

Appraisal Summary Table				Date produced:	30 October 2019	Contact:
Name of scheme:	A40 East Bound Widening: M5-Junction 11 to Arle Court Roundabout scheme - West Cheltenham Transport Improvements Scheme - Phase 2			Name		
Description of scheme:	Widening of the existing A40 carriageway eastbound from M5 J11 to Arle Court Roundabout. The scheme is the second phase of a wider programme of investments along the A40 corridor in Cheltenham called the West of Cheltenham Transport Improvements Scheme (WCTIS).			Organisation		
Role				Role		
Impacts	Summary of key impacts		Assessment			
Economy			Quantitative		Qualitative	Monetary £(NPV)
			Value of journey time changes(t)	£3.61m		Distributional 7-pt scale/ vulnerable grp
Business users & transport providers	The scheme will benefit business users due to reduction in congestion and reduction in travel time.		Net journey time changes (£)			
			0 to 2min	2 to 5min	> 5min	
			£1.90m	£0.95m	£0.76m	
Reliability impact on Business users	It is expected that the additional capacity will improve reliability due to the reduction in congestion and result in consistent benefits throughout the day but most significantly during peak hours.		N/A		Moderate beneficial	N/A
Regeneration	No Regeneration Areas (as specified in the WebTAG) are expected to be impacted by the implementation of the scheme. However, the scheme is expected to improve connectivity between Cheltenham and the Forest of Dean and other destinations along the A40 corridor, and enable development in the area.		N/A		Slight beneficial	N/A
Wider Impacts	No development is directly linked to the scheme, but it is however likely that without the scheme, the scale of development that can be approved would be constrained and the efficacy of any other mitigation measures reduced. It is not good practice in this instance to assess the wider impacts for Phase 2 on their own.		N/A		N/A	N/A
Environmental						
Noise	A full/detailed assessment of noise in accordance with the Design Manual for Roads and Bridges Volume 11, Section 3, Part 7 HD 213/11 Noise and Vibration, and the online Transport Analysis Guidance (webTAG) was completed.		An assessment of annoyance in accordance with the DMRB indicates that the number of people bothered 'very much' or 'quite a lot' by road traffic noise in the Design Year (2031), without the Scheme, will decrease by up to 10% at 240 dwellings, and increase by up to 10% at 327 dwellings.			
	Overall there is a small net increase in noise due to the Scheme with 42 households experiencing increased daytime noise in forecast year (2031) and 4 households experiencing increased night time noise in forecast year (2031), with 1 household experiencing reduced day and night noise in forecast year (2031). The impacts are not significant. The small changes in noise are associated with the changes in traffic speeds.		With the Scheme, the number of people bothered 'very much' or 'quite a lot' by road traffic noise will increase by <10% at 245 dwellings, by 10-20% at 331 dwellings, and by 20-30% at 2 dwellings in the Design Year (2031). There will also be a decrease by <10% at 68 dwellings.			
	Altogether the impacts of the scheme on Noise Important Areas (NIAs) in the vicinity of the Scheme are negligible, in accordance with DEFRA's Noise Action Plan: Roads (2 July 2019) there may be opportunities as part of detailed design to achieve improvements in noise level (i.e., a reduction), where possible.					
