

Staines SCOOT region revalidation update report, 20th November 2018

Short glossary

SCOOT: **S**plit **C**ycle **O**ffset **O**ptimised **T**iming. A “region” of traffic signals junction working as a team)

UTC: **U**rbain **T**raffic **C**ontrol. The traffic signals are connected to a single computer, which controls all the traffic signals in real time, taking information from on street detectors, and sending control signals back to the traffic signal controllers. UTC enables SCOOT to operate.

VA: **V**ehicle **A**ctuation. This is a local control method where different junctions work in isolation from each other. The timings of each stage in the sequence are adjusted (up to maximum pre-set values) as vehicles pass over detector loops on the approaches.

J215, Junction of B376 Wraysbury Road with Hale Street (Two Rivers)

J215 Current works carried out

This site has been validated for SCOOT operation and we have altered the right turn into the Two Rivers site enabling better flow into Hale Street in an attempt to keep traffic moving away from the Staines Bridge. This does result in extended queues on the approach from Wraysbury. We are planning to visit during evening peaks to assess what traffic behaviour is resulting from this as there maybe issues for the wider network by promoting movements here which are mentioned in “network wide comments” section below.

We note that due to the age of the controller on older standards when this site is operating under UTC/SCOOT the pedestrian movements are always called, leading to some lost time, however the wider co-ordination we believe out weighs the lost time at this moment in time. In light of this the junction only runs in UTC/SCOOT mode during the peak morning and evening times. At all other times the site will run on VA and run to demand, we have also undated the VA timings which did not match the current traffic flows.

J215 Further works

The site is currently on the refurbishment list for 2019. We therefore expect further improvements operationally to come from this refurbishment.

J215 Observations for consideration

- We note that the road surface is poor in this location and lining is fair to worn, the integrity of some detectors is at risk in some locations and may not be repaired due to poor road surface potentially leading to less efficient traffic movement.
- On several occasions the right turners into the Two Rivers site were exit blocked, leading to vehicles rapidly congesting Hale Street. It would be beneficial to have a yellow box across the junction a keep clear to try and assist keeping Hale Street exit free flowing.

J226, Junction of Staines Bridge with Clarence Street

J226 Current works carried out

The site has been validated for SCOOT operation. SCOOT detectors have been retuned as these had been set incorrectly over time and providing “bad” data to the system. A main outcome of the project is to reduce queues on the bridge so this approach has been weighted to assist with this, see J226 observations below for more information. From the Clarence Street approach heading westbound the SCOOT detection is poorly sited across two lanes, where lane one is ahead and lane two is for right turning traffic. This resulted in the SCOOT model incorrectly viewing both lanes as ahead traffic. We have rewired the

SCOOT loop into one of the VA traffic loops somewhat closer to the junction's stop-line to test if this will allow for correct SCOOT modelling. This will save re-cutting the SCOOT loop for the time being and provide time savings at the initial and end ramps of peak traffic (start and end of a peak) with more accurate data. As with the previous site the VA timings have been updated and the site was found to be more responsive to the traffic flows during the off peak in VA mode.

J226 Further works

Peak time observations required to ensure test loop for westbound traffic is operating correctly.

J226 Observations for consideration

- It was noted that driver awareness at this site is very low on Staines Bridge, regularly gaps of several bus lengths appear due to driver on phones or generally not paying attention, causing signals to incorrectly gap change and move to next stage, resulting in lost potential green time.
- Clarence Street road markings misleading resulting in poor lane discipline, suggested adding ahead arrow to lane 1 with different destination to assist driver to pick a lane early.
- More poor driver behaviour where drivers use lane one to bypass lane two at red and wait within junctions to turn right, sometimes through the red light.
- Right turn into Bridge Street has a banned U-Turn movement in force. It is not upheld well (especially taxis) resulting in pedestrian vehicle conflict on the Eastbound Clarence Street pedestrian crossing on the exit of the junction. Additional enforcement could improve safety, or better marking of U turn area on Clarence Street further to the east.

P219 Clarence Street Pedestrian Crossing

J219 Current works carried out

We connected this site into the UTC system. It previously had the correct equipment but had never communicated to our UTC in station. Site now configured and able to operate UTC.

