C153 Molesey Road (Hersham Railway Station) Pedestrian Crossing Facility

Feasibility Report

December 2017

Project Title: C153 Molesey Road, Hersham
Pedestrian Crossing near railway station

Document Title: Feasibility Report

Client Reference: PC0806

Date: December 2017

Prepared By: Andrew Porter

Authorised By: Peter Shimadry

Amendment List

Issue / Rev	Issue / Rev Date	Removed		Inserted	
		Page	Issue / Rev	Page	Issue / Rev

CONTENTS

1. INTRODUCTION:

Local residents and users of Hersham railway station have requested Surrey County Council to investigate the feasibility of installing a pedestrian crossing facility on Molesey Road. Many local residents and commuters are required to cross Molesey Road in order to access the railway station.

Safety concerns have been raised regarding the existing arrangement as no official crossing facility, either formal or informal, is present on Molesey Road in the vicinity of Hersham railway station.

Elmbridge Local Committee has allocated funding for this feasibility study, to investigate improvement options.

2. SITE ANALYSIS:

Molesey Road runs north-south between Molesey and Hersham. Hersham railway station is located approximately 1km north from its junction with the A244 at Hersham in the south.

Molesey Road in the vicinity of Hersham railway station is a single carriageway 30mph road where the alignment is generally straight. Immediately adjacent to the station is a narrow arched railway bridge. The carriageway to the south of the bridge is 10m wide and to the north 6.8m wide. This bridge has a height restriction of 3.2m (10' 9''). To allow vehicles to pass under the bridge, two way traffic signals have been introduced. There is a private road immediately to the north of the station running east, where a skip hire company and a scrap metal recycling company operate from. This road is therefore frequently used by Heavy Goods Vehicles (HGV's). This private road is not currently controlled by traffic signals, but has its junction between the signal heads on Molesey Road. Vehicles exiting from this road tend to do so by following the traffic released at the end of each phase by the traffic signals on Molesey Road.

There are existing footways adjacent to the carriageway on both sides of Molesey Road. These footways vary greatly in width, and are at their narrowest under the railway bridge (see Figure 5). There are currently no pedestrian crossings within the vicinity of the railway station. The nearest pedestrian crossings along Molesey Road are an uncontrolled pedestrian refuge island 260m to the south of the railway bridge, and 900m to the north. With wide carriageway widths, particularly to the south of the bridge, means that the time it takes for pedestrians to find adequate gaps in the traffic to cross are greater than narrower roads. Beyond the rear of the highway extents is a combination of residential and commercial properties, that have a number of dropped vehicle crossovers, making locating suitable pedestrian crossing locations difficult. It is worth noting that the footway that runs round the northern side of the railway station changes ownership between the public highway and third party ownership (see Figure 1 for public highway extents plan).

Permission will need to be sought from third parties to allow any works beyond the public highway.

