8. Conclusions

8.1 Engineering Conclusions

8.1.1 Three route alignments (Blue, Red and Yellow) have been designed using MX Road. During this design, the intention has been to follow the existing topography where possible and to minimise the volumes of cut and fill.

8.1.2 The Blue option requires additional overbridges, while the Red option has considerably more 'cut' than 'fill' volume. Therefore the costs of these schemes will be higher than for the Yellow.

8.1.3 Within each route alignment, four sub-options have been designed. The carriageway was widened to achieve a WS2+1 layout (to the current draft design standard). Also, an additional roundabout was designed for access to/from the B7023.

8.2 Environmental Conclusions

8.2.1 A Stage 2 Environmental Assessment has been carried out in accordance with the DMRB. Each discipline has reported separately (in a sub-section of this report). There will be an environmental impact associated with the provision of a bypass. Although several disciplines would receive an adverse impact, there are a number of disciplines which would benefit from the provision of a bypass. The situation could be improved for those that would be adversely affected by mitigation measures. These mitigation measures are detailed within each section of the report.

8.2.2 The overall conclusions for each discipline are noted below.

Air Quality

8.2.3 All options result in a decrease in greenhouse gases due to the reduced congestion and ability for traffic to flow relatively freely. Properties within the town centre will experience an improved situation, however a number of properties on the outskirts of Maybole will be adversely affected.

8.2.4 The Yellow route is preferred, with the Blue route being least preferred.

8.2.5 The sub-options which remove more traffic from the town centre will result in a further overall improvement, therefore the WS2+1 and roundabout schemes are more preferred than the base route.

Cultural Heritage

8.2.6 All options could impact upon locally important buildings, including Covenanter's Memorial, and would pass through relatively undisturbed ground which may yield buried archaeological remains. However, the reduction in traffic through the town centre will result in a benefit to the historic Maybole Conservation Area.

8.2.7 The Yellow route is preferred as it affects fewer designated cultural heritage assets, whereas the Blue route is least preferred.

8.2.8 Any sub-option which requires additional landtake would increase the risk of uncovering unknown buried artefacts, therefore the basic S2 option would be preferred.

Disruption Due to Construction

8.2.9 All options will have an impact due to construction. The Blue and Red routes will specifically impact upon the caravan park and a number of properties, while the Yellow route may impact upon the Whitefaulds residential area.

8.2.10 The Yellow route is preferred as it impacts upon fewer properties, whereas the Blue route is least preferred.

8.2.11 The impact is not expected to change significantly between sub-options.

Ecology and Nature Conservation

8.2.12 All options will have a negative impact on the ecology and nature conservation in the area. Although there are no statutory designated sites, a variety of flora and fauna has been found to be present.

8.2.13 The Blue option (including all sub-options) will have the greatest impact on existing habitats and species due to effects of severance, habitat modification and loss. The Yellow option is preferred due to the lower number of ecological receptors affected.

8.2.14 There will be limited difference in the impact of each sub-option as they follow the same alignment as the base route. The level of impact will increase slightly in proportion with the amount of landtake required.

Landscape Effects

8.2.15 All options would impact upon the landscape to the north of Maybole. Particularly due to the hilly landform, the earthworks required to construct a bypass will be relatively extensive.

8.2.16 The Blue alignments are the least preferred as they affect the landscape over the largest area, often conflicting with the existing landscape pattern. Conversely, the Yellow alignments are generally more sympathetic to the existing landform and affect the smallest area.

8.2.17 There is unlikely to be any discernible difference between the landscape and visual impacts of the options within each of the three basic alignments. However, the options requiring additional landtake would have slightly larger adverse impact.

Land Use

8.2.18 All options pass through several agricultural properties. The Yellow route also impacts upon an area that is zoned for residential development, while the Blue route impacts upon the caravan park. The Blue route also traverses several small pockets of ‘prime land’.

8.2.19 The option which results in the least loss of land will be preferred. Therefore the Yellow options are preferred, with Blue being least preferred.

8.2.20 The impact on adjacent land would be greater with a roundabout at B7023, and also for the additional carriageway required for a WS2+1 scheme, therefore these would be less preferred than the base S2 option.

Traffic Noise and Vibration

8.2.21 There would be a reduction in noise within the town centre as a result of the reduced traffic volume. However, there would be an increase in noise for several properties on the outskirts of Maybole.

8.2.22 The Blue route is preferred as it passes further from the large number of receptors in Maybole town centre. Whereas the Yellow is least preferred as it remains very close to Maybole.

8.2.23 The options with a junction at the B7023 are generally more preferred as they remove more traffic from the town centre than those options without a junction.

Pedestrians, Cyclists, Equestrians and Community Effects

8.2.24 Overall, all the route options have a moderate beneficial impact for pedestrians, cyclists and equestrians and have a beneficial effect on access to community facilities due to the reduction in vehicle trips in the town centre.

