# Shirland Road/Elgin Avenue LSS

## WA1502H2T Brief 16xxx
## Accident Remedial Study 2014-15

City of Westminster

To: Keith Coulter, Westminster City Council

From: Megan Crawford, FM Conway WSP

Date: 05 June 2015


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WSP

# Quality Management

## Scheme Title: Shirland Road – Elgin Avenue – Accident Remedial Study

## Report: Accident Remedial Study 2014-15

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## 1.1 INTRODUCTION

1.1.1 As part of the accident remedial programme 2014-15, Westminster City Council (WCC) issued brief 16xxx to FM Conway WSP to investigate road safety at the junction of Shirland Road and Elgin Avenue

1.1.2 Remedial measures have been identified by FM Conway WSP in order to improve safety at the junction. An economic First Year Rate of Return has been estimated, based on a preliminary Bill of Quantities and expected project costs.

1.1.3 There were 11 personal injury accidents in the 36-month period between 1 January 2011 and 31 December 2013. After a desktop study of the number and type of accidents, traffic surveys, the observations from site visits, and a number of remedial measures have been identified to help mitigate the risk of further accidents.

## 1.2 STUDY AREA

1.2.1 The junction of Shirland Road and Elgin Avenue is approximately at the mid-point of Shirland Road. The junction is fronted by a range of commercial premises on Shirland Road and residential properties on Elgin Avenue. The junction is signal controlled but does not have a formal pedestrian crossing facility, though traffic islands are provided at each arm of the junction.

1.2.2 The junction subject to this accident remedial study straddles two wards, Maida Vale and Harrow Road, which is divided along Shirland Road. Figure 1 shows the junction in the context of the surrounding road network. A plan showing the existing junction layout is included Appendix A.

1.2.3 Shirland Road has three bus routes that travel through the junction. These bus routes are 6 (Aldwych – Bertie Road, Willesden Green) & 414 (Putney Bridge – Chippenham Road, Maida Vale). Bus 228 travels from Elgin Avenue turning left onto Shirland Road, but in the opposite direction, travels down Chippenham Road instead and so bypasses this junction

1.2.4 The Central London cycling grid is intended to be a network of direct, high-capacity, joined-up cycle routes across central London. Many of these will run in parallel with key underground, rail and bus routes, and will be signed and branded accordingly. Two types of routes will form part of this Cycle Grid: 'Cycle Superhighways' and 'Quietways'. A proposed quietway route called Grand Union Alternative route is proposed and this follows Ilbert Street - Shirland Road - Sutherland Avenue - Circus Road - St John's Wood Terrace - St Edmund's Terrace within Westminster City Council. This is still under review and may change at a later date.

1.2.5 Three London underground stations are located near the junction; these are Maida Vale, Westbourne Park and Warwick Avenue. The nearest mainline station to the site is Queens Park.

1.2.6 Two schools are located within a 200m radius of the junction of interest. Essendine Primary School which caters for pupils aged 3 to 11 and Paddington Academy which caters for pupils aged 11 to 18. It is assumed that pupils from both schools would use this junction.

