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traffic and transportation

# Bond Street

## *Stage 1 Traffic Summary*

Produced for The City of Westminster

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## 1 INTRODUCTION

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### 1.1 PURPOSE OF REPORT

- 1.1.1 This report draws together the various reports and technical notes that have been prepared throughout stage 1 of the Bond Street study with particular regard to the traffic elements of the project.

### 1.2 STRUCTURE OF REPORT

- 1.2.1 This report is structured with sections reflecting the elements of the Stage 1 work. The chapters are as follows:
- ▶ Jacobs Initial Traffic Study.
  - ▶ Jacobs Concept Feasibility Study.
  - ▶ Traffic modelling update.
  - ▶ Parking / loading / kerbside activity update.

## 2 JACOBS INITIAL TRAFFIC STUDY – APRIL 2015

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- 2.1.1 The initial traffic study undertaken by Jacobs in April 2015 identified and presented base conditions for cyclists, pedestrians, public transport, and traffic operation. Traffic turning count surveys and Origin / Destination surveys were undertaken and the results of these surveys are summarised in this report. Initial analysis of kerbside activity was also undertaken.
- 2.1.2 The Jacobs initial traffic study identified and set out Strategy options for Bond Street. These included:
- ▶ **Strategy Option 1** – One way throughout, network capacity is maintained, no requirement for removal or reassignment of current traffic outside of the Mayfair study area.
  - ▶ **Strategy Option 2** – Two way between Bruton Street & Brook Street and Piccadilly & Burlington Gardens, with sub options to consider further extensions/ permutations of two-way working (eg. northbound across Oxford Street).
  - ▶ **Strategy Option 3** – One way throughout, considering that some loss of network capacity is acceptable in order to maximise public realm benefits on Bond Street. The impact of traffic reassignment outside the Mayfair area is manageable.
  - ▶ **Central area strategy options** – A number of alternative arrangements for allowing traffic movement through the central closed section of Bond Street were considered.
  - ▶ **Two-way strategy options** – A number of alternative two-way traffic arrangements were considered.
- 2.1.3 The feasibility of the Strategy options was examined and assessed against key criteria which included public realm, pedestrian comfort level, cycle amenity and movement, traffic network capacity and resilience, bus accessibility, ease of drop off / pick up, service and loading access, and potential strategic traffic network impact. The results of this analysis demonstrated that Strategy options for two-way on Bond Street did not provide a favourable outcome.
- 2.1.4 Traffic network control and capacity was considered. It was determined that under a one-way arrangement it would potentially be possible to remove traffic signal control from the junction of Grosvenor Street and New Bond Street to be replaced with a form of zebra crossing arrangement. It was also considered possible that controlled access in the form of a pedestrian or access only zone or potentially a restricted parking zone could assist in providing the stated public realm objectives of the scheme.

- 2.1.5 The Initial traffic study provided the following conclusions which were supported by the Project Board:
- ▶ Strategy options 1 & 3 would both provide opportunities for significant benefits to be achieved on New and Old Bond Street.
  - ▶ Two-Way traffic movement on New and Old Bond Street would be unlikely to achieve the aims of the project – specifically due to the impact on parking, loading and traffic network resilience that would result.
  - ▶ It was considered that none of the options to reintroduce traffic movement through the closed central area New Bond Street would be likely to provide significant benefit, but that further study would be required to resolve this issue.
  - ▶ Introducing two-way traffic on Davies Street and Brook Street would be beneficial to the Bond Street scheme as well as providing a general improvement in accessibility, a more civilised street environment, reductions in circulating traffic, and would support general aspirations to remove one-way streets throughout the Mayfair area.
  - ▶ It was recommended that further study involving development of the concept options identified and detailed traffic modelling would be required to identify the final preferred feasibility design.

### **3 JACOBS CONCEPT FEASIBILITY STUDY – SEPTEMBER 2015**

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#### **3.1 INTRODUCTION**

- 3.1.1 The Jacobs Concept Feasibility Study report follows on from the Bond Street Scheme Initial Traffic Study prepared by Jacobs in April 2015. The concept strategy options identified by the Initial Traffic Study have been further developed and assessed against the key scheme objectives to allow the identification of a preferred scheme design which can be approved by the Project and Strategic Boards. The Concept Feasibility Study report outlines this process, provides further analysis on background factors that have influenced design decisions and provides a traffic modelling impact analysis of the preferred Concept Design option arrangement.

