**Ideas for better traffic flow, safer pedestrian and cycle routes in Guildford**
**https://drive.google.com/file/d/17Opbo82bOEHsteLU7e0dm_N3bKDhpHf3/view**

Draft rev 5 (sketches added for A25/A320 junction & Dennis roundabout) rev 6 smaller font 27 September 2020. Rev 7 added showing Leas Road and a new one-way link (9 August 2021).

**Contents**

## 1. Introduction

This document describes my thoughts on how congestion in Guildford town centre could be reduced and how to create an improved road network for all including safer and expanded pedestrians and cycle routes. Redevelopment of North Street site offers the opportunity to redesign bus routes and to relocate the bus station. Widening of the A3 is of course a Highways England's scheme but aspects of this scheme would influence local traffic movements leading to and exiting the A3. No details are available of what the HE might propose and currently this scheme has again been shelved for the foreseeable future.

Changes to existing road network and building new infrastructure necessarily have to be in stages. Crucial to any improvement scheme is traffic management during its construction stages. There would be unavoidable delays and disruptions but the aim has to be to make these acceptable.

The approach should be to quickly deal with those that could be implemented in the short term and only requiring modest funding.

The second stage would be to carry out widening of footways and introducing cycle lanes wherever possible. North Street work would continue in parallel including changes that are necessary for dealing with bus routes and relocation of the bus station.

The third stage would be to carry out building new infrastructure. A new east-west route over the railway and the river would remove a lot of this traffic from the gyratory. North-south traffic could be lowered into an underground route between York Road roundabout and Quarry Street and would do away with most of this gyratory traffic and create a pedestrian and cycle friendly town centre.

The fourth and final stage would be to create bypasses to take through traffic out of the town centre. A possible route would be from Shalford (A281) to Parkway (A25) in a tunnel with spurs to Artington (A3100) and Broadford Road (A248). Alterations to A3 Stoke Road junction would be needed to cope with the traffic flow changes.

Other areas are: -

The A25 junction with A320 Stoke Road and
The A3 Dennis Interchange

2. **Short Term improvements.**

The route between the town –centre and the railway station is primarily through Bridge Street. A smaller number use the existing Walnut Footbridge. The replacement of this footbridge by a wider bridge for pedestrian and cycle use is under way but until the exit from the railway station lines up with this bridge when Solum Regeneration finishes their work, Bridge Street will remain the preferred route.

North footway on Bridge Street is narrow and pedestrians find it inconvenient during peak hours because of the sheer volume of people that use it. It is a safety hazard when pedestrians are forced on to the pavement in order pass each other. The footway needs to be widened. If the road is reduced to two lanes, the space vacated could be used for a wider footway and a cycle lane. A redistribution of traffic would be needed to cater for this change.

The inner lane of the gyratory is underused on all three sides except on Bridge Street. Right turn off Farnham Road Bridge into Park Lane for cars only going in contraflow direction would reduce traffic on the right hand lane in Bridge Street. Wider traffic would continue to use the current route. This contraflow route would continue on to Portsmouth Road and go left on Friary Bridge and then right again on to Millbrook. The sketch No. 1 below shows this, -


Sketch No. 1

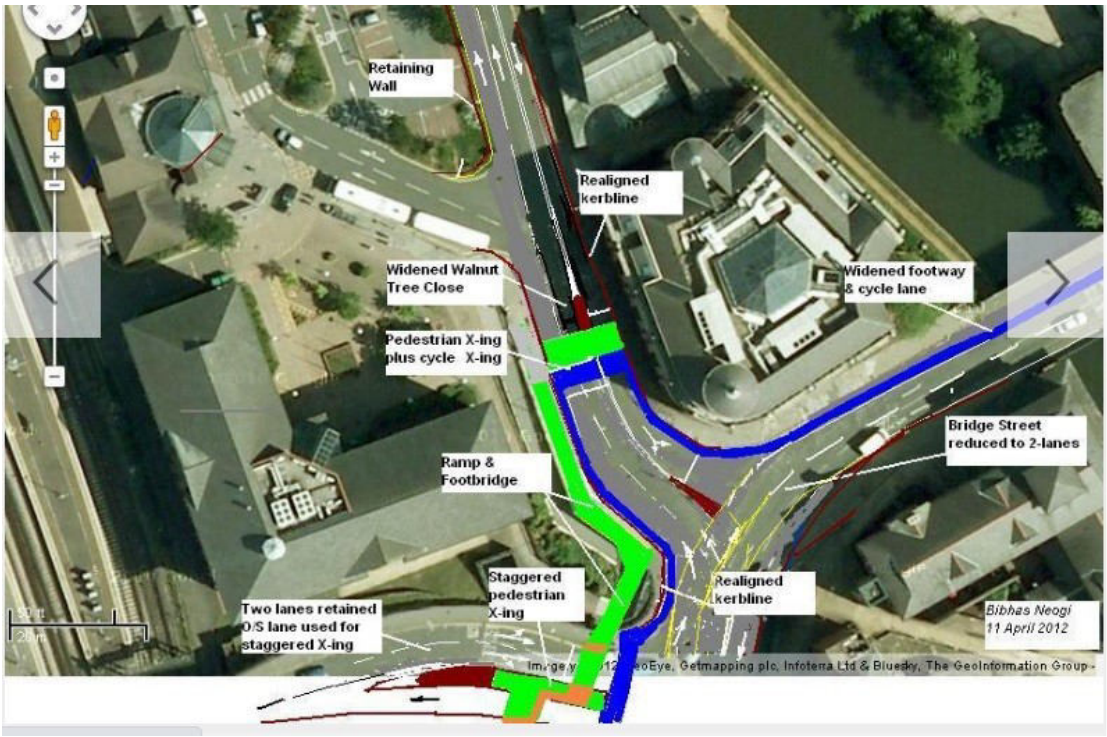
In order to improve southbound flow in Onslow Street, Debenhams pedestrian crossing should be made a two-stage crossing. It could be done by either introducing a chicane for the two northbound lanes and the island thus created or the offside lane could be closed and used as an island.. The adjacent pedestrian crossing in High Street should operate in tandem so that any left turning traffic into High Street does not hold up southbound flow.

The overall effect would be to create a better flow around the gyratory. Sketch No. 2 shows the altered Debenhams pedestrian crossing, -


Sketch No. 2

### 3. Medium-term Improvements

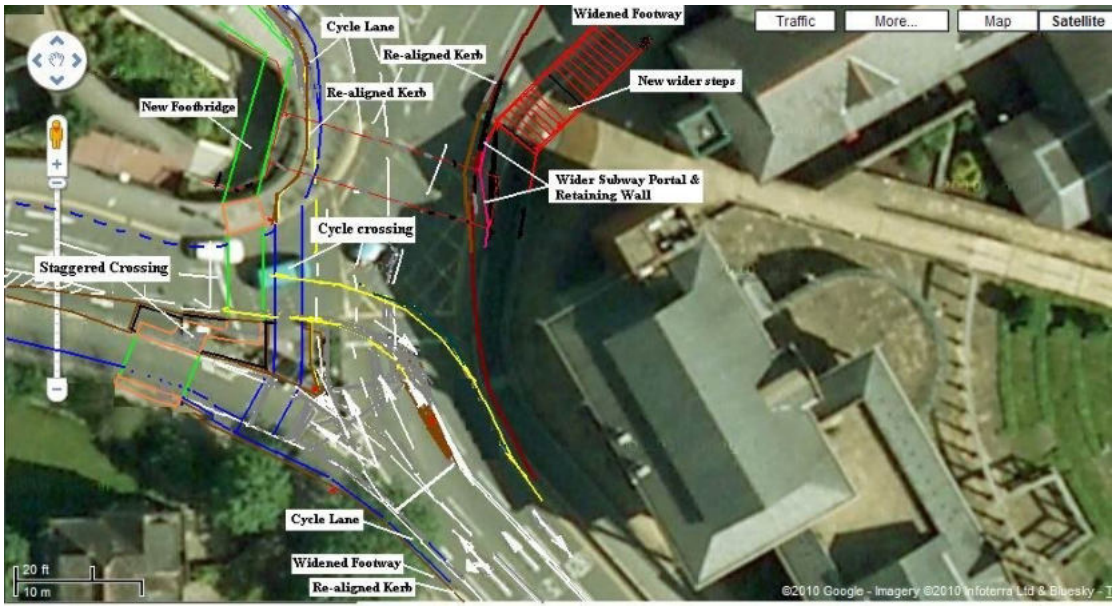
Traffic from closed lane on Bridge Street could be directed on to Walnut Tree Close (WTC) however its widening down to Station View junction would help. Northbound traffic beyond Station View would be made one-lane one-way over this narrow stretch of WTC. This could continue up to the turning around (prepared but not in use at the present time) near the Sorting Office. At a later date a new crossing of river Wey behind Crown Court could be built leaving WTC two-way north of that bridge. The sketch No. 3 shows the widening of WTC. Cycle routes would be continued to meet up with the Sustainable Movement Corridor coming out through Yorkies Footbridge.



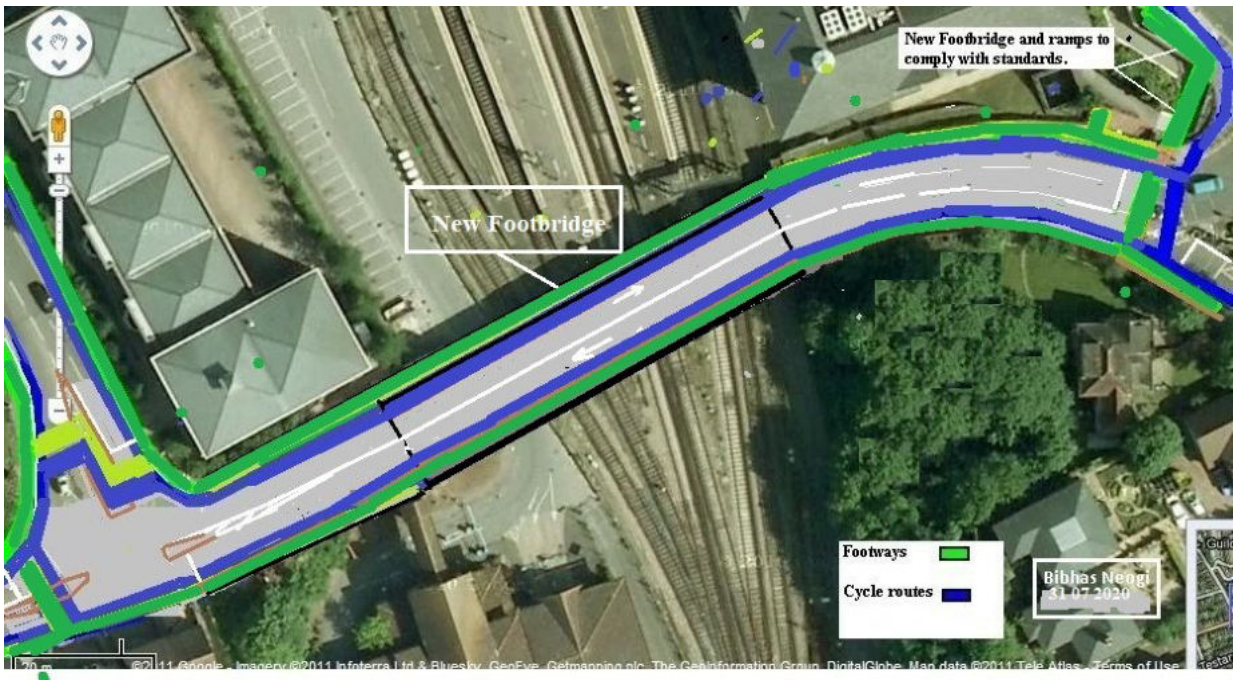
Sketch No. 3

The Bell-mouth of the junction would be altered to provide the widening with a cycle lane. The west footway would be taken up a ramp and a footbridge over the entrance to the subway below to the pedestrian crossing of Farnham Road. Cycle lanes on Farnham Road Bridge could be created by building a footbridge on the north side of it and by converting the existing north footway into a cycle lane. The westbound cycle lane could be provided by removing the central hatched area and by shifting the lane sideways. Supports for the new footbridge could be built on CFA piles constructed from a rig sitting on the bridge and tied to existing piers for lateral support.

