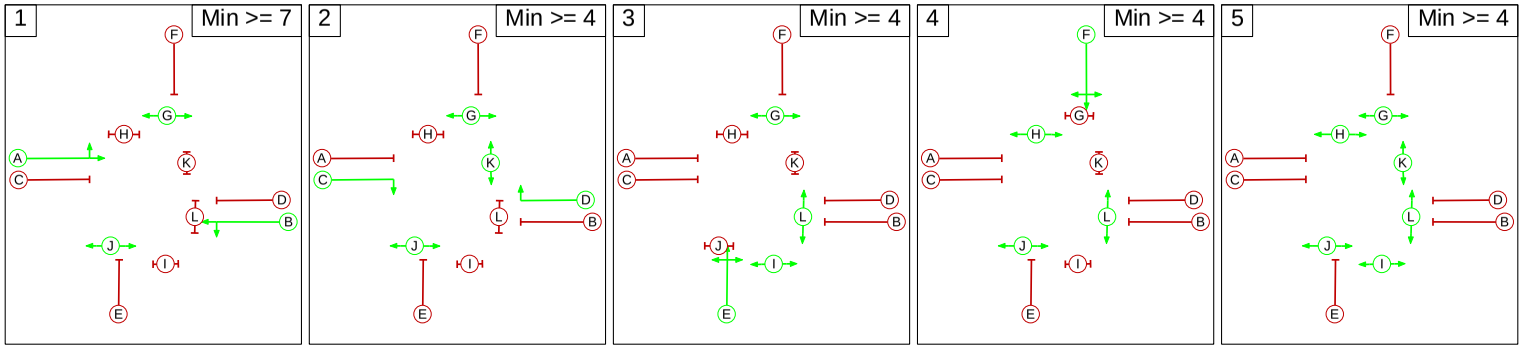
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B G J
2	C D G J K
3	E G I L
4	F H J L
5	G H I J K L

Phase Intergreens Matrix

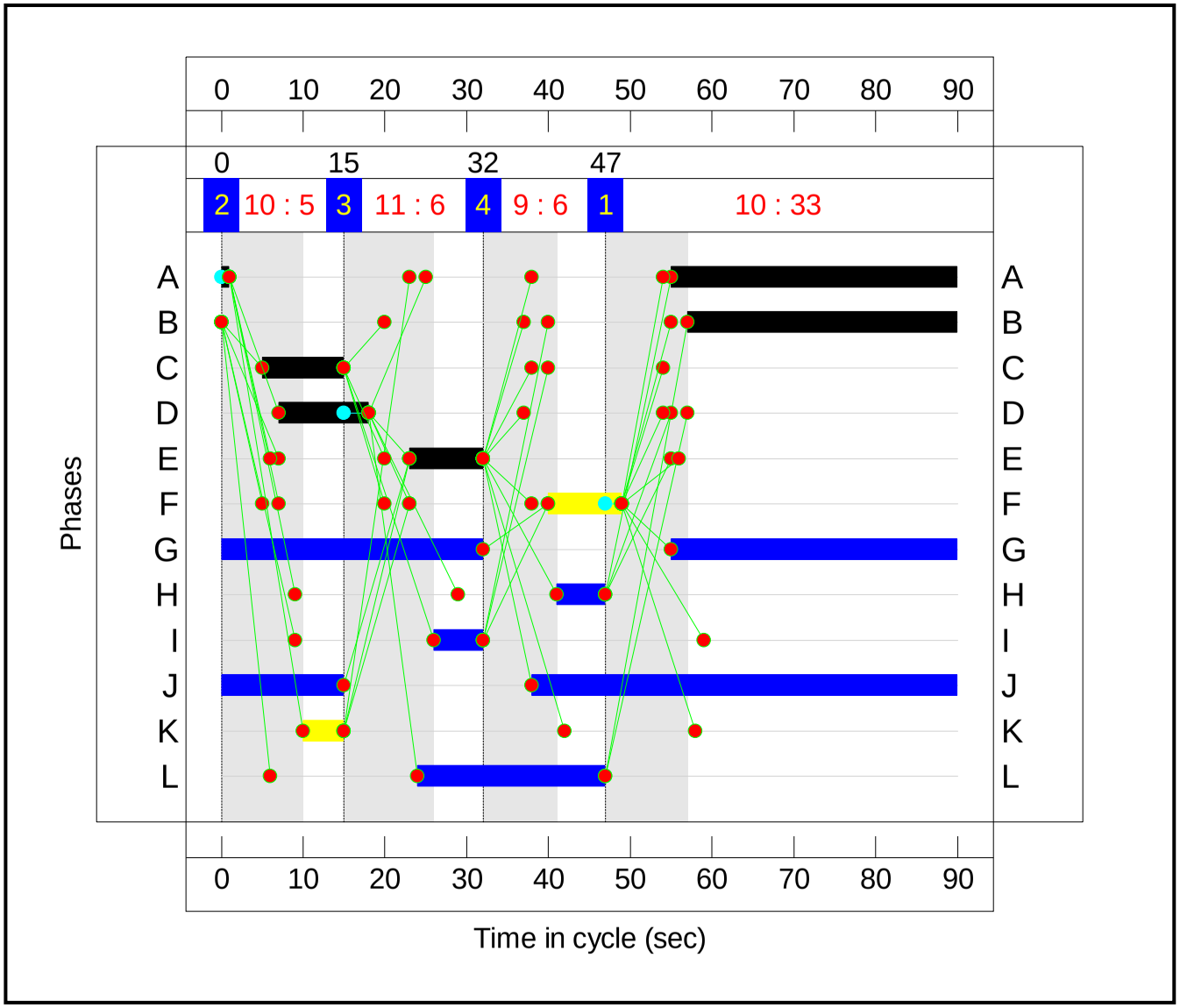
Terminating Phase \ Starting Phase	A	B	C	D	E	F	G	H	I	J	K	L
A		-	-	6	5	6	-	8	-	-	9	-
B	-		5	-	7	5	-	-	9	-	-	6
C	-	5		-	5	5	-	-	11	-	-	-
D	7	-	-		5	5	-	11	-	-	-	6
E	6	5	6	5		6	-	9	-	6	10	-
F	5	6	5	5	7		6	-	10	-	9	-
G	-	-	-	-	-	8		-	-	-	-	-
H	8	-	-	8	8	-	-		-	-	-	-
I	-	8	8	-	-	8	-	-		-	-	-
J	-	-	-	-	8	-	-	-	-		-	-
K	8	-	-	-	8	8	-	-	-	-		-
L	-	10	-	10	-	-	-	-	-	-	-	

Traffic Flows, Desired

Desired Flow :

Origin \ Destination	A	B	C	D	Tot.
A	0	21	68	89	178
B	13	0	135	433	581
C	78	141	0	160	379
D	148	839	183	0	1170
Tot.	239	1001	386	682	2308

Signal Timings Diagram



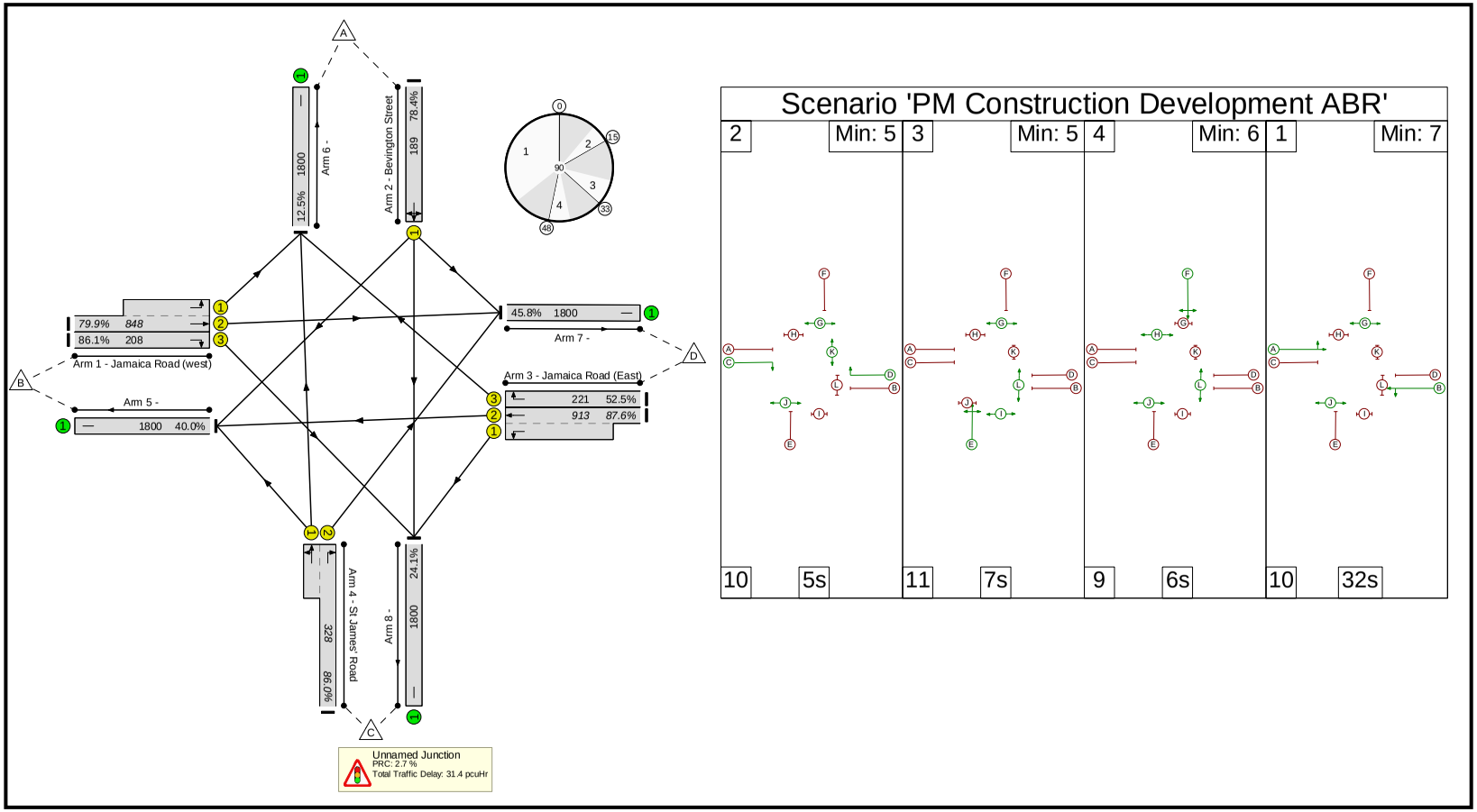
Network Results

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	-	-	-		-	-	-	-	-	-	**118.9%**	**0**	**0**	**0**	**146.8**	-	-
Unnamed Junction	-	-	-		-	-	-	-	-	-	**118.9%**	**0**	**0**	**0**	**146.8**	-	-
1/2+1/1	Jamaica Road (west) Left Ahead	U	A		1	36	-	446	2095:1819	863	51.7%	-	-	-	3.0	23.9	8.7
1/3	Jamaica Road (west) Right	U	C		1	10	-	135	1700	208	65.0%	-	-	-	2.3	61.8	4.1
2/1	Bevington Street Right Left Ahead	U	F		1	9	-	178	1700	189	94.2%	-	-	-	6.4	130.4	8.9
3/2+3/1	Jamaica Road (East) Ahead Left	U	B		1	33	-	1022	2045:1773	872	117.2%	-	-	-	92.2	324.7	106.0
3/3	Jamaica Road (East) Right	U	D		1	11	-	148	1657	221	67.0%	-	-	-	2.5	61.2	4.5
4/2+4/1	St James' Road Left Ahead Right	U	E		1	9	-	379	1905:1657	319	118.9%	-	-	-	39.3	373.5	41.0
5/1		U	-		-	-	-	1001	1800	1800	47.5%	-	-	-	0.5	2.3	13.0
6/1		U	-		-	-	-	239	1800	1800	12.6%	-	-	-	0.1	1.1	0.1
7/1		U	-		-	-	-	682	1800	1800	36.5%	-	-	-	0.3	1.6	3.4
8/1		U	-		-	-	-	386	1800	1800	20.0%	-	-	-	0.1	1.2	0.1