#### **3.2 SCHEME OBJECTIVES**

- 3.2.1 The scheme objectives include broad aims such as improving public realm, improving conditions for pedestrians and cyclists, improving the organisation of kerbside vehicle activity, improving road user safety and maintaining traffic network resilience. These have been further clarified through the use of a questionnaire survey of key business stakeholders on New and Old Bond Street. This has enabled the identification of specific objectives that have been used to assess the merits of the Concept Design options and to inform the direction of the development of the preferred Concept Design.

#### **3.3 ADJACENT SCHEMES**

- 3.3.1 The status and progress of schemes that are adjacent to, or cross-over with, the Bond Street scheme are being monitored. The most critical schemes likely to have a direct influence on the development and operation of the Bond Street Scheme are:
- ▶ Mayfair Cycle Grid, and the creation of northbound and southbound quietway cycle routes along the Jubilee Line corridor between Piccadilly to the south and Manchester Square to the north;
  - ▶ The MoDaBe (Mount Street / Davies Street) and Berkeley Square north public realm proposals, which include proposals for the removal of traffic signal control and creation of new public realm around the north side of the Square, and which accommodate Mayfair Cycle Grid proposals;

- ▶ Hanover Square public realm scheme, which seeks to peninsularise the west side of the Square, reduce carriageway widths and remove the complex traffic management arrangements currently provided on the south side of the Square, and which might result in changes to traffic access through the Square.

3.3.2 As these projects develop it is important that the proposed Bond Street Scheme takes into consideration potential impacts that could arise from the changes these schemes may trigger on the local traffic network.

### 3.4 KERBSIDE ACTIVITY

3.4.1 Kerbside activity on New and Old Bond Street has been reviewed in detail based on surveys undertaken by Atkins in April 2014. Key conclusions are:

- ▶ There is generally an over-provision of loading and short term waiting areas, which is reflected by the chaotic nature of this activity on street.
- ▶ The areas provided for parking are generally heavily utilised, but this tends to include a significant proportion of short term activity which could potentially use a time limited bay in the future.
- ▶ The type of kerbside activity varies significantly across the corridor, with generally high proportions of waiting, drop-off and loading throughout.
- ▶ The detailed kerbside analysis has been used to assess draft proposals for kerbside restrictions, which might indicate that the concept scheme arrangement may need some modification or mitigation if it is determined that all the current kerbside activity demands must be maintained or provided for.

### 3.5 CONCEPT DESIGN OPTIONS

3.5.1 The concept design options identified by the Initial Traffic Study included three strategy options. These can be summarised as:

- ▶ Option A - one-way on New Bond Street with a wide single lane carriageway;
- ▶ Option B - two-way on New Bond Street between Conduit Street and Brook Street;
- ▶ Option C - one-way on New Bond Street with a narrow single lane carriageway, signal removal at Maddox Street / New Bond Street and new mid-block pedestrian crossings.

3.5.2 The merits of these options were assessed in detail using a three stage process that encompassed the technical analysis prepared by the design team and the weighting of objectives provided by the stakeholder survey to generate overall scores for each option. The results of this assessment provided a clear indication that the Option 3 layout would provide the greatest benefit and the decision to select Option 3 as the preferred scheme was made by the Project Board and verified by the Strategic Board.

### 3.6 APPROVED CONCEPT SCHEME DESIGN

3.6.1 The approved concept scheme design is shown on the following Jacobs drawings:

- ▶ B2087300-OS-002-1 Bond Street Scheme Concept Design
- ▶ B2087300-OS-002-2 Bond Street Scheme Concept Design

3.6.2 In summary, the approved concept scheme design will provide:

- ▶ significantly wider footways on New and Old Bond Street;
- ▶ modified junction layouts to provide more space for pedestrians and better crossing facilities;
- ▶ easier and safer mid-block crossing movements for pedestrians;

- ▶ an improved environment for cyclists by providing appropriate facilities and lane dimensions in accordance with TfL cycling design guidance;
- ▶ organised loading, servicing and parking arrangements utilising on-footway loading pads for key sections of Bond Street which will be available as footway during times of peak pedestrian flow;
- ▶ significant scope for public realm improvements;
- ▶ removal of the traffic signals at Maddox Street / Grosvenor Street / New Bond Street and replacement with all-around zebra crossings;
- ▶ sufficient carriageway capacity to meet the demand of essential traffic on New Bond Street;
- ▶ an arrangement for Old Bond Street that will provide significant footway width improvements whilst providing for essential traffic movement and loading / servicing and parking activity.