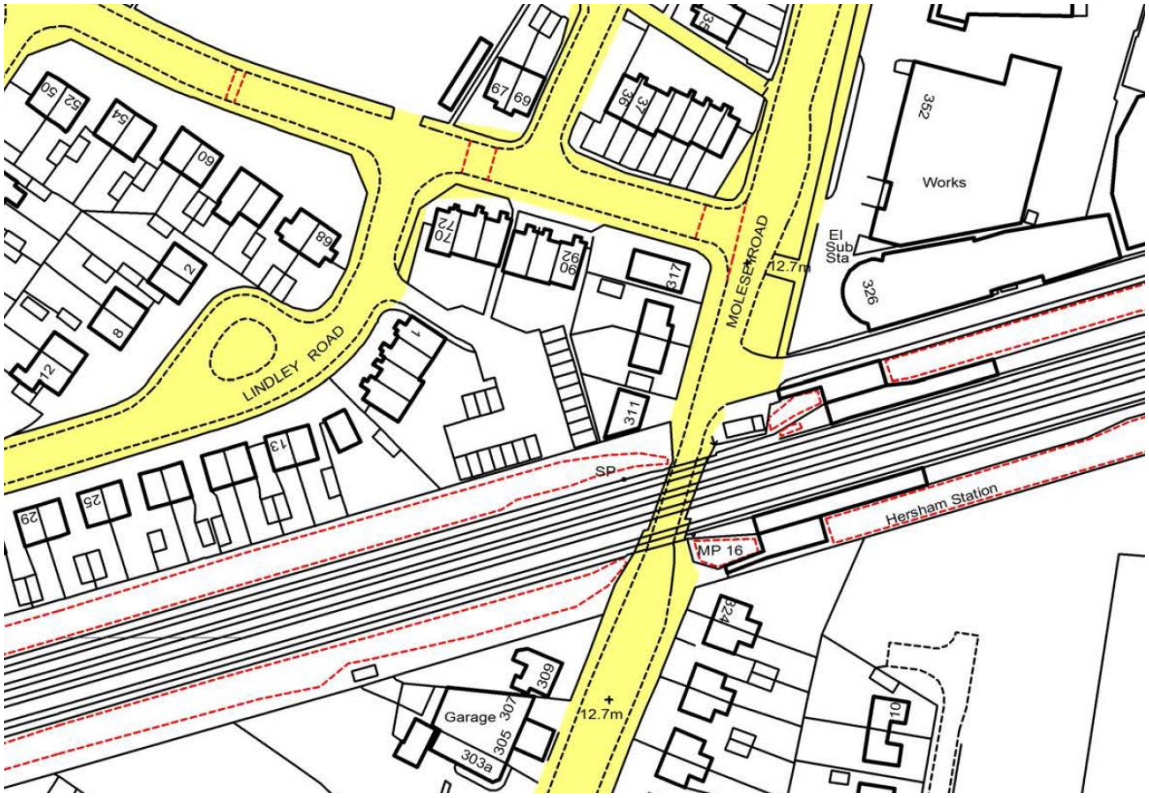


Figure 1: Highway extent plan (yellow indicates public highway)

The primary purpose of any proposed pedestrian crossing is to provide a safe crossing facility, in this case to and from the railway station. The prominent pedestrian crossing desire lines from the railway station are to the west toward Rydens housing estate via Walton Park and to the south towards the centre of Hersham village (see Figure 2). On site observations have shown that pedestrians crossing Molesey Road tend to do so between the existing traffic signal stop lines, where they have visibility of the traffic signals and of the traffic. Pedestrians crossing within the traffic signal ‘inter-green time’, the period where both traffic signals are showing a red light to allow traffic adequate time to clear the rail bridge, do so at the same time as vehicles from the private road, as well as private driveways may exit. Pedestrians crossing during this time have to be acutely aware of all the possible moving vehicles in order to cross safely.

There are both northbound and southbound bus stops located in the vicinity of the railway station, the southbound stop is 60m north of the rail bridge, and the northbound stop is 70m south of the rail bridge. The bus stops serve routes No. 514, 515 and 564.

There is an existing system of street lighting on Molesey Road, with lighting columns present on both sides on the carriageway. Depending on the type of pedestrian crossing facility proposed, it will be required during the detailed design stage, to carry out a lighting survey to ensure the levels of lighting are sufficient to provide a safe crossing facility during the hours of darkness.

According to the Office of Rail and Road, in 2015/16 Hersham railway station had 845,710 entries and exits. As this station does not have a car park immediately adjacent to it, these commuters will all be pedestrians in the vicinity of the station. The nearest car park is situated approximately 100m into Walton Park, from its junction with Molesey Road, and would involve these car park users having to cross Molesey Road to and from the station.

To the north of station are a couple of extremely well used cycle shelters (see Figure 6). It is evident that there is insufficient cycle parking provision against demand, and cycles can be seen locked to nearby posts, fences and pedestrian guardrail. There are no designated cycle facilities from Hersham railway station, only a 'signed-only' route to the River Thames via Walton Park.

