Appraisal Summary Table

Date produced:	23rd March 2018

Contact:	
Name	
Organisation	
Role	Promoter/Official

Name of scheme:	M56 J6 - 8 Smart Motorway
Description of scheme:	Introduction of All Lane Running being Junctions 6 and 7 on the M56 including associated technology and updated junction layouts.

Impacts		Summary of key impacts	Assessment				
			Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	Main benefits due to the scheme are derived from travel time savings, with additional benefits from reduced VOC fuel costs. Disbenefits are principally from user impacts during construction due to lower speeds, with additional disbenefits from VOC non-fuel costs during normal operations with the scheme in place. Journey time savings quoted do not account for user impacts during construction.	Value of journey time changes(£): £110.0m Net journey time changes (£) 0 to 2min: £101.9m 2 to 5min: £5.3m > 5min: £2.8m			N/A	£97.9m	N/A
	Reliability impact on Business users	The scheme would produce an overall benefit. The benefits are dominated by a reduction in day to day travel time variability (DTDV) due to the provision of additional capacity and variable speed limits. Benefits also forecast to result from reduced delays attributal to unforeseen incidents. Estimated using MyRIAD.	N/A			N/A	£7.6m	
	Regeneration	Appraisal of impact on Regeneration Areas not necessary as scheme is unlikely to impact accessibility to any significant degree.	N/A			None	N/A	
	Wider Impacts	The scheme is not expected to result in any significant agglomeration benefits, therefore preparation of a Land Use Transport Interaction model was not thought to be appropriate.	N/A			Neutral	NA	
Environmental	Noise	Night time noise levels have been derived from predicted day time levels in accordance with the procedures set out in the 'Calculation of Road Traffic Noise', 'Design Manual for Roads and Bridges Volume 11/Part 7 HD 213/11 Revision 1', and TRL report 'Converting the UK traffic noise index LA10,18h to EU noise indices for noise mapping'. Although this sheet and the DI Appriasal show noise levels are forecast to increase, the comparison of future year noise levels with opening year noise levels shows a decrease in noise for day and for night. The majority of noise changes are negligible and the overall assessment of noise change is neutral. The decrease in noise from opening year applies to both the future year with scheme noise levels and the future year without scheme noise levels as a result of low noise road surfaces which would be laid by the future year. The increase shown in this sheet and in the DI Appraisal is because noise levels are shown to reduce by more without the scheme in place than they do with scheme in place. No properties are predicted to experience 72dB LAeq,16h or greater in the future assessment year with and without the scheme in place. Analysis of the predicted daytime noise levels indicates that no dwellings would be expected to meet the noise insulation eligibility criteria contained in the Noise Insulation Regulations 1975. When operational, in the short-term, one dwelling is predicted to experience a minor perceptible increase in noise level. Conversely, 24 dwellings are predicted to experience perceptible minor decreases in noise level. All other dwellings and other sensitive receptors are predicted to experience negligible noise impacts or no change in noise level. The decreases in noise level are due to the inclusion of a new low noise surface on lanes 1 and 4 of the motorway as part of the Proposed Scheme. In the long term, all receptors are predicted to experience negligible noise impacts or no change in noise level for daytime and nighttime. By the design year there would be a decrease in the number of properties with noise levels above the significance threshold, although changes in noise are shown not to be perceptible.	Households experiencing increased daytime noise in forecast year: 294 Households experiencing reduced daytime noise in forecast year: 0 Households experiencing increased night time noise in forecast year: 273 Households experiencing reduced night time noise in forecast year: 0			N/A	-1,054,347	Income quintile 1 (lowest) - Neutral Income quintile 2 - Moderate adverse Income quintile 3 - Neutral Income quintile 4 - Moderate adverse Income quintile 5 (highest) - Moderate adverse (External - External trips excluded)
	Air Quality	**M56 (Only) TAG Assessment Results** Overall there is a net deterioration in local air quality due to the M56 scheme, as indicated by the increase in the net total assessment score (worsening) for both NO2 and PM10 in the opening year. The M56 scheme would change air quality at receptors for NO2 / PM10 by: improving 337 / 127, worsening 965 / 541, no change at 832 / 1466 receptors. There is an increase in regional NOx emissions with the scheme option (negative impact), due to increases in vehicle kilometres travelled. The NPV of these impacts over the 60 year appraisal period is a cost of -£221k, however using the latest draft estimates of NOx damage costs as a sensitivity test, this would result in a cost of -£2.5million, primarily as a result of increased NOx emissions. **Cumulative (3 Scheme) Air Quality Impacts** For the 'cumulative (3 scheme) core' case there are no significant adverse air quality effects and no mitigation is required for any of the 3 NW SMP schemes.	Assessment Score: PM10: +11 NO2: +157 Emissions: NOx (60 year period): + 291 tonnes			N/A	Value of change in PM_{10} concentration: NPV: -£105,077 Value of change in NO_X emissions: NPV: -£116,602 Total Value of change in air quality: NPV: -£221,680	Income quintile 1 (lowest) - Large adverse Income quintile 2 - Neutral Income quintile 3 -Slight adverse Income quintile 4 - Moderate adverse Income quintile 5 (highest) - Moderate adverse (External - External trips excluded
	Greenhouse gases	Overall increase in CO2 emissions with 'M56 only' scheme over 60 year appraisal period, due to increases in vehicle kilometres travelled. Calculated using non-TUBA method. The change in non-traded carbon dioxide emissions in 2020 = -4,677 tCO2e indicating a slight decrease in CO2 emissions in opening year. Change in emissions in tCO2e for the 60 yr appraisal period = +361,381	Change in non-traded carbon over 60y (CO2e): 361,381 Change in traded carbon over 60y (CO2e): 0			N/A	-£16,830,241	
	Landscape	The Proposed Scheme would be built within the context and limits of the existing highway corridor and infrastructure. The majority of effects would be limited to the construction period and within the existing highway boundary. The loss of vegetation along verges would open up occasional views towards existing and new highway features, including gantries, upgraded lighting and noise barriers, and this would increase the presence of the highway and traffic on it to adjacent receptors. Mitigation trees and shrubs would be planted where space is sufficient to reduce the effects on visual receptors and the setting of historic features in the long term. In addition new planting would help to integrate the highway more robustly into the adjacent landscape pattern. By year 15, the proposed mitigation planting would be mature and would be effective in contributing to the fabric of the wider landscape. Overall, there would be a Neutral effect on landscape.				Neutral		
	Townscape	As the Proposed Scheme would be built within the context and limits of the existing highway corridor and infrastructure there are no anticipated effects on local townscapes.						
	Historic Environment	One Heritage feature a Grade II listed building would experience a temporary significant adverse effect during construction only. Mitigation proposals include replacement planting of a similar or improved nature, together with enhancement measures along the route to improve the existing motorway corridor. Overall in the long term, the Proposed Scheme is considered to have a residual neutral effect on the setting of cultural heritage assets.				Neutral		
	Biodiversity	• No significant effects are anticipated on any statutory or non-statutory designated sites as a result of the construction and operation phases of the Proposed Scheme. • No significant effects on the favourable conservation status of notable and legally protected species are anticipated as a result of the construction and operation phases of the Proposed Scheme. • Construction will involve temporary loss of habitats confined to the soft estate, which will have temporary effects on resource availability for notable species, but is not considered to have a significant effect on the favourable conservation status of these species. • Mitigation and compensation measures required in relation to notable species, such as appropriate timing of site clearance, is detailed in the Proposed Scheme's OEMP. • Pollution risks during the construction phase, relating to noise, lighting, water and air will be managed as part of the Proposed Scheme's OEMP.				Neutral		
	Water Environment	The scale of the proposed works and restriction to within the existing highway boundary result in a low likelihood of effect during construction. The Proposed Scheme will include drainage improvements, in accordance with Interim Advice Note 161/15 such that discharges will be at existing established rates (up to the 1:100 year rainfall event). The Proposed Scheme is designed, and will be managed through the appropriate mitigation, to ensure water volumes or pollutants do not increase at any existing outfalls.				Neutral		
Social	Commuting and Other users	Main benefits due to the scheme are derived from travel time savings. Disbenefits are principally from user impacts during construction due to lower speeds, with additional disbenefits from higher VOC fuel and non-fuel costs during normal operations with the scheme in place.	Value of journey time changes(£): £45.6m Net journey time changes (£) 0 to 2min 2 to 5min > 5min					Income quintile 1 (lowest) - Slight beneficial Income quintile 2 - Moderate beneficial Income quintile 3 - Moderate beneficial