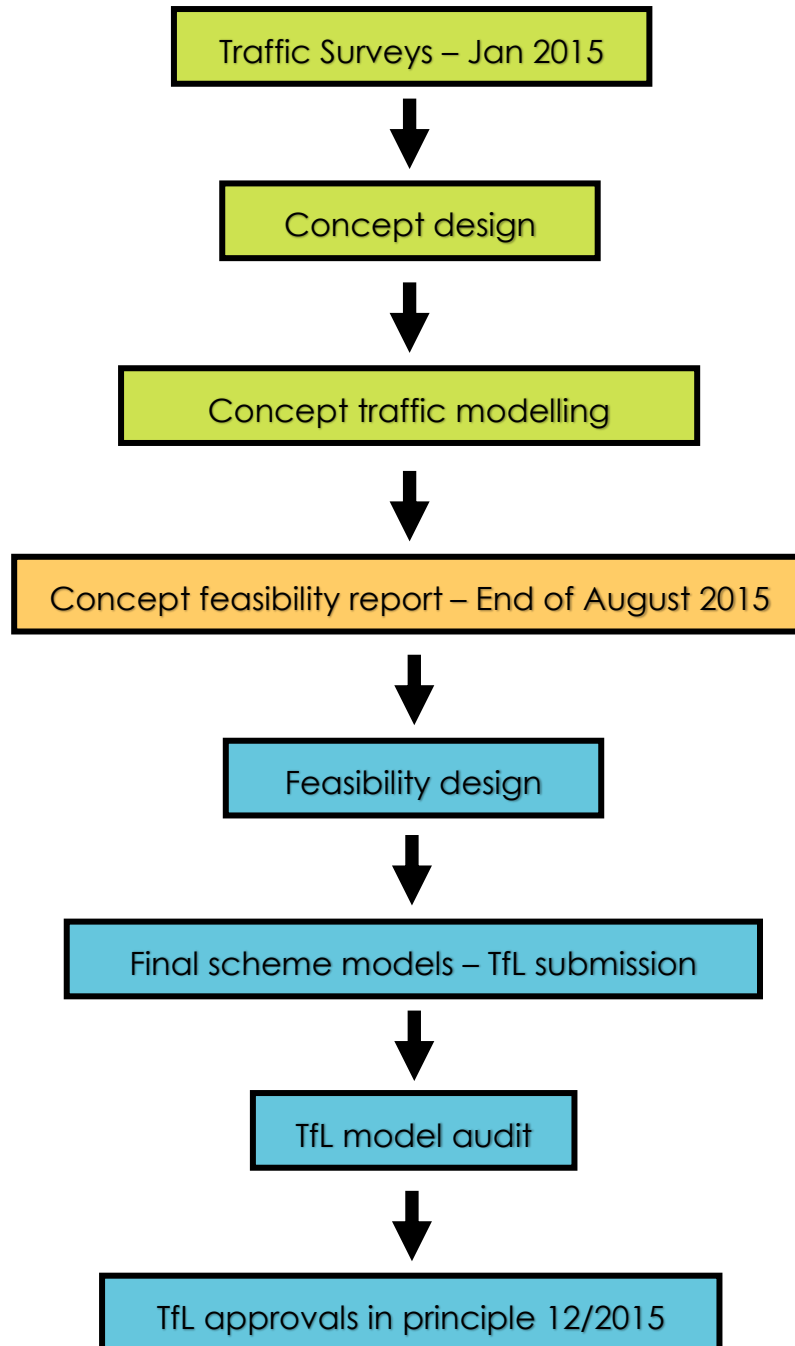
### 3.7 DESIGN DEVELOPMENT

- 3.7.1 A significant amount of design development through discussion with the design team (which included Jacobs, WSP and Publica) has occurred from the concept options set out in Initial traffic study. The details of this process and the changes proposed are provided in the Concept Feasibility Study Report.
- 3.7.2 Initial proposals for kerbside parking and loading restrictions have been developed. The study area has been split into six zones for the purposes of considering kerbside activity. The initial proposals for parking and loading restrictions include the introduction of a restricted parking zone control throughout Bond Street which would operate between Oxford Street and Piccadilly: "No Waiting, No Loading except in signed bays". The proposed restricted zone would vary between Conduit Street and Burlington Gardens: "No Waiting except in signed bays, No Loading 11am-7pm except in signed bays". The design has been developed to provide specific signed bays throughout the scheme including shared footway pads on New Bond Street between Brook Street and Conduit Street.
- 3.7.3 Traffic assignment assumptions have been developed based on the traffic surveys which were undertaken in January 2015. These assumptions are set out in the report on the basis that they will tie into the overall scheme modelling assessment, the methodology for which is summarised below. The essence of the reassignment assumptions is that some southbound traffic will prefer to use the new proposed westbound route on Brook Street and southbound route on Davies Street and that the effect of this is that demand on New Bond Street southbound will be reduced. The scheme has therefore been design accordingly, the main benefit being that with reduced traffic flows a straight, one-way, single-lane street layout can be provided between Brook Street and Conduit Street with no need to provide flare lanes at the junctions as currently are provided on site.

**3.8 SCHEME MODELLING ASSESSMENT**

3.8.1 The figure below provides an indication of the overall traffic modelling programme and the stage of completion achieved at the point that the Concept Feasibility Study has been developed.

**Figure 3.1: Modelling schedule – September 2015**





3.8.2 Concept traffic modelling has been undertaken using LinSig for three peak periods and VISSIM for the inter peak period only at this stage. The modelling undertaken demonstrates that the approved concept scheme will provide adequate capacity for existing traffic demand with no expected increase in traffic congestion. This is on the basis of the traffic assignment assumptions on the use of Brook Street and Davies Street two-way. Initial journey time information provided by VISSIM indicates that journey times should generally improve as a result of the proposed scheme.