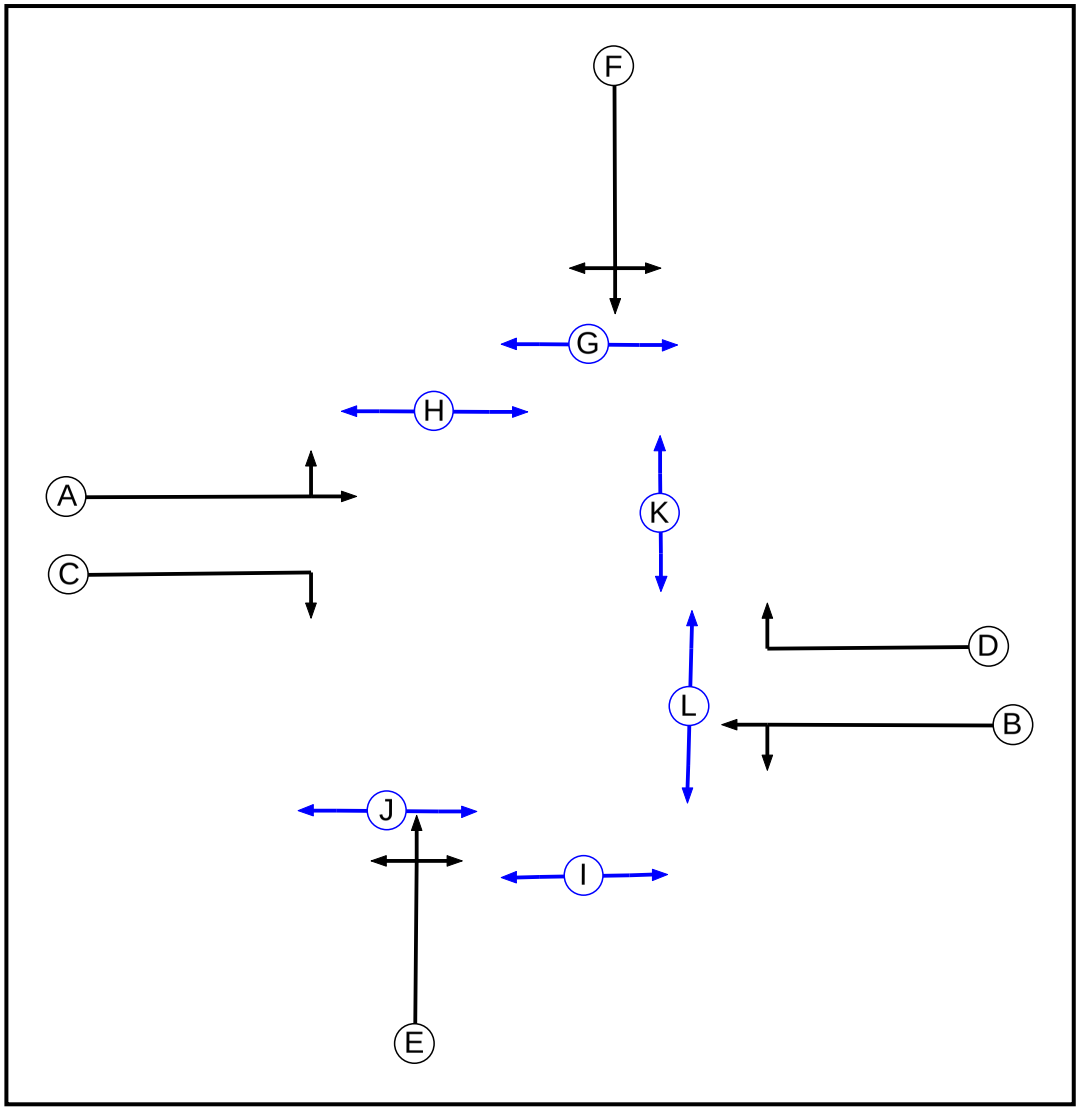
C1 PRC for Signalled Lanes (%): -32.2 Total Delay for Signalled Lanes (pcuHr): 145.73 Cycle Time (s): 90
PRC Over All Lanes (%): -32.2 Total Delay Over All Lanes(pcuHr): 146.75

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

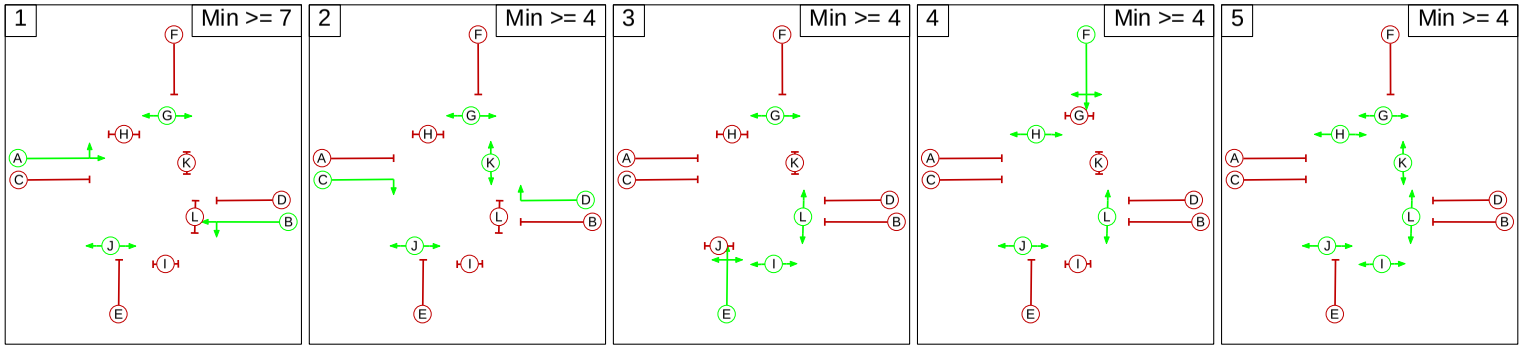
Network Layout Diagram



Phase Diagram



Stage Diagram



Phases in Stage

Stage No.	Phases in Stage
1	A B G J
2	C D G J K
3	E G I L
4	F H J L
5	G H I J K L

Phase Intergreens Matrix

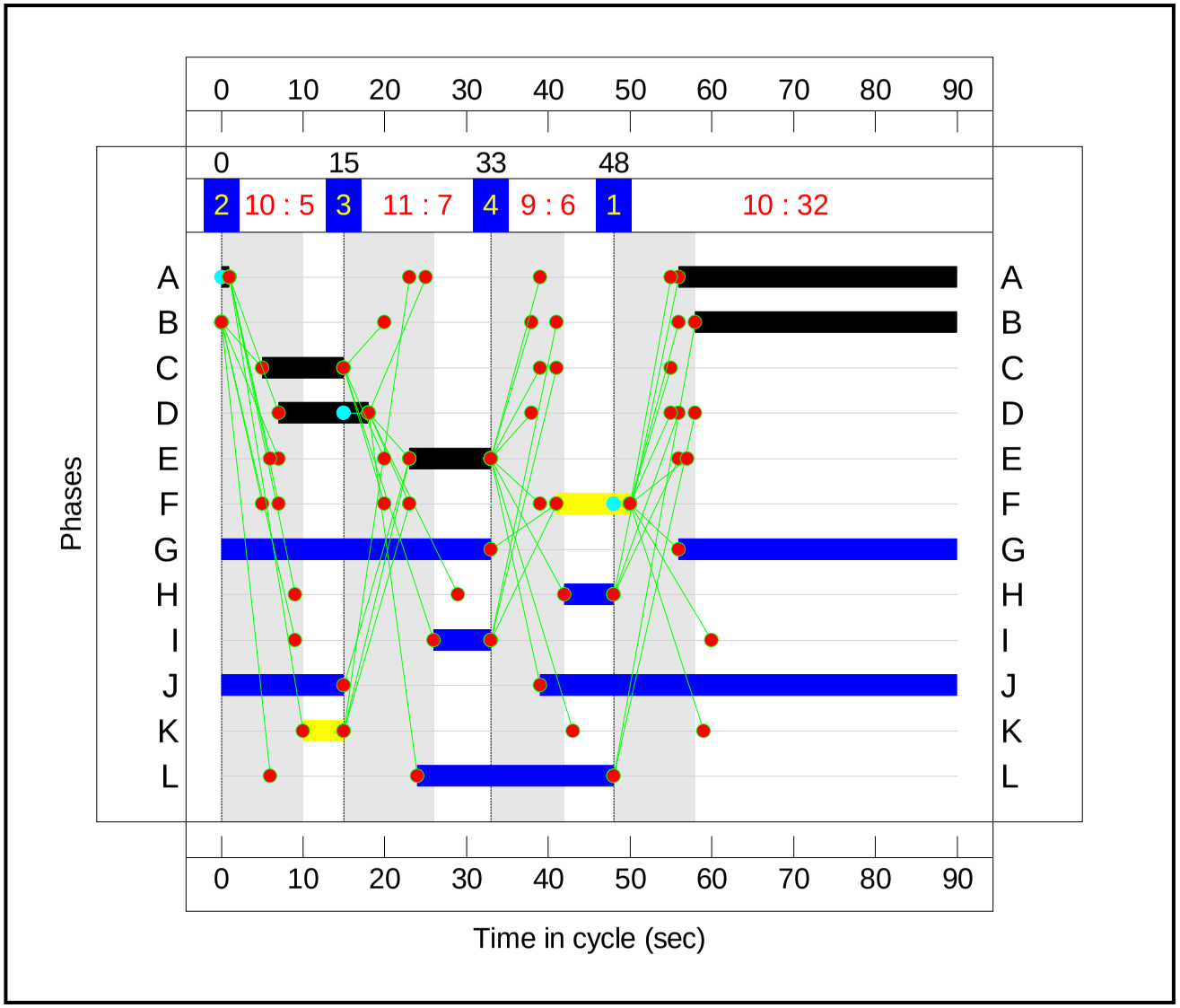
		Starting Phase											
		A	B	C	D	E	F	G	H	I	J	K	L
Terminating Phase	A		-	-	6	5	6	-	8	-	-	9	-
	B	-		5	-	7	5	-	-	9	-	-	6
	C	-	5		-	5	5	-	-	11	-	-	-
	D	7	-	-		5	5	-	11	-	-	-	6
	E	6	5	6	5		6	-	9	-	6	10	-
	F	5	6	5	5	7		6	-	10	-	9	-
	G	-	-	-	-	-	8		-	-	-	-	-
	H	8	-	-	8	8	-	-		-	-	-	-
	I	-	8	8	-	-	8	-	-		-	-	-
	J	-	-	-	-	8	-	-	-	-		-	-
	K	8	-	-	-	8	8	-	-	-	-		-
	L	-	10	-	10	-	-	-	-	-	-	-	

Traffic Flows, Desired

Desired Flow :

		Destination				
		A	B	C	D	Tot.
Origin	A	0	25	45	78	148
	B	42	0	179	636	857
	C	67	105	0	110	282
	D	116	590	210	0	916
	Tot.	225	720	434	824	2203

Signal Timings 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	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.6%**	**0**	**0**	**0**	**31.4**	**-**	**-**
Unnamed Junction	**-**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**87.6%**	**0**	**0**	**0**	**31.4**	**-**	**-**
1/2+1/1	Jamaica Road (west) Left Ahead	U	A		1	35	-	678	2095:1819	848	79.9%	-	-	-	6.3	33.6	16.3
1/3	Jamaica Road (west) Right	U	C		1	10	-	179	1700	208	86.1%	-	-	-	4.6	91.6	7.0
2/1	Bevington Street Right Left Ahead	U	F		1	9	-	148	1700	189	78.4%	-	-	-	3.3	79.7	5.2
3/2+3/1	Jamaica Road (East) Ahead Left	U	B		1	32	-	800	2045:1773	913	87.6%	-	-	-	8.7	39.2	17.1
3/3	Jamaica Road (East) Right	U	D		1	11	-	116	1657	221	52.5%	-	-	-	1.7	53.3	3.2
4/2+4/1	St James' Road Left Ahead Right	U	E		1	10	-	282	1905:1657	328	86.0%	-	-	-	5.7	73.0	6.9
5/1		U	-		-	-	-	720	1800	1800	40.0%	-	-	-	0.4	1.9	8.5
6/1		U	-		-	-	-	225	1800	1800	12.5%	-	-	-	0.1	1.1	0.1
7/1		U	-		-	-	-	824	1800	1800	45.8%	-	-	-	0.5	2.0	10.0
8/1		U	-		-	-	-	434	1800	1800	24.1%	-	-	-	0.2	1.3	0.2

C1 PRC for Signalled Lanes (%): 2.7 Total Delay for Signalled Lanes (pcuHr): 30.32 Cycle Time (s): 90
PRC Over All Lanes (%): 2.7 Total Delay Over All Lanes(pcuHr): 31.39

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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. Chambers Street
b. Bevington Street
c. George Row
d. Jamaica Road between the junction with Bevington Street and the junction with Abbey Street
e. Jamaica Road (A200) / Bevington Street junction
f. Jamaica Road (A200) / George Row junction
g. Jamaica Road (A200) / Abbey Street.

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
Jamaica Road (A200) between the junction with Bevington Street and the junction with Abbey Street	7	0	0	7
Chambers Street	0	0	0	0
Bevington Street	0	0	0	0
George Row	0	0	0	0
Bevington Street / Chambers Street junction	0	0	0	0
Bevington Street / Scott Lidgett Crescent junction	2	0	0	2

Location	Slight	Serious	Fatal	Total
George Row/Wolseley Street junction	1	0	0	1
George Row/John Felton Road junction	0	1	0	1
Jamaica Road/George Row junction	4	0	0	4
Jamaica Road/Bevington Street/St James's Road junction	13	1	0	14
Jamaica Road/Abbey Street (B202) junction	7	1	0	8
Total	**34**	**3**	**0**	**37**

D.1.5 During the five year period, a total of 37 road traffic accidents have occurred in the area of interest. Of these accidents, 34 are classified as slight and three are classified as serious.

D.1.6 Road traffic accident analysis for individual junctions and roads within the vicinity of the site is discussed below.

Chambers Street

D.1.7 Chambers Street is the main access road to the site, which leads from Bevington Street in the east to George Row in the west. Chambers Street is a two-way road and 30mph speed limit applies. Over the last five years, no accidents have occurred along Chambers Street.

Bevington Street

D.1.8 Bevington Street is a north-south route which lies to the east of the site. To the north, the two-way street leads to Bermondsey Wall East, and to the south it leads to Jamaica Road (A200).

D.1.9 In total, two accidents occurred along this road from April 2006 to March 2011 (five years) which were recorded as slight. Both accidents happened at its junction with Scott Lidgett Crescent.

D.1.10 One of the accidents involved two cars and the other accident involved a car and a pedal cycle. The major contributory factor in the accidents was reckless driving and not looking properly, not as a result of the road geometry.

George Row

D.1.11 George Row is a two-way road which runs to the west of the site, parallel to Bevington Street. The road links to Bermondsey Wall West to the north and Jamaica Road (A200) to the south. The junction with Jamaica Road (A200) is a give-way T- junction with a turn left only onto Jamaica Road.

D.1.12 There have been a total of two accidents along George Row with one accident that occurred at the junction with Wolseley Street and the other at the junction with John Felton Road.

D.1.13 The accident at the junction with Wolseley Street was recorded as slight involving two cars and mainly resulted from driving carelessly. The accident at the junction with John Felton Road was recorded as serious and involved a Light Goods Vehicle (LGV) and a motorcycle. The accident resulted from drivers failing to look properly and driving recklessly.

D.1.14 Of the accidents occurred along George Row and the junctions associated, none happened as a result of the road geometry.