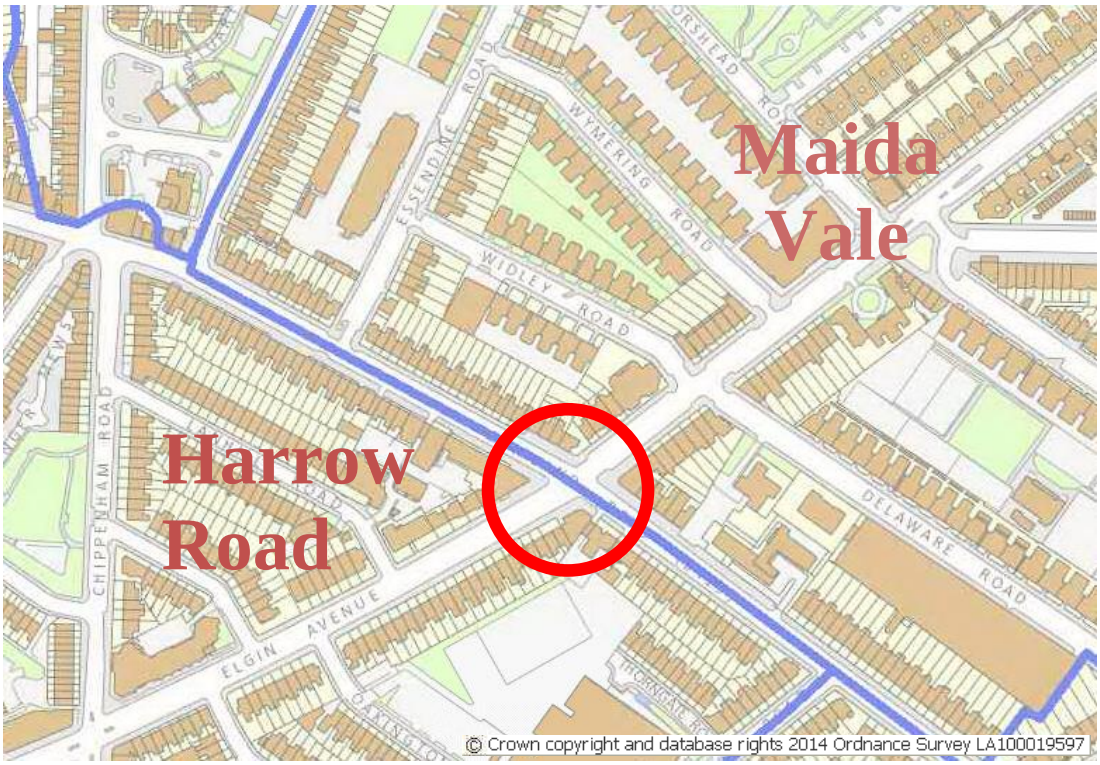



Figure 1: Junction of interest location

## 1.3 COLLISION ANALYSIS

1.3.1 Collision data provided by Transport for London (TfL) has been considered and is included in Appendix B. All personal injury collisions (PICs) are shown within a radius of approximately 50m around the junction, and the data represents a three-year period from 1 January 2011 to 31 December 2013. This collision data has been analysed together with comparative data for the City of Westminster (CoW) and the combined values of Inner London boroughs (ILBs) published in Collisions and Casualties on London's Roads 2012. The use of inner London Borough (ILB) data can be used as a control as there may be variations between the inner boroughs and the City of Westminster (CoW) and using both will help get a broader view during the collision analysis.

1.3.2 Contributory factors to each collision are provided as part of the completion of a STATS 19 form. As part of the analysis of the accident data, the contributory factors have been considered and a decision has been made by the author of this report to which was the most apt factor in order to help determine whether a specific road user was responsible for the collision.

1.3.3 Statistical analysis has been carried out using TMS Consultancy's collision assessment spreadsheet that determines whether there is any significance to the variance in results based on the sample size. A Poisson Test is used for counts of events that should be randomly distributed and is useful for determining whether the collision count for a variable within a particular time period (hour, day or month) is statistically significant. For example, if the greatest number of collisions in a sample occurred on a Tuesday, the Poisson Test allows us to determine whether this is a significant deviation from the mean number of collisions over the 7-day period and, therefore, whether or not the Tuesday figure was due to chance.

1.3.4 The results of the test have a significance level that in turn allows a level of confidence that can be applied to the results. With this test we can compare counts and place confidence levels on them that can be subjectively interpreted as shown in Table 1. For the purposes of this report nothing has been considered significant below the 95% confidence level.

| Significance Level | Confidence Level | Subjective Interpretation |
|---|---|---|
| *1%* | *99%* | Highly Acceptable |
| *5%* | *95%* | Acceptable |
| *10%* | *90%* | Fair |
| *20%* | *80%* | Indicative |

**Table 1: Statistical interpretation**

**Collision Summary**

1.3.5 There were 11 personal injury collisions (PICs) during the 3-year survey period between 1 January 2011 and 31 December 2013. An interpreted listing with details of each of the collisions that occurred is contained in Appendix B of this report. Three of these collisions resulted in 'serious' injury and the remaining collisions resulted in 'slight' injury. Slight injury accidents include: sprains, whiplash, bruises and minor cuts and shock requiring roadside attention. From Table 2 it can be seen that the rate for the number of 'killed or seriously injured' (KSI) collisions was higher than both the CoW and ILB rate.

| Severity | Site Total | Site Collision Rate (%) | Westminster Comparative Rate (%) | Inner London Comparative Rate (%) |
|---|---|---|---|---|
| KSI | 3 | 27 | 12 | 12 |
| Slight | 8 | 73 | 88 | 88 |
| Total | 11 | 100 | 100 | 100 |

**Table 2: Collisions by Severity (Automatic Traffic Signal junction)**

1.3.6 Three serious collisions occurred during the three years of interest. The first occurred in daylight at 14:16 on Friday 29 July 2011. The weather was fine and the road surface dry. The collision involved a cyclist and a parked car. The cyclist was travelling from the north-eastern arm of Elgin Avenue in a south-westerly direction and was hit when the driver of the parked vehicle opened his door into the path of the cyclist. The serious casualty was that of the 22 year old female cyclist. Contributory factors were that the driver of the parked car opened his door negligently and failed to look properly. The second serious collision occurred in darkness at 20:57 on Monday 14 January 2013. The weather was cold and the road surface was icy. The collision involved a car and a powered two wheeler (P2W) at the junction. The car was travelling from the north-eastern arm of Elgin Avenue and was turning right on the amber light onto the north-western arm of Shirland Road and collided with a P2W travelling in a north-easterly direction along Elgin Avenue. The serious casualty was that of the 25 year old male P2W rider. Contributory factors were that the driver of the car exceeded the speed limit, failed to judge the other persons path or speed, failed to look properly and was careless/in a hurry. The third serious collision occurred in daylight at 17:35 on 25 September 2013. The weather was fine and the road surface dry. The collision