Air Quality	Overall there is expected to be a net increase in the total emissions for both PM2.5 and NOx over the 60-year appraisal period due to an increase in total annual vehicle kilometres travelled. The local air quality assessment identified that the proposed scheme did not result in any air quality strategy objectives being exceeded and modelled changes in air pollutant concentrations at residential receptors within the Cheltenham Borough Council Air Quality Management Area were imperceptible.		Emissions 60 year period (tonnes): PM2.5: 3 NOx: 36		Value of change in PM2.5 emissions: NPV: -£258,139	
					Value of change in NOx emissions: NPV: -£172,019	
					Total value of change in air quality: NPV: -£430,157	
Greenhouse gases	There is an overall increase in CO <sub>2</sub> emissions with the scheme over the 60 year appraisal period, due to a commensurate increase in total annual vehicle kilometers travelled.		Change in non-traded carbon over 60y (CO <sub>2</sub> e tonnes)	27,285	-£1,226,561	
			Change in traded carbon over 60y (CO <sub>2</sub> e tonnes)	0		
Landscape	The surrounding landscape is varied with linear strips of deciduous woodland, arable farmland, semi-improved grassland and considerable screening vegetation along the A40. Cutting back and some removal of trees and vegetation in 3 sections are required to accommodate the works which may open up views for approx 4 properties, who already have glimpses of the A40. Avoidance of trees removal will be explored in detail design but replacement and enhancement planting would be proposed to mitigate any impact. The impact of the proposed works overall is expected to be slight adverse on the landscape and visual amenity of the area.		N/A		Slight adverse	N/A
Townscape	Not Required (inc in Landscape)		N/A		N/A	N/A
Historic Environment	There are three Grade II listed buildings which are located in proximity to Arle Court roundabout and the works construction compound. Consultation with the local Conservation Officer has confirmed that the scheme will not distract from the significance of the heritage assets and that there is a low risk that any archaeology will be impacted by the works. The potential for enhancement of the heritage assets should however be taken into consideration in the design of the scheme.		N/A		Neutral	N/A
Biodiversity	Habitats within the Scheme are all within the urban and urban fringe landscape and planted or managed. None are considered to be rare or distinctive (in a biodiversity context). There is potential for protected species including bats, badgers and great crested newts. The scheme will result in a net loss of 'soft landscaped' habitats, but others will be retained and new areas will be planted. Pre-works surveys will identify mitigation appropriate to any protected species on the site.		N/A		Slight adverse	N/A
Water Environment	Hatherley Brook, a main river, runs beneath the A40 Gloucester Road, to the east of the centre of Arle Court Roundabout. The proposed scheme is over 200m away from this floodplain of the Hatherley Brook. There is an existing ordinary watercourse east of Badgeworth Road culverted underneath the A40 which is likely to require an extension as a result of the earthworks widening. Any culvert extension is likely to require a Water Framework Directive assessment.		N/A		Neutral	
	The Risk of Flooding from Surface Water (RoFSW) maps show that the Arle Court Roundabout itself and sections of the A40 to the south of the roundabout have a medium to high risk of flooding from surface water. The need for improved drainage will be investigated during the detailed design stage and appropriate measures shall be put in place to ensure risk of flooding from potential increased surface water is avoided.					
	Widening of earthworks within the floodplain will require compensatory flood storage to be provided, this will be assessed within the Flood Risk Assessment produced for the scheme.					
	A Drainage Strategy will also be produced for the scheme. Appropriate pollution prevention measures will be implemented during works to prevent contamination to the water environment.					
Social						
			Value of journey time changes(t)		£6.88m	
Commuting and Other users	The scheme will benefit Commuting and Other users due to reduction in congestion and reduction in travel time.		Net journey time changes (£)			
			0 to 2min	2 to 5min	> 5min	
			£3.95m	£2.67m	£0.26m	
Reliability impact on Commuting and Other users	It is expected that the additional capacity will improve reliability due to the reduction in congestion and result in consistent benefits throughout the day but most significantly during peak hours.		N/A		Moderate beneficial	N/A
Physical activity	The addition of a lane on the A40 eastbound between the M5 Junction 11 and Arle Court Roundabout may cause a modal shift away from active travel. This is due to increased capacity leading to reduced congestion and travel times. However, there are no pedestrian facilities and limited cycle facilities along the section of the A40, hence it is unlikely that a significant number of people would travel along this route by active modes. Therefore, it is assumed that there won't be a significant mode shift away from active modes as a result of the Phase 2 upgrades. Therefore, the immediate impact of the scheme to physical activity is neutral.		N/A		Neutral	N/A