Sketches No. 4 & 5 show these, -



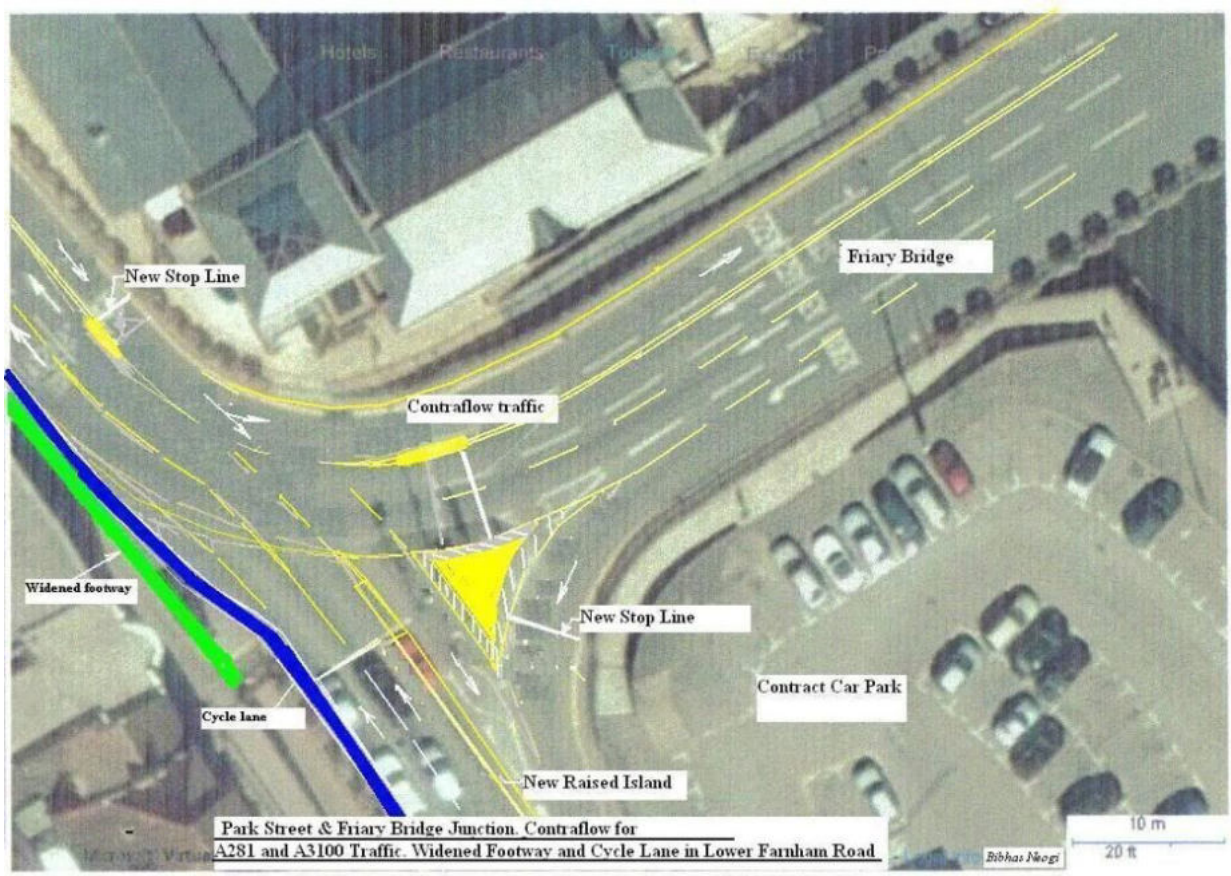

Sketch No. 4




Layout of footways and Cycle routes on re-built Farnham Road Bridge after the new railway bridge comes into operation

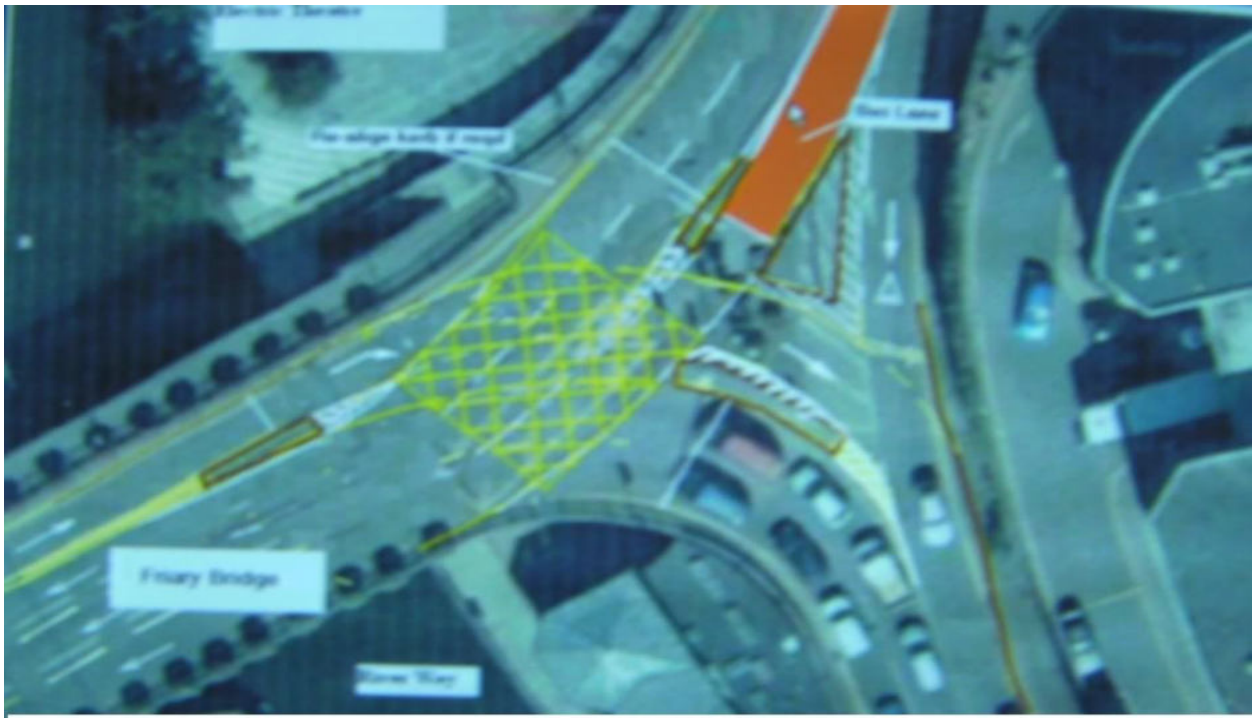
Sketch No. 5

Sketch No.6 shows the altered junction of Friary Bridge and Park Street. Three northbound lanes are reduced to two and a cycle lane is created. The southbound lane in contraflow is accommodated in the place of the current inner lane of the gyratory. Park Street west footway is widened and all lanes are widened to almost standard width. However, this is done at a later stage but for the short-term solution, the cycle lane and footway widening would not be carried out and three northbound lanes would be maintained. The southbound lane in contraflow is accommodated in the place of the current inner lane of the gyratory.



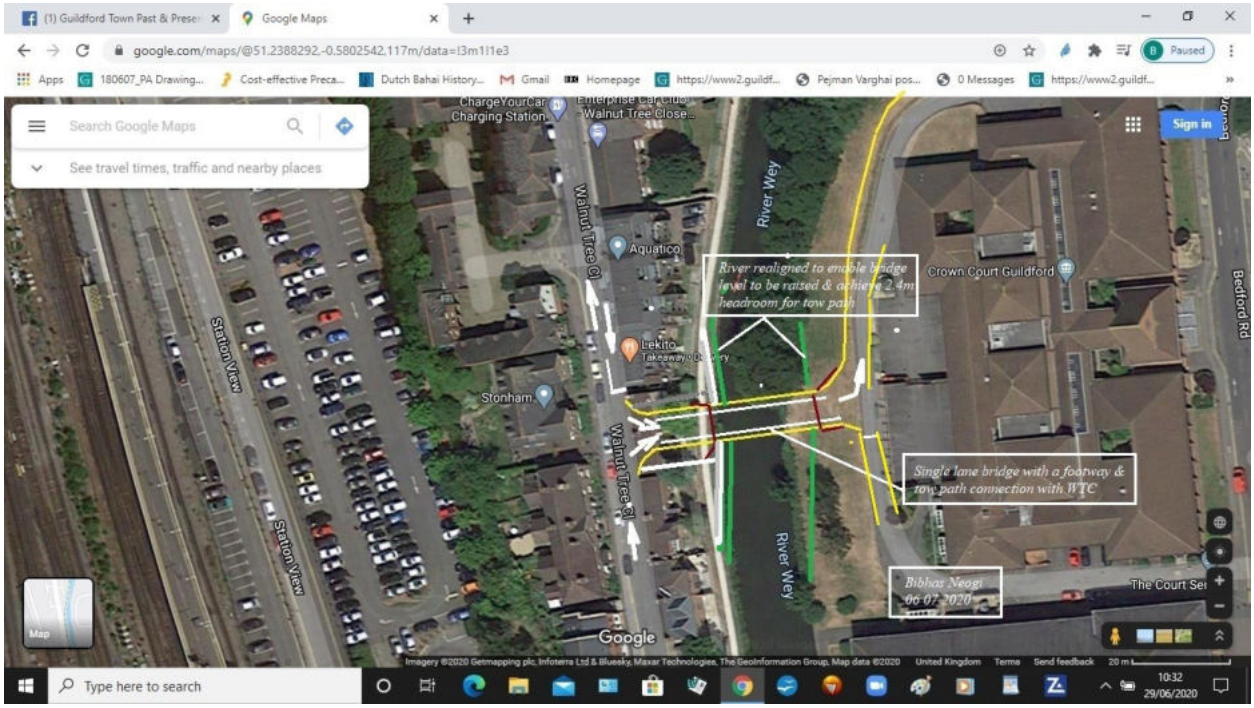
Sketch No. 6

And the sketch No. 7 below shows the altered layout of Millbrook junction with Friary Bridge. Traffic lights are introduced for the contraflow lane together with a Give Way sign for the southbound lane on Onslow Street, -


Sketch No. 7

**4. Building the New River Bridge and the east-west route.**

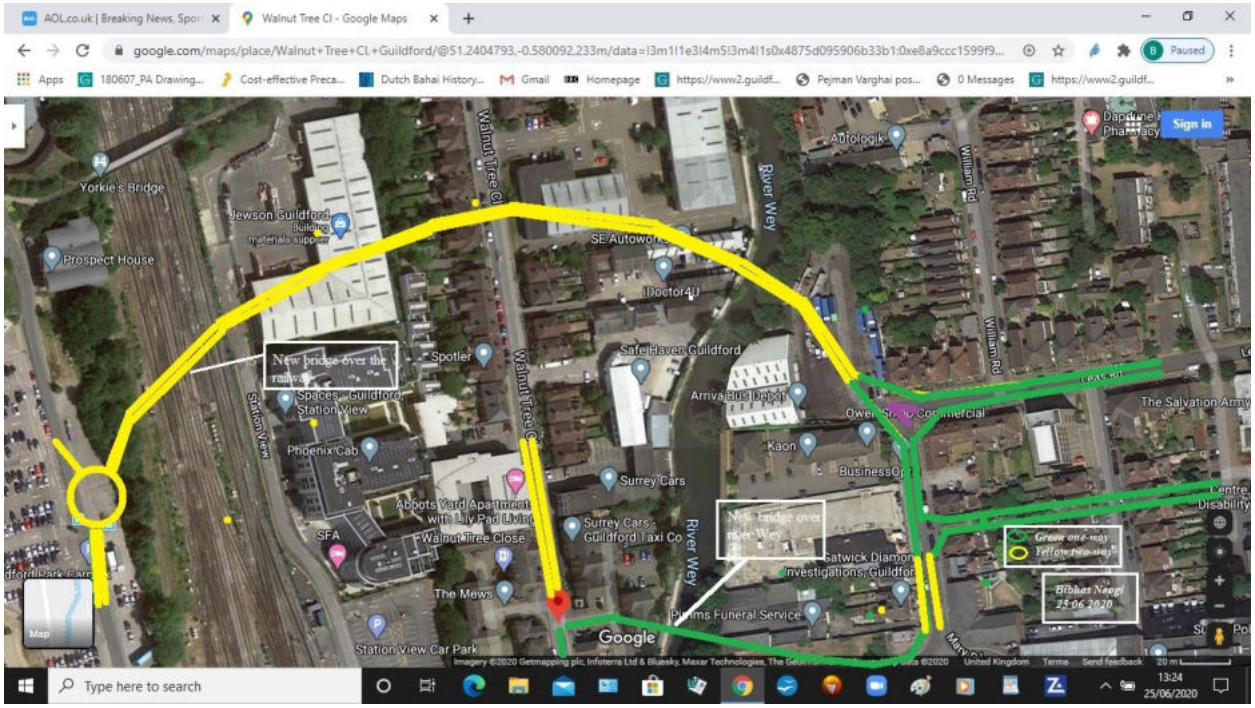
The location of the New River Bridge behind Crown Court requires some work to shift the flow eastwards by sheet piling and gaining enough bank land so that the towpath could be relocated under the bridge with headroom of at least 2,4m. This is needed to allow the road to rise up from WTC to create this headroom for the towpath. Some buildings would have to be demolished to make way for this route. The Sketch No.8 shows this, -