involved a pedestrian and a car. The pedestrian was travelling in a north-westerly direction and was hit when the driver of the vehicle turned right from the south-western arm of Elgin Avenue onto Shirland Road. The exact details of the collision are unknown as the driver fled the scene. The serious casualty was that of the 48 year old male pedestrian. Contributory factors given were that the driver of the car passed to close to the pedestrian, was careless/in a hurry, vision may have been affected by dazzling headlights. Also that the pedestrian failed to judge the vehicles path or speed, failed to properly and may have been careless or in a hurry.

Of the eleven Personal Injury Collisions (PICs) noted in the collision survey period, six of these collisions were due to right turning movements, two of the collisions involved pedestrians stepping out in front of vehicles, two collisions were shunt type collisions, with the final collision involving overtaking a stationary vehicle.

**Annual Variation**

1.3.7 From Table 3 it can be seen that there was an increase in the number of collisions from the first to the second survey year, and an increase from the second year to the third. There was a 150% overall change in the number of collisions over the survey period.

| Year | Severity | | | Total | Annual Change (%) |
|---|---|---|---|---|---|
| | Fatal | Serious | Slight | | |
| 01/01/11 - 31/12/11 | 0 | 1 | 1 | 2 | - |
| 01/01/12 - 31/12/12 | 0 | 0 | 4 | 4 | +50 |
| 01/01/13 - 31/12/13 | 0 | 2 | 3 | 5 | +20 |
| | | | | Overall Change (%) | +150 |

**Table 3: Collisions by Survey year (Automatic Traffic Signal junction)**

### Hours of Darkness/Light

1.3.8 Table 4 shows that 45% of the collisions in the survey period occurred during hours of darkness, which is higher than both the CoW and ILB comparative rates.

| Collision Category | Severity | | | Total | Collision Rate (%) | Westminster Comparative Average (%) | Inner London Comparative Average (%) |
|---|---|---|---|---|---|---|---|
| | Fatal | Serious | Slight | | | | |
| Dark | 0 | 1 | 4 | 5 | 45 | 36 | 35 |
| Light | 0 | 2 | 4 | 6 | 55 | 64 | 65 |

**Table 4: Collisions by Hours of Darkness/Light (Automatic Traffic Signal junction)**

### Surface

1.3.9 Table 5 shows that four of the collisions in the survey period occurred on a non-dry road surface, which is higher than both the CoW and ILB comparative rates.

| Collision Category | Severity | | | Total | Collision Rate (%) | Westminster Comparative Average (%) | Inner London Comparative Average (%) |
|---|---|---|---|---|---|---|---|
| | Fatal | Serious | Slight | | | | |
| Dry | 0 | 2 | 5 | 7 | 64 | 84 | 83 |
| Non Dry | 0 | 1 | 3 | 4 | 36 | 16 | 17 |

**Table 5: Collisions by Road Surface (Automatic Traffic Signal junction)**

### Month

1.3.10 Table 6 shows that the April and December were the two peak months, both with three collisions, though this is an increase in both the CoW and ILB comparative rates is not statistically significant.

| Month | Severity | | | Total | Casualty Rate (%) | Westminster Comparative Average (%) | Inner London Comparative Average (%) |
|---|---|---|---|---|---|---|---|
| | Fatal | Serious | Slight | | | | |
| January | 0 | 1 | 1 | 2 | 18 | 6 | 7 |
| February | 0 | 0 | 0 | 0 | 0 | 8 | 8 |
| March | 0 | 0 | 0 | 0 | 0 | 8 | 8 |
| April | 0 | 0 | 3 | 3 | 27 | 8 | 8 |
| May | 0 | 0 | 0 | 0 | 0 | 8 | 8 |
| June | 0 | 0 | 0 | 0 | 0 | 9 | 9 |
| July | 0 | 1 | 0 | 1 | 9 | 10 | 10 |
| August | 0 | 0 | 1 | 1 | 9 | 8 | 8 |
| September | 0 | 1 | 0 | 1 | 9 | 10 | 9 |
| October | 0 | 0 | 0 | 0 | 0 | 9 | 10 |
| November | 0 | 0 | 0 | 0 | 0 | 9 | 8 |
| December | 0 | 0 | 3 | 3 | 27 | 8 | 7 |

**Table 6: Collisions by Month (Automatic Traffic Signal junction)**

**Day**

1.3.11 Table 7 shows that the highest number of collision occurred on Thursday, this is an increase the CoW and ILB comparative rates, and is of fair confidence but is not statistically significant.

