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Portsbridge Roundabout – Further Analysis of SRTM Outputs

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Portsbridge Roundabout – Further Analysis of SRTM Outputs

DATE:	23 December 2020	**CONFIDENTIALITY:**	Public
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PROJECT:	62100616 AQUIND	**AUTHOR:**	S. Gander
CHECKED:	C. Williams	**APPROVED:**	C. Williams

INTRODUCTION

This Technical Note assesses the changes in traffic flows through Portsbridge Roundabout. This Technical Note has been produced in response to discussions held in relation to Question 3A.5 of Issue Specific Hearing 2 which dealt with matters relating to Traffic, Highways and Air Quality (ISH2) (EV-012(a)). Question 3A.5 is as follows:

> *"With reference to the Applicant's Responses to the Local Impact Reports ([REP2-013] page 3-24, 5.1.14), do the updated results for Portsdown Hill and Portsbridge Roundabout have any consequential effects on the modelled scenarios?"*

In response to Question 3A.5 Portsmouth City Council (PCC) stated in paragraph 4.5 "Deadline 5 Submission - Transcript of Oral Evidence to be presented at Issue Specific Hearing 2" (REP5-088) that:

> *"With regard to the Applicant's Responses to the Local Impact Reports ([REP2-013], 5.1.14), the updated results for Portsdown Hill and Portsbridge Roundabout are unlikely to have any consequential effects on the modelled scenarios. However the model does not predict the observed peak hour queuing on the off slip from the M27 at the Portsbridge Roundabout and the queue extent and safety implications of that will need to be determined."*

In response to Question 3A.5 and PCC's response on Portsbridge Roundabout the Applicant's Transcript of Oral Submissions for Issue Specific Hearing 2 on Traffic, Highways and Air Quality (REP5-061) noted the following:

> *"3.30 With regards to Portsbridge Roundabout, the Applicant accepts that when using the SRTM outputs the Do-Minimum scenario results for the junction capacity analysis do not reflect the existing situation where traffic queues are known to extend back from the westbound A27 off-slip onto the A27 mainline in the peak hours. Further to the response provided to PCC's Local Impact Report, which showed that the predicted impacts at this junction are forecast to be minor, the Applicant has completed further analysis of traffic flows comparing the outputs of the Do Something 1 and 2 Scenarios with the Do Minimum Scenarios. This comparative assessment has been undertaken in order to identify the changes arising from traffic reassignment by virtue of construction of the Proposed Development at Portsbridge Roundabout as shown below"*

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	AM Peak	PM Peak
Portsbridge Roundabout Do-Something 1 Net Traffic Flow Changes compared to Do-Minimum Scenario	+8	+34
A27 Westbound Off-Slip Do-Something 1 Net Traffic Flow Changes compared to Do Minimum Scenario	-10	+9
Portsbridge Roundabout Do-Something 2 Net Traffic Flow Changes compared to Do-Minimum Scenario	-18	+36
A27 Westbound Off-Slip Something 2 Net Traffic Flow Changes compared to Do-Minimum Scenario	-6	-8

"3.31 As the table shows, the Do-Something scenarios lead either to a decrease in traffic flow or an increase of 30-40 vehicles across the entire junction in the AM and PM peak hours. In addition, the A27 Westbound off-slip experiences a maximum increase of nine vehicles in the PM peak Do-Something 1 scenario and a decrease in traffic in all other scenarios. This is despite the junction operating in the SRTM with a lower level of delay than the existing baseline, with traffic instead using alternative routes such as the M275 to avoid construction works on the A2030 Eastern Road. The use of this higher class route as a consequence of traffic diverting away from the A2030 Eastern Road is considered to be intuitive given the direct and resilient links it provides into central Portsmouth from the A27."

"3.32 Based upon this analysis, the Applicant remains satisfied that the installation of traffic management on A2030 Eastern Road will have a negligible impact on the operation of Portsbridge Roundabout and in particular the A27 off-slip, further confirming that a robust assessment has been provided."

At ISH2 and in response to the evidence provided by the Applicant as included above, PCC then noted that these results appeared counter-intuitive given that Portsbridge Roundabout provides the next available route onto Portsea Island west of the A2030 Eastern Road and is therefore likely to be used by traffic reassigning away from the construction works when taking place in this location.

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This Technical Note therefore provides a response to the comment made by PCC through further assessment of SRTM outputs at Portsbridge Roundabout and wider highway network.

TRAFFIC FLOWS

In addition to the oral submission given by the Applicant in ISH2, further interrogation of the SRTM outputs has been undertaken. In order to understand the extent of redistributing traffic as a result of the modelled lane closure on A2030 Eastern Road, this additional analysis assessed changes in traffic flow on each of the three road bridges which link Portsea Island to the mainland.