Jamaica Road (A200)

D.1.15 Jamaica Road (A200) within the study area is a dual carriageway between the junction with Bevington Street and the junction with Abbey Street.

D.1.16 Jamaica Road (A200) runs east-west to the south of the site. To the east, the road meets Brunel Road (B205), Rotherhithe Tunnel (A101), and Lower Road (A200) at a roundabout. To the west, the road leads to Tooley Street (A200) and Druid Street (A200).

D.1.17 In total, 29 accidents have occurred along Jamaica Road (A200) in the local area and at the junctions associated. Those junctions included within this analysis are as follow:

a. Jamaica Road (A200) / Bevington Street / St James's Road junction;

b. Jamaica Road (A200) / George Row junction; and

c. Jamaica Road (A200) / Abbey Street (B202) junction.

D.1.18 Of the total accidents occurred along Jamaica Road in the local area and at the junctions associated, two were classified as serious with one occurring at the junction with Bevington Street and St James's Road which involved a car and a motorcycle, one at the junction with Abbey Street which involved a bus/coach and a pedal cycle.

D.1.19 The major contributory factors in the serious accidents were not as a result of the road geometry, but by drivers not looking properly and failing to judge other person's path or speed.

D.1.20 The remaining 27 accidents were classified as slight with three accidents occurred away from the junctions along Jamaica Road and the remaining 24 accidents happened at the junctions, half of which happened at the junction of Jamaica Road(A200) / Bevington Street / St James's Road.

D.1.21 Of the total slight accidents, six involved pedestrians. Three of these pedestrians were hit at the junction of Jamaica Road (A200) / Bevington Street / St James's Road of whom two were hit by cars and one was hit by a bus/coach. All the three pedestrians were minors. From the time of the accidents, it is assumed that none of the pedestrians were travelling to /from school. Not looking properly was the main cause of these accidents, and the road geometry was not the result of these accidents.

D.1.22 The other three accidents which involved pedestrians occurred along Jamaica Road (A200) in the local area away from junctions. Two of the pedestrians were hit by buses/coaches, and one was hit by a car. Not looking properly and reckless driving were the main causes of the accidents. No accidents involved minors.

D.1.23 Nine of the slight accidents involved pedal cycles collided with other vehicles including taxis, cars, LGVs, and a motorcycle. One of these accidents occurred at the junction of Jamaica Road (A200) / Abbey Street, two at the junction of Jamaica Road (A200) / George Row, and the remaining six accidents happened at the junction of Jamaica Road (A200) / Bevington Street / St James's Road junction. These accidents mainly caused by not looking properly, failing to judge other person's path or speed, and reckless driving, and not as a result of the road geometry.

D.1.24 Four of the slight accidents involved LGVs colliding with motorcycles, and one LGV hit a crossing. Three of these accidents happened at the junction of Jamaica Road (A200) / Abbey Street, and one occurred at the junction of Jamaica Road (A200) / George Row. Failing to look properly, failing to signal, and poor manoeuvre were the main causes of these accidents.

D.1.25 The remaining eight slight accidents involved cars and motorcycles which occurred at the junctions associated with Jamaica Road (A200) in the local area. The accidents mainly caused by not looking properly, failing to judge other person's path or speed, poor manoeuvre, and reckless driving.

D.1.26 Of the accidents occurred along Jamaica Road (A200) and the junctions associated, none happened as a result of the road geometry.

D.2 Summary and conclusion

D.2.1 Of the five year accident data analysed, the largest number of road traffic accidents occurred at the junction of Jamaica Road (A200) / Bevington Street / St James's Road, with one serious accident and 13 slight accidents.

D.2.2 In total four serious accidents occurred in the area of interest and no fatal accident happened in the vicinity of the site over the five year accident data analysis.

D.2.3 Of the total accidents, six involved LGVs which led to slight accidents. Six of the total accidents involved pedestrians, three of them were hit at the junction of Jamaica Road (A200) / Bevington Street / St James's Road and all three were minors. The other three pedestrians were hit along Jamaica Road (A200) in the local area away from junctions and none of them were minors. Of the pedestrians hit in the area of interest, none was hit by Goods Vehicles.

D.2.4 In case of the majority of accidents within the study area, not looking properly, failing to judge other person's path or speed and reckless driving were the main causes of accidents, and none of the accidents considered to be due to road geometry or failure of infrastructure.

Appendix E: Road Safety Audits

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Thames Water Utilities

Thames Tideway Tunnel - Chambers Wharf

Stage 1 Road Safety Audit

Project Ref: 27016/033

Doc Ref: 001

February 2013

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Document Control Sheet

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

Project Ref: **27016/033**

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

Doc Ref: **001**

Date: **February 2013**

	Name	Position	Signature	Date
Prepared by:	James Horne	Senior Engineer		14th February 2013
Reviewed by:	Philip Edwards	Principal Engineer		14th February 2013
Approved by:	Alan Fry	Divisional Director		14th February 2013
For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved

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 Chambers Wharf, Southwark site and considers both the situation during the construction phase and post construction. At this location an existing brownfield plot will be developed into new access facility for the proposed sewer network.

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

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

- Construction Phases:-
    - Suspending some existing parking bays in Bevington Street and Chambers Street in order to accommodate the passage of large construction vehicles accessing the site;
    - Constructing a pedestrian crossing point with refuge island and associated guard railing in Bevington Street;
    - Estimated 110 construction vehicles per day between 8:00 and 18:00;
- Operational Phase:-
    - Highway layout to be returned to its current layout i.e. parking bays reinstated and pedestrian crossing point removed;
    - 6 monthly maintenance access required by transit van;
    - 10 yearly maintenance required by rigid HGV / mobile crane – parking bays suspended as required for short term maintenance activity;

1.5 The Audit Team Membership was as follows:-

Audit Team Leader:-

James Horne Peter Brett Associates, Northampton

Team member:-

Philip Edwards Peter Brett Associates, Northampton

The Audit Team are independent of the Design Team.

1.6 The Audit took place during December 2012 / January / February 2013. The Audit Team visited the site on 6th December 2012 between 08:15 and 08:30. The weather during the site visit was cold but sunny. 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 describe 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 2011). 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 - General

Summary - Access to Site Potentially Restricted

The proposals indicate that the existing parking bays along Bevington Street and Chambers Street will be temporarily suspended for the duration of the Construction phase in order to facilitate access to the site for large vehicles. However, it is unclear how the proposals will prevent on-street parking within these temporarily suspended parking bays and maintain an unobstructed route to the site.

Recommendation

Temporary Traffic Regulation Orders should be made and waiting restrictions applied within the appropriate lengths of Bevington Street and Chambers Street in order to ensure access to site is not restricted by parked vehicles.

2.2 Problem

Location - General

Summary - Issues with Swept Paths Analysis

The swept path analysis undertaken for both the Construction and the Operational phases indicates that the Design Vehicles, when performing some manoeuvres, will overhang the adjacent footway thus potentially endangering pedestrians. It is noted that the speed at which the swept path analysis has been carried out at is 5kph. This is a very slow speed and in some locations, eg. turning from A200 Jamaica Road into Bevington Street, or proceeding along Bevington Street it would appear likely that site delivery vehicles will be travelling at a higher speed. There is a risk of large vehicles overrunning the footway, straddling lanes when they turn and braking unexpectedly at the junction.

Recommendation

Notwithstanding that the swept path analysis has been undertaken using Ordnance Survey data, (not topographical survey) the effect on the swept paths of vehicles travelling at a more realistic speed should be checked. Where necessary, measures should be provided to prevent large vehicles overrunning the footway and to protect pedestrians. It may also be necessary to review the extent of the proposed parking bay suspensions.

2.3 Problem

Location - Jamaica Road / Bevington Street / St. James' Road Signalised Junction

Summary - Potential Cyclist / Vehicle Conflict

The cross section of the Jamaica Road eastbound approach arm has 3 running lanes with an Advanced Stop Line (ASL) and an advisory cycle lane with Lane 1. Straight ahead and left turn movements are permitted from Lane 1. The scheme proposals will increase the number and frequency of large construction vehicles turning left into Bevington Street from Jamaica Road at this arm. This may increase the potential for conflict between left turning construction vehicles and cyclist travelling straight ahead. Further to 2.2 above, a large vehicle making this left turn may stand-off from the nearside kerb and swing wide, which could further increase the risk of a cyclist being dangerously positioned on the nearside of a left turning vehicle.

Recommendation

Measures should be provided in order to mitigate the risk of collisions between cyclists and left turning vehicles. This could include the provision of additional temporary signs advising cyclist of 'construction traffic' turning left at this junction should be provided, as well as additional cycle awareness signs for motorists.

2.4 Problem

Location - Chambers Street

Summary - Potential Pedestrian / Vehicle Conflict

A number of pedestrians were observed walking on the northern side of Chambers Street, although for much of its length, this side of Chambers Street does not have defined footway provisions. Furthermore, it is noted that the Thames Path also leaves the river bank and is effectively diverted around Chambers Wharf depot site via. Chambers Street. The increase in the number and frequency of large construction vehicles along Chambers Street, generated by the scheme proposals, may place pedestrians at greater risk.

Also, there are high sided hoardings along the perimeter of the Chambers Wharf depot site. These hoardings severely restrict pedestrian / vehicular intervisibility between drivers exiting the site at the proposed access and pedestrians walking on the northern side of Chambers Street.

Recommendation

The existing footway on the northern side of Chamber Street may need to be upgraded or else a barrier could be provided to create separation between the footway and carriageway.

The detailed design for the site access should ensure that there is adequate intervisibility for drivers / pedestrians at the back of the footway. The hoarding may need to be locally realigned adjacent to the site access.

2.5 Problem

Location - Bevington Street / Chambers Street Junction

Summary - Potential Pedestrian / Vehicle Conflict

It is proposed to install pedestrian guard rail in the eastern footway of Bevington Street for approximately 15m northwards from the proposed pedestrian crossing point. There is a footpath link from Emba Street which joins Bevington Street north of the proposed guardrail. Pedestrians using this footpath link may cross Bevington Street to / from Chambers Street directly in line with the footway link and effectively walk across the centre of the junction, potentially in conflict with the site traffic.

Recommendation

Given that it is proposed to provide a section of pedestrian guardrail, it is recommended that this railing is extended to the north sufficiently to deter pedestrians from crossing within the bellmouth of the Bevington Street / Chambers Street junction.

Operational Phase (Post Construction)

No problems identified that this stage.

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:	James Horne	Signed: 
Position:	Senior Engineer	Date: 14th February 2013
Organisation:	Peter Brett Associates	
Address:	11 Prospect Court Courteenhall Road Blisworth Northamptonshire NN7 3DG	

Audit Team Members:

		
Name:	Philip Edwards	Signed:
Position:	Principal Engineer	Date: 14th February 2013
Organisation:	Peter Brett Associates	
Address:	11 Prospect Court Courteenhall Road Blisworth Northamptonshire NN7 3DG	

Appendix A

Appendix A

Information Utilised in this Stage 1 Road Safety Audit:-

- Figure 20.2.1 – Site Location Plan;
- Figure 20.2.2 – Construction Traffic Routes;
- Figure 20.4.7 – Accident Locations;
- DCO-PP-19X-CHAWF-210003- Access Plan;
- DCO-PP-19X-CHAWF-210007– Permanent Works Layout;
- DCO-PP-19X-CHAWF-210014– Construction Phases – Phase 1 Site Setup;
- DCO-PP-19X-CHAWF-210015– Construction Phases – Phase 2 Shaft Construction;
- DCO-PP-19X-CHAWF-210016– Construction Phases – Phase 3 Tunnelling;
- DCO-PP-19X-CHAWF-210022- Existing Highway Layout;
- DCO-PP-19X-CHAWF-210023– Highway Layout During Construction;
- DCO-PP-19X-CHAWF-210024– Permanent Highway Layout;
- DCO-PP-19X-CHAWF-210025– Highway Layout During Construction Vehicle Swept Path Analysis;
- DCO-PP-19X-CHAWF-210026– Permanent Highway Layout Vehicle Swept Path Analysis;
- 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 Plan – Figure 1