| Day | Severity | | | Total | Casualty Rate (%) | Westminster Comparative Average (%) | Inner London Comparative Average (%) |
|---|---|---|---|---|---|---|---|
| | Fatal | Serious | Slight | | | | |
| Monday | 0 | 1 | 1 | 2 | 18 | 15 | 14 |
| Tuesday | 0 | 0 | 0 | 0 | 0 | 15 | 15 |
| Wednesday | 0 | 1 | 1 | 2 | 18 | 15 | 15 |
| Thursday | 0 | 0 | 3 | 3 | 27 | 17 | 16 |
| Friday | 0 | 1 | 1 | 2 | 18 | 15 | 16 |
| Saturday | 0 | 0 | 1 | 1 | 9 | 14 | 13 |
| Sunday | 0 | 0 | 1 | 1 | 9 | 10 | 11 |

**Table 7: Collisions by Day (Automatic Traffic Signal junction)**

**Hour**

1.3.12 Table 8 shows that the peak hour for collisions was 8pm – 9pm with three collisions. Though this again is higher than both the CoW and ILB comparative rates, it is not deemed statistically significant.

| Hour | Severity | | | Total | Casualty Rate (%) | Westminster Comparative Average (%) | Inner London Comparative Average (%) |
|---|---|---|---|---|---|---|---|
| | Fatal | Serious | Slight | | | | |
| 00:00 | 0 | 0 | 0 | 0 | 0 | 3 | 2 |
| 01:00 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| 02:00 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| 03:00 | 0 | 0 | 0 | 0 | 0 | 2 | 1 |
| 04:00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 05:00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 06:00 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| 07:00 | 0 | 0 | 1 | 1 | 9 | 3 | 4 |
| 08:00 | 0 | 0 | 0 | 0 | 0 | 7 | 7 |
| 09:00 | 0 | 0 | 0 | 0 | 0 | 5 | 5 |
| 10:00 | 0 | 0 | 0 | 0 | 0 | 5 | 4 |
| 11:00 | 0 | 0 | 1 | 1 | 9 | 5 | 4 |
| 12:00 | 0 | 0 | 0 | 0 | 0 | 6 | 5 |
| 13:00 | 0 | 0 | 0 | 0 | 0 | 5 | 5 |
| 14:00 | 0 | 1 | 0 | 1 | 9 | 5 | 5 |
| 15:00 | 0 | 0 | 1 | 1 | 9 | 5 | 5 |
| 16:00 | 0 | 0 | 0 | 0 | 0 | 7 | 6 |
| 17:00 | 0 | 1 | 0 | 1 | 9 | 6 | 7 |
| 18:00 | 0 | 0 | 1 | 1 | 9 | 8 | 8 |
| 19:00 | 0 | 0 | 1 | 1 | 9 | 6 | 6 |
| 20:00 | 0 | 1 | 2 | 3 | 27 | 5 | 5 |
| 21:00 | 0 | 0 | 0 | 0 | 0 | 3 | 4 |
| 22:00 | 0 | 0 | 1 | 1 | 9 | 3 | 4 |
| 23:00 | 0 | 0 | 0 | 0 | 0 | 3 | 3 |

**Table 8: Collisions by Hour (Automatic Traffic Signal junction)**

### Vulnerable Road Users

1.3.13 Table 8 shows the casualty data indicating that there were a total of thirteen casualties associated with the eleven collisions at the site. 38% of the collisions involved powered two wheelers (P2W), which is higher than the CoW and ILB comparative rates. 23% of the collisions involved pedestrian, which is just lower than the Westminster rate, but higher than the inner London Comparative rate.

| Casualty Category | Severity | | | Site Total | Site Casualty Rate (%) | Westminster Comparative Rate (%) | Inner London Comparative Rate (%) |
|---|---|---|---|---|---|---|---|
| | Fatal | Serious | Slight | | | | |
| Pedestrian | 0 | 1 | 2 | 3 | 23 | 26 | 20 |
| Pedal Cycle | 0 | 1 | 1 | 2 | 15 | 25 | 24 |
| P2W | 0 | 1 | 4 | 5 | 38 | 19 | 20 |
| Other | 0 | 0 | 3 | 3 | 23 | 29 | 35 |

**Table 8: Casualties by Road User and Severity (Automatic Traffic Signal junction)**

### Pedestrians

1.3.14 Three of the collisions in the study area involved a pedestrian casualty, and one of these serious collisions mentioned earlier in the report. Of the two remaining slight collisions, both involved a pedestrian being masked by a stationary or parked vehicle when they crossed the road, and both collisions occurred on the north western arm of Shirland Road. There are traffic islands on each arm of the junction, which should give protection for pedestrian unless they were not using this facility or they were opportunistic crossings. The site casualty rate is 23% which is lower than the comparative CoW rate but higher than the ILB rates.

### Pedal Cycles

1.3.15 Two of the collisions in the study area involved pedal cycles; one of these collisions was serious and is mentioned earlier in the report. The remaining collision occurred whereby a car turned right from Elgin Avenue (South western arm) into Shirland Road (south-eastern arm) and hit an oncoming cyclist who had disobeyed the red automatic traffic signal. The site casualty rate is 15% which is lower than both the comparative CoW rate and the ILB rates.

