

A127 The Bell Junction Improvement Options for Consultation



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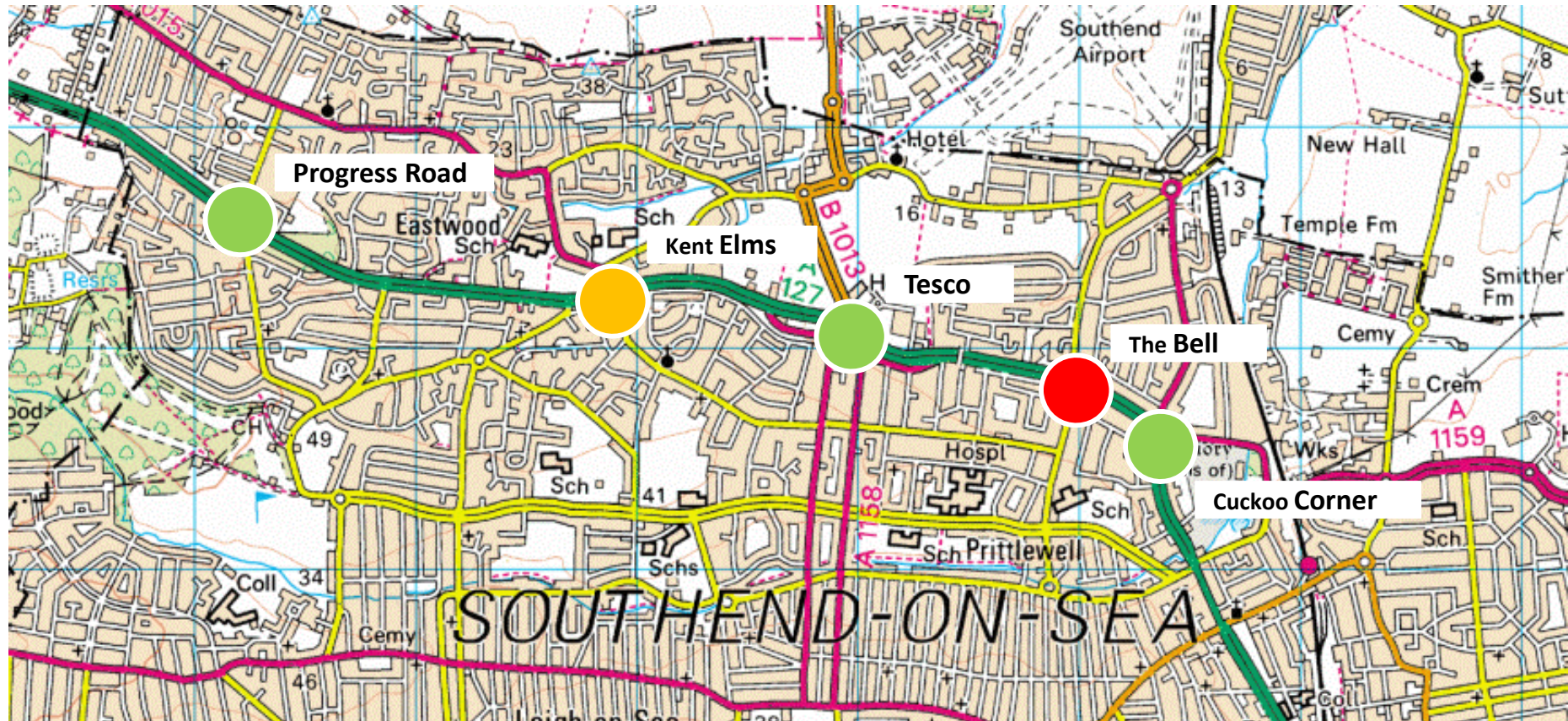
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Section 1 – Why?



A127 Corridor



The A127 has undergone a number of improvements at strategic junctions starting with Progress Road and Cuckoo Corner in 2010/11, Tesco Roundabout in 2014/15, with Kent Elms nearing completion and The Bell to be complete prior to 2020/21.

Those schemes that have been completed to date have improved the performance at each of the junctions and have contributed to an improved A127 corridor. The Bell scheme will also manage traffic better and contribute to improved air quality.

Why Improve The Bell Junction

The Southend Local Transport Plan and the South East Local Enterprise Partnership Strategic Economic Plan identify the A127 as a key corridor for growth.

The growth of London Southend Airport (LSA) and the planned new Airport Business Parks (as part of the Joint Area Action Plan (JAAP) with Rochford) will prove attractive to a wide range of global companies and offer capacity for at least 4,200 additional jobs up to 2021 and a further 3,180 after 2021.

Additional housing in Southend and Rochford will also put further demands on the highway network.

To enable this growth, the A127 requires substantial improvement and higher levels of maintenance. The Southend and Essex A127 Corridor for Growth Economic Plan sets out the rationale and supporting evidence in detail. The Southend element includes Highway and Bridge maintenance, together with the A127 Kent Elms and A127 The Bell Junction improvements. With Kent Elms junction nearing completion, we are now focusing on improvements at The Bell Junction.

£4.3m funding to support improvements at The Bell junction is being sought from the Local Growth Fund via the South East Local Enterprise Partnership. The Council is also looking to make a £0.72m contribution. Both contributions are subject to us being able to demonstrate value for money for the scheme.