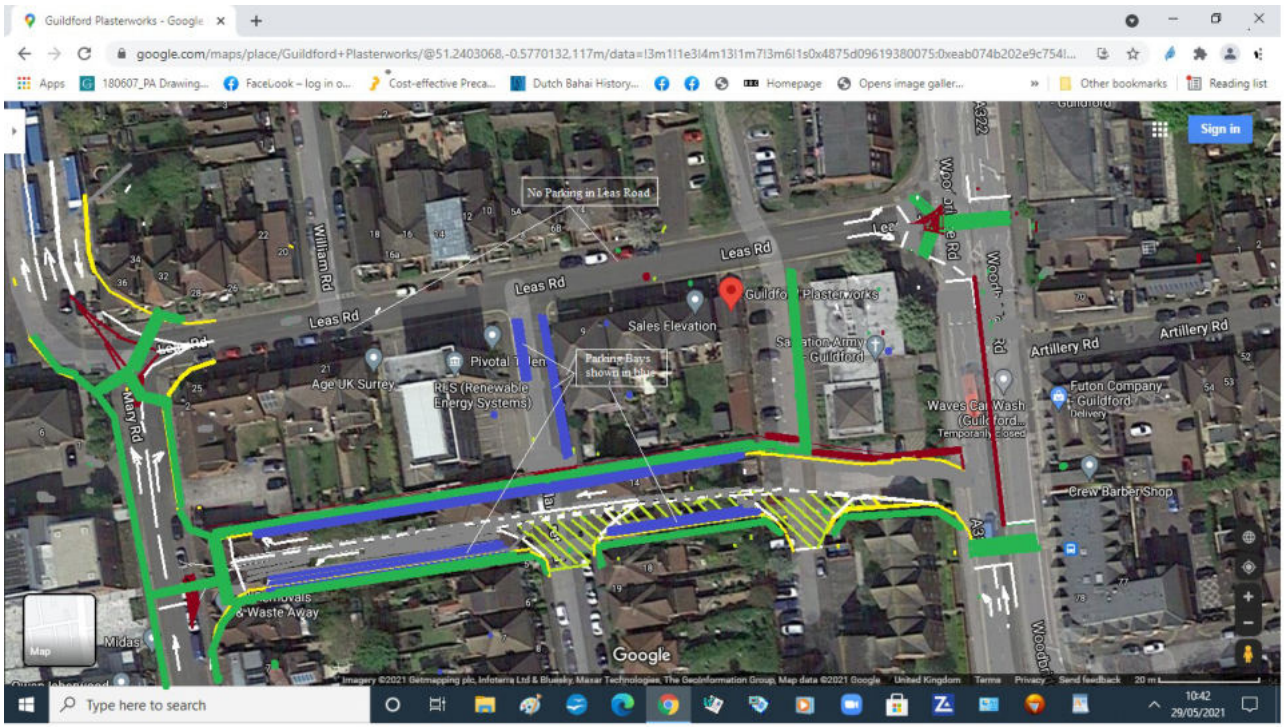
Sketch No. 8

The new east –west route would have been ideally placed to cross from Guildford Park Road to Woodbridge Road through the railway station site but Solum has now planning approval to build apartments and so this route is no longer available. A route further north beyond the new buildings on Station View adjacent to the railway station site is a possibility. This route would go through Jewson's Yard and cross WTC and the river and meet up with Leas Road through Arriva bus depot.

A two-lane one-way loop from Woodbridge road to Mary Road and Leas Road (all shown in green) would be made two-lane one-way route that would enable to accommodate traffic from the two-way east-west route (shown in yellow) and traffic coming through via WTC. This is shown in Sketch No, 9,-




Sketch No. 9




Sketch No 9A - Leas Road made one-way and a new link between Woodbridge Road and Mary Road.

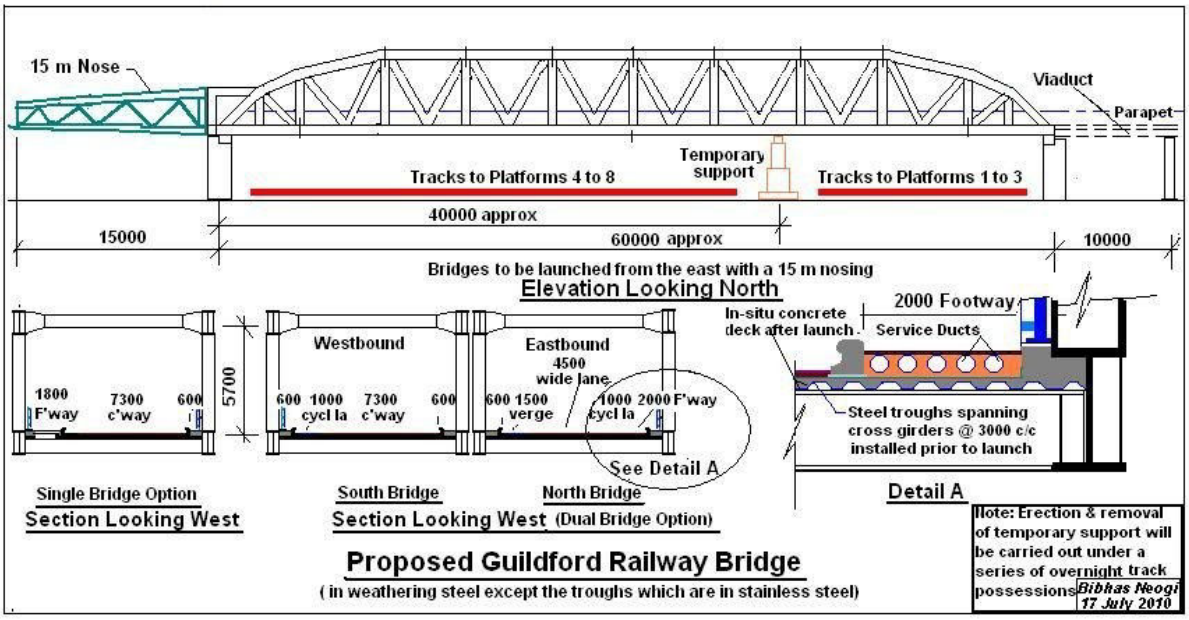
An alternative location of the New River Bridge is shown in the sketch No 9. Final location will depend upon what the council can procure with negotiation with the owners of the affected properties.

A roundabout is shown at the junction of this route with access to the housing on the car park site and the University of Surrey. This could be a T-junction if not enough room is available for a roundabout. The route from Madrid Road junction would be one-way in by the Church and there would be a junction with a two-way link to Guildford Park Road beside the railway station. The junction with Guildford Park Road would be a traffic light controlled junction. This arrangement

would take most of the east-west traffic out of Farnham Road Bridge, the gyratory and Onslow Street.

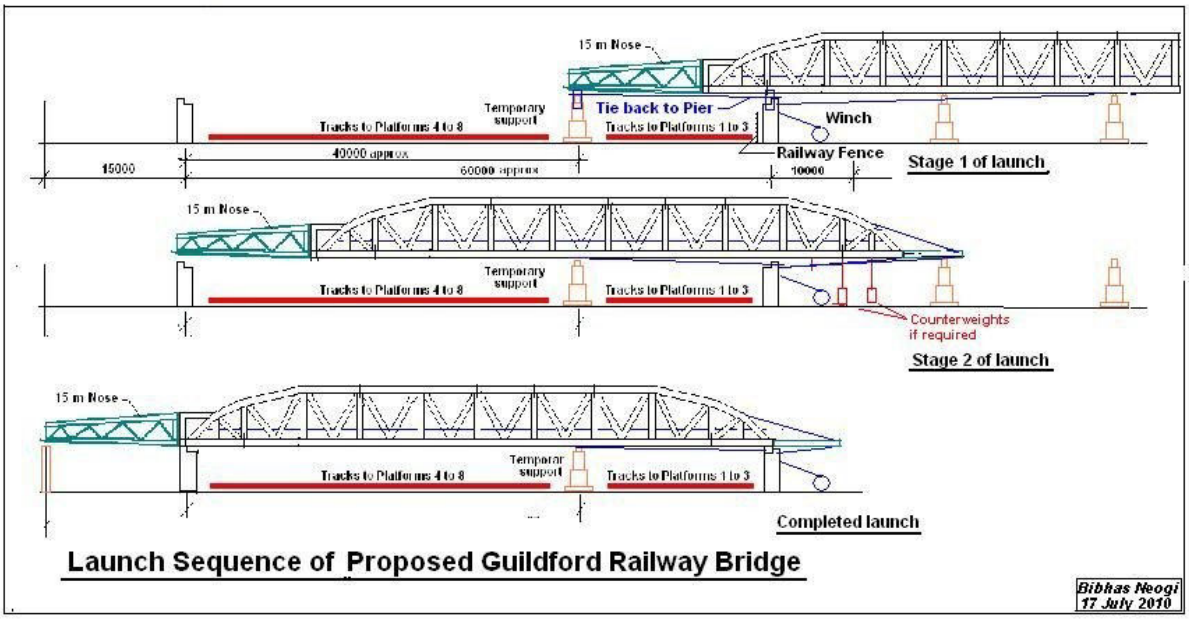
Construction of the bridge over the railway offers some challenge. A crossing without any support within the tracks is probably the only form that would be acceptable to Network Rail as there is not enough clear and safe space in between the tracks to carry out construction next to live rails.

So in all probability, the bridge has to be launched. A modified Warren Truss type bridge could be launched with a temporary support in the middle. The following sketches show a Warren Truss Girders and a possible launch sequence. In order to keep the weight to a minimum, the deck concrete would be cast after the completion of the launch. The steel structure could be made from weathering steel that requires no painting except for the steel trough sections between cross-girders that could be stainless steel. Whether one or two bridges side by side are required, would depend on the volume of traffic. This is shown in Sketch No. 10 and the launch sequence is shown in Sketch No. 11.




Sketch No. 10

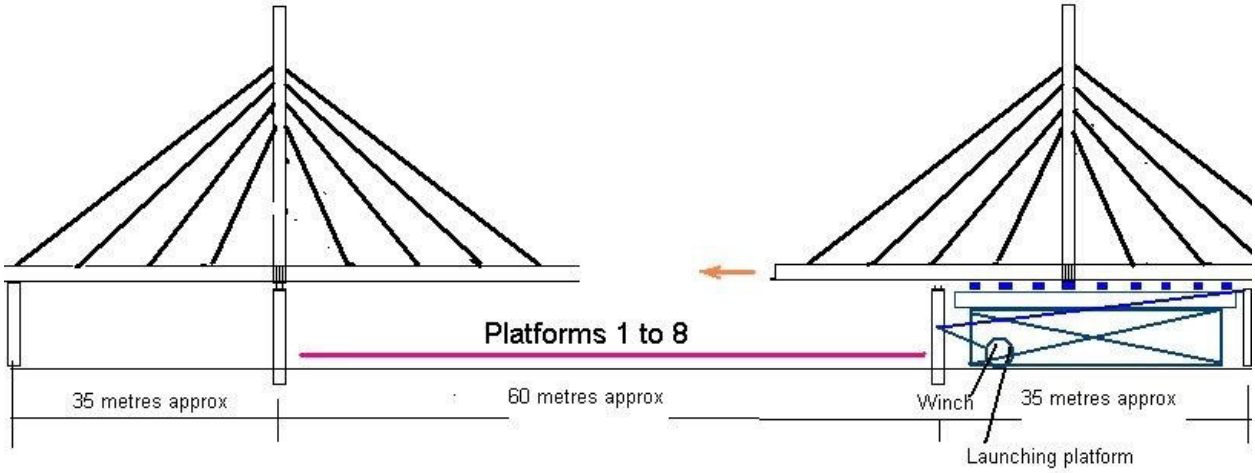
Launch sequence is shown in the Sketch No. 11.




Sketch No. 11

An alternative to the above that does not require a temporary support in the middle of the tracks is a cable-stayed bridge but built in two halves and launched from both sides. This is shown in the Sketch No. 12. Normally such a bridge would be constructed progressively as a balanced cantilever about each pier but construction over the live tracks is not possible. Therefore each half would be required to be constructed and launched to meet up in the middle. It is unlikely that in-line room would be available for the construction and therefore they would need to be constructed parallel to the tracks and rotated and transported using steerable multi-axle transporters. They will then be launched from temporary trestle platforms. Once a pier is over its bottom half, jacks will lift it up and the bearings will be positioned (not fixed yet) and the two halves bolted together in the middle. The piers will then be lowered and fixed into their final positions. The side spans would be concreted before the launch so as to maintain stability and ease of construction. The remainder would be concreted and the deck completed without any interference to the movement of trains.

