A27 Underpass – Fishbourne Road East

Transport Modelling and Feasibility Report

On behalf of **Chichester City Council**

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For and on behalf of Stantec UK Limited				

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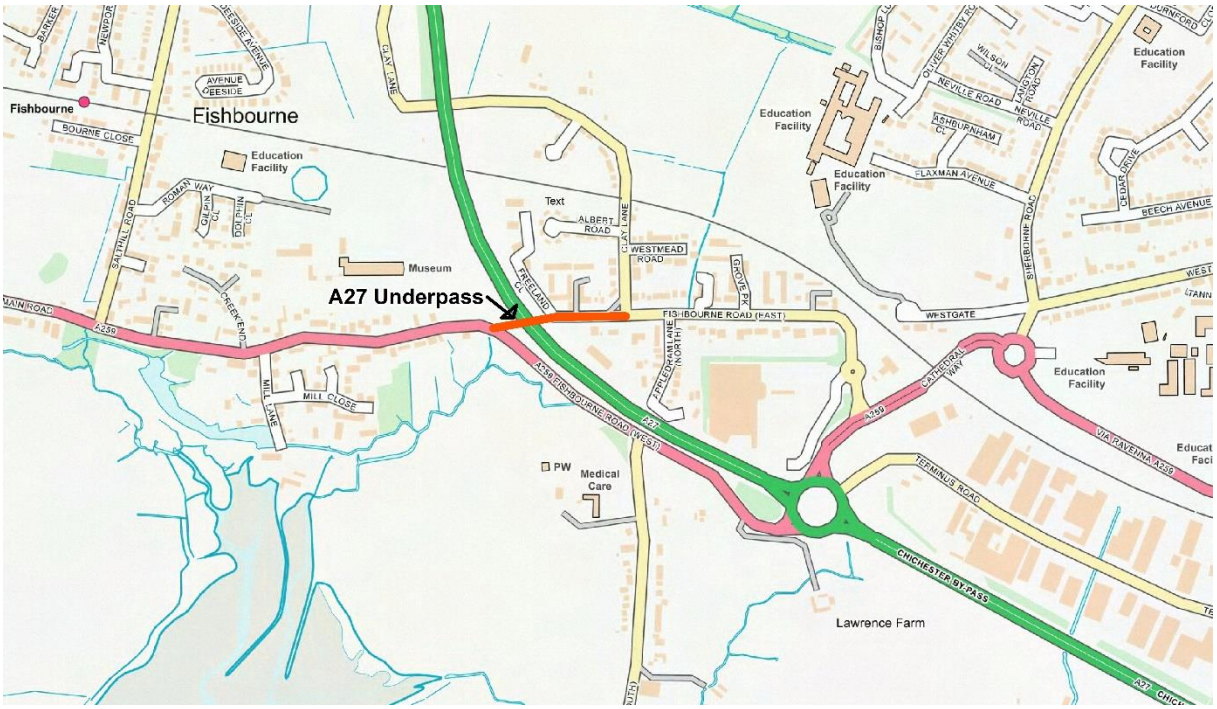
1 Introduction

1.1 Context

1.1.1 Stantec has been commissioned by Chichester City Council (CCC) to undertake a transport modelling assessment and advise on the feasibility for making the current cycle/pedestrian underpass of the A27 between Fishbourne Road East and Fishbourne Road West.

1.1.2 Figure 1.1 shows the location of the underpass.

Figure 1.1: Location of A27 Underpass



1.1.3 This note sets out the outputs from a high-level modelling exercise, to demonstrate the impact of the scheme on the local highway network.

2 A27 Underpass Modelling

2.1 Introduction

2.1.1 The modelling exercise has been undertaken using the same 2035 Do-Minimum model which was previously used to inform the Chichester Southern Gateway Study. The 2035 forecast model was developed using a base year model initially developed on behalf of Highways England and included some minor updates within the city centre, undertaken by Stantec. The model is developed using SATURN software, which is an industry recognised modelling software package widely used within the UK. The model consists of a network, which includes all major links within the Chichester area and a matrix of trips, which represents the highway trips between zones within the study area. The model is split into a number of zones, with smaller zones within the built-up areas and larger zones in more rural areas and on the periphery of the model area.

2.1.2 The base year model is validated to replicate 2015 traffic conditions to a level as set out in guidance produced by the Department for Transport (DfT). The 2035 model includes committed, along with committed highway schemes and again has been produced following DfT guidance. The model represents the AM Peak (0800-0900) and PM Peak (1700-1800) hours).