The Bell Junction - Constraints

Constraints

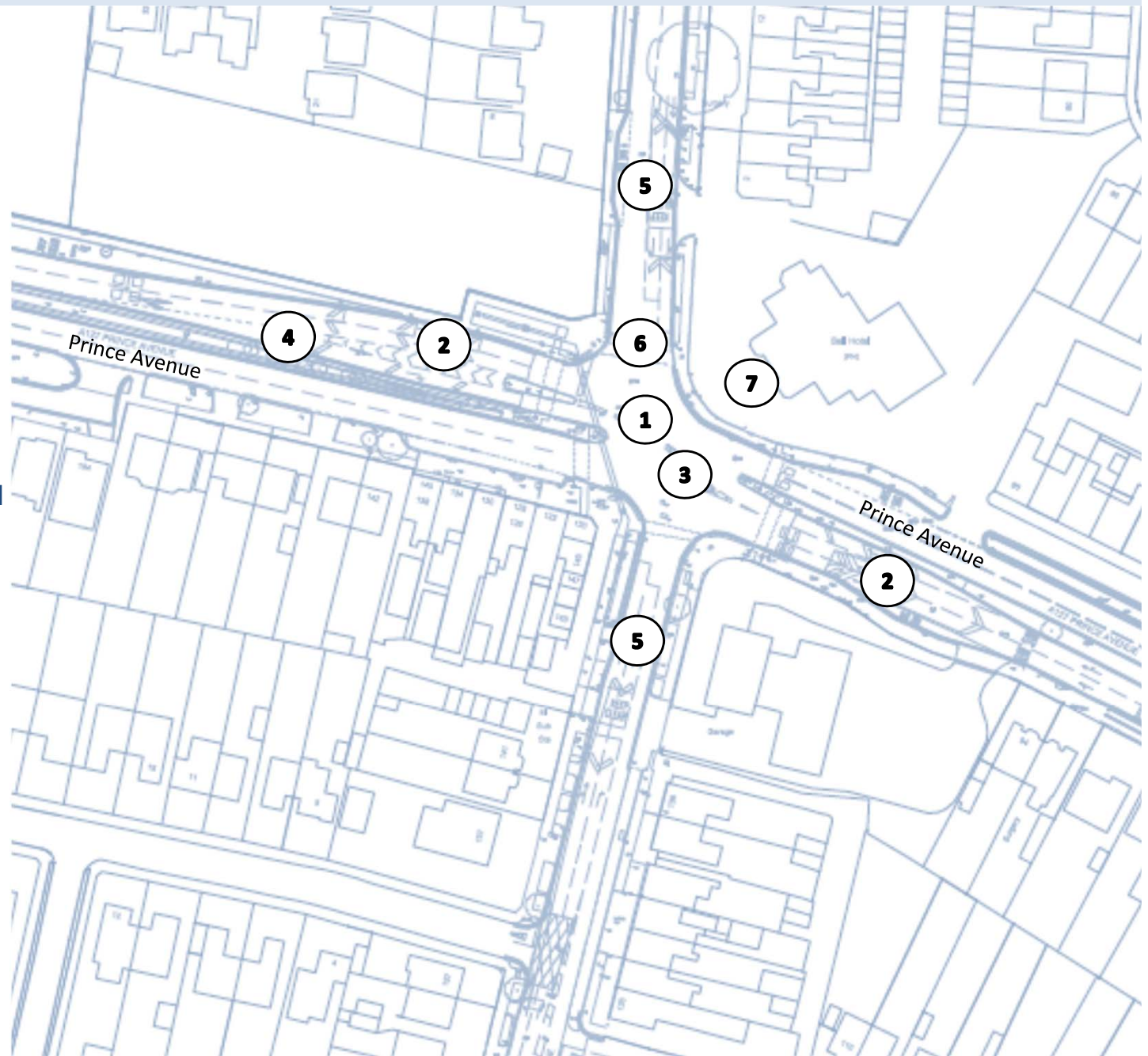
1. Congestion is experienced at both AM and PM peak periods in both directions on the A127 and side roads.
2. The traffic lights currently operate at a cycle time of 140 seconds, increasing vehicle waiting times at the junction.
3. Traffic queues on the eastbound A127 to turn right onto Hobleythick Lane, interrupting the flow of traffic on the main carriageway.
4. There are no formal pedestrian crossings on the side streets.
5. Right turn movements from Hobleythick Lane and Rochford Road are delayed due to the current operation of the junction.
6. The junction is within an area of poor air quality. Any new junction layout must reduce queuing to improve air quality.
7. The road is constrained by land outside the ownership of Southend Council.
8. There are many utility pipes and cables under the road that need to be moved.
9. We need to maintain access to neighbouring properties.
10. We must deliver on budget and on time.

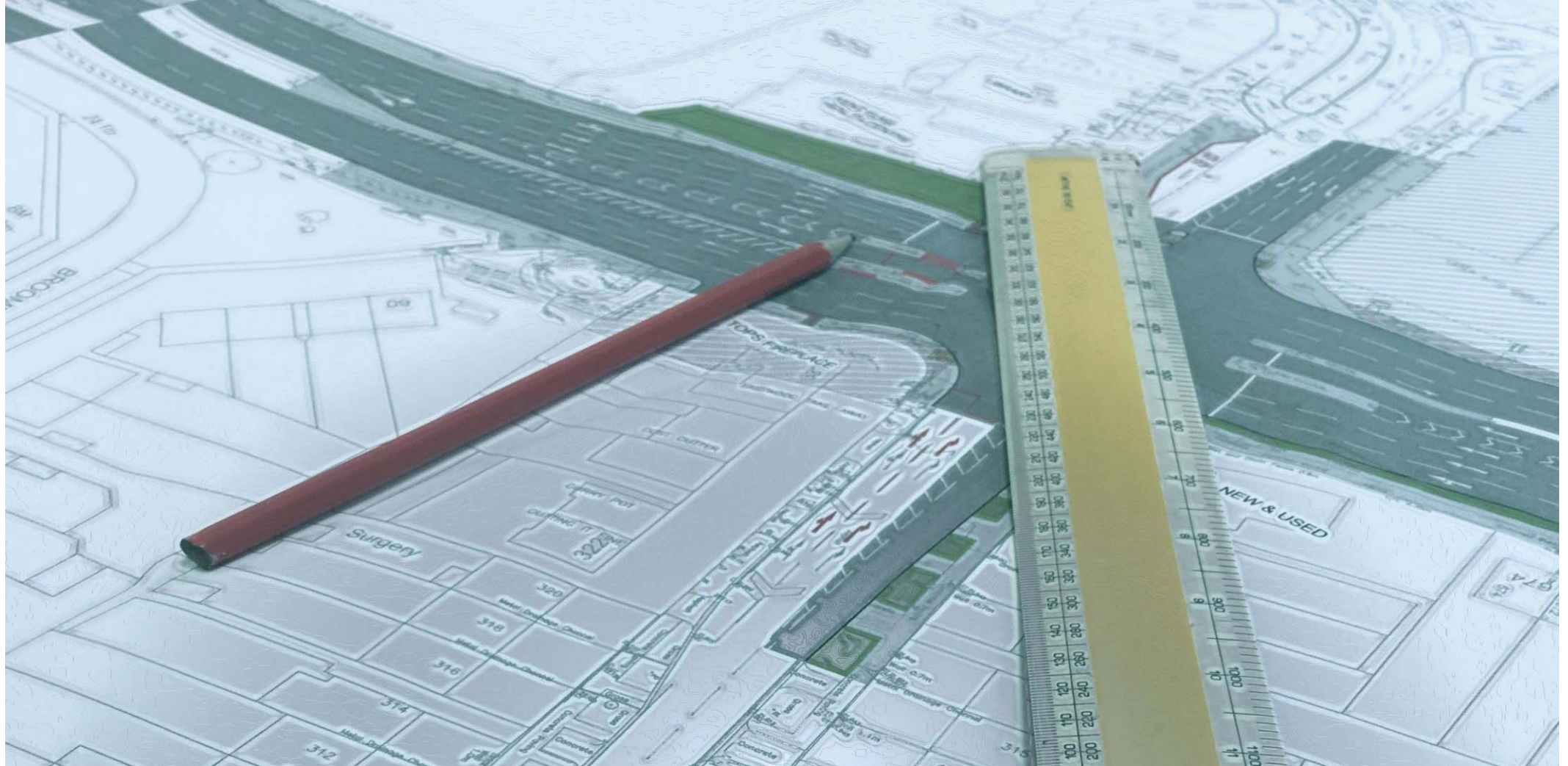


The Bell Junction - Scheme Objectives

Objectives

1. Enable the junction to manage greater volumes of traffic.
2. Reduce the vehicle waiting time at traffic lights to improve the flow of traffic.
3. Improve journey time reliability.
4. Increase capacity of the right turn lane from A127 Prince Avenue to reduce congestion.
5. Improve the performance of both Hogleythick Lane and Rochford Road to reduce delays.
6. Create more, safer crossings.
7. Improve air quality at the junction.