A comparison of the traffic flow changes between the Do Minimum (DM) and the Do Something (DS) have been assessed for each road bridge for the following scenarios:

- Changes to southbound traffic flow for all routes have been assessed against DS1 (southbound lane closures on the Onshore Cable Route); and
- Changes to the northbound traffic flow for all routes have been assessed against DS2 (northbound lane closures on the Onshore Cable Route).

The results of this assessment of traffic flow changes are set out in Table 1.

Table 1:Change in traffic flow on road bridges to/from Portsea Island

Route	Change in Traffic Flows from the DM to the relevant DS (vehicles)			
	AM		PM	
	Northbound (DS2)	Southbound (DS1)	Northbound (DS2)	Southbound (DS1)
A2030 Eastern Road	-46	-90	-42	-238
A3 London Road south of Portsbridge Roundabout	2	37	8	80
M275 north of Junction 1	11	49	32	153

As expected, the modelled lane closures on A2030 Eastern Road lead to a decrease in traffic in the DS scenario when compared to the DM. Assessment of the two alternative routes onto Portsea Island from the mainland show that in the DS scenario, the M275 sees a greater increase in traffic flow than the route via Portsbridge Roundabout. This is particularly notable for southbound traffic in each peak hour.

This analysis suggests that despite the route via Portsbridge Roundabout being geographically closer to A2030 Eastern Road than the M275, the latter is a preferable route for re-routing traffic. Instead of using Portsbridge Roundabout, the forecasts from the SRTM show that it is more likely that traffic will use

alternative routes such as the M275 to avoid constructions works on the A2030 Eastern Road, which is a higher class route that provides links into Portsmouth city centre, Naval base, Gunwharf Quays and southern areas of Portsea Island such as Southsea.

JOURNEY TIME ANALYSIS

Further to the analysis of changes in traffic flow presented in Table 1, further interrogation of the SRTM outputs has been undertaken to consider journey times changes which are forecast for vehicles travelling on two routes within central Portsmouth. The assessed routes are as follows:

- **Route 1**: A27 Havant Bypass to Victory Road North (via Portsbridge Roundabout, A2047 London Road, A2047 Kingston Road, and A2047 Fratton Road); and
- **Route 2**: A27 Havant Bypass to Victory Road North (via M275, A3 Mile End Road, Church Street and A2030 Holbrook Road).

All routes have been assessed for both southbound and northbound journeys and are shown on Figure 1 below.

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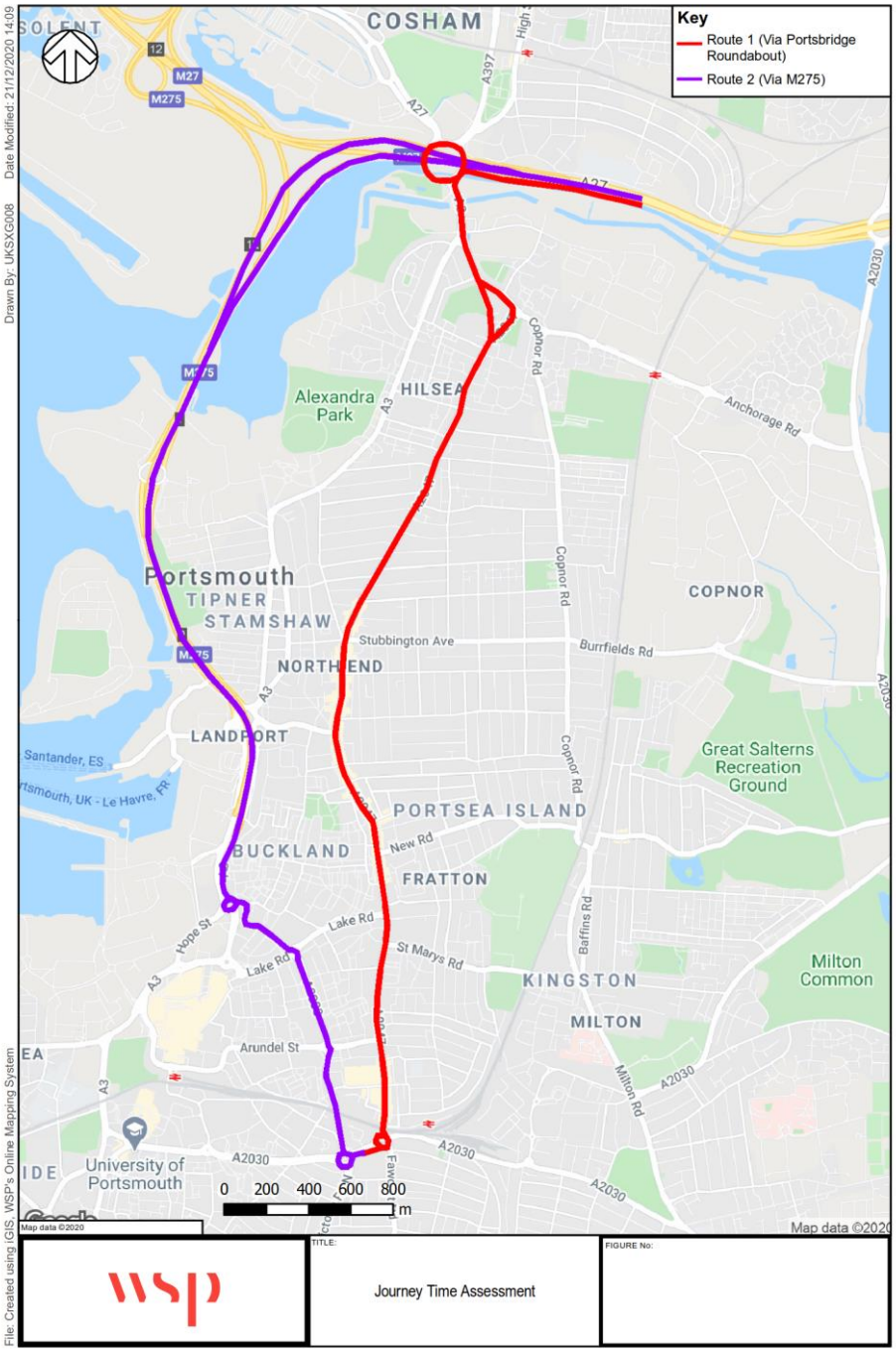
Figure 1: Assessed journey time routes