8.2.25 The route alignments (Blue, Red and Yellow) would all offer similar benefits.

8.2.26 However, the options that include a junction with the B7023 Culzean Road would offer slightly less benefits overall due to pedestrians and others having an additional junction to cross.

Vehicle Travellers

8.2.27 All the route options offer improved views for vehicle travellers over the existing condition. Also, all the route options would result in lower levels of driver stress than the existing A77 through Maybole.

8.2.28 No specific route alignment (Blue, Red or Yellow) would provide a greater reduction in driver stress when compared against the existing situation because all the alignments would be constructed to the same standard.

8.2.29 The options with a roundabout would increase driver stress, therefore be less be preferred. The options with overtaking lanes (WS2+1) would reduce driver stress further due to the additional overtaking opportunities.

Water Quality and Drainage

8.2.30 There will be additional surface-water run-off from any of the options, and this will be carried into the nearby watercourses by a series of burns.

8.2.31 The Blue and Red routes would require culverting at Broomknowes tie-in, therefore the Yellow base route is the preferred option with respect to the water environment.

8.2.32 The sub-option with the smallest paved surface area (S2) would be most preferred due to the lower surface area being drained.

Geology and Soils

8.2.33 There is a moderate adverse impact to the geology and soils of the study area associated with the loss of agricultural soils for all of the route options under consideration.

8.2.34 The Yellow route options are preferred due to the least land take and loss of agricultural soils.

8.2.35 The basic S2 route options are preferred over the WS2+1 and/or roundabout options, again as they result in the least land take and loss of agricultural soils.

Policies and Plans

8.2.36 All three routes satisfy the local authority's desire for a bypass of Maybole. However, there is also a desire to protect the landscape, which the implementation of a bypass could work against.

8.2.37 The Yellow route most closely follows the outline route stated in the Local Plan and is therefore considered to be the preferred option, while the Blue route is lest preferred as it deviates considerably from the outline route.

8.2.38 There is not any additional or reduced impact at this stage from the sub-options within each route alignment.

Conclusion

8.2.39 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. Conversely, the Blue route is least preferred as it passes furthest from the town and is the longest route. The exception to this is noise, as there is greater benefit when the bypass is further from the town.

8.2.40 The options with least landtake are generally preferred by most environmental disciplines, therefore the S2 is most preferred, with WS2+1 with roundabout at B7023 being least preferred. The exceptions to this are 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.

8.3 Economic Conclusions

8.3.1 A Paramics model has been prepared to model the traffic flows in the existing situation and with the proposed bypass schemes in place.

8.3.2 The economic benefits arising from such a bypass scheme have then been calculated. These benefits include those due to journey time savings/vehicle operating costs, maintenance delays and accidents.

8.3.3 The Yellow option is preferred as it removes a greater proportion of traffic from the town centre, therefore less traffic is experiencing delay. Balanced against the reduced cost of the Yellow option (in comparison with Blue and Red), the economics are very favourable with a BCR to Government (Central Growth Scenario) of approximately 9.

8.3.4 The addition of a junction with the B7023 does allow more traffic to use the bypass rather than remaining in the town centre. The extra benefit resulting from this is sufficient to justify the extra capital cost.

9. Overall Recommendation

9.1.1 A Value for Money Workshop was held on 1st March 2007, with participants from Atkins and Transport Scotland. It was facilitated by Glyn Harrison of Capital Value and Risk Limited. The purpose of the workshop was to debate the options and assess the best value for money solution, taking cognisance of the Government's appraisal criteria.

9.1.2 The information provided in this document was summarised to attendees at the workshop, and discussions were then held regarding the impacts of each of options.

9.1.3 The Yellow route performs best economically due to the slightly higher traffic flow and the lower cost (as a result of approximate cut-fill balance and expected number of underbridges). It is also preferred by the majority of environmental disciplines. It is recommended that the Yellow route be taken forward.

9.1.4 As the Yellow route requires three sections of climbing lane, there are considerable lengths of overtaking opportunity available within the base S2 sub-option. The WS2+1 does not result in sufficiently increased benefits to justify the additional capital cost.

9.1.5 Further, the provision of a junction with the B7023 has been shown to result in more traffic being removed from the town centre, therefore improved economics. Although the landtake is slightly greater for this sub-option, and therefore the environmental disciplines generally find it to have an adverse impact over the base route, the added benefit is considered to be an important part of the scheme. It is recommended that the Yellow Option 3.2 be considered as the preferred option.

9.1.6 All other Yellow sub-options are strong contenders and it is considered that a yellow WS2+1 alignment should be reconsidered at the start of a DMRB Stage 3 assessment.

9.1.7 While it should be noted that the economic performance of the Blue and Red options were similar, the Blue option was least preferred by the majority of environmental disciplines.