Section 2 – Highway Options





Highway Option 1



Highway Option 1

Option 1 has been designed with the intention of maximising some of the objectives of the scheme and should be read in conjunction with the footbridge layouts (see later section).

Option 1 addresses the issue of congestion caused by vehicles queuing to turn right from the A127 onto Hobleythick Lane. To overcome the queuing traffic spilling back into lane 2 of the Southend bound A127, additional capacity has been provided by extending the right-turn lane by 90m, which will accommodate an additional 15 vehicles. This will reduce the likelihood of vehicles blocking lane 2, which in turn will mean more vehicles will be able to cross over the junction at each green light.

Our traffic surveys show that very few vehicles turn right from the A127 onto Rochford Road. Option 1 bans this right-turn. By doing so, we can reduce the time that vehicles spend waiting at a red light when going straight ahead at the junction.

By removing the right-turn lane, we can also improve the pedestrian island on the eastern arm of the junction. The space previously allocated to carriageway can be used to provide greater space for pedestrians using the crossing facilities.

Benefits

1. Increased capacity on the right turn lane onto Hobleythick Lane to reduce queuing traffic spilling onto lane 2.
2. Removal of right-turn lane onto Rochford Road allows us to improve pedestrian facilities.

Constraints

- Removal of the right-turn lane onto Rochford Road means traffic will need to divert around the local network.
- This option provides only limited improvement to the amount of time vehicles queue at the traffic lights on Rochford Road and Hobleythick Lane.

Highway Option 2 – Preferred Option



Highway Option 2 – Preferred Option

Option 2 has been designed with the intention of maximising most of the objectives of the scheme and should be read in conjunction with the footbridge layouts (see later section).

This option builds on the improvements of Option 1. This option includes the improvements to the right-turn filter lane from the A127 onto Hobleythick Lane and the removal of the right-turn lane from the A127 onto Rochford Road. However, in addition, it provides a dedicated left-turn slip road from the A127 eastbound carriageway onto Rochford Road.

Including a new dedicated left-turn lane from the A127 eastbound carriageway onto Rochford Road reduces the impact of vehicles turning left at the junction. As vehicles make this manoeuvre, they often slow down, as the corner is so tight and swing into lane 2. When HGVs turn left here, this often results in them blocking the progress of vehicles going straight ahead at the junction.

The new left-turn slip road will remove this conflict. This new lane will have give-way lines as it merges with Rochford Road. The traffic lights at the junction will allow a reasonably unobstructed flow onto Rochford Road.

This option also provides a new crossing facility on Rochford Road. The lights at the pedestrian crossing will work within the operation of traffic lights, so they will indicate when it is safe to cross, rather than simply stopping the traffic.

The footbridge will need to be removed to accommodate this option as the existing footbridge supports would otherwise encroach on the proposed road layout.