2.1.3 The underpass has been coded into the model for both peaks to produce 'with scheme models. The trip matrix used is the same in both the Do-Minimum model and the with A27 Underpass model.

2.2 Flow Comparisons – 2035 DM v A27 Underpass

2.2.1 Figures 2.1 and 2.3 provide a comparison of flows between the Do-Minimum model and A27 Underpass model. The green represents links where flows decrease and blue where flows increase. The flow changes are very localised.

Figure 2.1: Flow Comparison with and without Tunnel – AM Peak

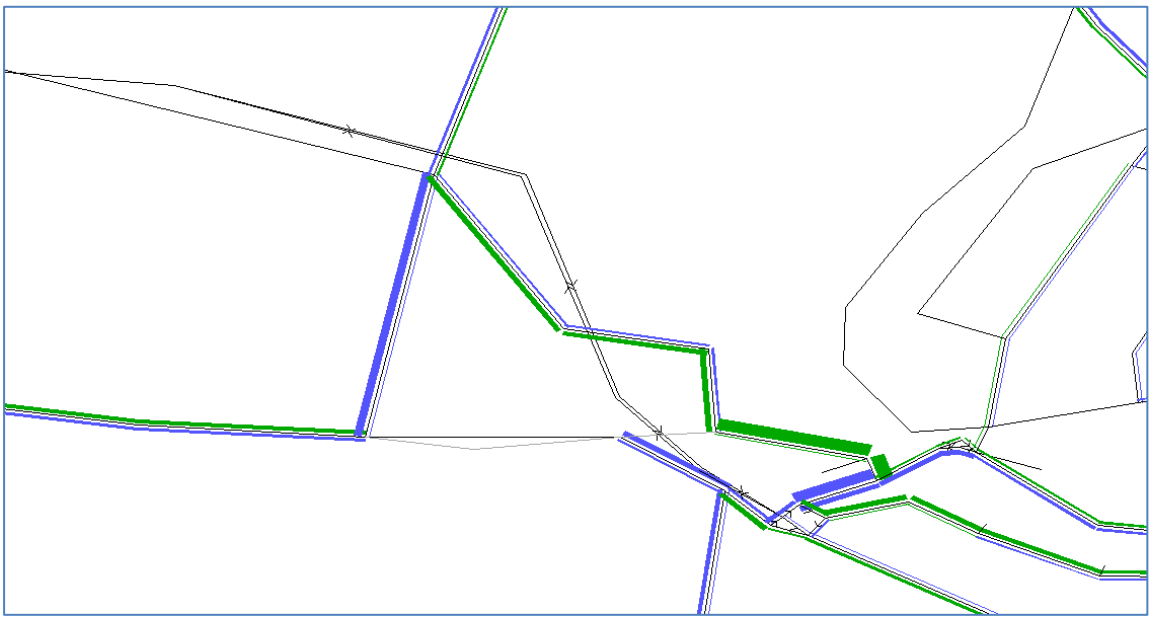
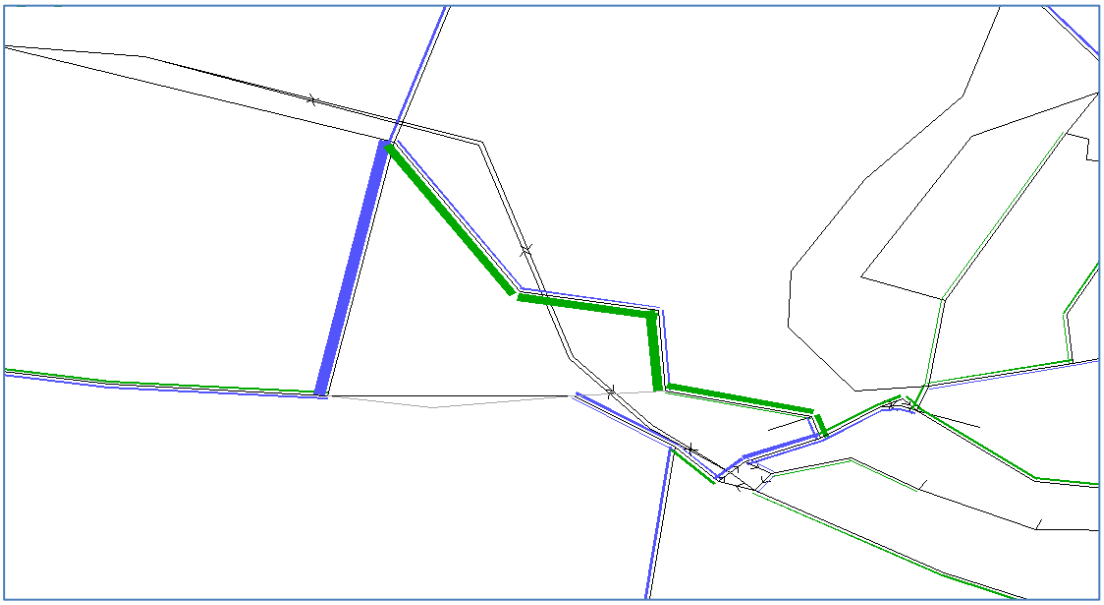