		Journey time savings quoted do not account for user impacts during construction.	£44.9m	-£2.9m	£3.6m	N/A	£24.4m	Income quintile 4 - Moderate beneficial Income quintile 5 (highest) - Large Beneficial (External - External trips excluded)
	Reliability impact on Commuting and Other users	The scheme would produce an overall benefit. The benefits are dominated by a reduction in day to day travel time variability (DTDV) due to the provision of additional capacity and variable speed limits. Benefits also forecast to result from reduced delays attributal to unforeseen incidents. Estimated using MyRIAD.	N/A			N/A	£9.4m	
	Physical activity	All existing facilities (such as foot bridges) will be retained. The scheme will not directly affect any pedestrian or cyclist facilities. It will not result in any changes in the journey length or time for pedestrians or cyclists.	NA			Neutral	NA	
	Journey quality	Smart Motorways facilitates the dynamic control of traffic for congestion and incident management. Traveller Views: Some changes to the perceptions of the motorway due to the frequency of additional infrastructure, however a neutral impact within the context of the motorway. Frustration: Variable message signs will be erected as part of the Proposed Scheme which will serve to provide clear and unambiguous information to drivers regarding road conditions, journey time certainty and reliability and can convey relevant operational information. All of which should contribute beneficially to the journey ambience.	NA			Slight Beneficial	NA	
	Accidents	The Scheme would provide an marginal reduction in accidents and severe casualties, with a marginal increase in fatal and slight casualties.	Total Accidents saved by scheme: 1			N/A	£0.4m	Not Assessed
	Security	The scheme is understood to have no impact on security.	NA			Neutral	NA	Not Assessed
	Access to services	The proposed scheme does not affect the provision or location of transport facilities and hence access to transport is unaffected.	NA			Neutral	NA	Not Assessed
	Affordability	The proposed scheme results in an increase of Vehicle Operating Costs. This is as result of traffic reassigning onto the strategic road network following the removal of congestion, and the increase in traffic speeds resulting in higher fuel consumption.	N/A			N/A	N/A	Income quintile 1 (lowest) - Slight Adverse Income quintile 2 - Moderate Adverse Income quintile 3 - Moderate Adverse Income quintile 4 - Moderate Adverse Income quintile 5 (highest) - Moderate Adverse (External - External trips excluded)
	Severance	No severance effects are expected following implementation of the proposed motorway scheme. All existing facilities (such as foot bridges) will be retained.	NA			Neutral	NA	Not Assessed
	Option and non-use values	The scheme does not involve the loss or introduction of a new mode of transport, as such, option values are unaffected.	NA			Neutral	NA	
Public Account	Cost to Broad Transport Budget	Represents November 2017 HECSD estimate plus operating and maintenance costs.	N/A			N/A	£76.1m	
	Indirect Tax Revenues	Data extracted from TUBA. Operation-related ITR and construction-related ITF	N/A			N/A	-£14.4m	