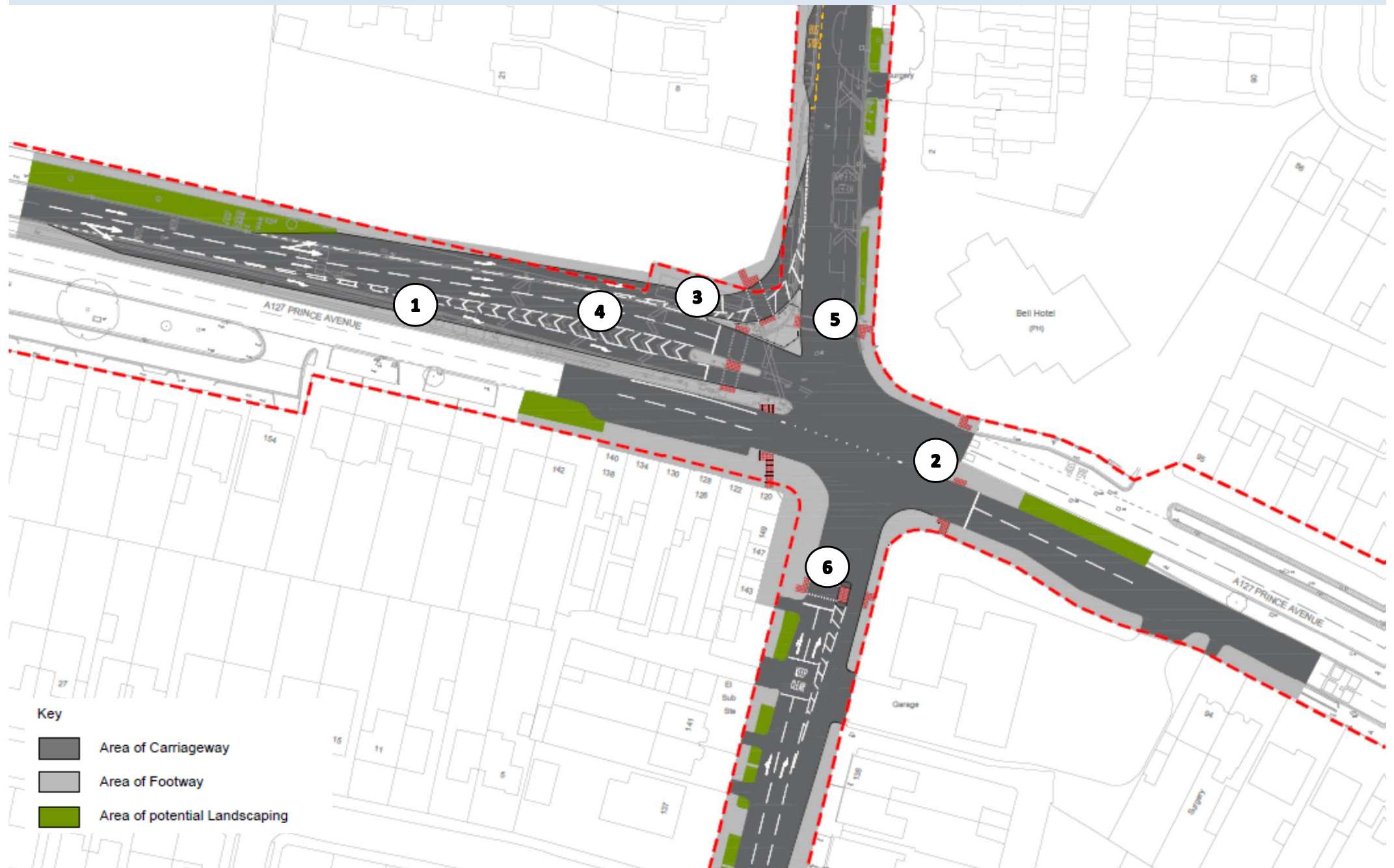
Benefits

1. Increased capacity on the right-turn lane onto Hobleythick Lane to reduce queuing traffic spilling onto lane 2.
2. Removal of right-turn lane onto Rochford Road allows for improved pedestrian facilities.
3. Provision of left-turn facility to remove the conflict of left turning traffic with traffic going straight ahead.
4. Improved junction performance for traffic going straight ahead.
5. Additional pedestrian crossing facility on Rochford Road.

Constraints

- Removal of the right-turn lane onto Rochford Road will require traffic to divert around the local network.
- Open space to the northwest is required to facilitate the scheme.
- Underground pipes and cables will need to be moved to accommodate the left-turn lane.

Highway Option 3



Highway Option 3

Option 3 has been designed with the intention of maximising the objectives of the scheme and should be read in conjunction with the footbridge layouts (see later section).

Option 3 provides the greatest number of improvements at the junction of the three options. This option provides the same benefits as option 1 and 2, (extending the right-turn lane onto Hobleythick Lane, banning the right-turn onto Rochford Road, providing a dedicated left-turn lane onto Rochford Road and improved pedestrian facilities on Rochford Road). However, it also includes a pedestrian crossing on Hobleythick Lane.

We have considered a crossing that allows pedestrians to cross the whole of Hobleythick Lane in one movement. However, this would mean that we would have to introduce an “all-red” phase in the traffic lights, meaning every approach to the junction would be stationary at the same time. This would reduce the performance of the junction and could reduce the improvements to air quality.

For this reason, this option would see pedestrians crossing Hobleythick Lane in two stages, with a central island provided as a safe waiting area. This removes the need for an “all-red” phase.

This means the road will need to be widened. The northbound traffic stop line will also be moved south to accommodate the pedestrian crossing and vehicle turning movements.

The existing footbridge will need to be removed as in Option 2.

Benefits

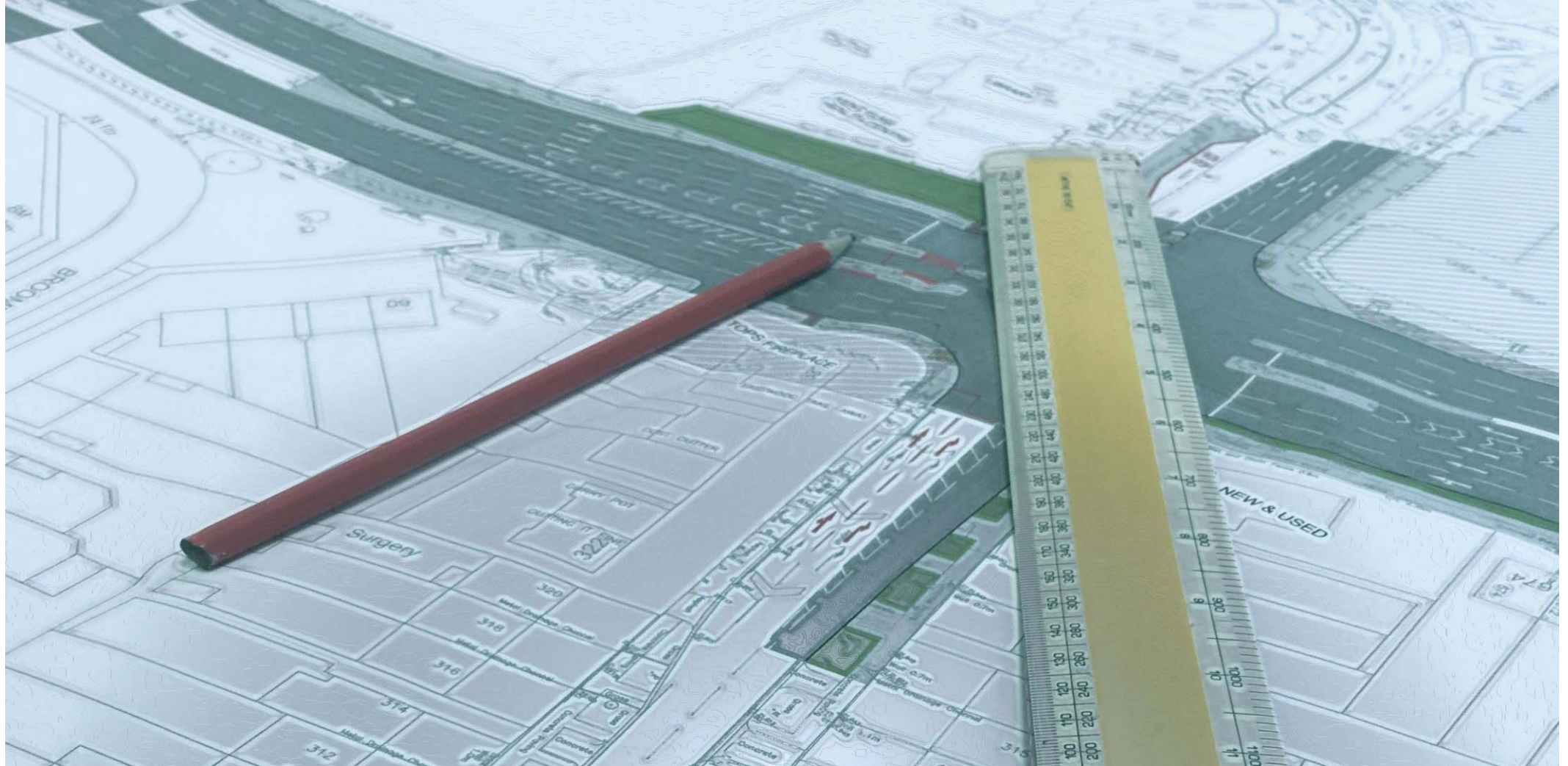
1. Increased capacity on the right-turn lane onto Hobleythick Lane to reduce queuing traffic spilling onto lane 2.
2. Removal of right-turn lane onto Rochford Road allows for improved pedestrian facilities.
3. Provision of left-turn facility to remove the conflict of left turning traffic with traffic going straight ahead.
4. Improved junction performance for traffic going straight ahead.
5. Additional pedestrian crossing facility on Rochford Road.
6. Additional pedestrian crossing facility on Hobleythick Lane.