### 3.9 CONCLUSIONS AND RECOMMENDATIONS

3.9.1 The work undertaken thus far on the identification and development of the final concept design is supported by detailed analysis of the key factors relating to traffic network operation and resilience. It is considered that the final concept design will provide a resilient traffic network that will provide an improvement in terms of reduced occurrences of traffic congestion whilst delivering significant public realm, pedestrian and cycling benefits and better organisation and control of kerbside vehicle activity.

3.9.2 There are a number of opportunities which need to be carried forward for detailed consideration before finalisation of the feasibility scheme design and final scheme models for submission. Jacobs recommends that these include:

- ▶ The existing demand for kerbside activity has been examined and presented in detail by this report. The impact on kerbside activity of the proposed concept scheme has been assessed based on draft proposals for kerbside restrictions but these will need to be examined in further detail and agreement reached that any impact on can be adequately mitigated to the satisfaction of stakeholders.
- ▶ Consideration of the potential for access only arrangements, pedestrian zones or timed closures needs to be undertaken in detail with due consideration to the impact the resulting traffic reassignment may provide. Such measures are not currently included in the scheme concept design but will be explored before finalisation of the feasibility design.
- ▶ The current traffic assignment methodology is appropriate for concept assessment but will need to be refined and verified using strategic modelling (TfL One model) for the final scheme modelling submission (subject to any access restrictions as mentioned above and external scheme impacts such as the potential introduction of a right-turn from Marlborough Road to Pall Mall).
- ▶ The form of the final approved Mount Street / Davies Street scheme would potentially have an impact on traffic assignment and directly influence the traffic demand on New Bond Street. Therefore changes to the design as part of the final review process need to be identified and included in the Bond Street scheme assessment.
- ▶ Development and agreement of the Mayfair Cycle Grid proposals could potentially result in modifications to junction control and layout subject to review and approval by Westminster City Council and Transport for London.
- ▶ The concept scheme design needs to be further developed to identify above ground traffic signal infrastructure and detail added in terms of proposed method of control and tactile paving arrangements so that the scheme designs can be submitted to TfL Traffic Infrastructure for their design review.
- ▶ The concept modelling needs to be further developed and refined based on the development of the scheme design and finalisation of the traffic assignment to provide a final scheme modelling submission to TfL Outcomes Delivery.

