

Environmental Objectives and Constraints

Environmental constraints were considered in a series of options reports which studied a study area of 5km from possible route corridors. The scheme route options were then tested against environmental objectives and constraints. A summary of these is provided in Table 5.

Detailed desktop surveys were undertaken in a study area covering the following subjects:

- Ecology
- Human Health
- Air Quality
- Noise
- Climate Change
- Soil and Ground Conditions
- Water Environment
- Landscape
- Cultural Heritage

Completion of these studies assisted the identification of three corridors in locations considered to be less constrained in terms of the assessments between M6 Junction 33 and the Lancaster South Strategic Growth Area.

From these three corridors, six route options were developed which are feasible in engineering terms. Further assessment was undertaken on each route option to appraise the suitability in performance terms – predicted traffic function of each route coupled with the expected air quality and noise impact.

The outcomes are summarised in the Summary Options Report which is in the document library.

TABLE 5: Outcomes for the preferred option		
Issue area	Constraint	Objectives
Environmental (Overall Environmental Constraints)	Biodiversity	• Protect and enhance biodiversity and green infrastructure • Protect and enhance sites designated for nature conservation
	Population and Human Health	• Improve road safety and reduce the number of accidents and other incidents • Improve segregation of vulnerable road users from traffic • Reduce air, noise and light pollution from transport
	Air quality	• Reduce air pollution impacts
	Noise	• Minimise noise on sensitive areas and places
	Climate Change	• Reduce CO₂ emissions for both construction and operation
	Ground Conditions	• Conserve soil and agricultural resources • Seek to remediate/avoid land contamination
	Water resources and flooding	• Protect and enhance where possible, the water environment • Reduce risk of flooding and increase resilience to the effects of a changing climate • Conform with the design requirements of the Design Manual for Roads and Bridges (DMRB)
	Landscape	• Protect and enhance the character and quality of the Study Area's landscapes and townscapes.
	Cultural Heritage	• Protect and enhance the quality and distinctiveness of the Study Area's historic and cultural heritage.
Design	Engineering	• Consider how well the preferred alignment meets engineering considerations
	Fulfil the transport planning objectives (design brief)	• How well the proposal fulfils the brief and how each of the alignments impacts positively upon travel within Lancaster and south Lancaster.
Public Perception	Consultation	Take into account public comments on: • Preferred option balanced against the brief • detailed aspects to improve the scheme
Value		• Value for money evaluated against the design, policy and legislative standards required



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TABLE 6: Environmental and Technical Performance Matrix																
	Biodiversity		Population and Human Health			Air quality	Noise	Climate Change	Ground Conditions		Water resources and flooding			Landscape	Cultural Heritage	Engineering
Route	Protect and enhance biodiversity and green infrastructure	Protect sites designated for nature conservation	Improve road safety and reduce the number of accidents and other incidents	Improve segregation of vulnerable road users from traffic	Reduce air, noise and light pollution from transport	Reduce air pollution impacts	Minimise noise on sensitive areas and places	Reduce CO ₂ emissions for both construction and operation	Conserve soil and agricultural resources	Seek to remediate/avoid land contamination	Protect and enhance where possible, the water environment	Reduce risk of flooding and increase resilience to the effects of a changing climate	Conform with the requirements of the DMRB design	Protect and enhance the character and quality of the Study Area's landscapes and townscapes	Protect and enhance the quality and distinctiveness of the Study Areas historic and cultural heritage	Consider how well the preferred alignment
Eastern 1	Moderate Potential	Potentially Affected	Moderate Potential	Moderate Potential	Moderate Potential	Moderate Potential	Limited Impacts	Moderate Potential	Moderate Impact	Limited Impacts	Moderate Difficulty	Moderately Vulnerable	Moderate Difficulty	Potentially Affected	Limited Impacts	Likely to be Good
Eastern 2	Moderate Potential	Potentially Affected	Moderate Potential	Moderate Potential	Moderate Potential	Moderate Potential	Limited Impacts	Moderate Potential	Adverse Impact	Limited Impacts	High Difficulty	Moderately Vulnerable	High Difficulty	Potentially Affected	Limited Impacts	Likely to be Moderate
Central 1	Moderate Potential	Potentially Affected	Moderate Potential	Moderate Potential	Moderate Potential	High Potential	Limited Impacts	Higher Potential	Moderate Impact	Limited Impacts	Low Difficulty	Less Vulnerable	Moderate Difficulty	Limited Impacts	Limited Impacts	Likely to be Good
Central 2	Moderate Potential	Potentially Affected	Moderate Potential	Moderate Potential	Moderate Potential	Low Potential	Limited Impacts	Moderate Potential	Moderate Impact	Limited Impacts	High Difficulty	Moderately Vulnerable	High Difficulty	Limited Impacts	Potentially Affected	Likely to be Moderate
Western 1	Moderate Potential	Affected	Moderate Potential	Moderate Potential	Low Potential	Low Potential	Limited Impacts	Lower Potential	Moderate Impact	Limited Impacts	High Difficulty	Moderately Vulnerable	High Difficulty	Limited Impacts	Potentially Affected	Likely to be Poor
Western 2	Moderate Potential	Affected	Moderate Potential	Moderate Potential	Moderate Potential	Moderate Potential	Limited Impacts	Lower Potential	Moderate Impact	Limited Impacts	High Difficulty	Moderately Vulnerable	High Difficulty	Limited Impacts	Potentially Affected	Likely to be Poor