Figure 2.2: Flow Comparison with and without Tunnel – PM Peak



2.2.2 Table 2.1 provides a comparison of flows on some key links within the immediate area of the tunnel, along with the actual difference in flows with and without the new tunnel.

Table 2.1: Flow Comparisons with and without Underpass

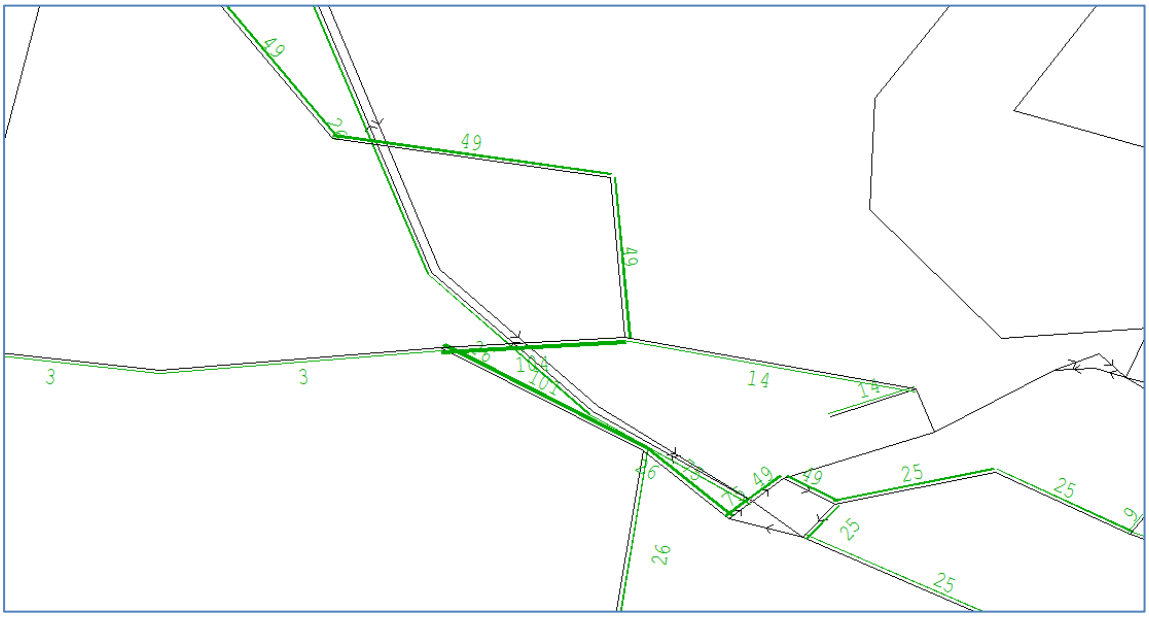
Link	Direction	AM Peak			PM Peak		
		Do-Minimum	With Underpass	Difference	Do-Minimum	With Underpass	Difference
Underpass	EB	N/A	645	N/A	N/A	470	N/A
	WB	N/A	104	N/A	N/A	49	N/A
Fishbourne Road East	EB	171	549	378	41	208	167
	WB	38	56	18	98	112	14
Fishbourne Road West (West of Underpass)	EB	1116	1365	249	430	534	104
	WB	750	548	-202	1009	716	-293
Fishbourne Road East (Between Underpass and Appledram Lane)	EB	1116	952	-164	430	367	-63
	WB	750	676	-74	985	969	-16
Fishbourne Road East (Between Underpass and Appledram Lane)	EB	837	776	-61	269	241	-28
	WB	486	611	125	980	1042	62
Cathedral Way (Between Roundabout and Fishbourne Road East)	EB	1429	1095	-334	903	798	-105
	WB	716	588	-128	908	869	-39
Clay Lane	EB	98	56	-42	48	17	-31
	WB	46	185	139	24	260	236

2.2.3 In order to understand some of the flow changes, analysis of trips using the tunnel in both directions is required. Figures 2.3 and 2.4 show the origin and destination of trips using the underpass in the AM peak in the east bound and westbound directions respectively. PM peak movements are very similar.