**4 TRAFFIC MODELLING UPDATE**

**4.1 FEASIBILITY TRAFFIC MODELLING**

4.1.1 Full, detailed, LinSig and VISSIM modelling of the base arrangements and proposed scheme have been prepared to TfL MAP standards. The proposed scheme modelling that has been produced includes the Mayfair Cycle Grid scheme proposals which have the effect of reducing capacity for traffic at some locations within Mayfair. Nevertheless, the modelling demonstrates that the proposed Bond Street scheme would not result in any significant traffic impact. This is because, even though traffic capacity on Bond Street southbound, south of Brook Street is reduced by a modest degree, new traffic capacity for southbound traffic is provided on Davies Street.

**4.2 LINSIG ANALYSIS**

4.2.1 The results of the LinSig modelling are provided in Table 5.1. and are summarised by the figures 4.1-4.3 below:

**Figure 4.1 – Bond Street – Comparison of degree of saturation – AM Peak (8:30-9:30)**



Figure 4.2 – Bond Street – Comparison of degree of saturation – Inter Peak (12:45-13:45)



Figure 4.3 – Bond Street – Comparison of degree of saturation – PM Peak (16:30-17:30)





Table 4.1: LinSig modelling results

Junction	Approach	AM Peak			Inter Peak			PM Peak		
		Base line DoS (%)	Proposed DoS (%)	Difference (%)	Base line DoS (%)	Proposed DoS (%)	Difference (%)	Base line DoS (%)	Proposed DoS (%)	Difference (%)
New Bond Street/Oxford Street/Vere Street	Oxford Street WB	41%	41%	0%	79%	79%	0%	91%	91%	0%
	Oxford Street EB	48%	48%	0%	82%	82%	0%	81%	81%	0%
	Vere Street SB	100%	100%	0%	88%	88%	0%	96%	96%	0%
New Bond Street/Conduit Street/Bruton Street	New Bond Street SB	64%	38%	-26%	96%	63%	-33%	96%	79%	-17%
	Bruton Street EB	65%	53%	-12%	84%	79%	-5%	69%	68%	-1%
	Conduit Street WB	59%	31%	-28%	97%	42%	-55%	68%	44%	-24%
New Bond Street/Maddox Street	New Bond Street SB	63%	-	-	88%	-	-	97%	-	-
	Maddox Street WB	50%	-	-	68%	-	-	68%	-	-
New Bond Street/Brook Street	New Bond Street SB	49%	53%	4%	82%	84%	2%	96%	85%	-11%
	Brook Street EB	62%	38%	-24%	91%	84%	-7%	90%	84%	-6%
Maddox Street/St. Georges Street	St George Street SB	19%	16%	-3%	21%	21%	0%	23%	22%	-1%
	St George Street NB	24%	32%	8%	32%	32%	0%	31%	31%	0%
	Maddox Street WB	37%	39%	2%	50%	64%	14%	39%	41%	2%
Davies Street/Brook Street	Brook Street EB	45%	66%	21%	54%	70%	16%	39%	80%	41%
	Brook Street WB	-	24%	-	-	64%	-	-	77%	-
	Davies Street SB	3%	7%	4%	4%	11%	7%	2%	10%	8%
	Davies Street NB	38%	44%	6%	84%	57%	-27%	74%	78%	4%
Davies Street/Grosvenor Street	Grosvenor Street WB	56%	56%	0%	66%	68%	2%	73%	83%	10%
	Davies Street SB	-	65%	-	-	56%	-	-	42%	-
	Davies Street NB	34%	48%	14%	78%	46%	-32%	74%	58%	-16%
Davies Street/Mount Street/Berkeley Square	Berkeley Sq NB	38%	-	-	62%	-	-	83%	-	-
	Mount Street EB	57%	-	-	60%	-	-	36%	-	-
	Davies Street SB	-	-	-	-	-	-	-	-	-
Old Bond Street/Piccadilly	Old Bond Street SB	27%	27%	0%	44%	44%	0%	54%	54%	0%
	Piccadilly EB	50%	50%	0%	50%	50%	0%	36%	36%	0%

**4.3 VISSIM ANALYSIS**

4.3.1 Journey time analysis using the feasibility VISSIM models has been undertaken for a number of key links within the study area. This analysis is presented in Tables 4.2-4.4 below.