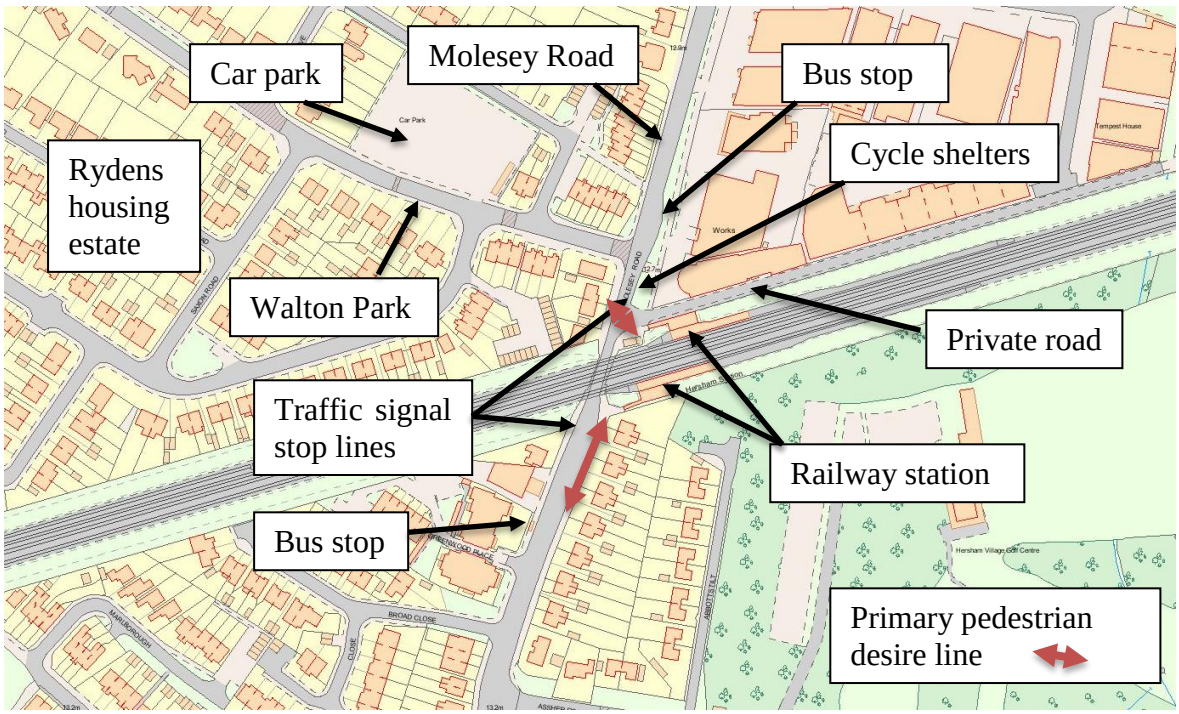


Figure 2: Location plan

Figure 3: Photograph of the northern side of the rail bridge, looking south

Figure 4: Photograph of the southern side of the rail bridge, looking north

Figure 5: Photograph of the rail bridge, looking south

Figure 6: Photograph of the cycle shelters

3. DATA COLLECTION:

3.1 Personal Injury Collision Data

An assessment has been made of the personal injury collisions along Molesey Road, between its junctions with Walton Park to the north and Greenwood Place to the south for the last 3 full years and part of 2017 where data is available, giving the period between 1st January 2014 and 30th September 2017. The Police and Surrey County Council do not collect or hold 'damage only' collision data, and therefore we are unable to report or comment on these. During this period there are eight recorded personal injury collisions, all had a severity of 'slight'. Injury categories are defined by the Department for Transport 'Instructions for the Completion of Road Accidents Reports from non-CRASH Sources' document, found at the webpage below:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/230596/stats20-2011.pdf

Latest 3 year and year to date collisions (01/01/14 to 30/09/17)			
Year	Slight	Serious	Fatal
2014	4	0	0
2015	1	0	0
2016	3	0	0
2017 (Jan to September)	1	0	0
Total	**9**	**0**	**0**

Figure 7: Personal Injury Collision Data

When the police attend personal injury collisions they assess and log the contributory factors that lead to the collision. The table below shows all the factors that led to the collisions that have been recorded at this location during this assessment period. Some collisions have a number of factors attributed to them.

Collision contributory factors (01/01/14 to (30/09/17)	
Factor	**Number**
No factors given	4
Failed to look properly	4
Following too close	1
Failed to judge other person's path	1
Loss of control	1

Figure 8: Personal Injury Collision Contributory Factors

All the collisions took place during daylight, and the majority of collisions happened when the road surface was dry.

Two of the injuries were as a result of a HGV hitting the bridge.

Despite the lack of pedestrian crossing facility, there was only one reported personal injury collision that involved a pedestrian, and this was a refuse collection worker being hit whilst working at the rear of the vehicle, so is not a result of crossing the road.