Public Account	Journey quality	The scheme maintains all existing pedestrian and cycle facilities and there is unlikely to be any significant impact to traveller care for these user groups. The lane gain between the M5 Junction 11 and Arie Court will increase capacity on the A40, which is likely to reduce travel time for motorists. Overall, there is a slight beneficial impact to journey quality for motorists and public transport users. Cyclists and pedestrians are unlikely to be significantly impacted by the scheme, hence there is a neutral impact. Therefore the overall impact is slight beneficial.	N/A	Slight beneficial	N/A	
	Accidents	According to the change in AADT, there is a significant increase in speed on sections of the A40 eastbound that occur within the scheme extent. This is likely due to the increased capacity along the A40 eastbound reducing congestion, meaning vehicles can travel faster along the road. Vehicles traveling at higher speeds are more likely to result in an accident. However, this is countered by the replacement of the sub-standard two lane taper merge, where there have been three identified accidents with the inherently safer lane gain arrangement. Therefore, on balance, the impact is assessed as neutral.	N/A	Neutral	N/A	Neutral
	Security	The scheme includes the conversion of the eastbound merge to the A40 from the M5 Junction 11 to a ghost island merge with a lane gain. It is expected that all lighting and security cameras along the route will be maintained, therefore not impacting on security. Informal surveillance is unlikely to have an impact as the changes are in an area where the majority of trips will be private car trips. There are no public transport stops along the section of the A40. Therefore, it is unlikely that there will be any significant impact to security as a result of the Arie Court Improvement Scheme Phase 2. Hence, there is a neutral security impact.	N/A	Neutral	N/A	N/A
	Access to services	At this stage in the assessment it is not known if the frequency or routings of buses will be altered as a result of the Phase 2 Arie Court Improvement Scheme. However, it is assumed that there will be journey time savings as a result of reduced congestion along the section of the A40. Services from Gloucester towards Cheltenham, which currently run along the section of the A40, may have slight journey time savings as a result of the scheme. However, it is unlikely there will be any significant accessibility impact as a result of this. Therefore, there is a neutral impact to accessibility due to the scheme.	N/A	Neutral	N/A	N/A
	Affordability	The calculation of impact in the appraisal tables are based on vehicle operating costs (fuel and non-fuel) for home-based 'commuting and other' trips (i.e. excluding business users). Only highways benefits have been modelled, and only internal to internal trips within an assessment area. The outputs of the 60-year appraisal from TUBA show approximately £55,000 disbenefit, as a result of the scheme. This slight disbenefit is likely caused by increased vehicle speeds along the A40 eastbound leading to increased fuel consumption. There are some affordability benefits likely caused by increased capacity along the A40 eastbound causing congestion to reduce in the area. This will reduce fuel costs as there's reduced vehicles idling, braking and accelerating while queuing. Although the affordability disbenefits slightly outweigh the affordability benefits for the Phase 2 Scheme, the impact per person is negligible and imperceptible. The overall impact of the scheme is therefore neutral.	N/A	Neutral	N/A	Moderate Beneficial
	Severance	There are some increases in speed on minor routes within the area that can be accessed by pedestrians, such as Cheltenham Road East northbound. It is likely that increased speeds will increase severance on this road. There is a decrease in speed on approach to the Cheltenham Road East/A40 Roundabout along Cheltenham Road East. Overall, it is likely that the effect of the Arie Court Phase 2 Scheme on severance will be neutral since there are approximately the same number of links with increased traffic speed as decreased traffic speed.	N/A	Neutral	N/A	Neutral
	Option and non-use values	TAG Unit 4.1 requires that option values and non-use values are assessed if the scheme being appraised includes measures that will substantially change the availability of transport services within the study area (e.g. the opening or closure of a rail service, or the introduction or withdrawal of buses serving a particular rural area). The Phase 2 scheme includes no changes to any public transport routes or services provided in the area. Therefore, there are no significant changes to transport services, so this indicator will not be assessed.	N/A	N/A	N/A	
	Cost to Broad Transport Budget	This is estimated to be £4.01m, in 2010 prices, discounted to 2010. This cost includes construction costs only.	-£4.01m	N/A	-£4.01m	
	Indirect Tax Revenues	There is a benefit to government due to a reduction in congestion. Fuel consumption is increased slightly, thereby increasing indirect tax revenues.	£0.01m	N/A	£0.01m	