**Table 4.2: AM peak journey time comparison**

Route	Journey Time (S)		
	Base	Proposed	Difference (S)
New Bond Street Southbound	153	152	0
Brook Street Eastbound	31	37	6
Brook Street Westbound	-	40	
Davies Street Northbound	41	85	44
Davies Street Southbound	-	66	-
Conduit Street Eastbound	123	103	-20
Conduit Street Westbound	197	156	-41
Old Bond Street Southbound	65	61	-4

**Table 4.3: Inter peak journey time comparison**

Route	Journey Time (S)		
	Base	Proposed	Difference (S)
New Bond Street Southbound	193	190	-3
Brook Street Eastbound	113	85	-29
Brook Street Westbound	-	42	-
Davies Street Northbound	109	85	-24
Davies Street Southbound	-	54	-
Conduit Street Eastbound	121	124	3
Conduit Street Westbound	344	208	-136
Old Bond Street Southbound	108	135	27

**Table 4.4: Inter peak journey time comparison**

Route	Journey Time (S)		
	Base	Proposed	Difference (S)
New Bond Street Southbound	136	135	-1
Brook Street Eastbound	59	40	-19
Brook Street Westbound	-	73	-
Davies Street Northbound	63	101	38
Davies Street Southbound	-	55	-
Conduit Street Eastbound	120	122	1
Conduit Street Westbound	259	190	-69
Old Bond Street Southbound	90	97	7

4.3.2 The journey time analysis shows that in general, the combination of the Bond Street and Mayfair Cycle grid is expected to have a positive effect in terms of minimising delay for traffic on the streets which are included within this assessment. The exceptions being northbound on Davies Street which could expect to see some increase in delay as a result of the conversion to two-way and the pedestrian crossing improvements proposed.

**4.4 PROGRESS AGAINST SCHEDULE – MODELLING APPROVALS - MARCH 2016**

4.4.1 To date the following key traffic modelling milestones have been achieved:

**Table 4.5: Modelling progress**

Optional	Delivering party	Scoped	Submitted	Approved
Traffic signal design audit	Jacobs	August 2015	October 2015	December 2015
Base LinSig (LMAP3)	Jacobs	January 2015	October 2015	December 2015
Base VISSIM (VMAP3)	Jacobs	January 2015	November 2015	February 2016
Proposed LinSig (LMAP5)	Jacobs (NRP)	January 2015	December 2015	<b>Outstanding</b>
Proposed VISSIM (VMAP5)	Jacobs (NRP)	January 2015	February 2016	<b>Outstanding</b>
Strategic ONE modelling	Transport for London	October 2015	March 2016*	<b>Outstanding*</b>

\*TfL has prepared strategic ONE modelling analysis of the Mayfair area including the Bond Street scheme and Brook Street / Davies Street two-way. This modelling was reviewed in March 2016 and requires further development to provide a level of robustness suitable for assessing the proposed schemes.

- 4.4.2 Transport for London has undertaken to state that the proposed scheme traffic models which are required for obtaining formal approval for the scheme from TfL cannot be approved until the Strategic ONE modelling exercise that they are undertaking in parallel can be used to assess the accuracy of the traffic assignment assumptions. Due to the delays in providing a robust ONE modelling assessment, this has meant that the approval of the proposed scheme models has been delayed.
- 4.4.3 It is considered that although official approval from TfL has not been granted, there is limited risk in terms of progressing forward to the next stage of the project with this element outstanding. This is based on the following:
- 4.4.4 The ONE modelling outputs presented to date, although work in progress, indicate that the traffic flows predicted by the strategic modelling are significantly less than those currently provided in the Proposed Scheme VISSIM and LinSig. In terms of the areas where reassignment is expected, the VISSIM and LinSig models consider consistently higher traffic flows on all routes and therefore the results provided by the scheme models could effectively be considered as a worst case.
- 4.4.5 In the event that the process of resolving the modelling approvals results in an identified requirement for additional capacity on Bond Street, this could be provided by conversion of the proposed zebra crossings to signal control. It is recommended that the infrastructure is put in place for rapid conversion of these sites in the future as the level of pedestrian demand is something which cannot be accurately predicted at this moment in time due to the ongoing development of Crossrail.

