

Introduction

The assessment involving Red / Purple elements R5, P2 being compared with the Blue element B1 was presented to a multi-disciplinary workshop in April 2018, taking account of the Engineering, Traffic / Economics and Environmental assessments.

Selecting a preferred element within this area allowed the options work to progress to further assessments and ultimately help to inform the preferred option decision for the scheme (expected later in 2018).

Options Design Development

All of the options displayed at public exhibitions in June 2017 have been developed taking into account:

- feedback from consultations (public, statutory bodies, landowners, etc);
- three-dimensional geometric design of mainline, junctions and side roads;
- consideration of Non-Motorised Users (NMUs);
- preliminary drainage design;
- optimisation of junction locations; and
- interaction with environmental / landscape specialists in optimising alignments and junction layouts.

Engineering Assessment

All designs are in accordance with Design Manual for Roads and Bridges (DMRB) guidance and no departures from standard are required for any of the options under consideration at this stage. The cost estimates prepared for each design provide the main differentiating factor between elements in engineering terms. It is considered that all elements can be developed using value engineering to reduce the costs and this will be carried out on the preferred option at DMRB Stage 3.

Traffic / Economic Assessment

Forecast traffic flows for each pairwise section have been produced to inform noise and air quality assessments. Traffic model outputs for the do-minimum (no scheme) and do-something (with scheme) scenarios have been used to calculate benefits of journey time savings and accidents savings. The element with the best value for money has been identified by comparing the additional benefits and additional costs between each pair being assessed.

Environmental Assessment

The approach to environmental assessment has been adapted from Environmental Impact Assessment (EIA) methodology, drawing on relevant guidance from DMRB Volume 11 and other good practice guidance including relevant Interim Advice Notes. The principles of the EIA assessment provide a robust basis for examination of the pairwise elements and their comparative performance. The assessment has been structured according to the 12 key environment topics drawn from DMRB which are reported in two groupings shown in the following table.

Environment Topics and Groups for Detailed Options Assessment

Topic	Group
Air Quality	Communities and People
Noise and Vibration	
People and Communities	
Agriculture, Forestry and Sporting	
Policies and Plans	
Materials	
Visual Effects	
Cultural Heritage	Natural and Cultural Heritage
Landscape	
Nature Conservation	
Geology, Soils, Contaminated Land and Groundwater	
Road Drainage and the Water Environment	

The significance of an environmental effect results from the interaction between its magnitude (which is related to the extent of the physical change, its spatial extent, duration and frequency) and the value of the resource or the number and sensitivity of those people who might be affected. Effects have been categorised into:

- none or negligible: no detectable change to the environment;
- minor: a detectable but non-material change to the environment;
- moderate: a material and important but non-fundamental change to the environment;
- major: a fundamental change to the environment and a principal consideration.

Effects categorised as being moderate or major (adverse or beneficial) are considered to be significant. Key Environmental Constraints and Issues are shown in Appendix A.

Assessment Framework

The engineering, environmental and traffic/economic findings and key differences have been drawn together into a multi-disciplinary framework for determining the element to be taken forward for the pairwise comparison. The following colour coding has been used to indicate preferences for each paired element:

	Clear preference
	Slight preference
	No preference

The workshop concluded that the Red / Purple elements R5-P2 should be taken forward to the next stage of scheme assessment and that the Blue element B1 was therefore removed from further consideration.

Full details of the Comparison is included in Appendix B. A summary of which is presented in the table below.

Pairwise E Assessment - Summary

Topic		Preference		Comments
		North	South	
Environment	Communities & People	Clear Preference		Clear Preference for North Option which has lower effects on NMUs, community land, policy, materials and visual amenity
	Natural & Cultural Heritage	Clear Preference		Clear Preference for North Option which has lower ecological and landscape effects
Engineering (cost)		Slight Preference		Slight Preference for North Option due to cost differential (£17M) driven by significantly less earthworks.
Traffic / Economic (NPV)		Clear Preference		Clear Preference for North Option as it provides best value and results in higher transfer of traffic from local road network
Overall Preference		Clear Preference		North Option is Clear Preference