J219 Further works

We need to test the crossing under UTC/SCOOT control. There is a damaged SCOOT detector at this site which may need to be repaired, we are testing whether the loop has any future value to see if we can abandon it.

J219 Observations for consideration

None

J217 Clarence Street junction with High Street

J217 Current works carried out

Retuned detectors as these had incorrect values. Site found to be running VA and very low traffic demand suggested UTC/SCOOT intervention would be detrimental to pedestrian movements and low demand right turners. VA timings altered slightly.

J217 Further works

Site has some UTC database errors which are none critical to clear up.

J217 Observations for consideration

- Bollards to High Street not operational, however enforcement seems to be upheld by public well.

- Potential for U-turning conflict with pedestrians across south bound Thames Street. Could add box signs to signals with an order to improve safety at this location for pedestrians.

J221 Thames Street junction with Elmsleigh Road

J221 Current works carried out

Site UTC data updated to current standards and SCOOT validation completed. The site has had its VA timings updated and only runs UTC/SCOOT during the peaks, allowing for better service to side roads and pedestrians during the off-peak.

J221 Further works

Improve peak co-ordination and modelling data to ensure the right movements from J216 (Thames Street junction with South Street) are getting a fair bit of green time, issue is inconsistent so it maybe a database issue or the model is trying too hard and getting itself confused. SCOOT does not cope well with sudden alterations to traffic patterns generally and J216 is a little inconsistent with traffic arrival from outside the signal network.

Investigate pedestrians appearing in UTC without demands, possible prom change required, which would give an opportunity to improve programming standards to current levels at the same time.

J221 Observations for consideration

- A lot of traffic passes through this junction two to three times in the same direction. Suggests hunting for parking or generally lost? Believe they are accessing car park from South Street and circling back to Thames Street. How and why not known.
- Pedestrian crossings are single stage crossings (not staggered) resulting in quite a large amount of wasted time, especially if pedestrians cross in a gap in traffic and no longer require the crossing to operate. Altering crossings to puffin style or staggered crossings may improve this.

J216 Thames Street junction with South Street

J216 Current works carried out

UTC database corrected to enable SCOOT operation. Implemented composite links in SCOOT to try and get better modelling of traffic patterns with existing loop layout. Composite loops have not been used in Surrey before and documentation on their use is poor at best. Having observed our settings we believe the links are operating much more efficiently than before the project and the model does appear to be more accurate to on site conditions. Composite links use several loops and algorithms to calculate the traffic flow, typically normal links use one loop to count a movement, Staines network and existing infrastructure lend itself to using composite loops.

J216 Further works

Monitoring of the right turn movement from Laleham Road, this movement is very inconsistent due to the type of link used to model it. Initial observations seem promising.

J216 Observations for consideration

- Distracted drivers for the ahead movement from Laleham Road result in a lot of horn usage between drivers. They tend to look ahead at the signal crossing downstream or the secondary head for the right turn movement and miss their signal turning green. We could review the signal head and pole arrangement to decrease this happening.
- We believe we could re allocate some of the phases within the existing stages to improve traffic flow around the u-bend comprising Thames Street and South Street,

with minimal impact to pedestrians. This would need to be investigated further and modelling would help look at the benefits/impacts. This would require traffic count data.

J214 South Street Bus Station Access

J214 Current works carried out

Identified which SCOOT loops feed which sites, errors in asset records resulting in multiple loops present at site either appearing in use when they had been abandoned or lost during other carriageway works. Updated database to match on site assets. We have not validated this site as the bus movements are very low during our visits and had minimal impact on conflicting main road traffic.

J214 Further works

None

J214 Observations for consideration

- Several pedestrians crossed at this location where no facility is provided, perhaps suppressed demand?
- Site is a prime candidate for bus priority in UTC to enable buses to forwards call to gain access to the bus station under busy conditions.
- On occasion vehicles would use Bus Station Lane to overtake small queues. Although right turn does not appear to be an official bus lane this behaviour may cause issues in the peaks when congestion forms, will need monitoring.