It would probably be a pioneering method of construction.




Cable-stayed option for railway bridge in Guildford

Bridge built in two halves and launched from both ends. The 1st stage launch uses steerable multiaxle supporting transporters. 2nd stage launch uses a platform for support whilst the assembly is winched against the pier to oversail the tracks.

Sketch No. 12

**5. Bus station relocation and redesigned bus routes**

Current bus station is located within the North Street redevelopment site. There is a Planning Application for this site that proposes a mixture of retail outlets and housing. Whether the bus station would be replaced in-situ or by on street bus bays or relocated to another site is not yet known. There had been studies conducted by Surrey County Council and various sites had been explored but the preferred site was Bedford Road car park site. However, there were issues with access to and exit from this site. Bus operators raised the issue of access and difficulties with congestion that badly affect their efficient running and frequency especially during peak periods.

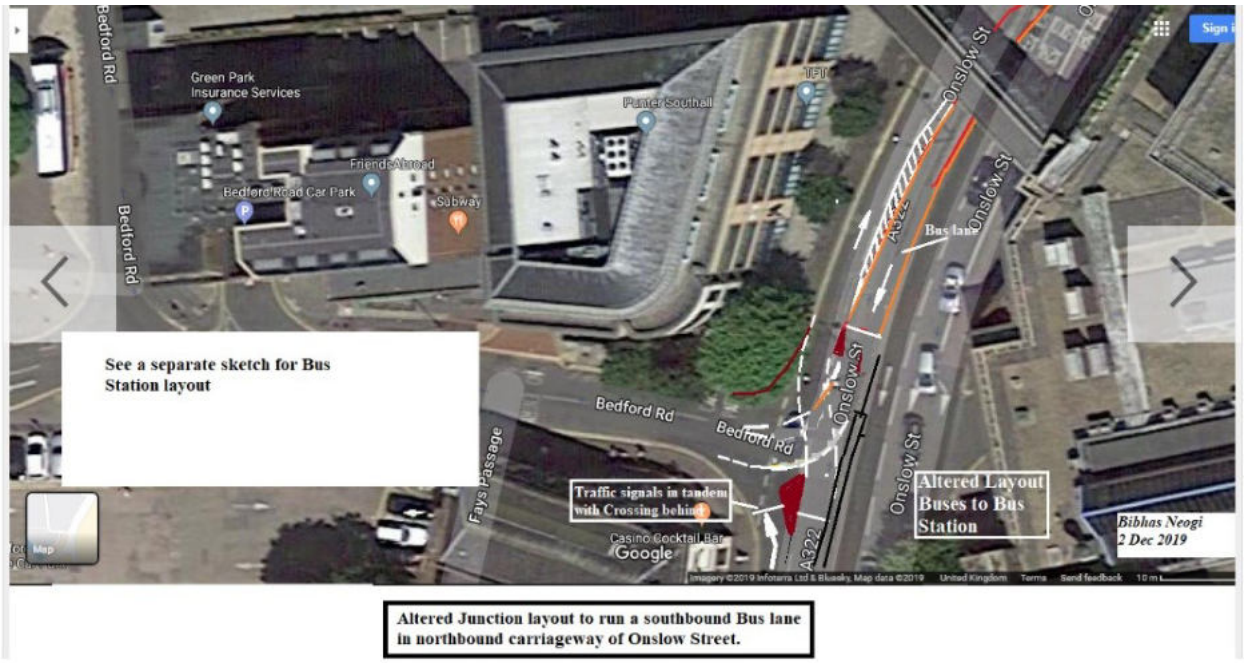
Whatever decision the councils make, I believe the bus station has to be vacated to secure a safe construction site. It seems logical to move it to Bedford Road site on a temporary basis. If it proves to be viable and if it works well, it might even be made permanent.

[[There is concern about flooding in this area of Bedford Road. I believe Environment Agency is looking into ways of dealing with this. Barriers along the river and upstream flood alleviation schemes are being explored by the EA. It may be possible to create reservoirs in the flood plains and control the flow using renewable energy for pumping etc. The reservoirs could be turned into leisure areas for boating with restaurants and gardens on the islands inside them. Please have a look at Eco Park in Kolkata.

https://en.wikipedia.org/wiki/New_Town_Eco_Park
https://tinyurl.com/Kolkata-Eco-Park

Maybe there are businesses out there that would explore the possibilities]]

In order to improve access to this site and not adversely affect the gyratory, some alterations to the existing layout in Onslow Street would be required. Southbound bus lane in Onslow Street would be moved to the offside lane from York Road roundabout end and taken across to occupy the offside northbound lane by removing the median barrier just south of the footbridge location. A set of traffic lights would be introduced at the junction with Bedford Road that works in tandem with the pedestrian crossing lights. This alteration is shown in the sketch No, 13.



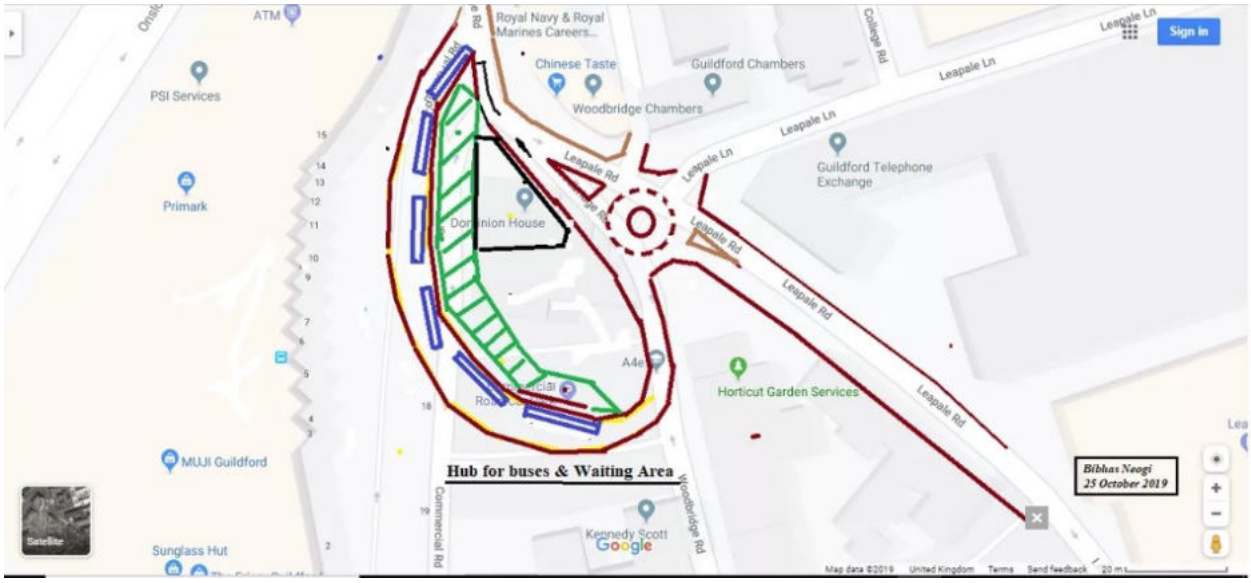

**Sketch No. 13**

The Layout of bus bays as shown in the Sketch No. 14 would accommodate fifteen bays and four layover bays. A mini hub proposed to be located behind Dominion House that would have about six bays. Passenger waiting area and public facilities and Cafes may also be provided. Some buses – maybe alternates ones would connect with this mini-hub before proceeding to the bus station.

This would be convenient for those coming from the north and east and those who want to go to the bus station for connections. Two bays maybe assigned to the Park & Ride buses.


**Sketch No. 14**

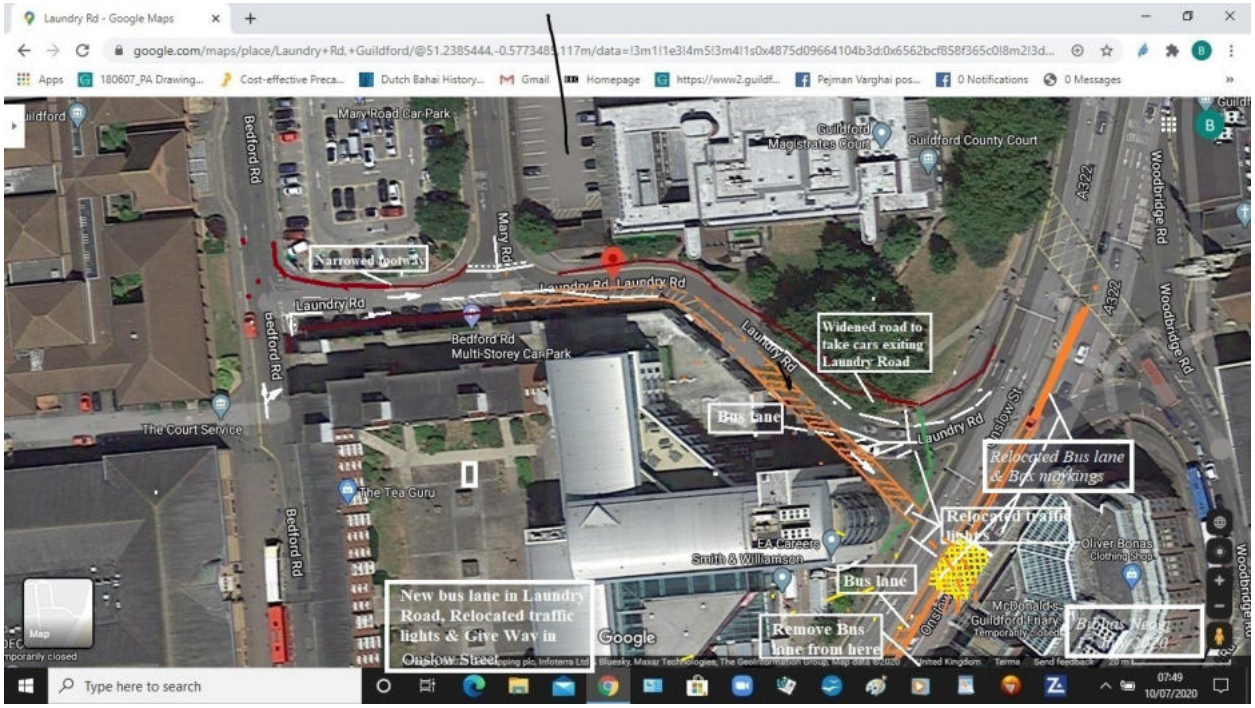
**The mini-hub is shown in Sketch No.15.**




**Sketch No. 15**

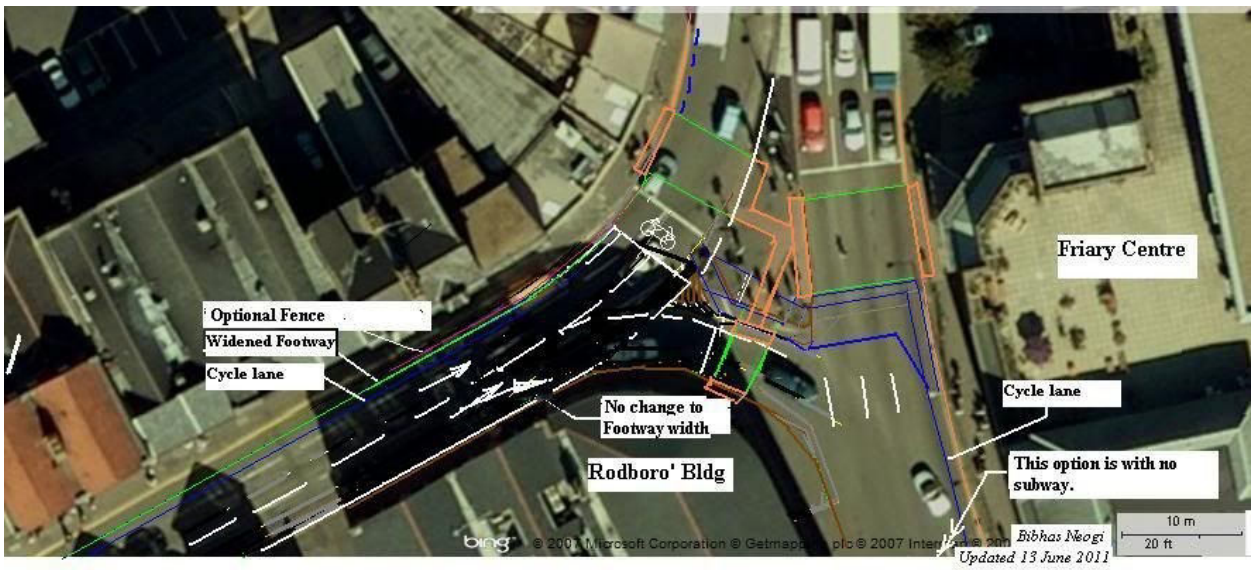
Buses from the south and the west would come through Bridge Street as before and then they would turn left into Onslow Street and left again into Bedford Road.