### Powered Two Wheelers

1.3.16 Five of the collisions in the study area involved powered two wheelers; one of these collisions was serious and is mentioned earlier in the report, one of these collisions is also mentioned in the section below for non-vulnerable road users as one of the casualties was the driver of the non-vulnerable road user. Four of the collisions involved right turning movements, three turning from Elgin Avenue and one from Shirland Road, though one collision occurred while waiting to turn right. Two of the collisions were very similar except for the directions. Of these two collisions, one occurred when the powered two wheeler travelling from Shirland Road (NW arm) turned right onto Elgin Avenue (SW arm) causing a collision with a vehicle travelling along Shirland Road, the other, when a powered two wheeler travelling from Elgin Avenue (NE arm) turned right onto Shirland Road (SE arm) causing a collision with a vehicle travelling along Elgin Avenue. Contributory factors for both collisions were failure to look properly and failure to judge the other persons path or speed. The remaining two collisions were shunt collisions.

One occurred when a powered two wheeler travelling from the south-eastern arm of Elgin Avenue hit the back of a vehicle waiting to turn right onto Shirland Road (SE). The contributory factor was failure to look properly. The final collision involved a 3.5T vehicle and a powered two wheeler, due to one of casualties being the driver of the 3.5T vehicle, this collision is also mentioned in the section below. Both vehicles were travelling from the north-western arm of Shirland Road to the south-eastern arm of Elgin Avenue when the driver of the 3.5T vehicle failed to slow down in time and hit the rear of the powered two wheeler. Both parties were injured, the fault was assigned to the driver of the 3.5T vehicle as contributory factors were following too closely and failing to judge the other person's speed or path.

**Non-Vulnerable Road Users**

1.3.17 Two of the collisions in the study area involved casualties of non-vulnerable road users. Both of these collisions were slight. One of these is mentioned in the powered two wheelers section above as in this collision; both parties (P2W rider and driver of 3.5T vehicle) were injured. The final collision involved two cars; one car was travelling across Elgin Avenue south-western arm to north-eastern arm, when another car turned right from Elgin Avenue north-eastern arm onto Shirland Road north-western arm causing a collision. The fault was assigned to the right turning vehicle and contributory factors were many, including failure to look properly, careless/reckless/in a hurry and failure to judge other persons path or speed.

**Traffic Surveys**

1.3.18 An automated traffic count radar survey was carried out at the junction Elgin Avenue and Shirland Road between 9th March 2015 and 15th March 2015. The radars were sited on each arm of the junction. The full results can be found in Appendix C and a summary can be seen in Table 9. From the results in the table below the average speed for all arms is below the speed limit with only the 85$^{th}$ percentile speed on Elgin Avenue (South-westbound traffic) going slightly above the speed limit. Though speeding did occur on both arms of the junction, Elgin Avenue saw a higher proportion of speeding compared to Shirland Road. On Elgin Avenue between 7% and 12% of the vehicles were recorded to be going 30-35mph, compared with 0% - 3% on Shirland Road. The percentage of vehicles recorded travelling between 35-40mph was between 1% - 2% on Elgin Avenue, compared with 0%-1% on Shirland Road. The speeding occurred throughout the day, not as expected just in the evening or early hours of the morning. Higher speeds were noted on both Shirland Road and Elgin Avenue, but these were less than 1%.

| Site ATC camera | Junction arm | Direction | Volume (whole survey period) | Mean Speed (mph) | 85th Percentile Speed (mph) |
|---|---|---|---|---|---|
| 11 | Shirland Road (NW arm) | South-eastbound | 4,016 | 19.1 | 23.69 |
| | | North-westbound | 2,798 | 20.4 | 24.61 |
| 12 | Elgin Avenue (NE Arm) | South-westbound | 3,504 | 23.65 | 28.54 |
| | | North-eastbound | 4,587 | 25.81 | 29.91 |
| 13 | Shirland Road (SE arm) | South-eastbound | 4,128 | 22.57 | 26.53 |
| | | North-westbound | 3,217 | 19.4 | 24.62 |
| 14 | Elgin Avenue (SW Arm) | South-westbound | 4,058 | 25.77 | 30.5 |
| | | North-eastbound | 4,769 | 24.19 | 28.58 |

**Table 9: ATC Survey Data Summary**

**Manual Classified Count**

1.3.19 Manual classified counts were carried out on Tuesday 10th March 2015 at the junction of Elgin Avenue and Shirland Road. The full results can be found in Appendix C. A summary table for vehicle movements is shown in Table 10, based on the survey results, the most frequent movements at the junction are the straight ahead movements across the arms, (highlighted green) with the most popular being across Elgin Ave (SW) to Elgin Avenue (NE) at 22.5%, followed by Shirland Road (NW) to Shirland Road (SE), then Elgin Avenue (SW) to Elgin Avenue (NE) and finally Shirland Road (SE) to Shirland Road (NW). The next popular movements are highlighted orange.