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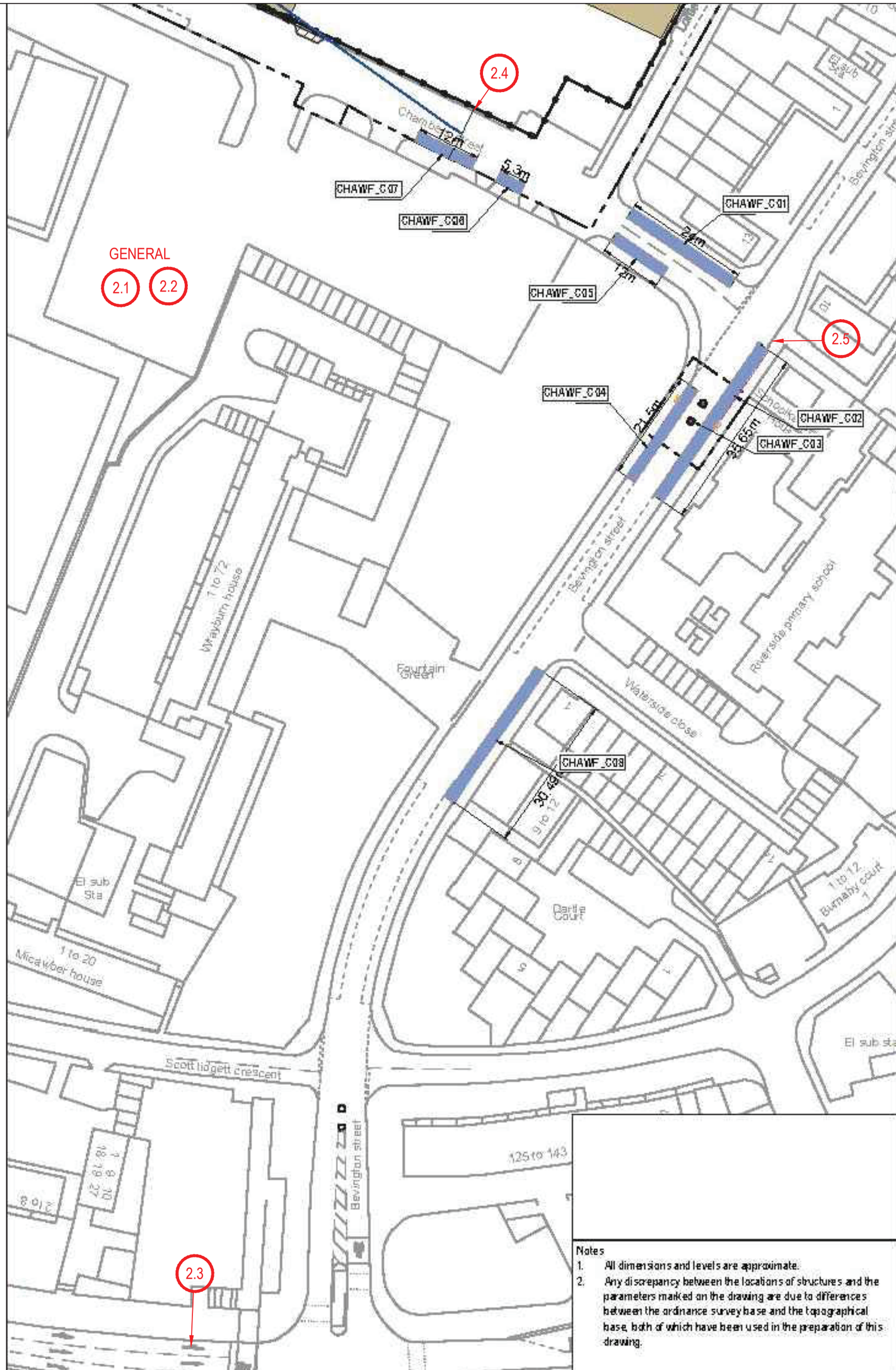

pba peterbrett
Offices throughout the UK and Europe
www.peterbrett.com

NORTHAMPTON
Tel: 01604 878300

Client

THAMES WATER UTILITIES

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.

THAMES TIDEWAY TUNNEL
CHAMBERS WHARF

SITE REFERENCE PLAN

Mark	Revision	Drawn	Date	Chkd

Drawing Status: STAGE 1 ROAD SAFETY AUDIT

Date of 1st Issue	15/02/13
A3 Scale	N.T.S.
Drawn by	SB
Checked by	PE

Drawing Number: FIGURE 1
J:\Safety Audits\27016 Thames Tunnel\Acad\dwg\27016_SIRSA_001 - FIGURE 1.dwg

Revision: -

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Technical Note

ARUP

13 Fitzroy Street
London
W1T 4BQ
United Kingdom
www.arup.com

t +44 20 7636 1531
d +44 20 7755 4752

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 Chambers Wharf		

1 Introduction

This report is the Designer's Response to the Stage 1 Road Safety Audit Report for Chambers Wharf completed on 14 February 2013.

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

2.1 Problem –

Location: *General*

Summary: *Access to site potentially restricted*

Description: The proposals indicate that the existing parking bays along Bevington Street and Chambers Street will be temporarily suspended for the duration of the Construction phase in order to facilitate access to the site for large vehicles. However, it is unclear how the proposals will prevent on-street parking within these temporarily suspended parking bays and maintain an unobstructed route to the site.

Recommendation: Temporary Traffic Regulation Orders should be made and waiting restrictions applied within the appropriate lengths of Bevington Street and Chambers Street in order to ensure access to site is not restricted by parked vehicles.

Designer's response

Agree with the recommendation. Exact type and length of traffic restrictions to be reviewed at detail design (stage 2) of the project to enable construction vehicle access along Chambers Street and Bevington Street.

2.2 Problem –

Location: *General*

Summary: *Issues with Swept Paths Analysis*

Description: The swept path analysis undertaken for both the Construction and the Operational phases indicates that the Design Vehicles, when performing some manoeuvres, will overhang the adjacent footway thus potentially endangering pedestrians. It is noted that the speed at which the swept path analysis has been carried out at is 5kph. This is a very slow speed and in some locations, eg. turning from A200 Jamaica Road into Bevington Street, or proceeding along Bevington Street it would appear likely that site delivery vehicles will be travelling at a higher speed. There is a risk of large vehicles overrunning the footway, straddling lanes when they turn and braking unexpectedly at the junction.

Recommendation: Notwithstanding the fact that the swept path analysis has been undertaken using Ordnance Survey data (and not topographical survey data), the effect on the swept paths of vehicles travelling at a more realistic speed should be checked. Where necessary, measures should be provided to prevent large vehicles overrunning the footway and to protect pedestrians. It may also be necessary to review the extent of the proposed parking bay suspensions.

Designer's response

Recommendation noted. The vehicle swept path analysis will be amended in detail design (stage 2) to ensure all manoeuvres can be completed without overhanging the adjacent footways and that vehicle speeds are appropriate

2.3 Problem –

Location: *Jamaica Road (A200) / Bevington Street / St. James' Road signalised junction*

Summary: *Potential cyclist / vehicle conflict*

Description: The cross section of the Jamaica Road eastbound approach arm has 3 running lanes with an Advanced Stop Line (ASL) and an advisory cycle lane with Lane 1. Straight ahead and left turn movements are permitted from Lane 1. The scheme proposals will increase the number and frequency of large construction vehicles turning left into Bevington Street from Jamaica Road at this arm. This may increase the potential for conflict between left turning construction vehicles and cyclist travelling straight ahead. Further to 2.2 above, a large vehicle making this left turn may stand-off from the nearside kerb and swing wide, which could further increase the risk of a cyclist being dangerously positioned on the nearside of a left turning vehicle.

Recommendation: Measures should be provided in order to mitigate the risk of collisions between cyclists and left turning vehicles. This could include the provision of additional temporary signs advising cyclist of 'construction traffic' turning left at this junction should be provided, as well as additional cycle awareness signs for motorists.

Designer's response

Recommendation noted. Measures set out in the *CoCP* described in the Chambers Wharf *Transport Assessment* 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 Chambers Wharf site, the risk to all road-users would be managed by the contractor(s) in accordance with the provisions made under the Traffic Signs Manual Chapter 8 - Traffic Safety Measures and Signs for Road Works. This would include compliance with TfL guidance (Cyclists at Roadworks – Guidanceii) to ensure safe passage for cyclists.

2.4 Problem –

Location: *Chambers Street*

Summary: *Potential pedestrian / vehicle conflict*

Description: A number of pedestrians were observed walking on the northern side of Chambers Street, although for much of its length, this side of Chambers Street does not have defined footway provisions. Furthermore, it is noted that the Thames Path also leaves the river bank and is effectively diverted around Chambers Wharf depot site via. Chambers Street. The increase in the number and frequency of large construction vehicles along Chambers Street, generated by the scheme proposals, may place pedestrians at greater risk.

Also, there are high sided hoardings along the perimeter of the Chambers Wharf depot site. These hoardings severely restrict pedestrian / vehicular intervisibility between drivers exiting the site at the proposed access and pedestrians walking on the northern side of Chambers Street.

Recommendation: The existing footway on the northern side of Chamber Street may need to be upgraded or else a barrier could be provided to create separation between the footway and carriageway.

The detailed design for the site access should ensure that there is adequate intervisibility for drivers / pedestrians at the back of the footway. The hoarding may need to be locally realigned adjacent to the site access.

Designer's response

Recommendation noted. Measures to mitigate use of the northern footway of Chambers Street will be reviewed at detail design (stage 2).

2.5 Problem –

Location: *Bevington Street / Chambers Street junction*

Summary: *Potential pedestrian / vehicle conflict*

Description: It is proposed to install pedestrian guard rail in the eastern footway of Bevington Street for approximately 15m northwards from the proposed pedestrian crossing point. There is a footpath link from Emba Street which joins Bevington Street north of the proposed guardrail. Pedestrians using this footpath link may cross Bevington Street to / from Chambers Street directly in line with the footway link and effectively walk across the centre of the junction, potentially in conflict with the site traffic.

Technical Note

211146-04 15 February 2013

Recommendation: Given that it is proposed to provide a section of pedestrian guardrail, it is recommended that this railing is extended to the north sufficiently to deter pedestrians from crossing within the bellmouth of the Bevington Street / Chambers Street junction.

Designer's response

Recommendation noted. The extension of pedestrian guard rail to the north will be reviewed at detail design (stage 2). This should be discussed and agreed with the London Borough (LB) of Southwark as their current general policy is to not install new sections of pedestrian guardrail.

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: **7.10.17**

Chambers Wharf

Figures

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

Hard copy available in

Box **52** Folder **B**
January 2013

Thames Tideway Tunnel

Creating a cleaner, healthier River Thames

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Thames Tideway Tunnel

Transport Assessment

Section 20: Chambers Wharf figures

List of contents

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Plans

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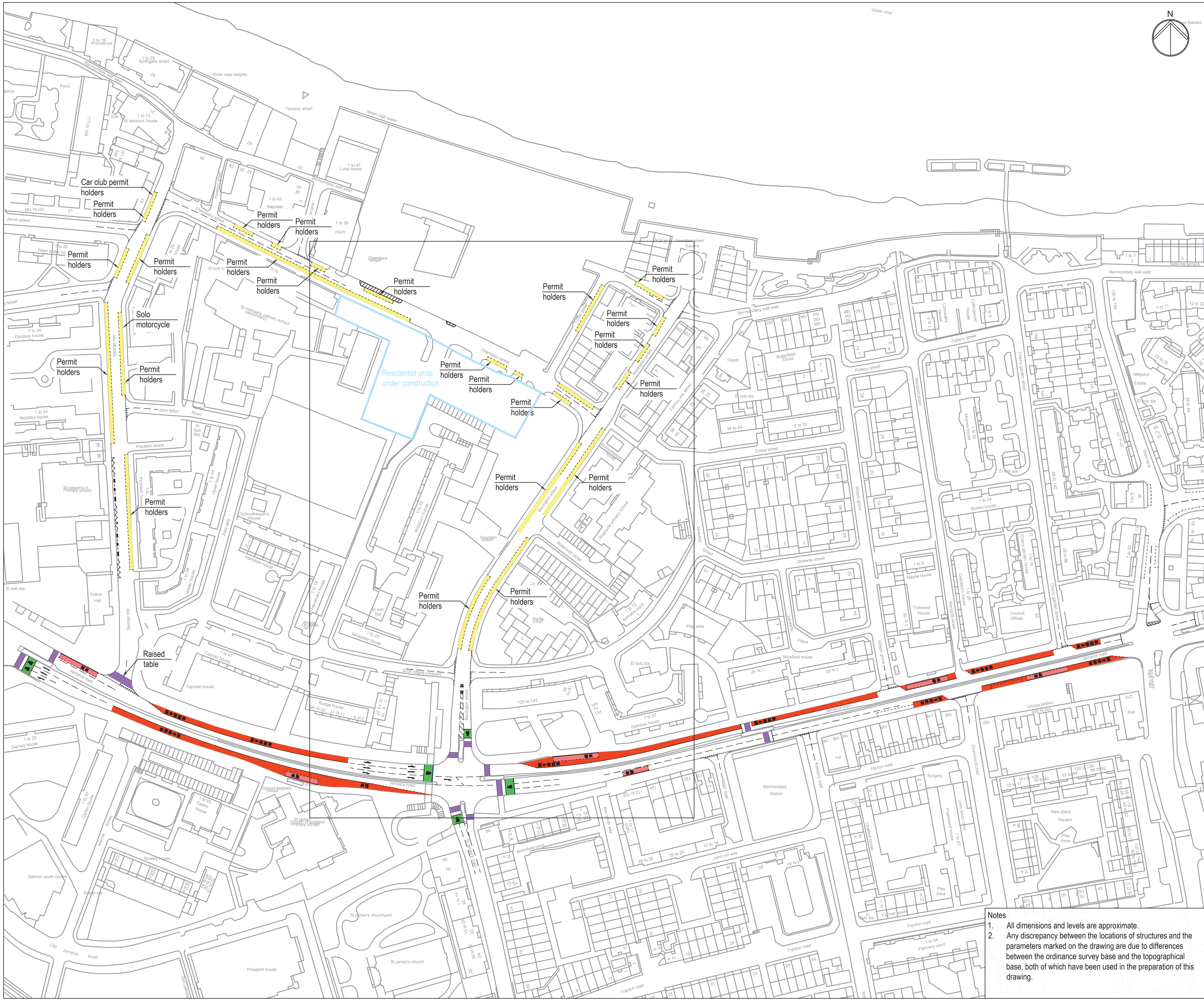
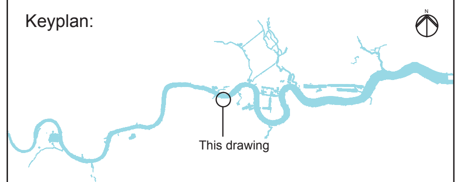
Chambers Wharf