4. DISCUSSION AND OPTIONS:

Currently vehicles using the private road adjacent to the railway are not part of the traffic signal phase. This road has a scrap metal dealer as well as a skip hire company based at the end, which means that there are numerous HGV movements immediately next to a busy railway station. These vehicles exit the private road at the end of each signal phase (the same time as pedestrians would likely to be looking to cross the road). This conflict could lead to difficulties crossing the road at best and at worse a personal injury collision, although data suggests that no pedestrians crossing the road have been injured in a collision. If any pedestrian crossing facilities are to be installed, it would be necessary to create a traffic signal phase for the traffic exiting the private road so that all vehicles (with the exception of those from 2 houses and café) would be under signal control. Given the road layout, each signal phase would have to be run separately and in turn. To allow pedestrians to cross as safely as possible another phase would be required, a pedestrian only phase. This would effectively turn a 2 phased junction into a 4 phased junction, which would undoubtedly, in busy periods, increase delays for motorists travelling north/south. To determine the extent of the delays, traffic modelling of the options will be required. Each option would cost approximately £3,000 to model with a cost of £1,000 in addition for the necessary data collection. During an 'all red' phase for traffic, pedestrians would be able to cross at any point between the 3 vehicle stop lines. Surrey County Council's traffic signals department have reviewed the following options and have raised concerns about the ability to place the primary signal head within the private road where there is adequate visibility. This would need to be further evaluated should these options be taken further. Third party land owner's agreement will also be necessary for most of the options to be viable. A topographical survey of the location would also be of benefit, to ensure any design will work on site.

4.1 Do nothing

This option looks at carrying out no works. The personal injury data suggests that pedestrians are crossing Molesey Road safely. An installation of a pedestrian crossing point could increase this collision rate, as pedestrians may feel safer, and therefore not ensure traffic has stopped before crossing.

It is noted that there are no pedestrian crossing facilities at all in this vicinity, and whilst the majority of pedestrians will find an opportunity to cross within a relatively short period of time, those people who are more vulnerable, or have disabilities may find crossing difficult. In extreme cases, some pedestrians may feel unable

to use this railway station, given the lack of adequate crossing facilities allowing them to access it.

By doing nothing, the traffic congestion created by the existing traffic signals will remain the same.

Conclusion – Whilst doing nothing will not affect the pedestrian personal injury collisions, it also does not improve ease of crossing. Walking and public transport are two of the sustainable modes of transports that are being encouraged, the absence of crossing facilities does not support this initiative.

Guide price for construction £0k

4.2 Pedestrian refuge islands

One of the options considered was for the introduction of uncontrolled pedestrian refuge islands, but ultimately this was discounted. Between the railway bridge and Walton Park, installation of an island is not possible due to the carriageway width, turning movements of vehicles entering and exiting the private road and a number of dropped kerbs for private properties. On the southern side the of bridge, between the bridge and Assher Road, the carriageway is wide enough for an island to be installed, however the position of side roads and dropped kerbs for private properties, siting an island along this length would restrict turning movements, and therefore this option has not been deemed feasible.

Conclusion – There is insufficient space for pedestrian refuge islands to be installed, therefore cannot be recommended.

Guide price for construction £0k

4.3 Option 1 – Two stage signalised crossing to the north of railway station

This option involves the installation of a four phased signalised junction, the phases being:

1. North bound traffic
2. South bound traffic
3. Private road exiting traffic
4. Pedestrian crossing

This increase from the existing two phased signalled junction will have an effect on the traffic congestion at this junction, which will need to be modelled to evaluate the likely impact if this option, or any other is before being considered for further investigation.

To the north of the railway station, a build out would be created to allow a crossing point of Molesey Road at 90 degrees to the footway to be installed. Vehicle tracking software has been used to confirm large vehicles will still be able to access and egress the private road unhindered. This would mean that pedestrians wishing to travel to/from the railway station and Walton Park would need to cross in 2 stages. The reality is that pedestrians are likely to cross diagonally to the station on the direct desire line, and as this is a pedestrian only phase, it would be possible to do so.

A crossing south of the railway bridge would operate at the same time as the crossings to the north, and would allow pedestrians travelling north along the western footway to cross safely to the station. The position of this crossing would have no impact on residential accesses, but would involve the removal of some existing pedestrian guardrail.

This option allows all pedestrians, regardless of their vulnerability or disability, to cross Molesey Road to access the railway station.