Constraints

- Removal of the right-turn lane onto Rochford Road will require traffic to divert around the local network.
- Open space to the northwest is required to facilitate the scheme.
- Underground pipes and cables will need to be moved to accommodate the left-turn lane and the widening of Hobleythick Lane.

Highway Options Summary

	Highway Option 1	Highway Option 2 – Preferred Option	Highway Option 3
Junction Performance	<p>AM PEAK - higher volumes of traffic than option 2 but less than option 3, with the longest queue lengths of the three options, and also the longest delay.</p> <p>PM PEAK - Lowest volume of traffic passing through the junction, with the longest queue lengths of the three options and also the longest delay.</p>	<p>AM PEAK - Lowest volume of traffic, with reduced queue lengths compared to option 1 with marginally shorter delays than option 1.</p> <p>PM PEAK – higher volumes of traffic than option 1, with reduced queue lengths compared to option 3, with marginally shorter delays than option 1.</p>	<p>AM PEAK - highest volume of traffic through the junction, with marginally reduced queue lengths over option 1 and 2, with marginally shorter delays than option 1 and 2.</p> <p>PM PEAK - higher traffic volume than option 1 and 2, with reduced queue lengths over options 1 and 2, with shorter delays than option 1 and 2.</p>
Network Performance	<p>AM PEAK - Performs slightly better than both option 2 and 3 in all of the metrics.</p> <p>PM PEAK -Performs slightly worse than both options 2 and 3 in all the metrics.</p>	<p>AM PEAK - Performs very similarly to option 3 within the metrics.</p> <p>PM PEAK - performs better than both option 1 and 3 in the majority of the metrics.</p>	<p>AM PEAK - Performs very similarly to option 2 within the metrics</p> <p>PM PEAK - performs better than option 1 but worse than option 2 in the majority of the metrics.</p>
Pedestrians	<p>Improved pedestrian facilities on the eastern arm of the junction.</p>	<p>Improved crossing on the eastern arm of the junction and new crossing provisions on Rochford Road. Left turn lane will have an increased journey time for pedestrians.</p>	<p>Improved crossing on the eastern arm of the junction, new crossing provisions on Rochford Road and Hopleythick Lane. Left turn lane will have an increased journey time for pedestrians. Crossing on Hopleythick Lane will have an impact on junction performance.</p>
Land	<p>No additional land is required</p>	<p>Public Open Space to the north west of the junction required</p>	<p>Public Open Space to the north west of the junction required</p>
Utility Companies	<p>Limited diversions required in Central Reservation.</p>	<p>Diversions required to the north west corner and south west corner of the junction.</p>	<p>Diversions required to the north west corner and south west corner of the junction; and along the eastern verge of Hopleythick Lane.</p>
Current Estimated Cost (Excl. Footbridge)	<p>£2.061M</p>	<p>£4.401M</p>	<p>£6.405M</p>



Section 3 – Footbridge Options



Footbridge Layout 1 – NOT VIABLE

Highways Options 2 and 3 require the footbridge to be removed.

This layout shows how a footbridge that meets the preferred disability access standards (ramps with a gradient of 1:20) would look. The dashed red line shows the extent of the highway boundary. As you can see, this layout would require us to greatly encroach on land outside the highway boundary.

This layout would result in ramps that are approximately 139m in length on both sides of the junction. Due to available space, the configuration on the southern side of the junction will require the ramp to wrap around itself occupying land that is outside the highway boundary. This would have a severe visual impact on the adjacent properties and businesses, restricting their view.

In order to accommodate the ramps on the northern side, a considerable amount of land would be required from the area of public open space.

The provision of a new pedestrian footbridge that meets the recommended design criteria to ensure it is compliant with the Equality Act at the junction is currently estimated to be in the region of £3.06M and would have a significantly larger footprint than the existing footbridge. The footprint would also be outside the highway boundary on both the northern and southern side of the junction and would therefore require additional land.

For these reasons, this layout is not viable.



Footbridge Layout 2 – NOT VIABLE

Highways Options 2 and 3 require the footbridge to be removed.

This layout shows how a footbridge that meets the minimum disability access standards (ramps with a gradient of 1:12) would look. The dashed red line shows the extent of the highway boundary. As you can see, this layout would still require us to greatly encroach on land outside the highway boundary.

This layout would result in ramps that are approximately 80m in length on both sides of the junction. Due to available space, the configuration on the southern side of the junction will require the ramp to wrap around itself occupying land that is outside the highway boundary. This would have a less severe visual impact (than Layout 1) on the adjacent properties and businesses, restricting their view.

In order to accommodate the ramps on the northern side, land would still be required from the area of public open space.

The current estimated cost of building this footbridge would be in the region of £2.13M and would have a significantly larger footprint than the existing footbridge. The footprint would also be outside the highway boundary on both the northern and southern side of the junction and would therefore require additional land.

For these reasons, this layout is not viable.



Footbridge with Steps Only

This option provides a replacement footbridge with a flight of steps at each end only. The structure, therefore, does not provide a route for wheelchair users or those with mobility impairments. Users who are unable to use the footbridge will need to cross via the pedestrian crossings on the road.

This footbridge option still requires land from public open space to the north, but the steps on the southern side would be contained within the same footprint as the existing footbridge, and therefore offers less impact to the adjacent shops and residential properties than the two layouts we consider to be unviable.

Costs associated with this structure are currently estimated to be in the region of £0.759M