The exit routes of buses would be via Bedford Road, Mary Road and then Leas Road or from Bedford Road to Laundry Road albeit widened to three lanes from Mary Road junction to Onslow Street. This is shown in Sketch No. 16.




**Sketch No. 16**

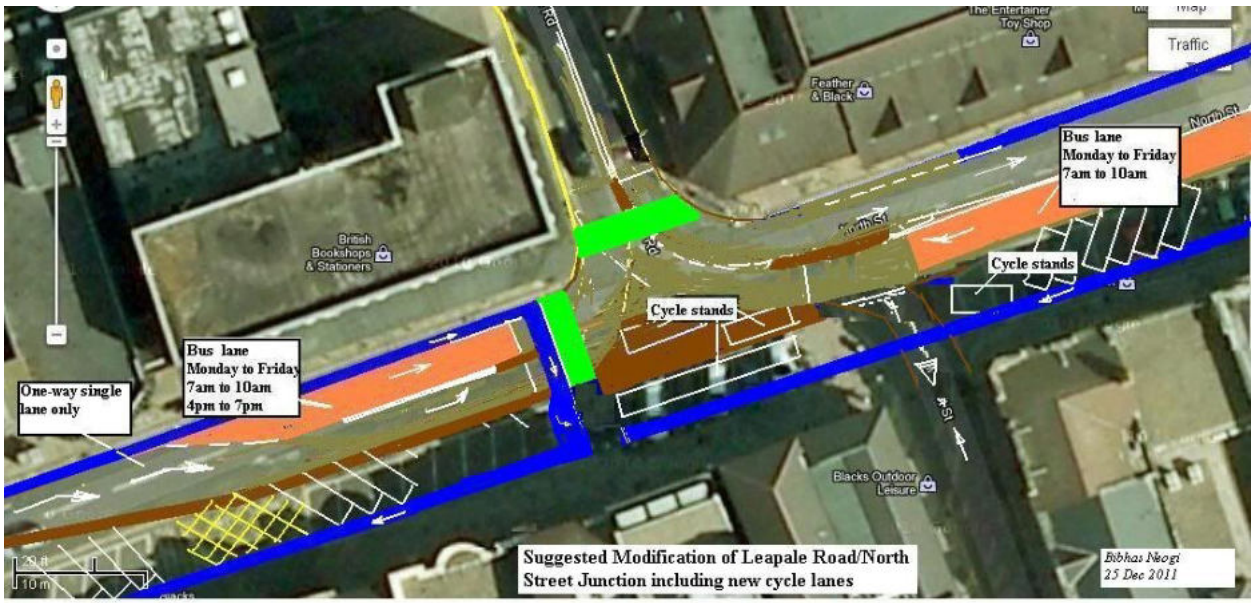
The current bus lane would be moved from the nearside to offside lane and the lane taken through to the northbound carriageway as has been shown in Sketch No. 13. The altered pedestrian crossing when Bridge Street is reduced to two lanes, north footway widened and a cycle lane added, would include a cycle crossing adjacent to the pedestrian crossing. The traffic lights would be automatic rather than pedestrian controlled, as both lanes in Bridge Street would operate at the same time. This is shown in Sketch No. 17.




OPTION with no subway - Layout of Traffic lanes, Cycle lane & Widened Footway in Bridge Street.
Right turning into Onslow Street to be maintained

**Sketch No. 17**

Buses going eastwards through North Street would use pedestrianised lower half of this road as shown in Sketch No. 18. Cycle lanes are shown in blue.




**Sketch No. 18**

## 6. Medium to longer term improvements

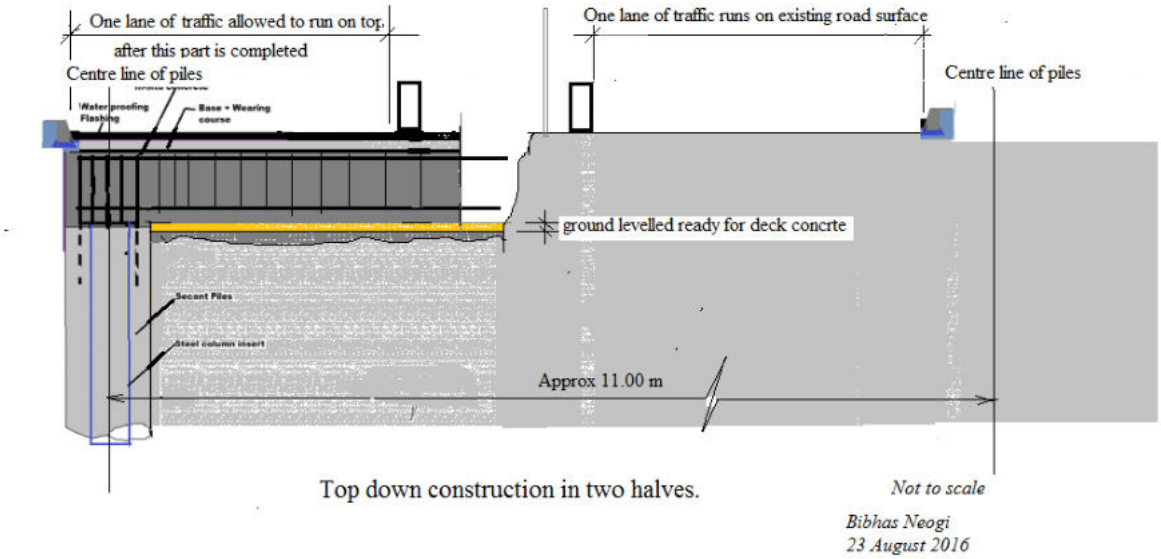
The stretch of the A281 between Quarry Street junction and York Road roundabout could be lowered into an underground route like a tunnel but not constructed as a tunnel. Traffic management is an integral part of the design process since a reasonable traffic flow has to be maintained during construction. Delay and some disruptions are inevitable but these will have to be kept to an acceptable level.

A cut and cover system is not suitable for most of the length since traffic has to be maintained at least in one direction with the other direction put in a diversion. Therefore a top-down construction in two halves seems to be the answer. In a top-down construction method, a row of interlocking piles are constructed one on each side that form the route. Initially only one half would be done with traffic maintained on the other half.

On the stretch of the A281 between Quarry Street and High Street, the northbound lane would be maintained and the southbound traffic would be diverted. There would be a rolling traffic management over the length of the work site. Southbound traffic would be diverted via Quarry Street during daytime and put back on during the overnight period and the work area would be managed by shuttle traffic. This way disturbance to households in Quarry Street would be avoided during night-time.

Over the length where the traffic lane is closed, piles are constructed. The road is dug up to a depth required by the road deck of the ‘tunnel’ and the width of the dig depends on the safety of the adjacent running traffic lane. The ground is prepared and the deck cast.

Sketch No.19 shows the cross section of the road and the half the ‘tunnel’ under construction.




**Sketch no, 19**

Top-down construction has advantages over cut & cover method where it is not possible to dig up big areas without disturbing surrounding properties or roads. The video https://www.youtube.com/embed/e1WsifGUM2Q about the construction of Kolkata Metro is interesting to watch. Towards the very end it shows how the underground station is created using Top-down construction method.

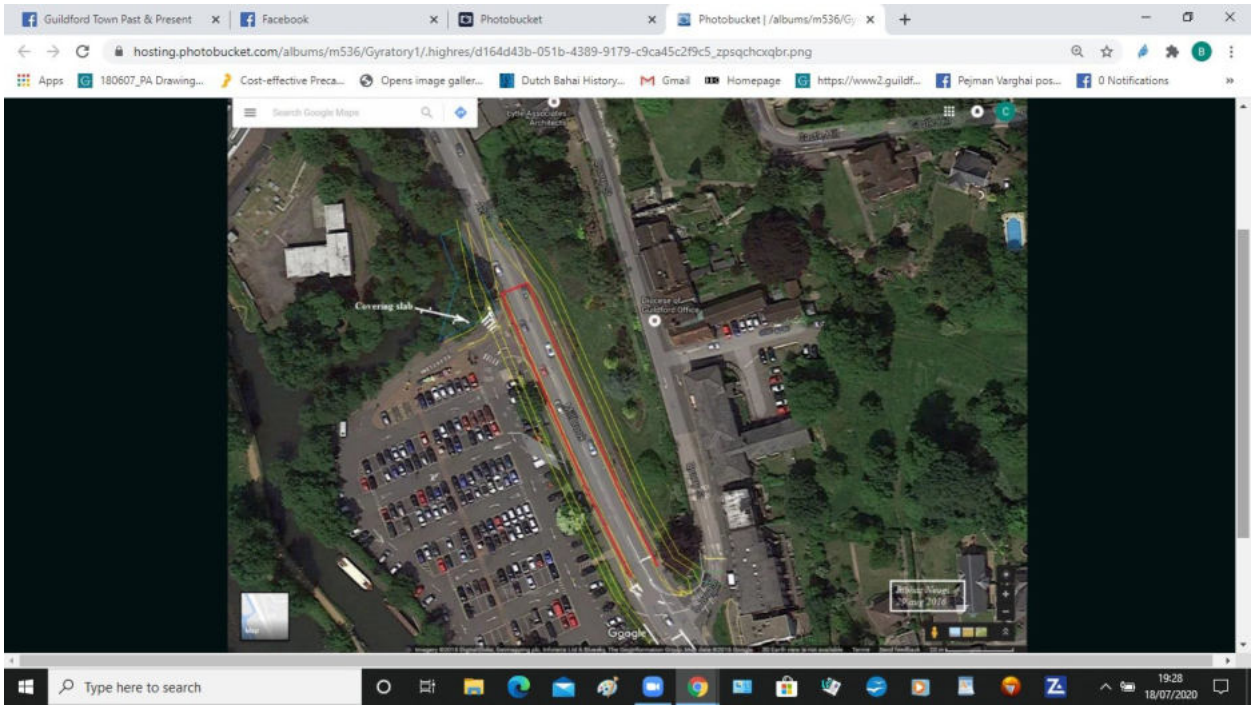
Town Bridge would be reopened for local traffic and also used for diversion when the section between High Street and North Street is constructed. This section would most likely to be constructed using cut and cover method as the ground level would be lowered to create the riverside public space. Diversion for southbound traffic could be through widened Friary Street on to High Street and then Quarry Street during the daytime as before.

For the stretch between York Road roundabout and Bridge Street, two-way traffic of one lane in each direction could be maintained during the construction. East-west traffic would have been removed from the gyratory by this time and the New River Bridge between WTC and Mary Road would also take some of the traffic away from this section.

Surface road would be reinstated once the construction is complete.