Agreement with third party land owners, such as Network Rail, would be necessary, for the installation of crossing points, traffic signals and loops.

Conclusion - This is a full access option, and as long as traffic modelling shows delays were acceptable, position of signal heads are possible and third party land agreed, then this option would be viable.

Guide price for construction £150-200k

4.4 Option 2 – Single stage diagonal crossing to the north of railway station

This option is similar to Option 1 in that it will be a four phase signaled junction, and the crossing to the south of the railway bridge would be the same. The crossing to the north of the bridge would be diagonal across Molesey Road to the station, which is on a desire line. The Department for Transport (DfT) guidance suggests that diagonal crossings are possible, but not favoured due to the needs of disability groups. If diagonal crossings are installed they should purposefully be made unsuitable for those with certain disabilities, by not have any tactile paving, a kerb upstand of at least 25mm, and the signals themselves should not be audible or have a tactile element under the push-button unit. Consultation would also be necessary with local disability groups. If the advice is followed, then this crossing would only be suitable for the physically able, and would be considered discriminating against those with disabilities. It is worth noting that diagonal crossings already exist in Surrey with tactile paving and flush kerbs, an example being the junction between Smallfield Road/Balcombe Road, Horley.

Surrey County Council's traffic signals department have reviewed this option and have raised concerns about the ability to place the primary signal head within the

private road, where there is adequate visibility. This would need to be further evaluated if should this option be taken further.

This option also doesn't address those pedestrians wishing to travel north/south to cross the private road.

Conclusion – Assuming DfT guidance is followed, this option may provide a crossing on the desire line for the majority of pedestrians, but given it would not be a facility for all ability groups, it could not be recommended.

Guide price for construction- £100-150K

4.5 Option 3 – Combination of Option 1 and 2

Again this option is similar to the previous options, and would also be a four phase signalised junction. As with Options 1 and 2 the crossing point to the south of the railway bridge is in the same position. The difference is with the crossing positions to the north of the railway bridge, where this option incorporates both the two-stages crossing suitable for all pedestrians from Option 1 and the diagonal crossing on the desire-line for the majority of pedestrians from Option 2. It is similar in nature to the crossing at the junction of Oxford Street and Regent Street in London.

As with the other options, this option would require traffic modelling, confirmation on traffic signal head placement and agreements with third party land owners before it could be confirmed whether the scheme should/could be installed.

Conclusion – This option provides the best pedestrian crossing routes allowed following DfT guidance.

Approximate Construction Costs - £200-250k

5. RECOMMENDATION:

Based on existing personal injury collision data alone, there is no justification to carry out any works when compared with other locations with recorded collisions resulting in injury.

This said, site observations have shown that pedestrians do not find it easy to cross and that a pedestrian crossing facility would improve their ability to do so. It is therefore recommended that traffic modelling and a topographical survey of the site takes place. This would then help to evaluate the likely impact these options would have on traffic congestion, and provide the full picture with which to judge the value of progressing any options further.

Addendum 1:

Additional funding has been provided to conduct a traffic modelling assessment of the junction. The assessment reviewed the impact the existing arrangement had on traffic as well as the likely impacts of the proposed options 1 and 3, i.e. introducing fully signalised pedestrian phases.

The assessment provides a value of the Practical Reserve Capacity (PRC) which is a measure of the spare capacity at the junction. The results showed that the existing layout is well within capacity with an average PRC of 42% for the morning and 45% for the afternoon peak times. However, this changes when the options are assessed.

- Option 1: the PRC is -0.7% in the morning peak and 1.0% in the afternoon peak
- Option 3: the PRC is -3.4% in the morning peak and -1.1% in the afternoon peak

A minus figure represents where the junction is operating over its theoretical capacity, i.e. all scenarios apart from Option 1 in the afternoon peak.

The cycle time (the time it takes the traffic signals to complete a full cycle of phases) of the existing traffic signals in the morning peak is 99 seconds, and the afternoon peak is 94 seconds. It is predicted that the time taken to complete a full cycle for the options will double and are as follows:

- Option 1: The cycle time is 198 seconds in the morning peak and 196 seconds in the afternoon peak.
- Option 3: The cycle time is 200 seconds in both the morning at afternoon peak.