1.3.20 It is worth noting that though only low a percentage of vehicles turn right at this junction compared to the straight across movements; the majority of the collisions were right turns (63%) and were made from Elgin Avenue onto Shirland Road (71%)

1.3.21

| Entry Arm | | Destination Arm | Totals | % of movement |
|---|---|---|---|---|
| A | - | A | 1 | 0.0% |
| A | - | B | 628 | 3.8% |
| A | - | C | 2829 | 17.0% |
| A | - | D | 771 | 4.6% |
| B | - | A | 399 | 2.4% |
| B | - | B | 0 | 0.0% |
| B | - | C | 654 | 3.9% |
| B | - | D | 2782 | 16.7% |
| C | - | A | 2231 | 13.4% |
| C | - | B | 525 | 3.2% |
| C | - | C | 7 | 0.0% |
| C | - | D | 862 | 5.2% |
| D | - | A | 454 | 2.7% |
| D | - | B | 3742 | 22.5% |
| D | - | C | 754 | 4.5% |
| D | - | D | 0 | 0 |
| Total number of vehicles | | | 16639 | |

**Table 10: MCC Data Summary**

### Pedestrian Count

1.3.22 A pedestrian count was undertaken n Tuesday 10th March 2015 at the junction of Elgin Avenue and Shirland Road. The full results can be found in Appendix C. Based on the survey results, the three most popular movements for pedestrians are across Shirland Road – C2-C1 (SW-NE), Elgin Avenue – B1-B2 (NW-SE) and Elgin Avenue – D1-D2 (SE-NW). A summary table showing these movements is shown in Table 11 with percentages.

| Origin | to | Destination | Total | % of movement |
|---|---|---|---|---|
| A1 | - | A2 | 914 | 12.2% |
| A2 | - | A1 | 707 | 9.4% |
| B1 | - | B2 | 1166 | 15.5% |
| B2 | - | B1 | 715 | 9.5% |
| C1 | - | C2 | 906 | 12.1% |
| C2 | - | C1 | 1250 | 16.7% |
| D1 | - | D2 | 1011 | 13.5% |
| D2 | - | D1 | 838 | 11.2% |
| Total no. of pedestrians | | | 7507 | |

**Table 11: Pedestrian Count Summary**

## 1.4 SITE ASSESSMENT

### Shirland Road/Elgin Avenue

1.4.1 The junction of Shirland Avenue and Elgin Avenue is signalised but does not have a pedestrian phase. It is part of a SCOOT link which coordinates with nearby junctions to help vehicle movement through the network. The IBUS system is also used at this junction which is a method of bus priority that allows buses to be progressed through traffic signals by prioritising their passage to improve speed and reliability for passengers.

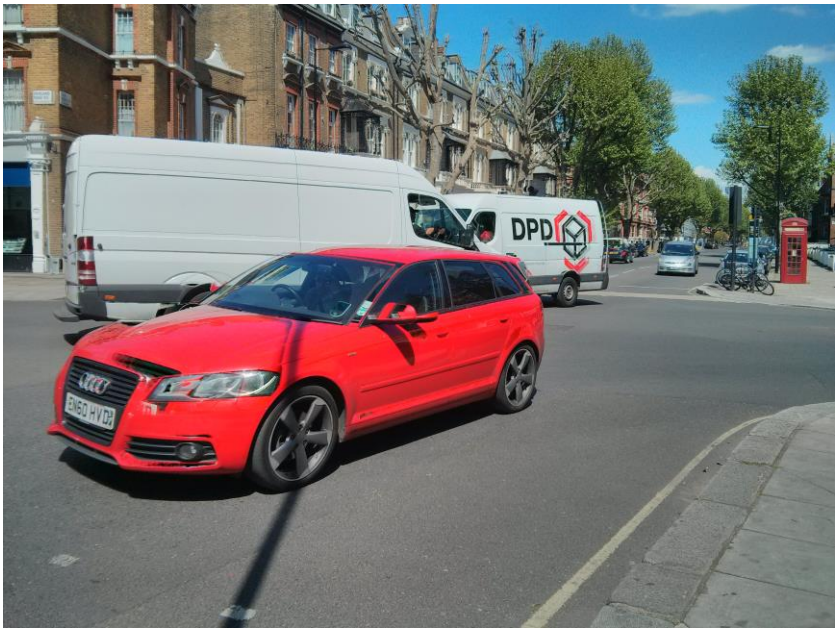
1.4.2 A plan of the signal layout and timings are located in Appendix D. The junction has two stages, when Elgin Avenue (both arms) are in red phase, Shirland Road has the go ahead and all movements are permitted, and when Shirland Road is in red phase, vehicles from Elgin Avenue are permitted to make all movements.