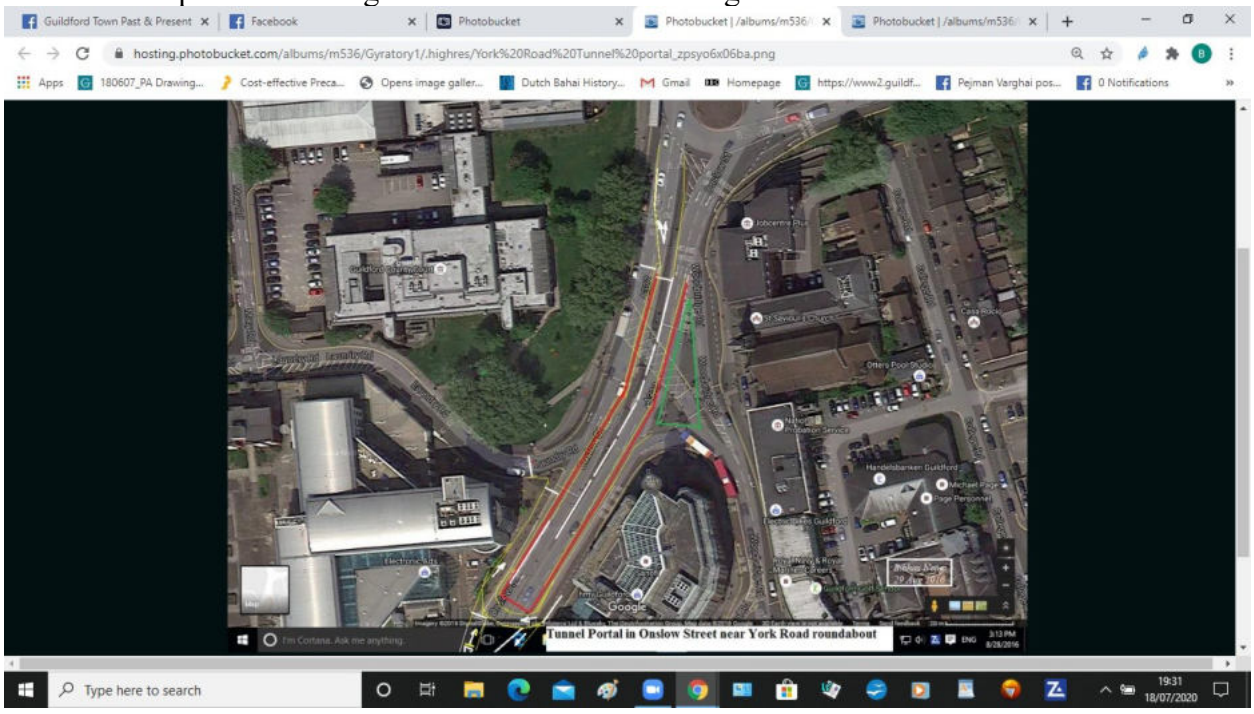
The sketch No. 20 shows the southern portal of the ‘tunnel’.
Surface road on the east would be placed on the verge and on the west the road would be on a strip of land taken from the car park. Access to the car park and exit from it would be relocated as appropriate and any necessary adjustments to the direction of routes inside as a result would be made.

The road would rise up above the highest expected flood level before entering the ramp. The walls of the ramp and the ‘tunnel’ portal would act as a flood barrier.




**Sketch No. 20 Southern ramp**

The northern portal would again have surface lanes alongside. This is shown in the Sketch No. 21




**Sketch No. 21 Northern ramp**

The northern ramp would of course cut across the exit bus lane from Laundry Road, so would no longer be available and for a short period, the buses would have to turn left on to the surface route of Onslow Street and turn around at the roundabout. Once the underground route comes into operation, exit from the bus station could also be from Bedford Road since volume of traffic on the surface routes would primarily consist of buses, taxis and cycles and so a redesigned traffic light controlled junction with Onslow Street would be possible.

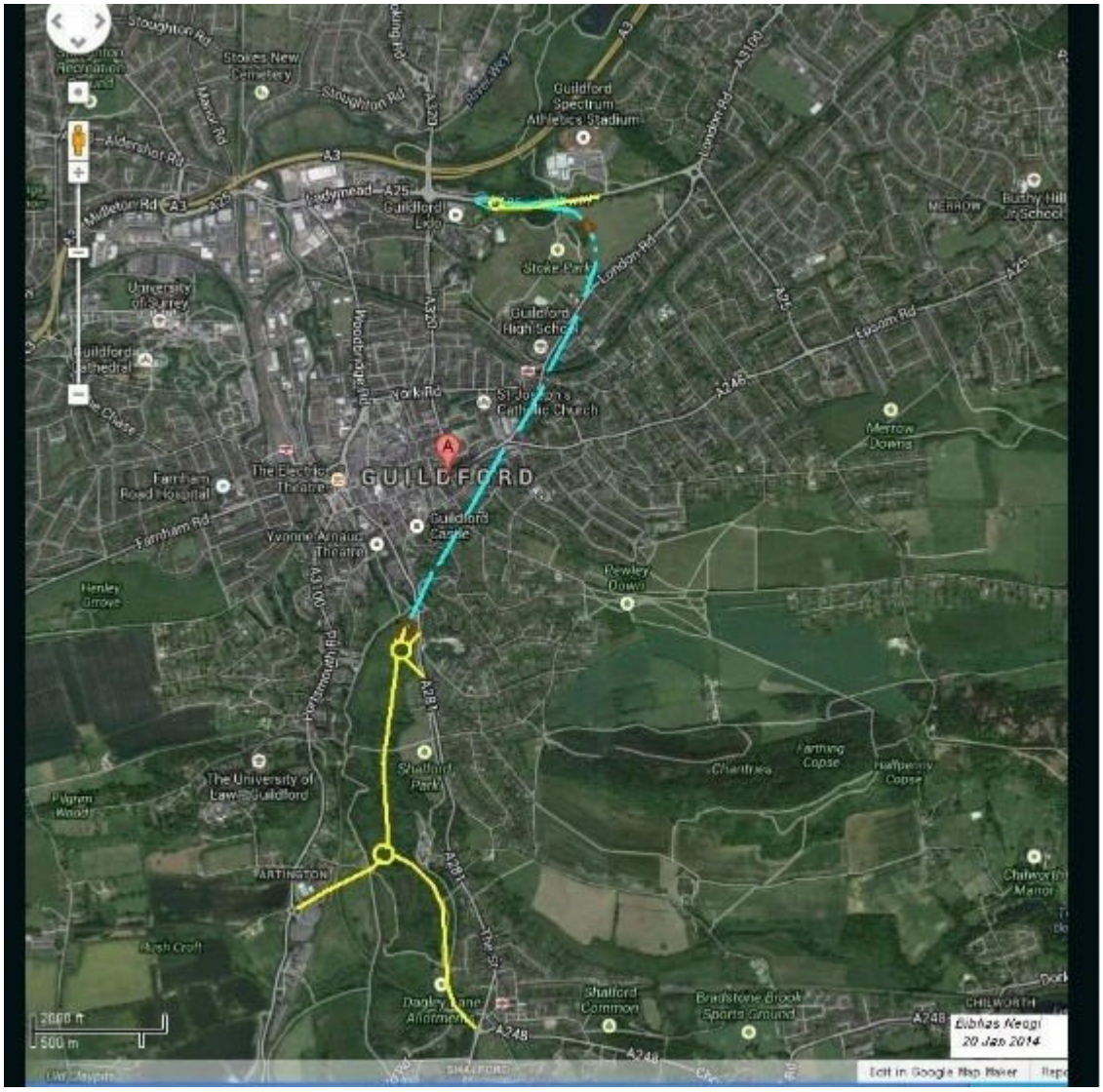
Added on 12 June 2021 – The cost of putting the A281 in a tunnel like route may prove to be too expensive for the councils, so an alternative would be to divert the southbound route on Onslow Street over the new east-west route (made two lanes westbound ) and take it through Guildford Park Road, Farnham Road Bridge, Park Street and then over the re-opened Town Bridge. Southbound Onslow Street traffic would access North Street only as there would be no route beyond Friary Bridge towards Millbrook. Northbound route would remain as it is on Onslow Street.

## 7. Longer term solution

Guildford is a Gap Town so all roads go through it. The gyratory is where east-west and north-south traffic mix. A new east-west route as described takes away most of this traffic from the gyratory and the underground route takes away the north-south traffic from the town centre. However, a bypass could take some of the through traffic away from the A281 and the A3100. A possible solution would be a tunnel from Shalford Park area to the Parkway near the Lido together with spurs to the A3100 Artington and another spur to Broadford Road (the A248) near Shalford roundabout south of the Railway Bridge.

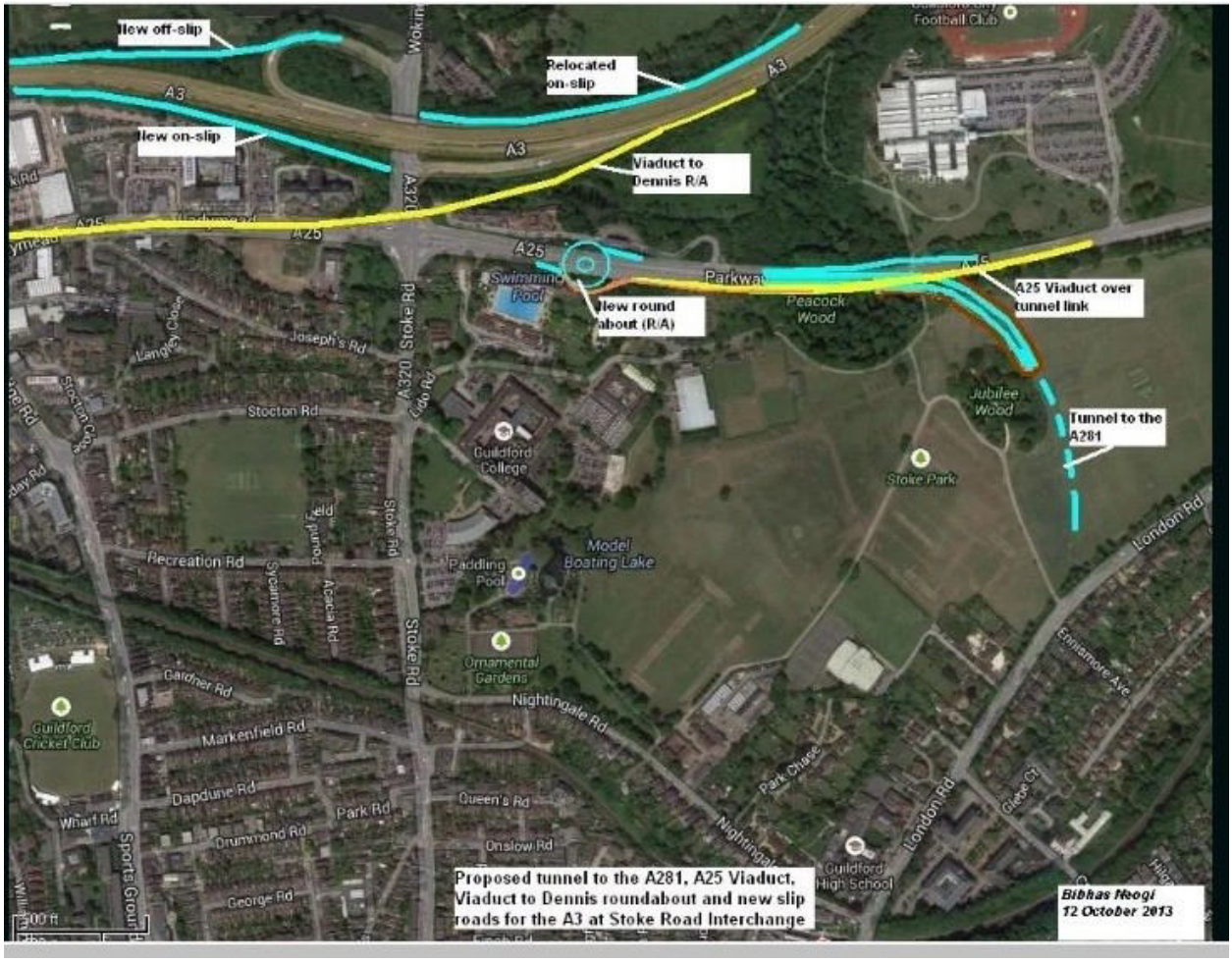
The spurs would be formed on embankment built with spoils from the tunnel. This would reduce the work of transporting spoils by lorries on road network and save costs at the same time.

The Sketch No, 22 shows a possible route for the tunnel.



Sketch 22. A281 to A25 Tunnel

A roundabout on the A25 and a Flyover to take the westbound A25 lanes is shown in the Sketch No, 23. This roundabout could also be used for improving traffic flow at the Stoke Road junction.