Figure 2.3: Eastbound Trips through Underpass - AM Peak

2.2.4 The figure indicates that the majority of eastbound trips (517 of 653) are approaching from the west on the A259. A smaller number are coming the west from Fishbourne Roundabout (81) or Appledram Lane (55). The majority of the trips from the west are then heading north on Clay Lane, whilst the A259 trips head towards the city centre on Fishbourne Road East. This leads to extra traffic on these residential roads. An increase in traffic on these roads will result in adverse impacts on residents and increase noise and pollution levels, which are a disbenefit of the scheme. There is also the potential for increased accidents and poor perception of road safety as a result of traffic increasing in these roads.

Figure 2.4: Westbound Trips through Underpass - AM Peak



2.2.5 The westbound flows are shown to be far lower than eastbound flows. The majority of these flows are local to Fishbourne Road East and from Clay Lane and then heading towards to Appledram Lane, Chichester bypass or Terminus Road. No traffic is using the underpass westbound from Chichester City Centre, this is because it is quicker to use the route via Fishbourne Roundabout.

Junction Impacts

2.2.6 The addition of the underpass results in a slight reduction in delays at Fishbourne Roundabout in the PM Peak. Figure 2.5 shows the stop line delay in seconds at the roundabout in the Do-Minimum scenario and Figure 2.6 shows the delays with the underpass. This shows a total delay of 262 seconds with the underpass and 303 seconds in the do-minimum, giving a reduction of 41 seconds delay per vehicle travelling eastbound through the junction. In the AM Peak, the eastbound delay reduces from 180 seconds without the underpass to 93 seconds with the underpass.

2.2.7 Delays in the westbound direction are smaller and reduce from 54 seconds to 30 seconds in the AM Peak and 54 seconds to 50 seconds in the PM peak.

2.2.8 The reduction in delays will result in some journey time benefits being accrued to some travellers as a result of the scheme.

Figure 2.5: Fishbourne Roundabout Stop Line Delay – Do-Minimum PM Peak

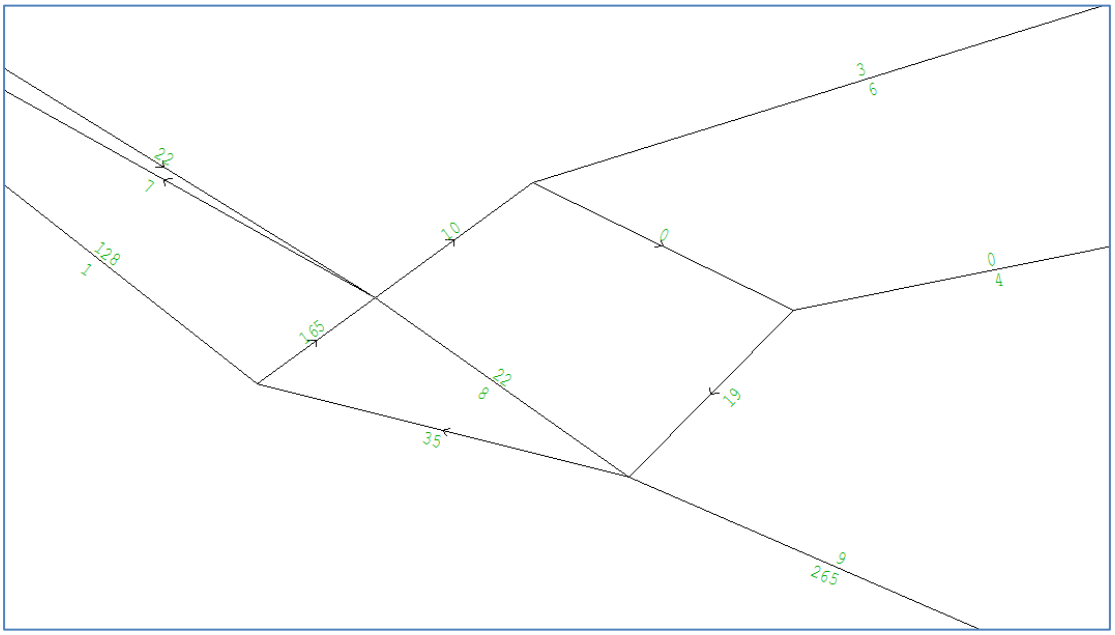
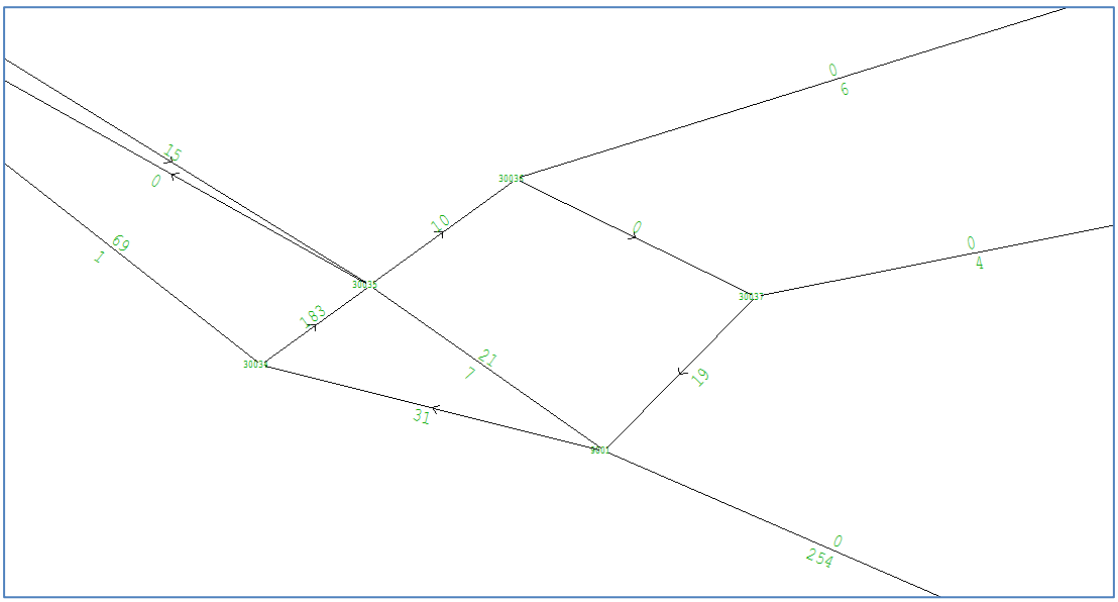