THAMES TIDEWAY TUNNEL - SCHEDULE OF ASSOCIATED HIGHWAY WORKS

Drawing Number	Works Reference	Location	Item of Work	Date of Implementation
DCO-PP-19X-CHAWF-210023	CHAWF_C01	Chambers Street	Suspension of resident parking bay (4 No.)	TBC
	CHAWF_C02	Bevington Street	Suspension of resident parking bay (6 No.)	TBC
	CHAWF_C03	Bevington Street	New pedestrian refuge island to be constructed. Includes dropped kerbs, tactile paving and retro-reflective bollards.	TBC
	CHAWF_C04	Bevington Street	Suspension of resident parking bay (4 No.)	TBC
	CHAWF_C05	Chambers Street	Suspension of resident parking bay (2 No.)	TBC
	CHAWF_C06	Chambers Street	Suspension of resident parking bay (1 No.)	TBC
	CHAWF_C07	Chambers Street	Suspension of resident parking bay (2 No.)	TBC
	CHAWF_C08	Bevington Street	Suspension of resident parking bay (5 No.)	TBC
DCO-PP-19X-CHAWF-210024	CHAWF_P01	Chambers Street	Re-provision of resident parking bay (4 No.)	TBC
	CHAWF_P02	Bevington Street	Re-provision of resident parking bay (7 No.)	TBC
	CHAWF_P03	Bevington Street	Removal of pedestrian refuge island. Includes dropped kerbs, tactile paving and retro-reflective bollards.	TBC
	CHAWF_P04	Bevington Street	Re-provision of resident parking bay (4 No.)	TBC
	CHAWF_P05	Chambers Street	Re-provision of resident parking bay (2 No.)	TBC
	CHAWF_P06	Chambers Street	Re-provision of resident parking bay (1 No.)	TBC
	CHAWF_P07	Chambers Street	Re-provision of resident parking bay (3 No.)	TBC
	CHAWF_P08	Bevington Street	Re-provision of resident parking bay (5 No.)	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
- Bus stop / stand
- Bus lane
- Pedestrian crossing
- Cycle lane / advance stop line

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
Existing

10m 0 100m

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

FOR INFORMATION

Location
Chambers Wharf
London Borough of Southwark

Document Information
Application for Development Consent
Existing highway layout

DCO-PP-19X-CHAWF-210022
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

Highway layout during construction

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
- Bus stop / stand
- Bus lane
- Pedestrian crossing
- Cycle lane / advance stop line

Revised
- L.L.A.U.
- Pedestrian refuge
- Suspended on street parking
- Temporary footway restrictions
- Illustrative on-site manoeuvring zone
- Tactile paving
- Visibility splay - 2.4m x 43m (ssd adjust for bonnet length)
- CHAWF_C00 See schedule of works
- Hoarding line
- Site access
- Guardrail

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 phases

10m 0 40m

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

ILLUSTRATIVE

Location
Chambers Wharf
London Borough of Southwark

Document Information
Application for Development Consent
Highway layout during construction

DCO-PP-19X-CHAWF-210023
January 2013

Notes
1. All dimensions and levels are approximate.
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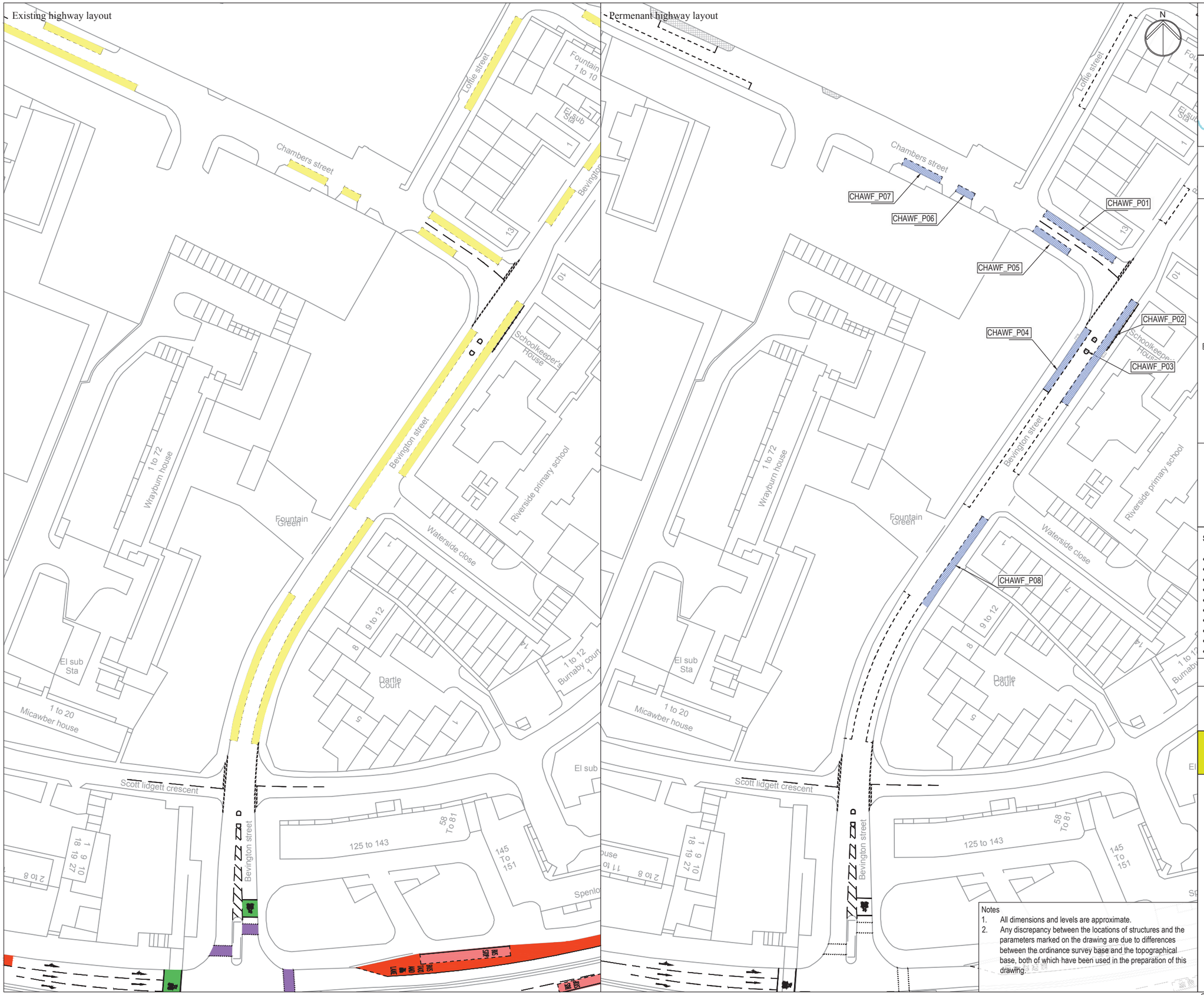
Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

Existing highway layout

Permenant highway layout



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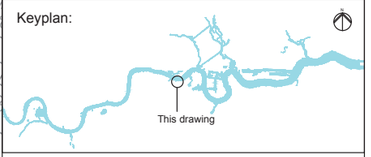


Coordinates are to be Ordance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Key

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

Revised
- Reinstated footway
- Reinstated carriageway
- Reinstated on street parking
- Illustrative on-site manoeuvring zone
- Pwth1x_p00 See schedule of works
- Remove guardrail

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 phases

10m 0 40m

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

ILLUSTRATIVE

Location
Chambers Wharf
London Borough of Southwark

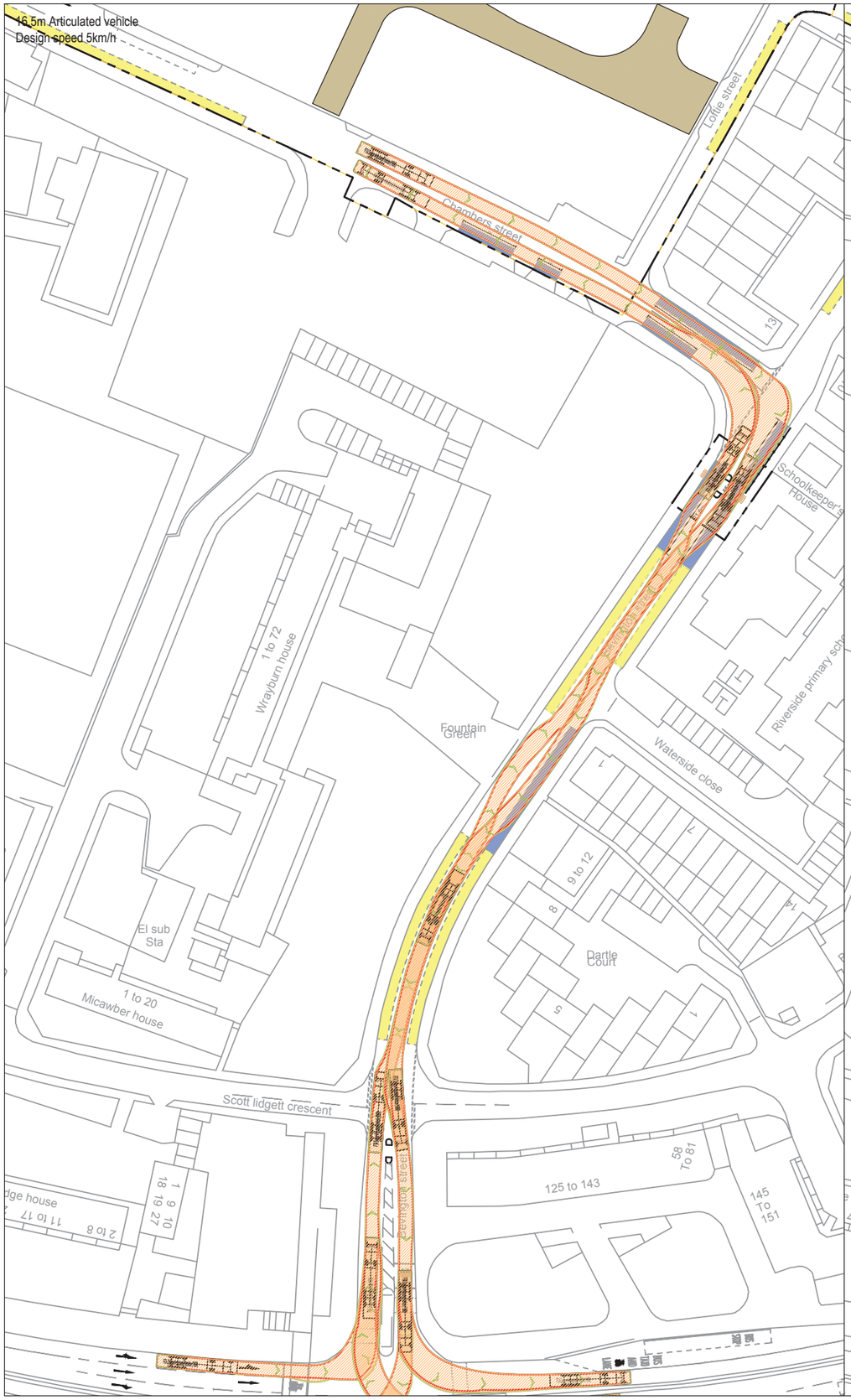
Document Information
Application for Development Consent
Permanent highway layout

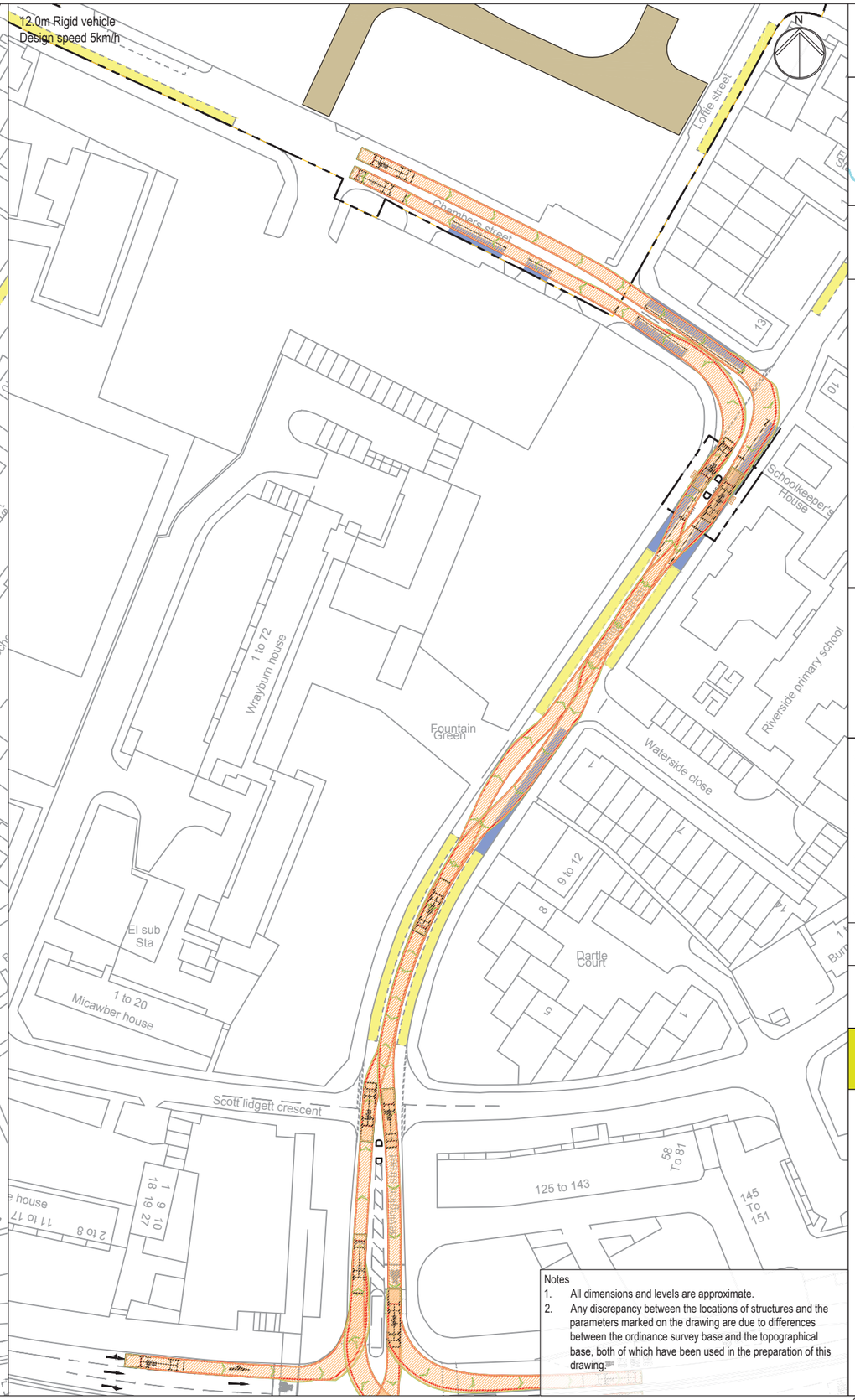
DCO-PP-19X-CHAWF-210024
January 2013

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





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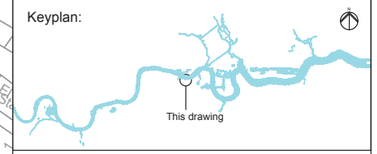
2. Any discrepancy between the locations of structures and the parameters marked on the drawing are due to differences between the ordinance survey base and the topographical base, both of which have been used in the preparation of this drawing.