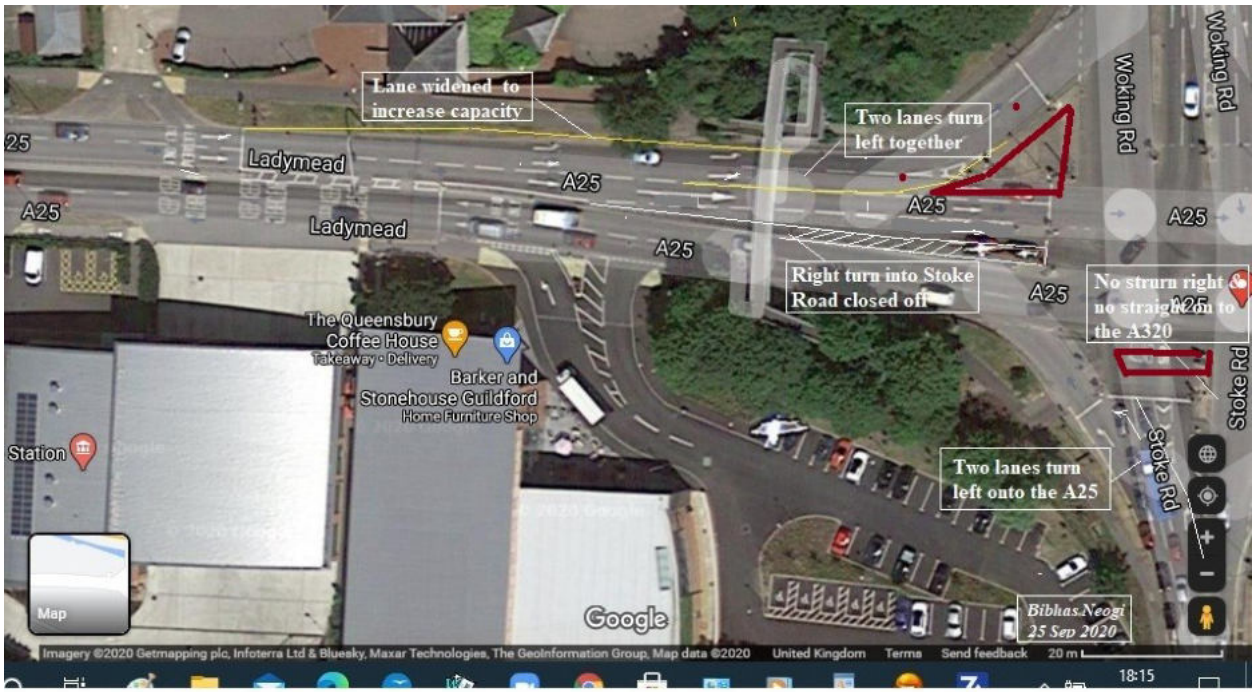

**Sketch No, 23 A25 Parkway Roundabout, Tunnel and Flyover**

The roundabout would be another one located slightly east of that shown in this sketch to take advantage of the entry and exit routes to the Hotel. This is shown in the Sketch No. 24. The roundabout shown in Sketch No. 23 would cater for traffic on the eastbound A25 turning around and heading either north for Woking or south towards the town centre.


**Sketch No. 24 Roundabout on the A25**

## 8. Improving traffic flow at the Stoke Road junction with the A25

Now that the A3 widening is going to be shelved for the third time, funding for infrastructure from the central government would be scarce for a long time.
The councils should therefore aim to improve the network wherever possible using low cost solutions
My suggestions for improving Stoke Road /A25 junction are as follows, -
Create a roundabout on Parkway, the A25, near the access to the hotel opposite the Lido. Stop straight on and right turn out of Stoke Road on to Parkway and use Recreation Road to cater for the stopped-up movements by creating a roundabout at its junction with Woodbridge Road.
Stop traffic turning right from the A3 off-slip to the A320 – instead this traffic would turn left and left again on the A25 and turn around at the new roundabout. Stop turning right into Stoke Road from the eastbound A25. Traffic would use the new roundabout on the A25 instead to turn around. All the above would reduce the number of phases at this junction and allow more time on the remaining ones. The lane alterations are shown in sketch No. 25.

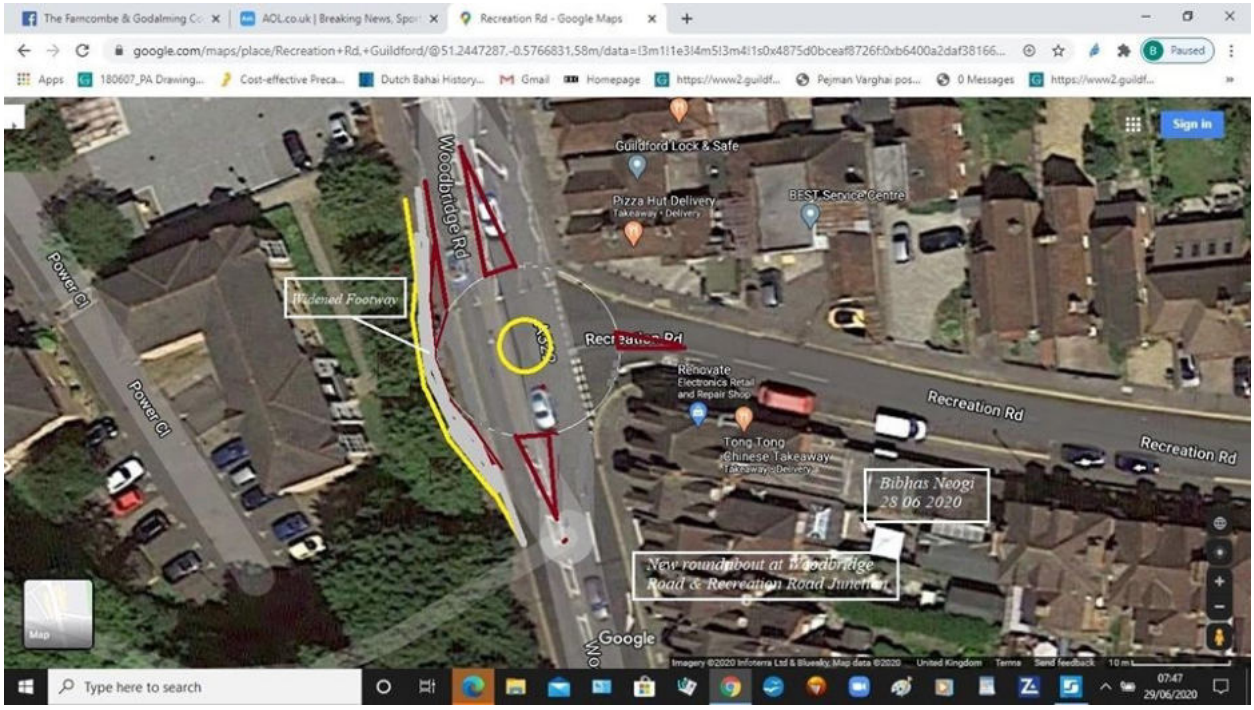



**Altered Junction of the A25 & the A320 for better flow of traffic**

Sketch No. 25

To cater for the stopped-up exit from Stoke Road on to the A25, Recreation Road could be made one-way to Woodbridge Road and a roundabout created at its junction. At the same time Stocton Road could be opened up for one-way access towards Stoke Road.

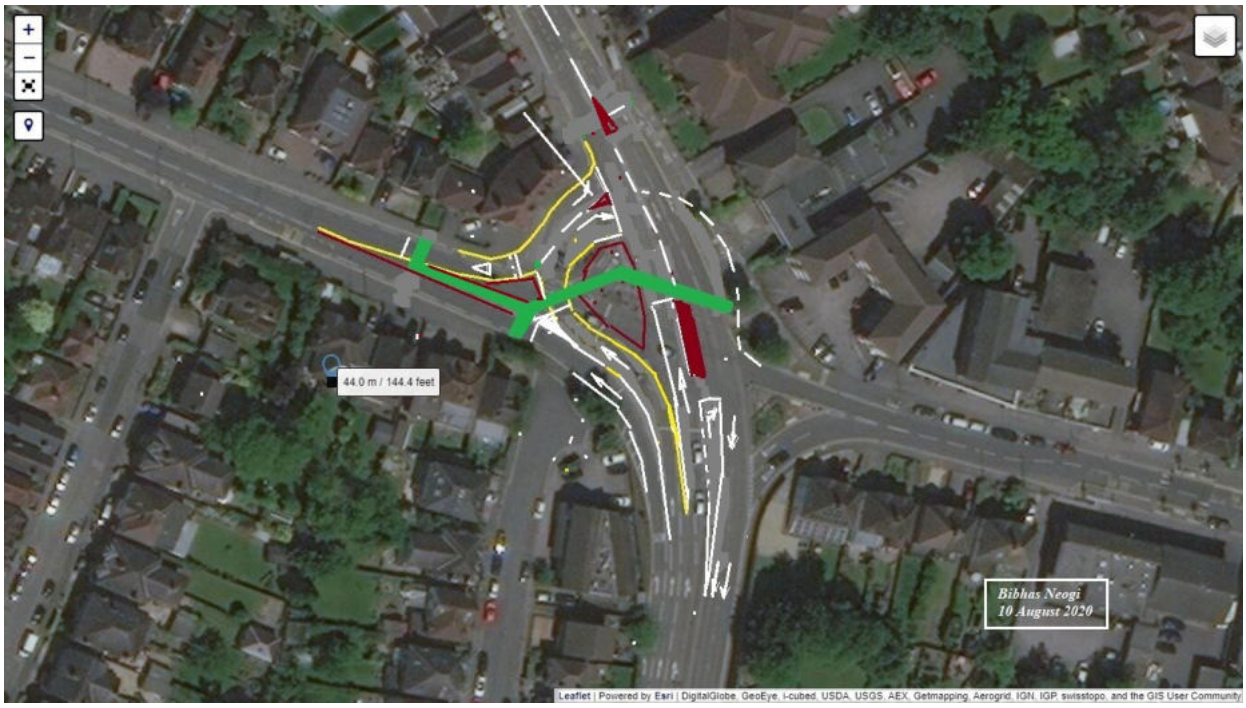
The proposed roundabout on Woodbridge Road does not require a lot of work. Please see the Sketch No. 26 below.




**Sketch No. 26 Roundabout at Woodbridge Road & Recreation Road junction**

## 9. Alterations to road layout of the A322 Worplesdon Road

At Dennis Interchange, traffic from the slip road going towards Ladymead cuts across traffic going straight on to the Business Park area or joining the southbound A3. Alterations to road layout could be explored to reduce congestion and enhance safety. This would involve stopping the direct movement from the slip road on to the roundabout. Instead this traffic would turn left on to Worplesdon Road and turn around to join the southbound traffic on the A322. This is shown in Sketch No. 27. Turning around radius needs to be checked to ascertain if this is feasible and also whether the relocated pedestrian crossings to suit the altered traffic lanes would work.