Figure 2.6: Fishbourne Roundabout Stop Line Delay – With Underpass PM Peak



3 Scheme Delivery

3.1.1 The current underpass has a height restriction and is designed to support pedestrian and cycle movements only which generally require 2.4m clearance. To accommodate all vehicle types the clearance would need to be increased to circa 5.3m, less if the link was not to be utilised by HGV's. The current structures at either end of the underpass are shown in Figure 3.1 and 3.2.

Figure 3.1: Current A27 Underpass – Western Approach

Figure 3.2: Current A27 Underpass – Eastern Approach

3.1.2 To meet the required headroom, the underpass would have to be lowered which would mean regrading both the approaches. This would be a major engineering exercise, costly and possibly create drainage issues in that the new road level would require pumps operating 24/7 to be installed to prevent flooding.

3.1.3 On the eastern side, the proximity of Freeland Close would make this very difficult to achieve. This would be even more of an issue on the western side where there would be a need to tie in with the A259 and provide a new junction on the existing bend.

3.1.4 The route is also currently used as a pedestrian and national cycle route only and therefore a good level of provision for these users would still be required in the future. Even with an eastbound only route being provided (given the little use by westbound traffic), there is unlikely to be sufficient width to accommodate both without the requirement for widening the structure. The work required to do this would be expensive and time-consuming construction project.

3.1.5 The A27 is part of the strategic road network, so any work involving this underpass would require very close liaison with Highways England, who manage the road. This would require legal agreements and fees in order to assist in delivery of the scheme.

3.1.6 The length of the subway is around 50m and the construction is likely to require some comprehensive and technically difficult tasks. A very high-level cost for implementing the scheme is likely to be in the realm of millions.

4 Summary

4.1.1 This note has set out the modelling undertaken of providing a vehicular route utilising the existing cycle and pedestrian underpass of the A27 to the west of Fishbourne Roundabout.

4.1.2 The modelling indicates that there will be some savings in delays at Fishbourne Roundabout, however this are quite small.

4.1.3 Relatively substantial traffic flow increases are seen on Fishbourne Road East and Clay Lane, both of which are residential routes. This is likely to lead to disbenefits in terms of air quality, noise, accidents and severance (caused by higher traffic flows).

4.1.4 The delivery of the scheme will not be simple and is likely to be costly.

4.1.5 Given the likely high cost of the scheme, the limited impact on delays at Fishbourne Roundabout and the impacts on the residential roads, the scheme is unlikely to provide value for money.