Keyplan:



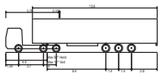
Coordinates are to be Ordance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Key

Revised
- Illustrative on-site manoeuvring zone

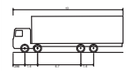
Vehicle swept path analysis
- Vehicle body outlines
- Vehicle chassis outline
- Vehicle swept path
- L.L.A.U.

16.5m Articulated vehicle



Max Legal Articulated Vehicle (16.5m)	
Overall Length	16.500m
Overall Width	2.550m
Overall Body Height	3.833m
Min Body Ground Clearance	0.396m
Max Track Width	2.000m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	8.973m
Design Speed	5km/h

12.0m Rigid vehicle



Rigid Truck	
Overall Length	12.000m
Overall Width	2.550m
Overall Body Height	3.833m
Min Body Ground Clearance	0.412m
Track Width	2.477m
Lock to Lock Time	6.00 sec
Kerb to Kerb Turning Radius	11.000m
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
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- 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 phases

10m 0 40m

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

ILLUSTRATIVE

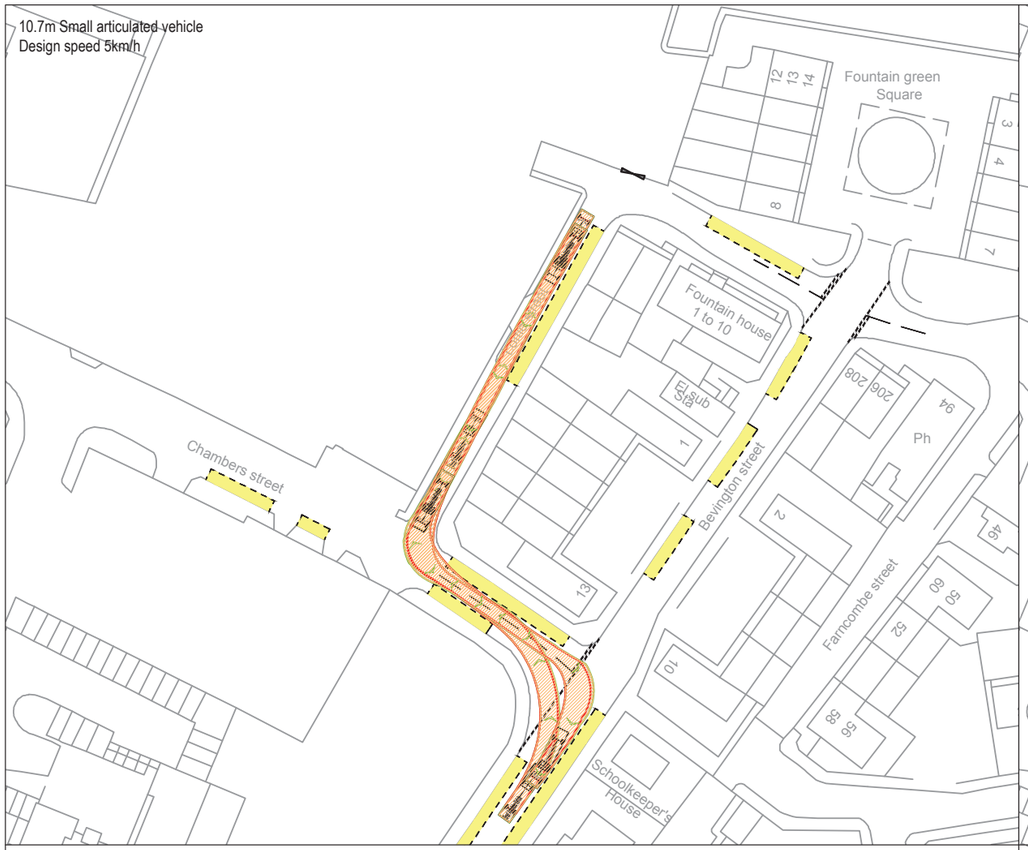
Location
Chambers Wharf
London Borough of Southwark

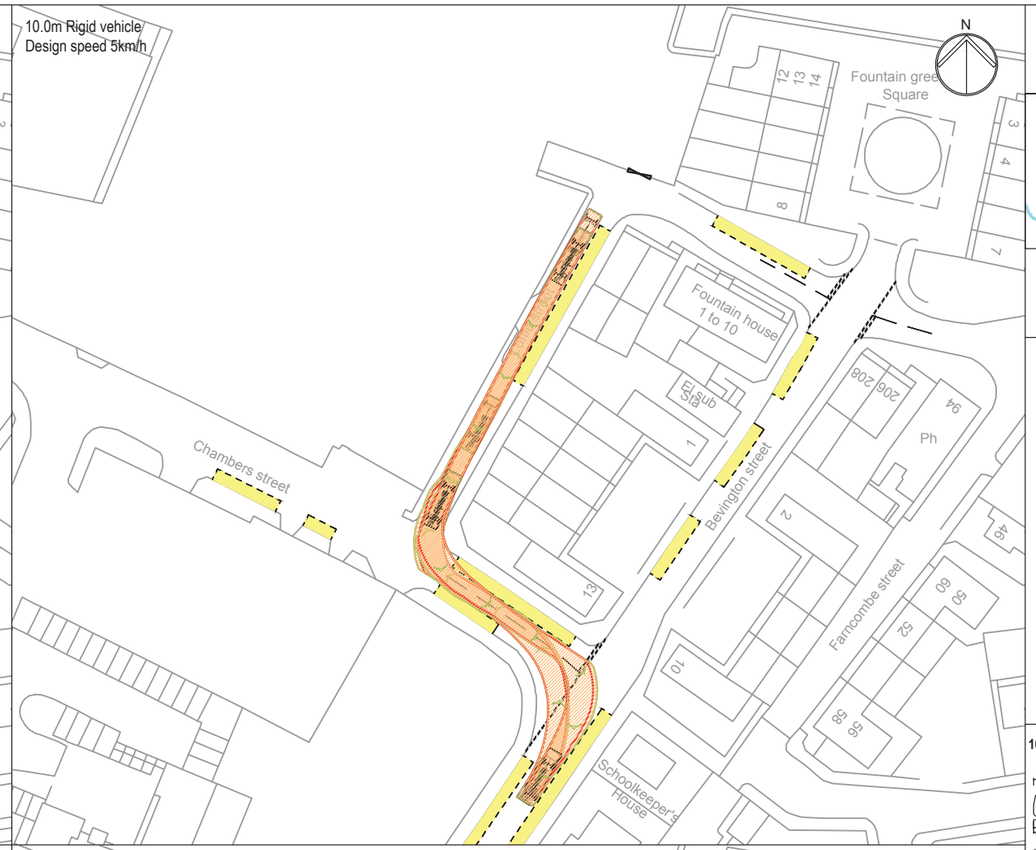
Document Information
Application for Development Consent
Highway layout during construction
Vehicle swept path analysis

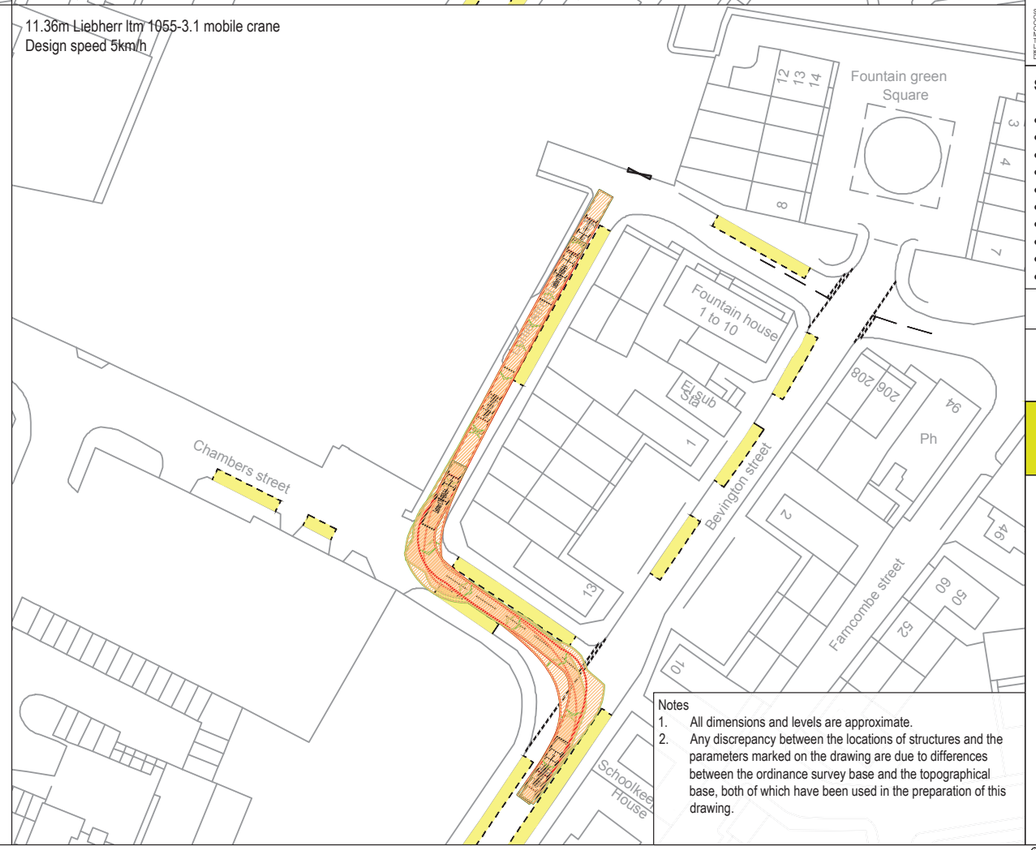
DCO-PP-19X-CHAWF-210025
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water







Notes
1. All dimensions and levels are approximate.
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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

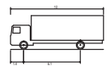
Revised

Illustrative on-site manoeuvring zone

Vehicle swept path analysis

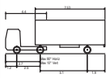
- Vehicle body outlines
- Vehicle chassis outline
- Vehicle swept path

10.0m Rigid vehicle



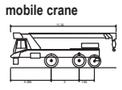
FTA Design HG Rigid Vehicle (1998)	
Overall Length	10.000m
Overall Width	2.500m
Overall Body Height	3.640m
Min Body Ground Clearance	0.440m
Track Width	2.470m
Lock to Lock Time	3.00 sec
Kerb to Kerb Turning Radius	11.000m
Design Speed	5km/h

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	6.00 sec
Kerb to Kerb Turning Radius	5.100m
Design Speed	5km/h

11.36m Liebherr ltm 1055-3.1 mobile crane



Liebherr LTM 1055-3.1 Mobile Crane	
Overall Length	11.360m
Overall Width	2.600m
Overall Body Height	3.733m
Min Body Ground Clearance	0.353m
Track Width	2.600m
Lock to Lock Time	4.00 sec
Wall to Wall Turning Radius	8.170m
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

Permanent phase

10m 0 40m

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

ILLUSTRATIVE

Location

Chambers Wharf
London Borough of Southwark

Document Information

Application for Development Consent

Permanent highway layout
Swept path analysis

DCO-PP-19X-CHAWF-210026
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

Transport assessment figures

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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

Chambers Wharf
London Borough of Southwark

Document Information

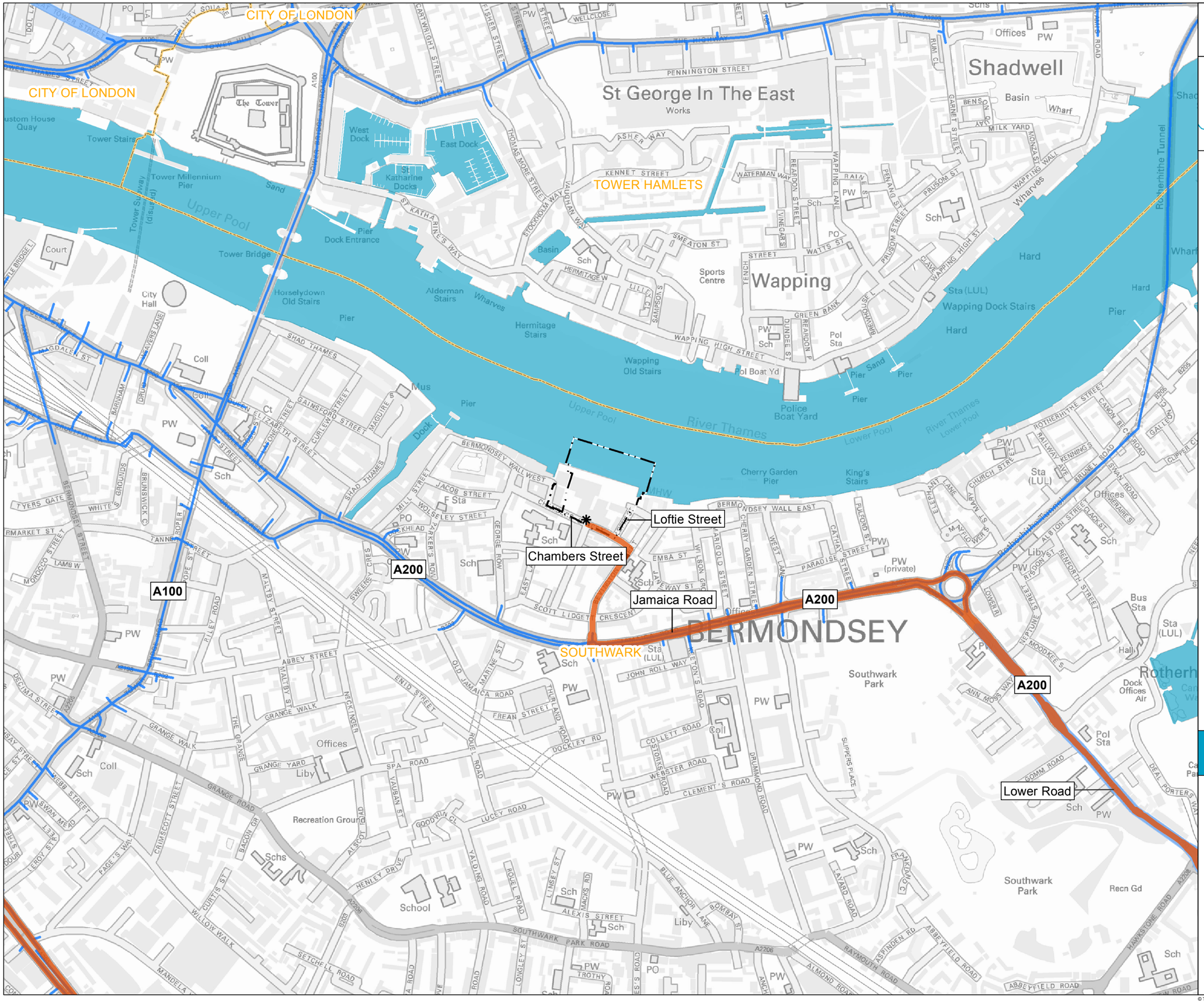
Transport Assessment

Transport - site location plan

Figure 20.2.1
1PL03-TT-50609
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