*Photograph 1 – Overall look of the junction from North-east arm of Elgin Avenue*

1.4.3 All arms of the junction have one approach lane and one exit lane, on Elgin Avenue on the north eastern arm the road has been built out on both sides. Each arm of the junction has a refuge which is approximately 2m wide and 1.2m in length. Keep left self-righting bollards are located on each island; each refuge also has a primary signal plus the secondary signal head for the opposite arm of the junction.


*Photograph 2 – Example of islands - located on north-west arm of Shirland Road*

1.4.4 Many of the collisions mentioned in the report were as a result righting turning collisions, it was noted on site that there seemed to be conflict in the middle of the junction between the vehicles using Elgin Avenue and Shirland Road. As we can see from the signal information gained from TfL located in Appendix D, there are only two stages. When Elgin Avenue is in its green phase, Shirland Road is its red phase, the opposite also applies. It may mean that the signal timings need to be tweaked. This could be reviewed when a more in depth assessment is made by the modelling team if the proposal to introduce a pedestrian phase is introduced




*Photograph 3 – Conflict in junction centre – taken from south-west arm of Elgin Avenue*

1.4.5 For all the arms of the junctions dropped kerbs have been installed in line with the traffic islands, but no tactile paving has been provided. The studs also seem to be positioned in an unusual arrangement on some arms of the junction, and not in

line with the desire lines. In this junction, alignment is difficult due to the diagonal layout of the junction.

1.4.6 Some cycle facilities have been provided at this junction these are located on the Shirland Road arms of the junction. The cycle reservoirs for both arms are approximately 4m wide with a 15m long cycle lane on the north-western arm that is 1.3m wide and a 19m long cycle lane on the south-eastern arm that is 1.2m wide. Elgin Avenue does not have a cycle lane or reservoir. Though there is cycle parking facilities located on north-eastern arm of Elgin Avenue on the south east side.

*Photograph 4 – Cycle reservoir and cycle lane on south-east Shirland Road*

1.4.7 As mentioned earlier in the report, Shirland Road forms part of the London bus network. Bus cages are located near the junction on the south-eastern arm of Shirland Road, both bus cages are 37m long and are highly utilised.

1.4.8 The junction is surrounded by single yellow lines, as there are no signs notating the times; the waiting restriction is that of the controlled parking zone. For this area the controlled parking zone is C1. The waiting restrictions for the zone are Monday – Friday 8:30am – 6:30pm. No loading restrictions were noted at this junction.


*Photograph 4 – Single yellow lines at the junction on all arms – taken from North-west arm of Shirland Road*

## 1.5 STREET LIGHTING ASSESSMENT

A detailed street lighting assessment can be found in Appendix E. In summary the existing lighting consists of functional electric lighting and is not fully compliant with the required British standards BS 5489-1:2013. Upgrading the lighting installation in the vicinity of the junction may help to improve road safety in the area, as five out of the eleven collisions took place in the hours of darkness.

## 1.6 PROPOSED SAFETY IMPROVEMENTS

### Right turn arrows

1.6.1 Due to the majority of collisions being right turns (63%) and the majority of these turns are movements from Elgin Avenue onto Shirland Road, (mainly from Elgin Avenue (NE) to Shirland Road (NW), it is proposed to install right turn arrows, across Elgin Avenue, making the vehicles wanting to turn right more visible and all road users more aware of right turning manoeuvres at this location. Due to the diagonal nature of the junction the prime positioning for vehicles turning right is further forward than a right turning pocket would allow. The carriageway width would not allow for a dedicated right turn lane.

### Realignment of crossing

1.6.2 As the existing widths of all the crossings at all arms of the junction are less than 2.4m, it is proposed to widen these, and to improve the alignment of the crossing as the existing alignment for the pedestrian studs is unusual. As the crossing desire lines proposed to be remarked, the traffic islands would have to be modified to suit this new alignment. Not all large vehicle tracking movements were possible at this junction in its current layout, these included the left turn from Elgin Avenue (SW) to Shirland Road (NW), the left turn from Elgin Avenue (NE) to Shirland Road (SE), the left turn from Shirland Road (NW) to Elgin Avenue (NE) and finally the right turn from Shirland Road (SE) to Elgin Avenue (NE). The location of the new islands would not exacerbate the situation based on the existing layout, though it is recommended a topographical survey be undertaken

to obtain a more accurate outline of the kerb layout at the initial design stage to fully understand what would be possible in improving the alignment.

**Tactile Paving**

1.6.3 There is no tactile paving at this junction at any of the crossing points, as it is proposed to realign the crossing points, the opportunity to relay the tactile paving in line with the guidance given in Westminster Way is to be taken. It is proposed that the tactile paving at the crossing will be grey coloured and contain two rows rather than three as per the guidance and standard details.

**Skid-Resistant Treatment**

1.6.4 There seems to be skid-resistant treatment only on the north-eastern arm of Elgin Avenue, it is recommended that this be relaid on this arm and laid on the three remaining arms for a length of 50m from the stop lines but up to the first stud line.