4.4.6 The largest risk from a traffic network perspective would be if the two-way proposals for Brook Street and Davies Street could not be implemented. IN the event that these streets remain one-way, it is likely that there would be implications for traffic network operation which would need to be managed or the Bond Street scheme would require further adjustment of more onerous nature than the replacement of priority control with traffic signals.

## 5 PARKING, LOADING AND KERBSIDE ACTIVITY UPDATE

### 5.1 DESIGN PROPOSALS

5.1.1 The proposed design for kerbside restrictions throughout the scheme has been developed to a level that is considered appropriate for the purposes of Stage 1 Feasibility. The proposals have been reviewed by The City of Westminster’s Parking Services department and the comments and recommendations provided have been incorporated into the design. It is expected that further development of the proposals will continue into Stage 2 as proposed traffic orders are developed and consulted upon. The current kerbside restriction proposals are shown on drawing 6432/OS/005-1\_Rev0.2.

5.1.2 In summary, the current proposals provide a single style of restricted parking zone to be used throughout the scheme. This can be described as “no waiting & no loading at any time except in signed bays”. Zone entry signs will be required to distinguish the Restricted Parking Zone (RPZ) from the current CPZ and zone signs will be required on exit from the RPZ to indicate a return to the CPZ. Due to the same style of restriction being in place throughout Bond Street this should hopefully provide a legible arrangement. It is expected that the forthcoming Hanover Square scheme and potentially other future East Mayfair schemes may be able to extend the RPZ to provide a larger, more coherent area. This restriction does not require any yellow lining to enforce.

5.1.3 Bays are proposed throughout the scheme in three different formats:

- ▶ Traditional bay markings using white road paint located in the carriageway;
- ▶ bays marked by a different type of surface material located in the carriageway;
- ▶ shared bays to be located on the footway marked with a different surface material.

5.1.4 Consideration has been given to the dimensions and location of proposed bays to ensure that there is adequate access for loading and servicing for all businesses and properties on and adjacent to New Bond Street and Old Bond Street.

5.1.5 A number of different restriction types are proposed to be used throughout the scheme for signed bays. These are summarised in Table 5.1.

**Table 5.1: Proposed restrictions**

Restriction type	Restrictions	Operation times	Not in operation
24 hour loading bay	Loading only, Max Stay 20mins	24 hr	N/A
Morning timed loading bay / pad	Loading only	8.30-11.30	General parking 6.30pm-8.30am
Pay-by-phone	Pay-by-phone or loading	8.30am-6.30pm	General parking
Residents permit	Residents only	24 hr	N/A
Residents & Pay	Pay-by-phone or residents	8.30am-6.30pm	General parking
Taxi rank	No waiting except taxis	24hr	N/A

5.1.6 Car club and disabled bays will also be included in the scheme.

**5.2 PARKING SATURATION ANALYSIS**

5.2.1 Analysis of the current occupancy of parking bays throughout the east side of Mayfair (East of Duke Street, Mount Street, Berkeley Square and Stratton Street) using Westminster's recent annual parking surveys. The key conclusions from this analysis are summarised in Table 5.2 for the two time periods most closely matching the operational times for the proposed restrictions.

