Executive Summary

Following completion of the STAG Part 1 assessment and subsequent DMRB Stage 1 design/assessment, Atkins was commissioned to undertake a DMRB Stage 2 design/assessment for the northern bypass options for A77 Maybole.

Three routes were developed (Blue, Red and Yellow), each of them lying to the north-west of Maybole. Each route ties into the existing A77 to the south at a new roundabout (Broomknowes) and to the north at a new roundabout (Smithston). Within each of these three routes, four sub-options were developed as follows:

- Single Carriageway (S2)
- Single Carriageway (S2) with roundabout at B7023
- Wide Single Carriageway (WS2+1)
- Wide Single Carriageway (WS2+1) with roundabout at B7023

The twelve options were each designed using MX Road. The existing topography was followed where possible, and volumes of cut and fill material were minimised. However, the Blue routes require additional overbridges, while the Red routes have considerably more 'cut' than 'fill'. Therefore the costs of these schemes are higher than for the Yellow.

The options were then modelled using Paramics (a traffic microsimulation package) to determine the effect on traffic flows, speeds etc. They were also assessed for any benefits/disbenefits arising from accidents and delays due to roadworks. The overall economics were calculated in terms of Benefit to Cost Ratio.

All options would result in approximately half of existing traffic being removed from Maybole town centre. This would reduce congestion within Maybole and allow through-traffic an improved route. The Yellow options perform best economically as they remove slightly more traffic from the town centre and have a lower scheme cost than the other routes. The Blue options perform least well economically as they are longer and more expensive. Additionally, the provision of a roundabout at the B7023 would result in more traffic using the bypass instead of the town centre and therefore the economics would be further improved. The most economically beneficial option is the Yellow S2 with roundabout (BCR ~9).

A DMRB Stage 2 Environmental Assessment was also undertaken for each of the twelve options. The specialist disciplines all reported separately on their findings with regard to the baseline, likely impacts and possible mitigation measures.

In general, the Yellow route is preferred by most environmental disciplines as it remains closer to the town and is slightly shorter than the other routes, thus having a smaller landtake. Conversely, the Blue route is least preferred as it passes furthest from the town and is the longest route, with an accordingly high landtake. The exceptions to this include noise and air quality, both of which receive greater benefit when the bypass is further from the town.

The options with least landtake are generally preferred by most environmental disciplines, therefore the S2 is most preferred, with WS2+1 with roundabout being least preferred. The exceptions to this again include noise and air quality, both of which benefit from a higher volume of traffic being removed from the town centre by way of an additional junction and/or overtaking provision.

Overall, it is recommended that the 'Yellow Single Carriageway with Roundabout at B7023' be taken forward to DMRB Stage 3 design/assessment. A secondary option for further consideration is the 'Yellow WS2+1 with Roundabout at B7023.' An Investment Decision Makers Meeting agreed that these options should be considered at the Strategic Transport Project Review.