**Cycling**

1.6.5 Though only one collision involved a cyclist, it is proposed to add the cycle reservoirs (5m) on both arms of Elgin Avenue, but only a lead in cycle lane of the south-western arm of Elin Avenue, due to the increased popularity of cycling in the borough and across London.

**Pedestrian Phase**

1.6.6 As three of the collisions in the area involved pedestrians and two of these involved a pedestrian stepping out and being masked by a parked or stationary vehicle, it is proposed to install pedestrian phases at all arms of the junction and create a more attractive crossing to pedestrians.

**Waiting and loading restrictions**

1.6.7 As standard practice in Westminster City Council is to protect a junction with double yellow line ‘at any time’ waiting restrictions It is proposed to install double yellow lines around the junction up to the nearest parking bay or with a 10m minimum.. It is proposed to upgrade to ‘No loading at any time’ restrictions around the mouth of the junction, approximately 10m to ensure that no vehicles obscure visibility between road users or block access to the crossing. This would further enforce the Highway Code which states that "do not stop or park opposite or within 10 metres (32 feet) of a junction, except in an authorised parking space".

1.6.8 With trial authorisation of ‘No loading at any time’ double kerb blips without the need for signs to diag. 618 are proposed. The proposal will not add street clutter around the junction, which is line with WCC’s policy to reduce street clutter.

**Lighting**

1.6.9 There were five collisions that occurred in the hours of darkness, this is higher than the average rate from both CoW and ILB. The lighting columns around the junction are not to British standard and should be upgraded, either as part of this scheme or as part of CoW lighting maintenance programme. Approximately three new lighting columns would be installed (Two on Shirland Road (NW), and one on Shirland Road (SE), and four existing lighting columns would be upgraded, though this would be looked at more closely in the initial design stage.

## 1.7 RECOMMENDATIONS

1.7.1 It is recommended that the safety measures outlined in this report be progressed to stage 2, as per drawing 70010092-001-GA-01 in Appendix A. The suggested remedial measures should have a positive effect on safety in the study area. All users are likely to benefit from the proposals recommended.

### Costs

1.7.2 A Bill of Quantities (BoQ) has been produced for the recommended measures but does not consider temporary traffic management, adjustments and utilities diversions if required. The BoQ is estimated at £99,534.83, and is included in Appendix F. Full project costs, including an allowance for risk and contingency, and City Council costs comes to £368,156.32 and are also included in Appendix F.

### Collision Savings

1.7.3 The Collision savings have been calculated based on the remedial measures proposed above. Where several measures are proposed for a location the remedial value of the first proposal is applied to the affected collisions and then the remedial value(s) of the remaining measures are applied to the affected remaining collisions. The reduction factors have been taken from the RoSPA Road Safety Engineering Manual – Evaluating Solutions to Accident Problems (Appendix G). The accident types and projected savings based on remedial treatments for the study area are shown in the Table 12 below. The collision saving for this junction is 1.46.

| Accident location Reference | Accident problem | Remedial treatment | No. of Accidents | Reduction factor based on RoSPA | Three year collision saving |
|---|---|---|---|---|---|
| 3,4,10* | Pedestrian accidents at existing crossing | Crossing improvements | 3 | 41% | 1.23 |
| 1*,6*,7*,8*,10*,11* | Vehicle accidents at junctions | Junction improvements | 6 | 44% | 2.46 |
| 8*, 11* | Accidents at existing signals | Signal improvement | 2 | 22% | 0.14 |
| 1*,6*,7*,9 | Darkness accidents | Lighting | 4 | 21% | 0.56 |
| Three year accident saving | | | | | 4.39 |
| Accident saving | | | | | 1.46 |

* accident used more than once - remaining % worked out which is then multiplied by the reduction factor

**Table 12: Collision saving with proposed remedial improvements**

### First Year Rate of Return (FYRR)

1.7.4 The average cost per injury accident including an allowance for damage only accidents is £103,543 for urban roads; this is calculated by the price and value year 2015. This figure is based on January 2014 figures as calculated by the Department for Transport's Transport Analysis Guidance (TAG) Unit 3.4.1.

1.7.5 The first year accident saving rate for this scheme can be estimated to be 1.46 accidents.

1.7.6 The FYRR for the proposed scheme has been estimated using the following calculation based on the scheme implementation cost as set out in this report is:

$$FYRR = \frac{\text{Number of accidents saved per annum} * \text{Average cost per injury accident}}{\text{Total Scheme Cost}} * 100$$

$$YRR = \frac{1.46 * £103{,}543}{£368{,}156.32} * 100 = 41.06\%$$

1.7.7 The first year rate of return of is 41.06% and this scheme should be considered as a Local Safety Scheme.

1.7.8 Lighting improvements have been included in this cost, as the junction is below standards, though as below standard may be undertaken as part of maintenance works.