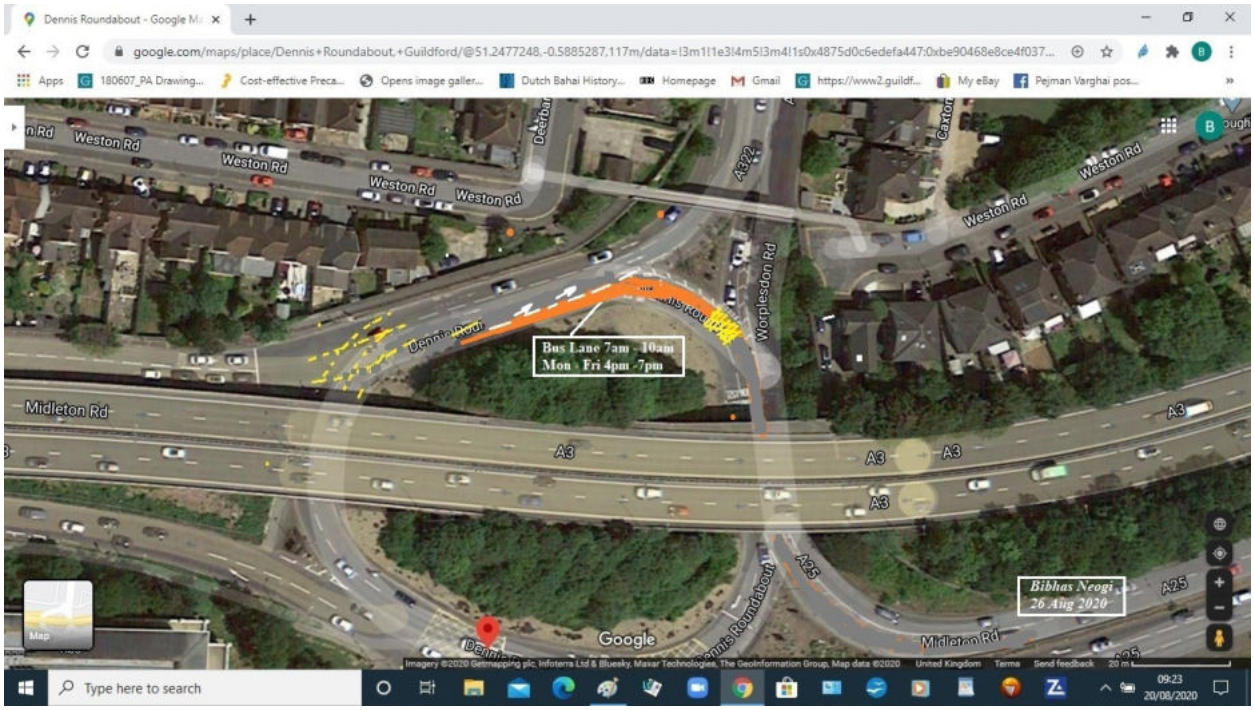



**Sketch No. 27**

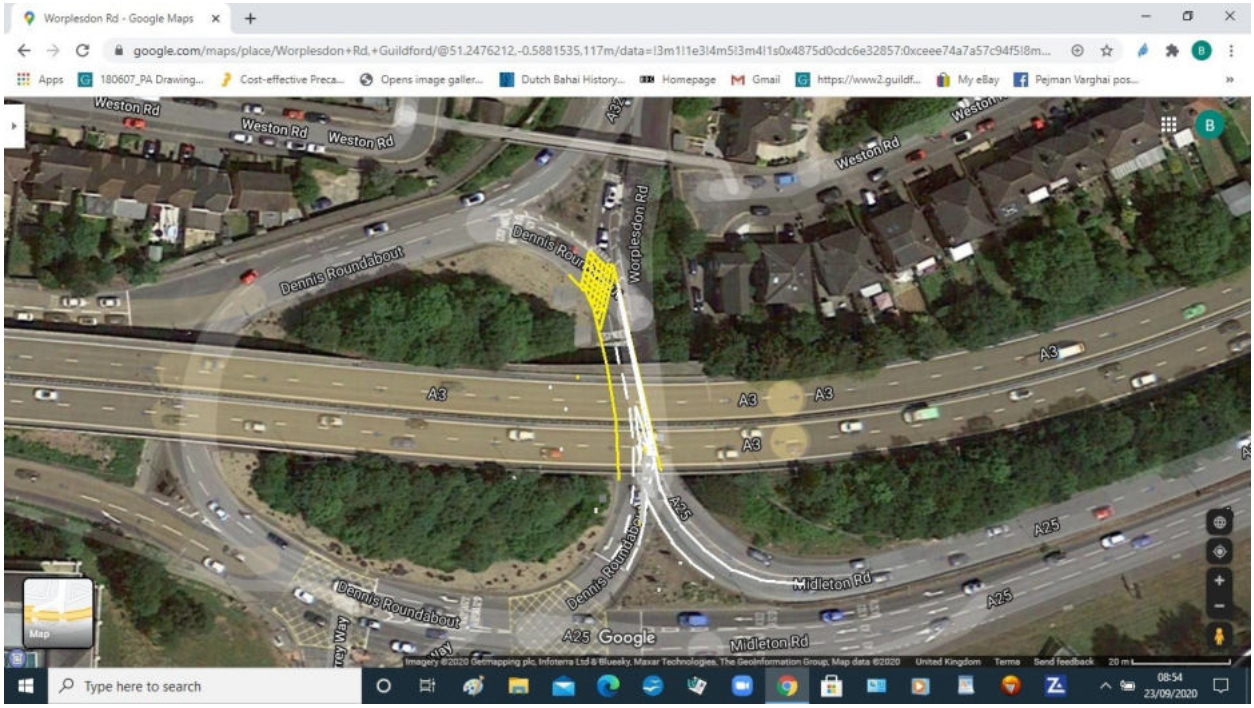
Business Park is a later addition after the junction was designed and at that time exit from Ash Grove was directly on to the A3. Access from Ash Grove now is via a roundabout on the link to Business Park & another roundabout to the industrial area.

If this alteration is done, the layout of the junction would be almost similar to a conventional dumble-bell junction ie with a road between two roundabouts passing under the main road and slip roads connecting the roundabouts.

The proposed alterations would help to improve access to these areas.
[It may be possible to create a buses only access directly (as it is now for all traffic) on to the A25 eastbound offside lane by marking the junction area as a yellow box junction between the A322 offside lane and beyond with the existing give-way arrangement retained.] Some buses coming through Aldershot Road and Worplesdon Road could access this area and return to the roundabout and use the short bus lane only before rejoining the existing route. The buses only access may be for peak periods so that outside these hours, movements would continue as they are now for traffic leading to the A25 eastbound offside lane. Providing better bus access to the Business Park area would also reduce demand for huge car parks. These areas could be reduced considerably to provide housing instead. Developers might be interested in exploring the possibilities. This is shown in Sketch No. 28 – [ rev 3 25 Aug 2020]. Lane markings could be altered to provide more stacking length for the lane heading for the Business Park. This is shown in Sketch 29.

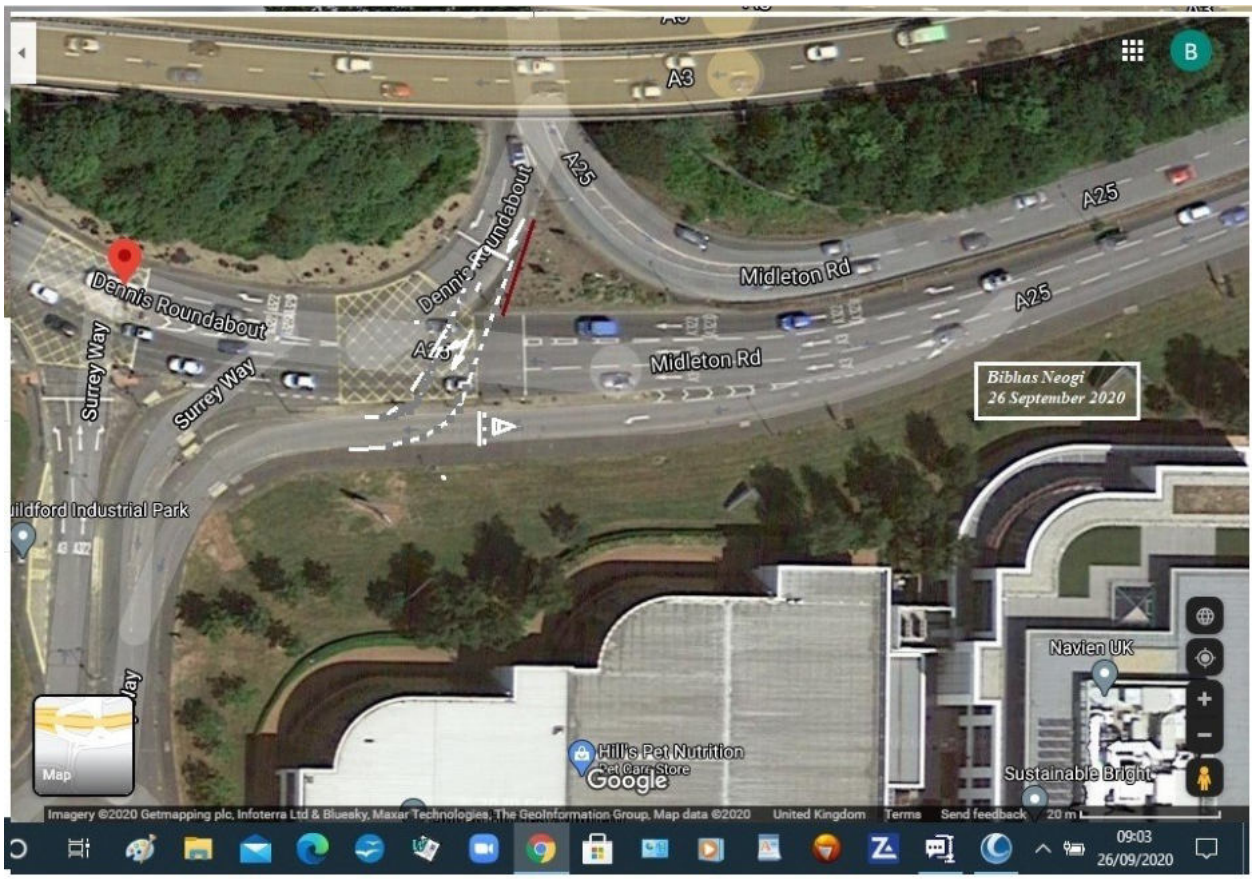


Sketch No. 28




Sketch No, 29

Sketch No, 30 shows a possible alteration of the lane exiting Dennis roundabout and proceeding on to Surrey Way. The left turning lane off the A25 on to Surrey Way would have a Give Way introduced to allow this movement safely. The current layout of this movement is often blocked by traffic waiting to go onto the A3 on-slip. It would then also be possible for the traffic on this lane to turn around at the roundabout in the Business Park and rejoin Dennis roundabout controlled by the existing traffic signals.



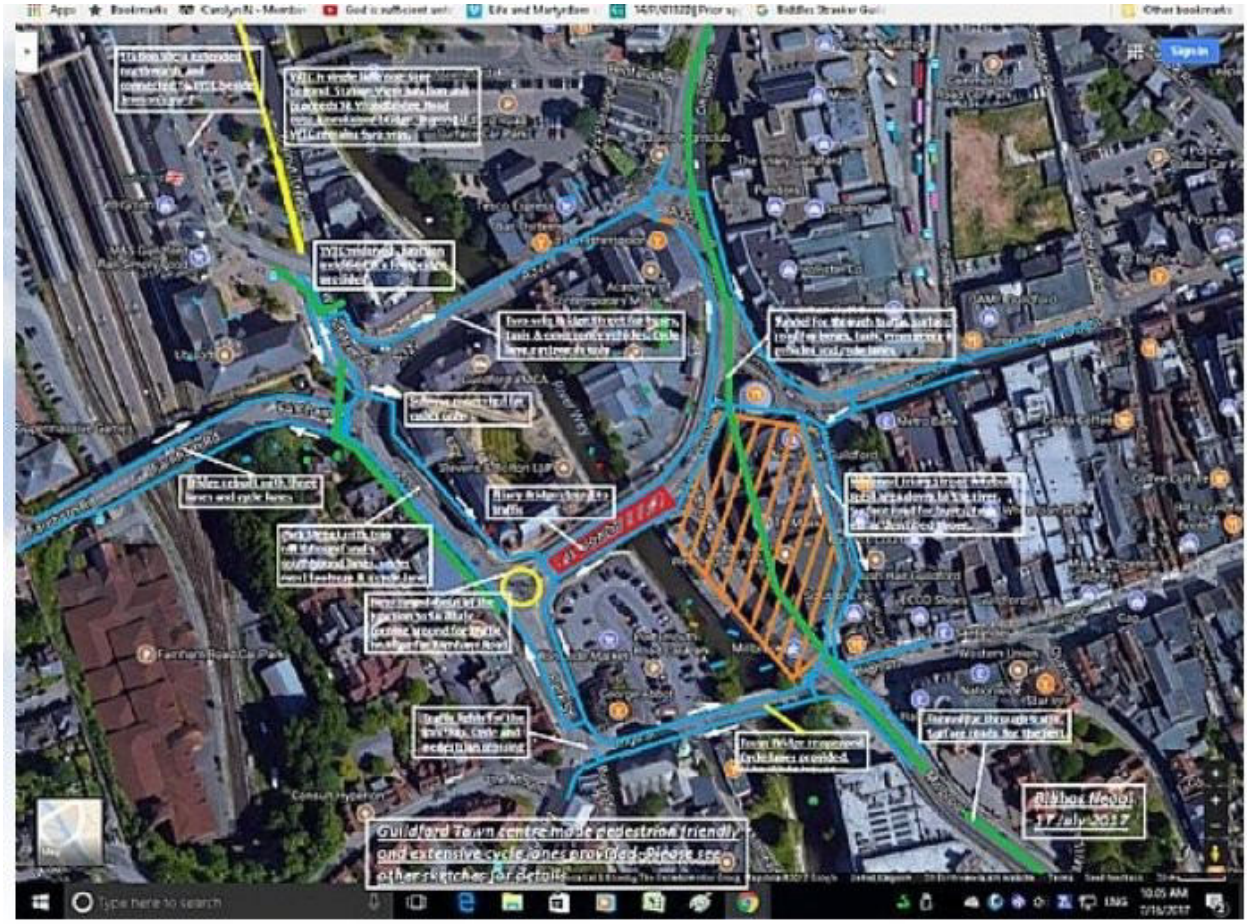

**Alterations to lane exiting the roundabout onto Surrey Way.**

Sketch No.30

If Stoke Road Interchange is altered to provide an off-slip road, the need for access to Ladymead, Parkway and the town centre would be diversified and help further to improve traffic movement at Dennis roundabout. However, we do not know whether Highways England was considering such an improvement for Stoke Road Interchange. Also a new on-slip at the Stoke Road Interchange would help reduce the queue on the on-slip at Dennis roundabout.

**10. Town centre with extensive cycle lanes and pedestrian friendly roads.**

And finally when all the above alterations and new routes are completed, the town centre would be a pedestrian and cycle friendly place. Possible cycle routes are shown in blue in the sketch No. 31 and safer roads would make it better for all users




**Sketch No. 31 Town centre with extensive cycle lanes and safer pedestrian friendly roads.**

**My website http://www.spanglefish.com/revampguildfordgyratory/ could also be found by searching for 'revamp guildford gyratory' that describes these ideas in more detail.**

**Bibhas Neogi**
**25 September 2020**
**Ground altitude finder :-**
https://www.freemaptools.com/elevation-finder.htm