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Journey time analysis has been completed for each route when compared to the DM for the following scenarios:

- Southbound journey time for all routes have been assessed against DS1 (southbound lane closures on the Onshore Cable Route); and
- Northbound journey time for all routes have been assessed against DS2 (northbound lane closures on the Onshore Cable Route);

The results of this journey time analysis have been summarised in Table 2.

Table 2: Journey time analysis for two alternate routes into central Portsmouth

		Journey time (minutes)	
		AM Peak (08:00 – 09:00)	PM (17:00 – 18:00)
Route 1 (Portsbridge Roundabout)	Southbound – DS1	12	14
	Northbound – DS2	16	15
Route 2 (M275)	Southbound – DS1	9	14
	Northbound – DS2	14	14

As can be seen in the results set out in Table 2, in all directions and for all scenarios the route via M275 is either comparatively shorter, or the same duration as the route via Portsbridge Roundabout. These journey times, alongside the greater level of traffic redistribution seen on the M275 suggests that Portsbridge Roundabout is unattractive route for traffic routing away from the modelled works on A2030 Eastern Road, and thus the impact of such works on Portsbridge Roundabout is unlikely to considerably alter its existing operation.

As the route onto Portsea Island via Portsbridge Roundabout is located on the A3 corridor, the attractiveness of this route will also be negatively impacted by the modelled road works at Ladybridge Roundabout. This could increase the number of vehicles choosing to route via the strategic road network, and the M275 from the Waterlooville / Havant area, whom would otherwise use the A3 corridor. In relation to this, Table 3 below provides a summary of forecast journey time increases for the DS1 scenario for traffic travelling south along the A3 London Road corridor and through Portsbridge Roundabout.

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Table 3: Journey time analysis for A3 Corridor Southbound in DS1 Scenario

	Journey time (seconds)	
	AM Peak (08:00 – 09:00)	PM (17:00 – 18:00)
A3 London Road north of Ladybridge to A3 London Road south of Portsbridge Roundabout Journey Time Increase	+67	+99

This shows that the southbound journey time along the A3 London Road in the SRTM Do-Something 1 scenario is impacted by the traffic management location at Ladybridge roundabout, therefore making the use of this corridor less attractive than over alternatives such as the A3(M) / A27 / M275. This leads to re-assignment of traffic away from the corridor, as highlighted in the Applicant's response to Question 3A.5 at ISH2.

CONCLUSION

It is considered that the forecasts identified above are intuitive of typical driver behaviour, who will want to make the best possible progress on journeys and will seek the best alternative routes in the event that traffic management measures are in place along the A2020 Eastern Road. In this case, the highest levels of traffic reassignment away from the A2030 Eastern Road are shown to be on the M275, which is reflective of the nature and class of the M275.

This continues to confirm that the SRTM outputs as it relates to the Proposed Development are robust and provide a suitable evidence base for the assessment of traffic impacts.