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Keyplan:

Key

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

110 55 0 110 m

Scale 1 : 7,500 at A3

FOR INFORMATION

Location

Chambers Wharf
London Borough of Southwark

Document Information

Transport Assessment

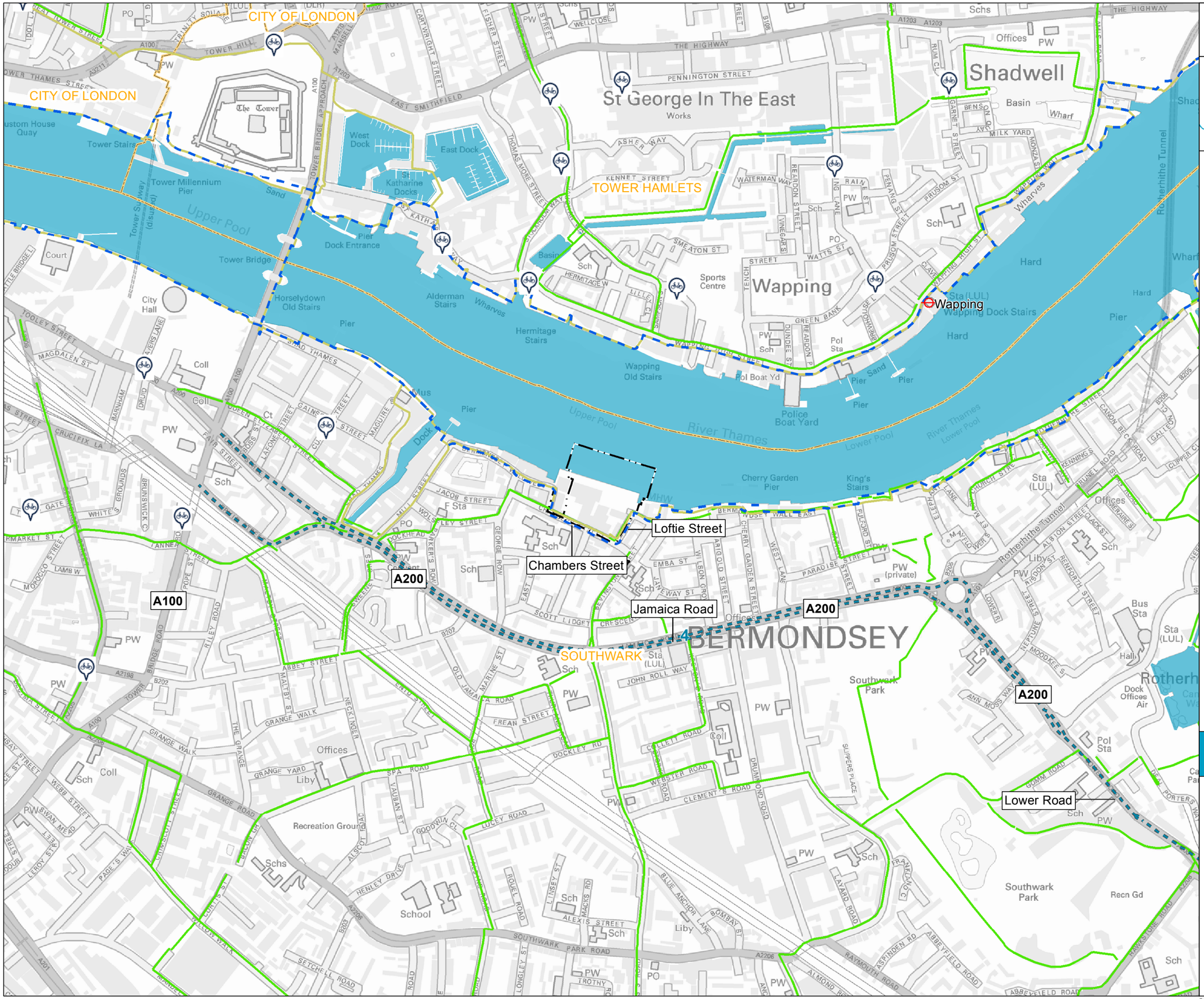
Transport - construction traffic routes

Figure 20.2.2

1PL03-TT-50601
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



Keyplan:

Key

- Underground stations with cycle parking
- Barclays cycle hire locations
- Cycle superhighway (Opening 2015)
- London cycle routes
- London strategic walk network
- 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

Chambers Wharf
London Borough of Southwark

Document Information

Transport Assessment

Transport - pedestrian and cycle network

Figure 20.4.1

1PL03-TT-50617
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

Keyplan:

Key

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

Chambers Wharf
London Borough of Southwark

Document Information

Transport Assessment

Transport - public transport

Figure 20.4.2

1PL03-TT-50625
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

Keyplan:

Key

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

110 55 0 110 m

Scale 1 : 7,500 at A3

FOR INFORMATION

Location

Chambers Wharf
London Borough of Southwark

Document Information

Transport Assessment
Transport - parking

Figure 20.4.3
1PL03-TT-50633
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water

Keyplan:

Key

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

60 30 0 60 m

Scale 1 : 4,000 at A3

FOR INFORMATION

Location

Chambers Wharf
London Borough of Southwark

Document Information

Transport Assessment

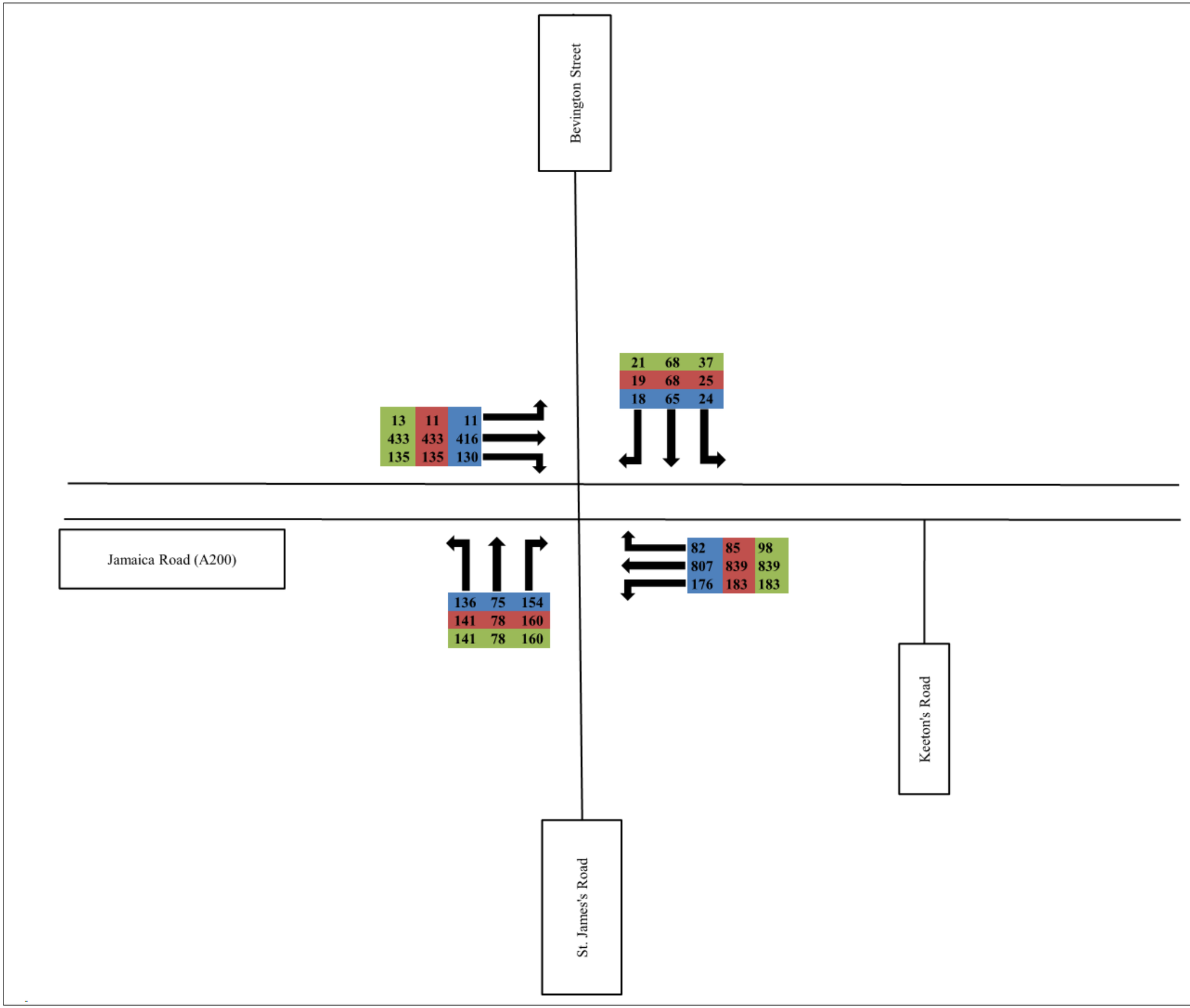
Transport - survey locations

Figure 20.4.4

1PL03-TT-50641
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

Chambers Wharf
London Borough of Southwark

Document Information

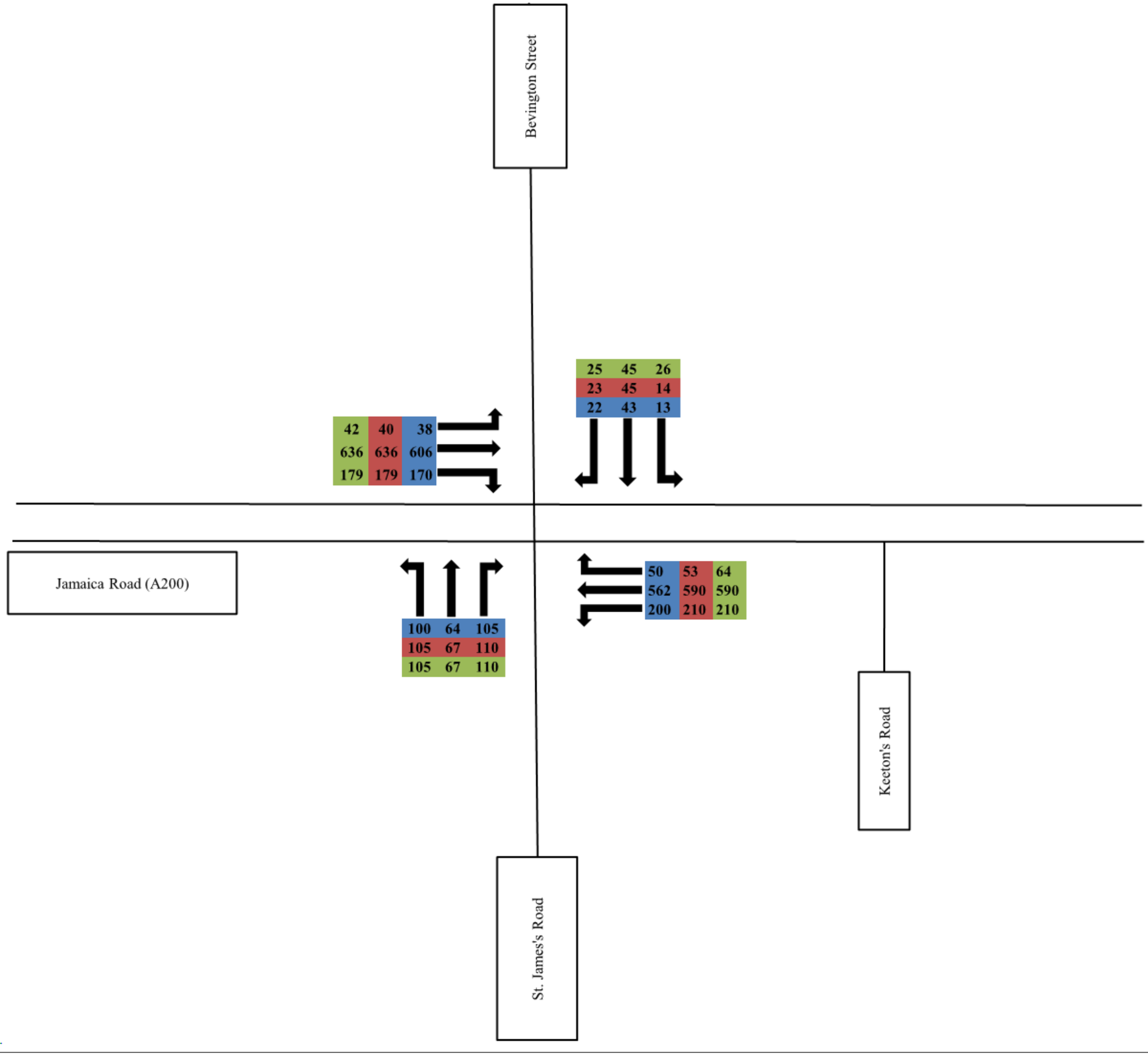
Transport Assessment

Transport - Baseline, Construction and Development case traffic flow (AM peak hour)
Figure 20.4.5