The assessment also shows the predicted length of vehicle queues. Due to the increased length of time for the signal cycle, this has an impact on the queue length. For the existing layout the average maximum queue length is 14 cars in the morning and 12 cars in the afternoon peak times. Queue length increases when the options are assessed.

- Option 1: average maximum queue length is 23 cars in the morning and 19 cars in the afternoon peak
- Option 3: average maximum queue length is 26 cars in the morning and 21 cars in the afternoon peak

The maximum queue length for each scenario is on the southbound approach to the railway bridge. These results suggest that any attempt to change the current arrangements to the traffic signals by introducing a pedestrian crossing phase and to bring the private road under signal control, will result in significant delays to traffic trying to pass under the rail bridge. The additional queue length is also likely to have the effect of delaying those travelling south along Molesey Road wishing to turn into Walton Park, as well as making it more difficult for those wishing to exit right from Walton Park onto Molesey Road.

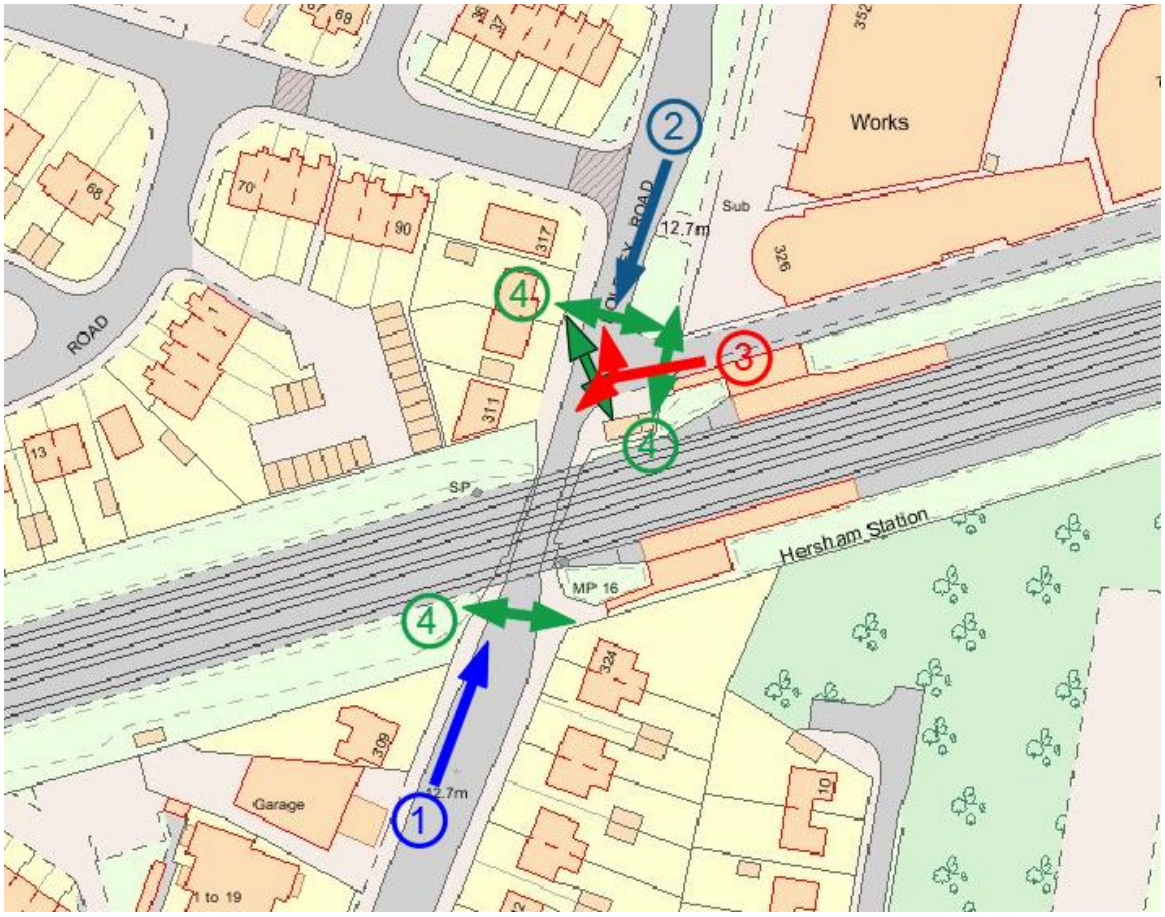


Figure 9: Signal phases of the Option Layout

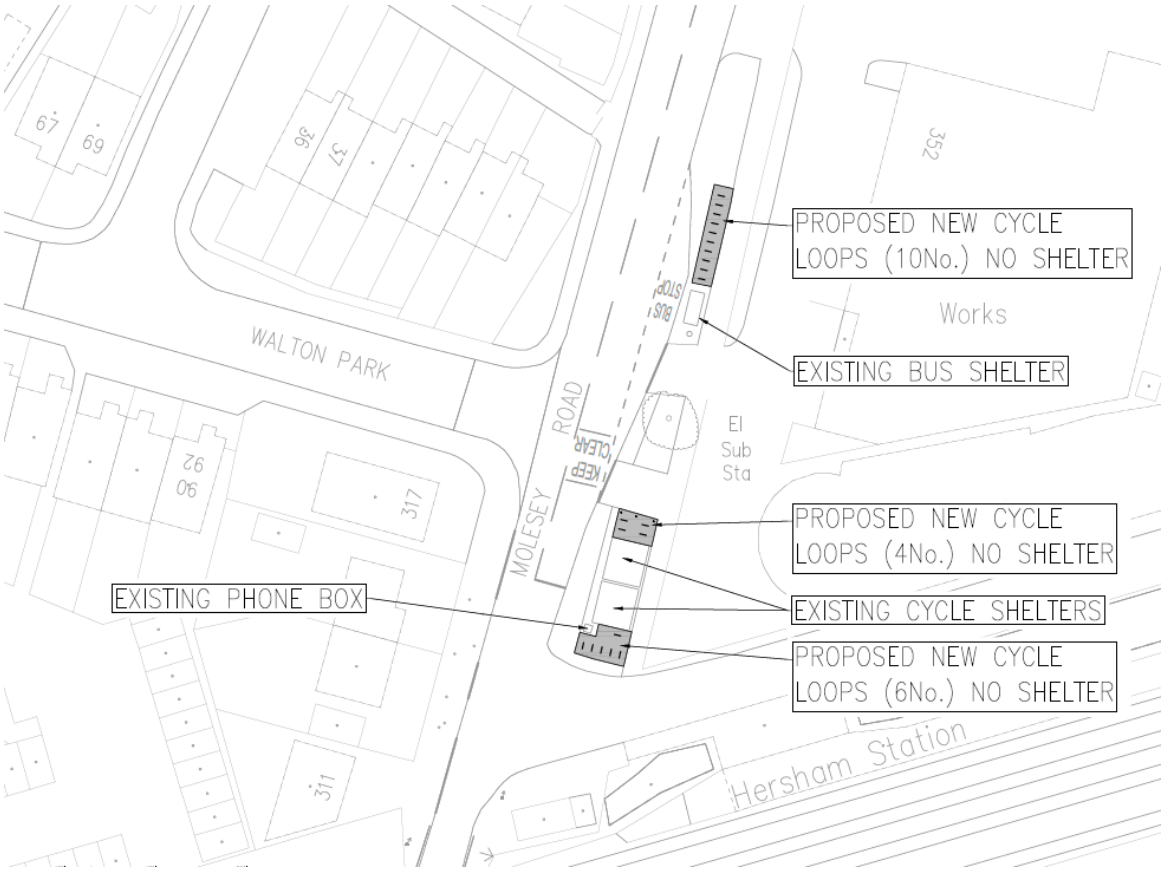
1 - Northbound traffic
2 - Southbound traffic
3 - Private road traffic
4 - Pedestrian movement (Option 1 and 3)
Pedestrian movement (Option 3 only)

Addendum 2:

Following discussion with Members, it was decided not to progress a pedestrian crossing scheme at this time.

A further request was made to investigate the possibility of increasing the provision of cycle parking. Currently there are times where the demand for cycle parking exceeds the existing provision. This can result in cycles being attached to pedestrian guard railings near the bridge, which can restrict pedestrian movement.

In order to alleviate this situation, the introduction of additional cycle parking has been investigated. The plan below shows an initial concept for the additional cycle parking.



This design looks to introduce 20 additional cycle loops, thereby doubling the amount of parking provision. These new loops would be on a new concrete hard standing, but not under the cover of a shelter.
Cost estimate: £20,000.