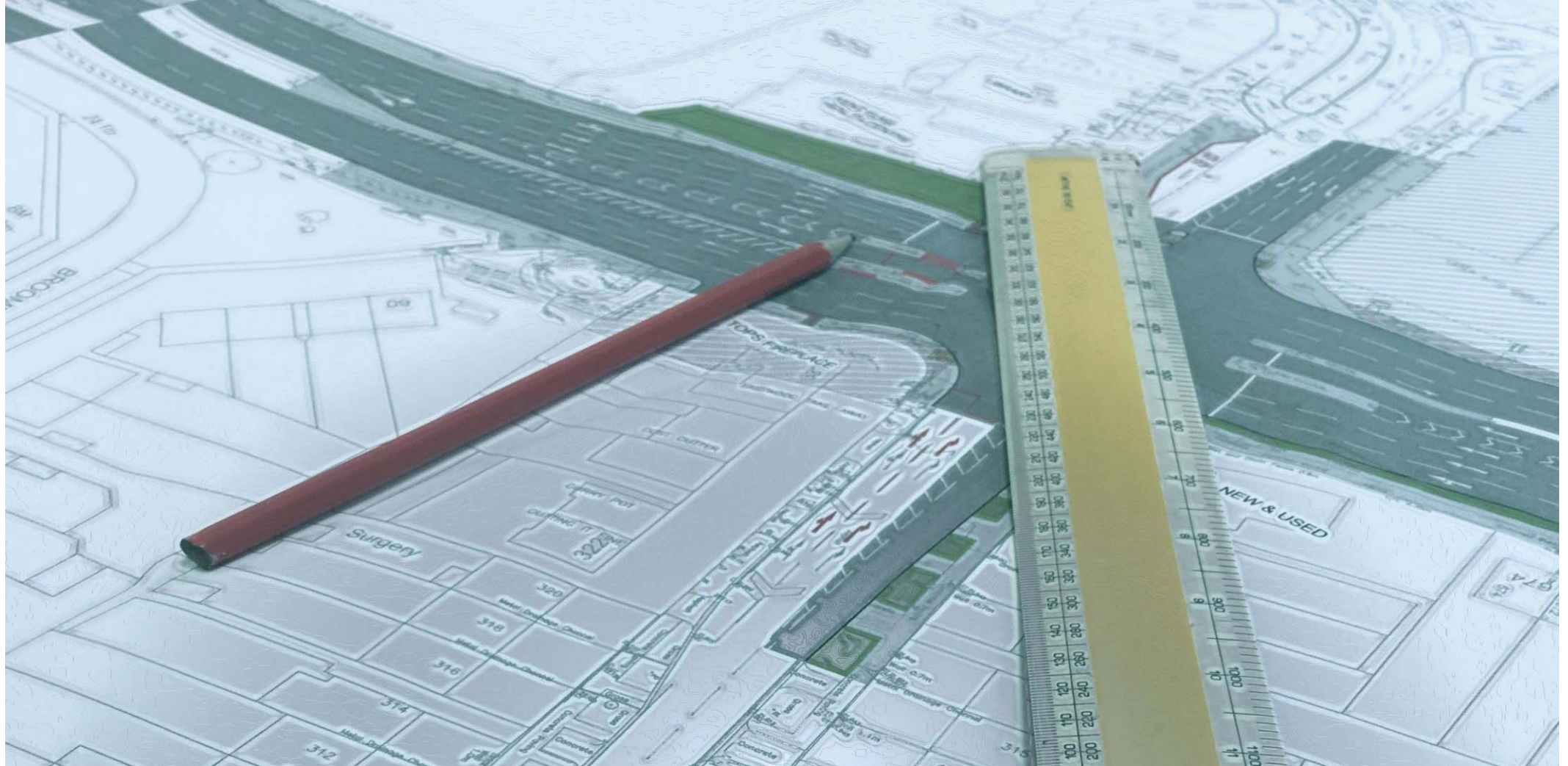
No Footbridge

An alternative arrangement would be not to provide a footbridge, with all users using the improved pedestrian crossings on the road.



Footbridge Summary

	Layout 1 – NOT VIABLE	Layout 2 – NOT VIABLE	Footbridge with Steps Only	No Footbridge
Equality Act Compliance	Meets the recommended design criteria.	Meets the minimum recommended design criteria.	Is not compliant as no ramps are provided.	N/A
Accessibility	Those pedestrians using the ramps will be required to travel 315m across the structure.	Those pedestrians using the ramps will be required to travel 245m across the structure.	No ramps available access only possible via steps.	Crossing of carriageway via surface crossing only.
Visual Intrusion	Has a significant impact on the properties on the southern side of the junction.	Impact is slightly lessened due to the reduced size of the bridge.	No change in impact as the footprint of the bridge remains the same as existing.	None.
Land	Land will be required on both the southern and the northern side of the junction from residents and businesses as well as the public open space to the north.	Land will be required on both the southern and the northern side of the junction from residents and businesses as well as the public open space to the north.	Land will be required from the public open space to the north.	No land required.
Utility Companies	Significant diversions required on the southern and northern side.	Significant diversions required on the southern and northern side.	Diversions required on the southern side.	None.
Current Estimated Cost	£3.06M	£2.13M	£0.76M	N/A



Section 4 – The Preferred Scheme



The Preferred Scheme

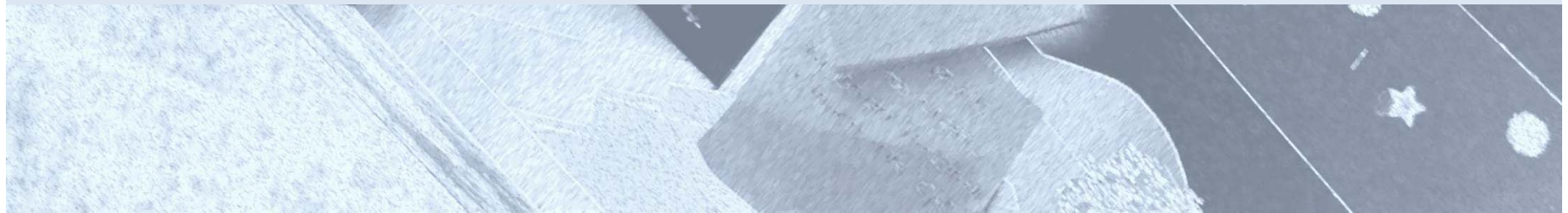
Highway Option

Highway Option 2 is the recommended scheme option. This option maximises the junction improvement, supporting the continued growth of the town, including London Southend Airport and the Airport Business Parks and improving access to pedestrians, local businesses and local schools.

The design will be developed further during the detailed design process.

Footbridge Option

The choice as to whether a new footbridge is installed at the junction should be based on both technical highway standards, local conditions and public consultation.



Section 5 – Have Your Say

Have Your Say

Having taken into account the existing conditions, the nature of the problems at the junction and the needs and plans for the area, the Council is proposing a scheme which best fits the objectives and balances the need of road users, the community, the environment and businesses.

Through this consultation, the Council is inviting you to provide your views and comments on the proposals. Your views will be taken into consideration before a final decision is made.

Please consider all of the options detailed in this document and give us your feedback by completing the questionnaire, which you can find by visiting www.bettersouthend.co.uk and following the link to “The Bell”.

Paper copies are available on request by emailing bettersouthend@southend.gov.uk or calling 01702 215408.

If you would like this information in another language or format, please contact bettersouthend@southend.gov.uk or call us on 01702 215408.



Section 6 – Traffic and Pedestrian Flows



Current Vehicle Traffic Flows

Existing

The A127 corridor currently experiences high volumes of traffic which in turn generates significant queue lengths, which has an impact on the delay times. Traffic figures for the A127 over a 12 hour period in 2016, and peaks, are shown in the diagrams.

Prince Avenue

The volume of eastbound right turning traffic from Prince Avenue is significant in number and due to the effective queue length of the right turn lane, traffic spills into lane 2 which obstructs the traffic passing through the junction.