1PL03-TT-50900
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

Chambers Wharf
London Borough of Southwark

Document Information

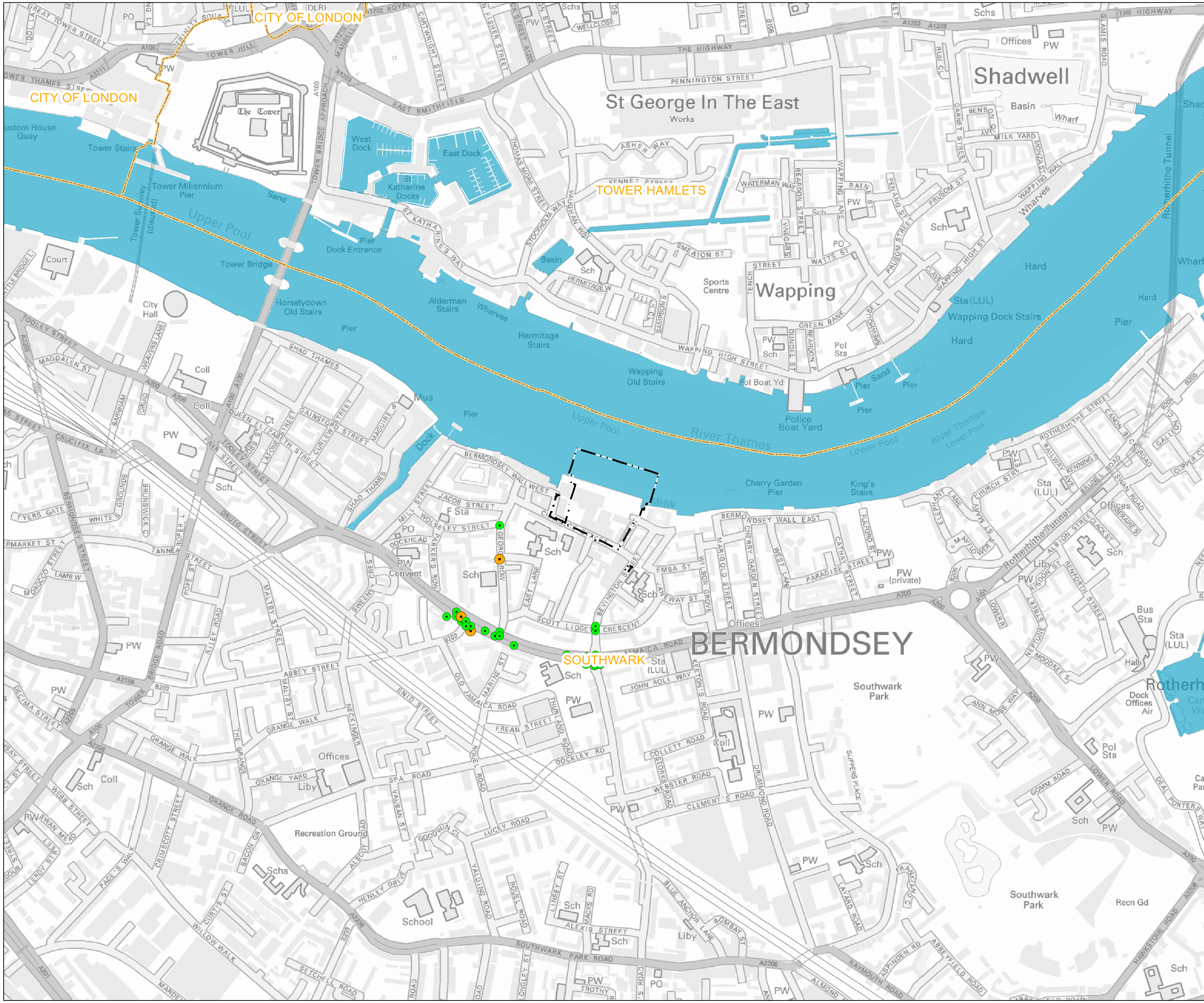
Transport Assessment

Transport - Baseline, Construction and Development case traffic flow (PM peak hour)
Figure 20.4.6

1PL03-TT-50924
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



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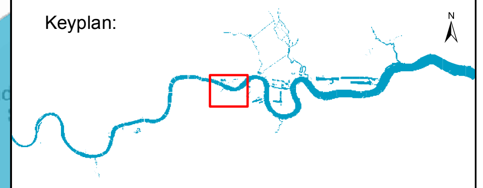
Keyplan:



Key

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

110 55 0 110 m

Scale 1 : 7,500 at A3

FOR INFORMATION

Location

Chambers Wharf

London Borough of Southwark

Document Information

Transport Assessment

Transport - accident locations

Figure 20.4.7

1PL03-TT-50745

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

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

Chambers Wharf
London Borough of Southwark

Document Information

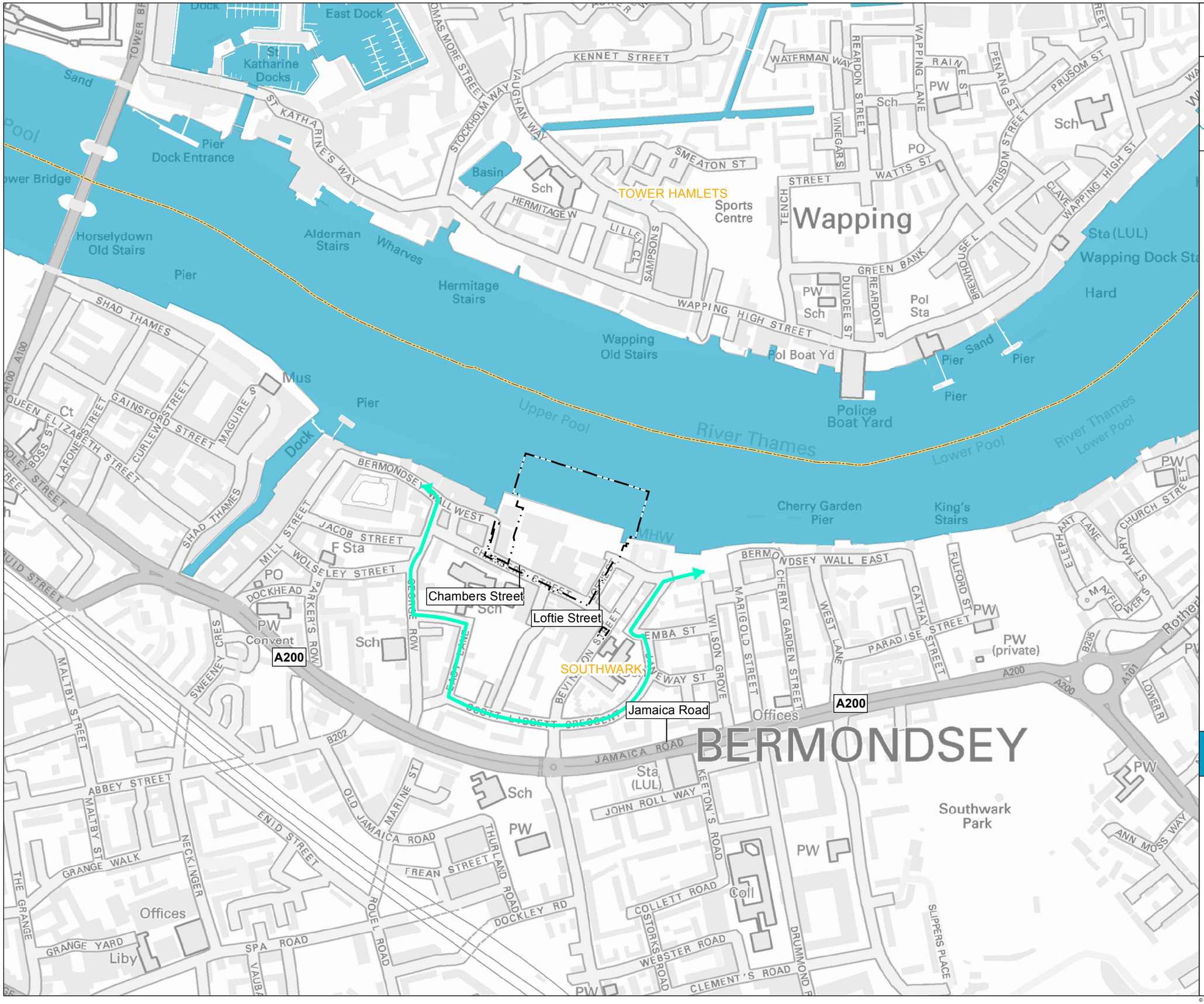
Transport Assessment

Transport - pedestrian and cyclist accidents by severity
Figure 20.4.8

1PL03-TT-50829
January 2013

Thames Tideway Tunnel
Creating a cleaner, healthier River Thames

Thames Water



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Keyplan:

Key

- Proposed cycle diversion
- 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

Chambers Wharf
London Borough of Southwark

Document Information

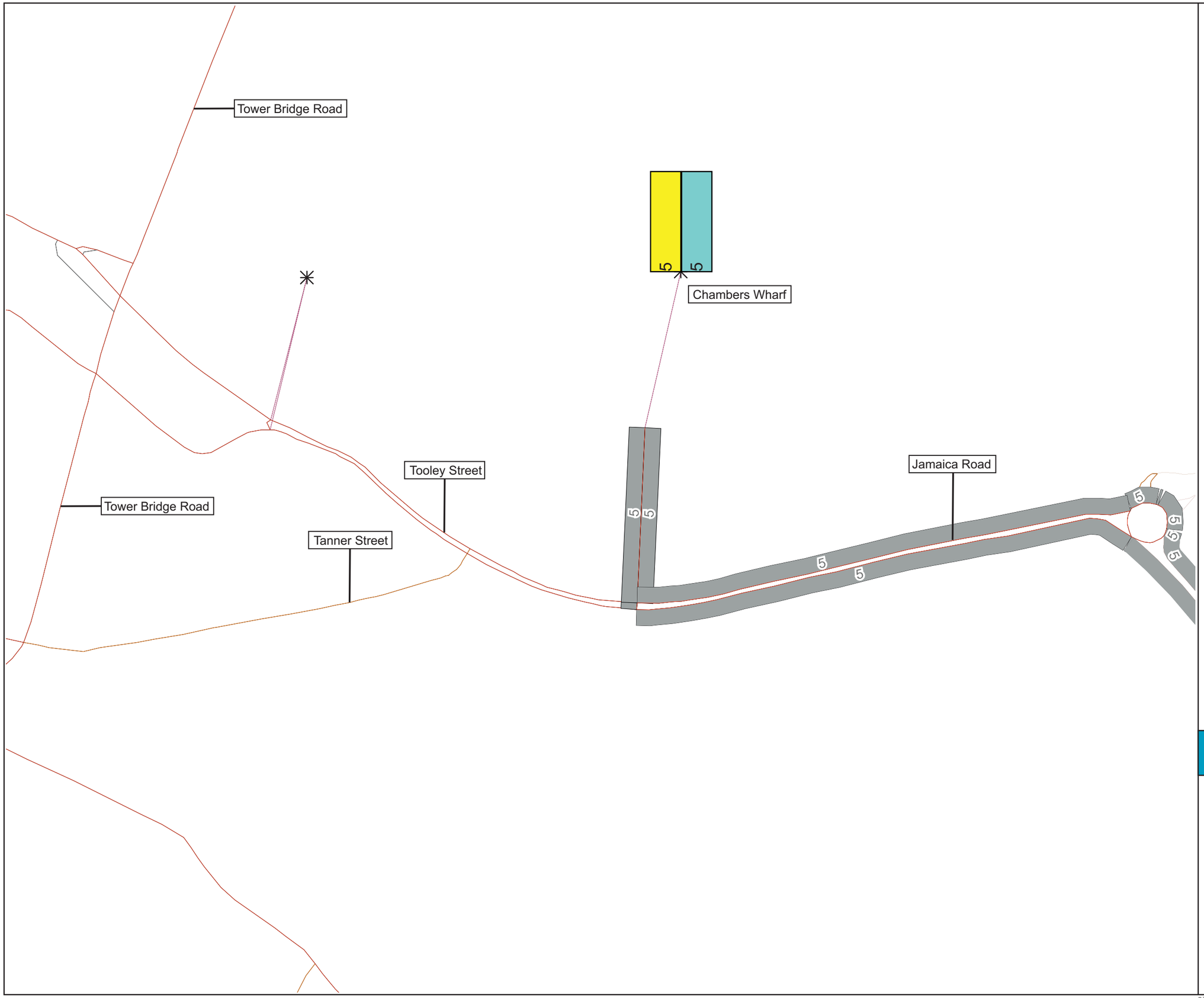
Transport Assessment

Transport - cycle diversion for Chambers Wharf construction phases 1,2,3,4
Figure 20.5.1

1PL03-TT-50768
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

Chambers Wharf
London Borough of Southwark

Document Information

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

Figure 20.5.2

1PL03-TT-50886

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-071017