J218 South Street junction with Bus Station exit / car park entrance & exit

J218 Current works carried out

Bus Station Exit road is in poor condition and the detection for this approach is damaged, we are unable to repair it so some funding used to purchase two new above ground detectors to bring this approach back into good operation. Until these detectors are fitted the bus station exit is coming up every cycle, which is wasting time. The detectors have been ordered and we are hopeful they will be installed and operational before the end of December. There were a lot of loops on the car park side of the junction with no described function, we have investigated their potential use and have retained some that are operational and will be abandoning others. This will make the junction simpler to handle in the UTC system. Partial validation has been carried out. We encountered problems on our last visit with the use of composite links at this site (working from the success of J216) but traffic flows were too low to facilitate a good validation period. Equally the car park exit and bus station require validation once detection issues are sorted and wired into use. VA timings have been reviewed and again are in use during the off peak times to make them more responsive to local need. This may need to be monitored during the Christmas period to ensure this remains the best mode of operation for the site.

J218 Further works

Waiting for detection issues to be repaired to complete validation exercise.

J218 Observations for consideration

- Road and lane layout is confusing when approaching from the north. The lanes only have arrows in them with no destination guidance. Recommend additional signage is provided.
- Heavy pedestrian movement to and from car park resulted in a lot of false demands to the pedestrian crossings during periods of light traffic, resulting in wasted time.

J213 South Street Junction with High Street/Mustard Mill Road

J213 Current works carried out

Site is in a substandard condition equipment wise, but functional. Found loop designation for SCOOT were not the same as the UTC database, investigated what loop had which function and altered database to match. Also altered the database's core information for the loops as it was dated in its standards usage. Validation has been carried out and VA timings altered to match in with the local traffic better. We noted a lot of traffic leaves the junction heading to Two Rivers shopping centre, roughly 85% of the traffic made this movement, which suggests the network is not operating how the wider UTC system and our strategic views would desire. We discuss this in more detail in "network wide comments" section below.

J213 Further works

The pedestrian legends at site require altering as they do not match the crossing type on the South Street arms.

J213 Observations for consideration

- Driver guidance is very poor at this location and it is not clear where the main traffic flow is meant to head, this may explain heavy right turn into Two Rivers.
- Very heavy pedestrian flows East to West and vice versa, at times the East footpath became very crowded.
- Access next to the Iron Bridge serving businesses can cause major blockages to the through traffic in both directions. It is a very narrow access but at time we saw it used by Large Goods vehicles both in and out. This also caused issues for pedestrians. Is a more suitable access for larger vehicles available?
- Bridge is narrow and constrains capacity at the junction.

J211 London Road junction with Kingston Road & Fairfield Avenue

J211 Current works carried out

This site is a TM-150-2 model type controller which is unfamiliar to both officers working on this project. The controller was installed some years again as part of a controller trial site. It therefore does not conform with our current standards entirely and its operation overall appears to have inherited a lot of old data that should have been reviewed before the controller was installed. The UTC database was altered to match the data provided however it became apparent that there is an issues between manufacturer products which need to be reviewed. Loop detectors where investigated to check they were operating correctly.

J211 Further works

Approach controller manufacturer to investigate product conflicts/issues resulting in UTC drop out issues. We will also request and co-ordinate the design of a new controller configuration to alter the data currently held to conform to our current standards. Carry out full SCOOT validation work once this is complete, checking neighbouring sites are not adversely affected by alterations.

J211 Observations for consideration

- Road condition is poor in areas around this location putting some loop infrastructure at risk of failure without being able to repair, leading to inefficient traffic signal timing.
- Road is heavy cambered which can result in slower vehicle speeds for larger/longer vehicles to navigate the undulations.
- Driver guidance is confusing in this area and leads to very poor lane discipline between the staggered T junctions. Regularly people in the ahead lanes are cut up by people using lane 2 either by accident or to jump the congestion by several cars.

J229 London Road junction with Fairfield Avenue

J229 Current works carried out

UTC and SCOOT validation on the main road was abandoned due to parking and construction issues from local businesses. It was noted that nearly all loop detection was destroyed or damaged in Fairfield Avenue. Site had also had a recent road traffic accident resulting in damage to one of the signal poles. UTC database was altered to match the existing site information and the SCOOT model is set up and ready to go when the health of the site is improved.

J229 Further works

Fully validate the site and co-ordinate with J211 once issues are resolved.