**Table 5.2: East Mayfair occupancy analysis – Existing provision**

Restriction type	Total bays	Occupancy 07:30 – 09:30		Occupancy 11:00 -15:00	
		(suspended)	Saturation	(suspended)	Saturation
Car club	3	2(0)	67%	2(0)	67%
Diplomatic	23	11(2)	48%	17(0)	74%
Disabled	19	3(3)	16%	12(0)	63%
Doctor	1	1(0)	100%	1(0)	100%
Double Yellow	1281	55(91)	4%	14(35)	1%
Motorcycle	372	263(1)	71%	359(0)	97%
Pay-by-phone (including P&D)	475	327(28)	69%	421(7)	89%
Resident	221	138(24)	62%	165(1)	75%
Shared P-b-P & Res	85	45(1)	53%	67(0)	79%
Single Yellow	1186	160(57)	13%	78(40)	7%
Taxi	69	18(2)	26%	35(0)	51%

5.2.2 Analysis of the study area specifically has also been undertaken with the 2014 detailed survey information. Tables 5.3 and 5.4, show the analysis of the 90<sup>th</sup> percentile highest occupancy within the two relevant time periods.



**Table 5.3: Existing vs. proposed occupancy analysis 8.30am-11.30am**

Restriction type	Existing		Proposed		
	Capacity	90th%ile occupancy	Capacity	Saturation	Excess
Pay by phone	11	9.75	14	109%	2.25
Residents parking	6	6.5	7		
Shared bays	13	12	5		
Loading only	175	57	77	74%	-20
Taxi	9	1	10	10%	-9
Disabled	1	1	1	100%	0
Car club	1	1	1	100%	0
General parking	0	0	0	0%	0

**Table 5.4: Existing vs. proposed occupancy analysis 11.30am-6.30pm**

Restriction type	Existing		Proposed		
	Capacity	90th%ile occupancy	Capacity	Saturation	Excess
Pay by phone	22	18	14	138%	10
Residents parking	6	6	7		
Shared bay	13	12	5		
Loading only	164	62	35	177%	27
Taxi	9	7	10	70%	-2
Disabled	1	1	1	100%	0
Car club	1	1	1	100%	0
General parking	0	0	0	0%	0

5.2.3 The analysis presented in tables 5.3 & 5.4 indicates the following:

- ▶ During the time period 8:30am -11:30am the proposed scheme will provide sufficient capacity for the current peak kerbside demand with the exception of two parking movements. During this time period there is an excess of capacity for current loading demand.
- ▶ During the 11.30am-6.30pm time period, the available capacity for parking activity (Pay by phone and residents) will be approximately 10 vehicles less than is necessary to meet the current peak demand. This means that up to 10 vehicles will be forced to park at alternative locations nearby as a result of the scheme proposals.

- ▶ During the time period 11.30am-6.30pm, there will be insufficient loading capacity compared to the current peak demand. This will force the majority of loading activity to, where possible, be confined to the morning 8.30am – 11.30am time slot. This supports the aims of the scheme with the effect that the shared footway loading pads will be available for use by pedestrians and for drop-off and pick up manoeuvres from 11.30am-6.30pm.
- 5.2.4 A detailed assessment of whether the proposed scheme will provide sufficient capacity overall for all of the loading activity that is required on street has been undertaken. The proposed arrangement reduces capacity during the 11.30am-6.30pm time slot for loading, but provides excess capacity for the 8.30am-11.30am time slot. Examining the time period 8.30am-6.30pm as a whole and assessing the total existing demand in this time period provides a **loading saturation result of 83%**, indicating that the proposed scheme will provide enough capacity to accommodate all existing demand as long as it adjusts to the proposed time restrictions.
- 5.2.5 Night time parking demand has been considered and it has been determined that the proposed scheme will provide sufficient capacity to meet existing on street demand.

**5.3 IMPACT ON CAPACITY**

5.3.1 The actual impact on capacity for each of the restriction types is summarised in table 5.5.

**Table 5.5: Existing vs. Proposed Parking and Loading – daytime capacity**

Restriction type	Existing	Proposed		
	No. Bays (8.30-10.30)	No. bays (8.30-11.30)	Of which relocated outside immediate study area	Change (8.30-11.30)
Pay by phone	22(11)	14	0	-8(+3)
Residents parking	6	7	1	+1
Shared bay	13	5	0	-8
Loading on single / double yellows	164	0	0	-164
Loading only	0(11)	35(77)	0	+35(66)
Taxi	9	10	0	+1
Disabled	1	1	0	0
Car club	1	1	0	0
General parking	0	0	0	0