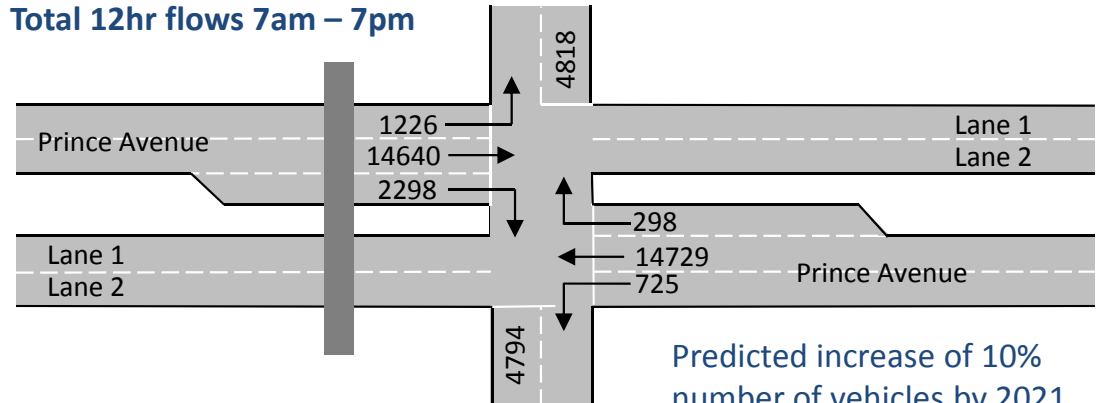
Left turning traffic from Prince Avenue into Rochford Road is reasonable in volume, however it does have a significant impact on the throughput by slowing traffic in lane 1.

The volume of traffic westbound is not specifically interrupted by the turning movements at the junction, but like the eastbound direction, the number of vehicles passing through results in the saturation of the junction at peak times, this leads to queuing through the junction.

Hobleythick Lane and Rochford Road

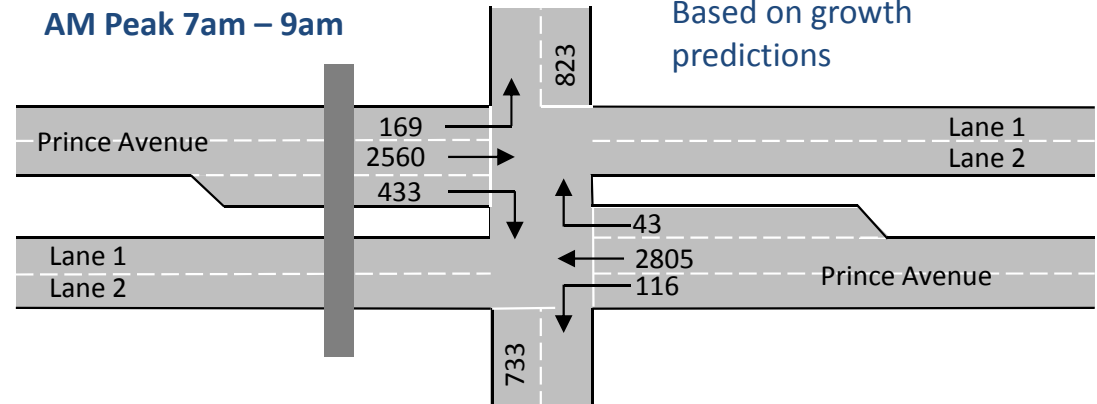
Whilst these two arms run independently the volume of traffic around the junction limits the time available for these roads.

Total 12hr flows 7am – 7pm

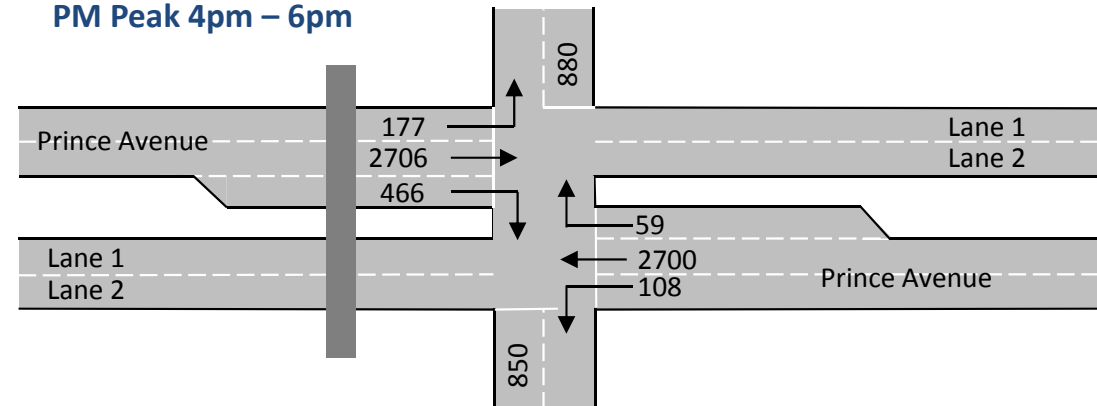


Predicted increase of 10% number of vehicles by 2021
Based on growth predictions

AM Peak 7am – 9am



PM Peak 4pm – 6pm



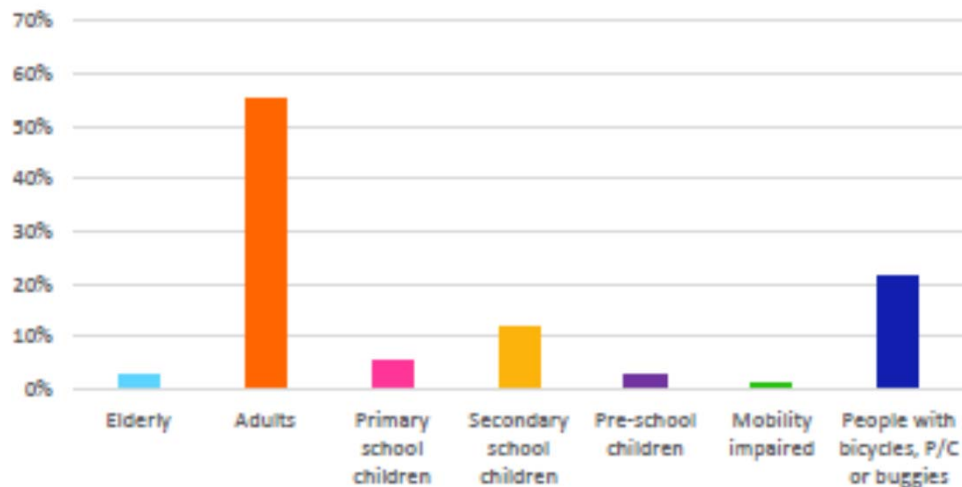
Pedestrian Movements

There are three peaks during the weekday, 08:00-09:00, 13:00-14:00 and 15:00-16:00. At the weekend the pattern is different when pedestrian flows tend to stay the same level between 10:00-14:00.