J229 Observations for consideration

- Road surface has failed on Fairfield Avenue and need urgent attention, however we accept this may be undertaken by the developer of the local site. London Road is ok.
- The “network wide comments” section details issues that affect this site.

Network Wide Comments

There were several noted worth issues witnessed during our initial works in the Staines town area briefly outlined below:

- Overall the driver guidance around the area is poor with a mixture of relevant and outdated signage. It was noted that some signs appear to contradict one another. A comprehensive review and upgrade of the signs and road markings would be beneficial, especially for drivers who are unfamiliar with the area.
- The car park guidance system is now defunct and obsolete. The static car park signs are not coherent and there are significant gaps. For example there are no car park signs at all on the London Road approach to the town centre. Renewal of the electronic guidance system would assist drivers in their decision making on the approaches to the town centre, and might reduce the volume of hunting traffic. At the very least provision of a comprehensive scheme of static car park direction signs would assist drivers in finding car parks.
- The weight restriction on Staines Bridge does not appear to be being enforced.
- There is evidence to suggest that significant numbers of drivers are using Bridge Street / Hale Street / Mustard Mill Road as their preferred through route through the town centre. The Hale Street / Mustard Mill Road route is 200m shorter than the Clarence Street / Thames Street / South Street route and has four fewer traffic signal controlled junctions. We need a wider discussion on whether this is the desired route to actively encourage as this has reduced efficiency at both Staines Bridge and Mustard Mill Road junctions, which are not currently geared to favour these movements.
- Generally around the southern U bend section of Staines (Clarence Street round to South Street & the Iron Bridge) congestion is rather sporadic resulting in periods of underutilised capacity. The reason for this is not known but while validating sites it was noted on several occasions traffic flow was greatly reduced to sometimes no traffic at all, when the entries to this network were congested. It may suggest loading or blocking issues are occurring on the network out of our sight during our visits. When these events occur it causes the model to react to the drop in traffic and

distorts its accuracy. When the traffic returns suddenly the system can struggle to recover, taking 5-10 minutes to compensate for this wide variation.

- London Road has significant parking issues between the junction of Kingston Road and Fairfield Avenue. While validating we had to abandon the site on numerous occasions due to parking outside the business on the double yellow lines. The worst occasions involved lorries that blocked lane one close to the stop line, leaving only one car length to get round and continue straight ahead. If one vehicle wished to turn right into Fairfield Ave then the whole stretch of London Road and Kingston Road was brought to a standstill. The longest recorded time of a parked lorry was roughly 45 minutes. Consideration of further enforcement or catering for parking elsewhere for business traffic would have a huge positive impact on the through traffic in this location.
- In several locations low pedestrian demand was satisfied within gaps in traffic. The signals around the town are unable to cancel the pedestrian demand and as such inadvertently waste time running the pedestrian stage when no longer required. Should future funding be available then efficiencies could be gain at some sites with the implementation of crossings with cancellable demand, ie, Puffin style crossings.
- It was noticed that buses heading into town are quite often trapped in the queues. The town may benefit from bus priority systems on the buses depending on which provider is being used. Currently no signals in the Staines area have bus priority fitted and it would be a useful addition to promote modal shift. This would need further investigation with SCC public transport team and partners.
- At the junction of London Road and Kingston Road it would be worthwhile testing scenarios to allow vehicles from Kingston Road to turn right to reduce the number of conflicting traffic movements along London Road. The impact of such an alteration is not fully understood so would need investigation. It could lead to a reduction of traffic into Fairfield Ave and improve main road flow because of this lowering in demand.
- A common theme is the condition of the carriageway, which is so poor in places that there is a significant risk of detector loop failure that may not be repairable without carriageway resurfacing.

Comments for the future work

- With Christmas approaching validation work will not be practical to carry out due to abnormal traffic flows. It will be a chance to progress the more physical element of the work and engage external parties where required. This should put us in a good position to come back in the New Year with the polish required at select sites.
- We will need to monitor the traffic behaviour with our recent alterations to the SCOOT model to see if traffic behaviour is trying to do something different to our model. As mentioned at Hale St we are concerned vehicles are using this part of the network to bypass the rest of our signals. It may be difficult to persuade users to use the more heavily signalled side of the network, which would result in network wide efficiencies.

This page is intentionally left blank