Weekday - Adults form the majority of all categories observed with more than 50% of all users, followed by people with bicycles/buggies (22%) and students with 20%.

Weekend – Adults are the majority with almost 65% of all users, followed by people with bicycles/buggies (21%). Naturally the number of school children is low at 7%.

Percentage distribution according to categories
All locations

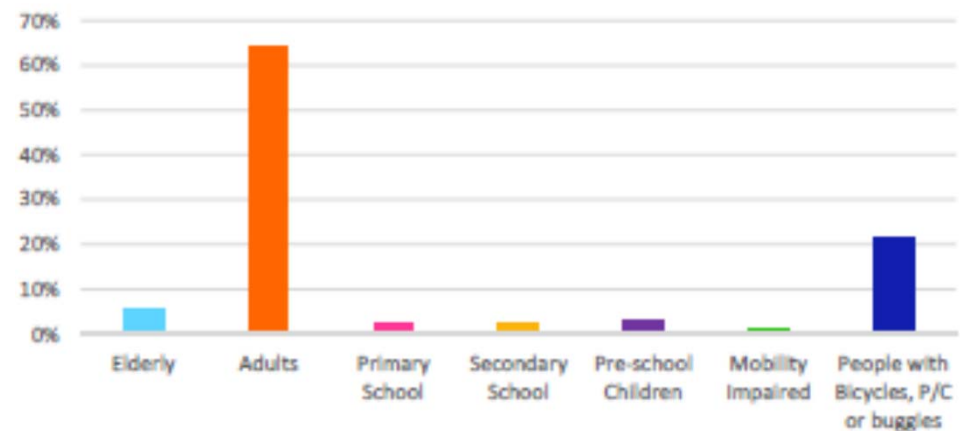


Weekday — Pedestrian Distribution

The east to west movement at the junction is not very strong, neither during the peak hour or during other hours of the day.

The north/south movement, the footways on Hobbeythick Land and Rochford Road are almost double during the peak hour relative to the average. This is the same for the eastern and western crossings, the footbridge is mainly used during the peak hour and therefore is an important link for those walking north/south at the junction.

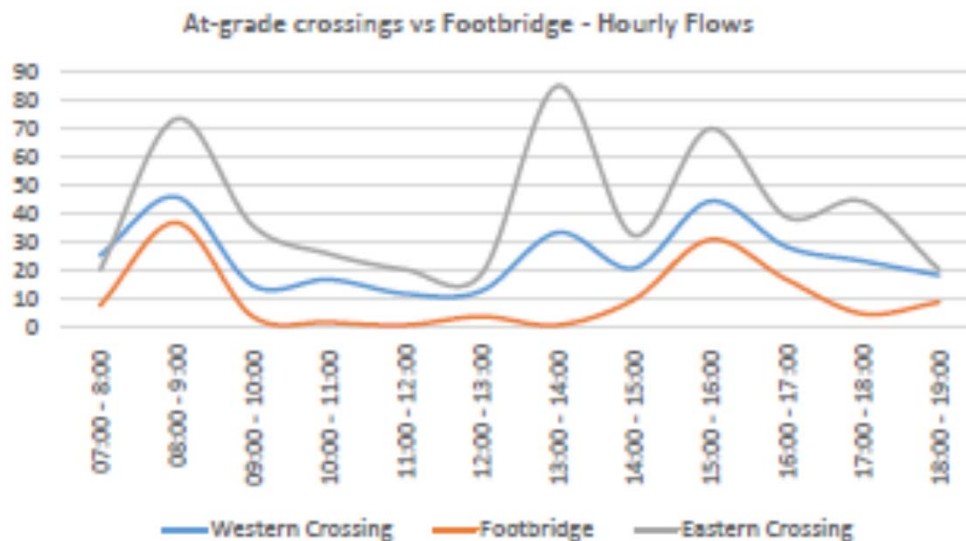
Percentage distribution according to categories - All
Locations



Weekend — Pedestrian Distribution

Pedestrian Movements

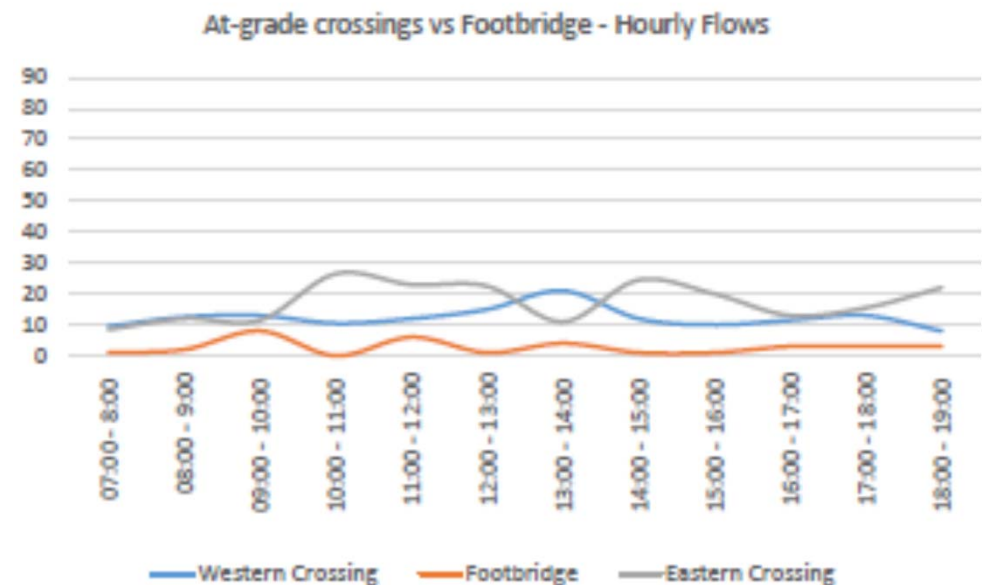
Weekday – the eastern crossing is the busiest location (42pph) compared to the footbridge (11pph) and the western crossing (25pph). The balance of pedestrians is even on the eastern and western side of the crossing, however the western at grade crossing sees almost twice as many people use it when compared to the footbridge. This trend does change in the morning and afternoon peak when a higher percentage use the footbridge, this increase is formed by students and young children with parents.



Weekday — Crossing Distribution

At the weekend the flows along the footbridge (3pph) are very low. Once again the eastern crossing (18pph) is the busiest location followed by the western crossing (12pph).

The percentage distribution is similar to the weekday, apart from the students, or young adults, who do not use the junction at the weekend.



Weekend — Crossing Distribution