Traffic function

All routes were firstly tested against the Lancaster City centre and M6 Junction 33 Traffic Model and were compared with a situation which did not implement the scheme. Two years are focused upon; the Opening Year of 2025 and the Design Year of 2040. None of the six route options operate congestion free in 2040.

Table 7 illustrates the predicted traffic characteristics and Table 8 provides the predicted traffic flow changes in Galgate comparing all options.

The Central options provide the most direct alternative to the A6 in terms of travel distance. The new link road is predicted to experience some congestion, which is particularly noticeable in Central 1 around the new road junction with Hazelrigg Lane.

Central 1 route option achieves greater congestion relief on the A6 and Stoney Road junction. In all the other route options, congestion is still present at this junction, even in the Opening Year.

The main disadvantage of Central 1 option is the new junctions could experience high levels of congestion. Should this route option be taken forward the junction capacity will have to be carefully designed to maintain traffic flow.

Central 2 option adds a link to the A588. In the Design Year this link is would attract additional traffic flows from the A588 to the A6 causing a detrimental effect on traffic conditions in Galgate.

Western options provide routes that do not offer additional connection to the motorway. These route options also have a relatively lower rate of success - only achieving moderate traffic flow reductions on the A6 in some of the peak periods and directions modelled.

Eastern route options provide good traffic removal from Galgate. Because these route options are slightly longer they are not as successful in removing flow from the A6 in all periods and directions compared to the Central 1 route option.

TABLE 7: M6 Junction 33 Link Road – Option Traffic Performance				
Route	Reduces congestion at A6/Stoney Lane in 2025	New infrastructure operates congestion free in 2025	Reduces congestion at A6/Stoney Lane in 2040	New infrastructure operates congestion free in 2040
Eastern 1	Partially	Yes	Partially	No
Eastern 2	Partially	Yes	Partially	No
Central 1	Yes	No	Partially	No
Central 2	Yes	No	Partially	No
Western 1	Partially	Yes	Partially	No
Western 2	Partially	Yes	Partially	No

TABLE 8: Traffic flow changes at the A6 though Galgate under each route option							
Route	Direction	2025 change (%)			2040 change (%)		
		AM	IP	PM	AM	IP	PM
Eastern 1	NB	-8%	-8%	-6%	-1%	3%	5%
	SB	-45%	-41%	-43%	-59%	-41%	-16%
Eastern 2	NB	0%	-2%	1%	2%	9%	7%
	SB	-42%	-36%	-44%	-57%	-35%	-22%
Central 1	NB	-21%	-20%	-31%	-1%	-7%	-38%
	SB	-39%	-30%	-36%	-65%	-37%	-1%
Central 2	NB	-25%	-24%	-33%	-1%	-14%	12%
	SB	-40%	-35%	-45%	-48%	-36%	2%
Western 1	NB	3%	-19%	-13%	-2%	2%	56%
	SB	-20%	-14%	-5%	-9%	21%	27%
Western 2	NB	-19%	1%	-25%	-30%	-19%	3%
	SB	-1%	5%	-13%	-5%	5%	34%

How both schemes relate

One of the main objectives of the city centre public realm and movement strategy is the need to remove vehicles from the central gyratory. A considerable number of car journeys from south Lancaster access M6 at Junction 34 travelling via the city centre. It is important for the M6 Junction 33 Link to attract enough of these car journeys to remove traffic from the city centre. The main reason for this is to avoid congested traffic that harms public transport efficiency as the city becomes gridlocked.

The District of Lancaster Highways and Transport Masterplan sets Lancashire County Council’s aspiration for transportation in Lancaster city and specifically for south Lancaster. At page 30 under ‘Our transport Vision’ the District of Lancaster Highways and Transport Masterplan highlights a broad route from M6 Junction 33 around Galgate village towards the city and a new travel corridor providing a reliable prioritised bus services through South Lancaster Strategic Growth Area.

The introduction of measures to improve the public realm within the city centre combined with public transport improvements are expected to bring in good travel habits for those who live and work in the area. In the future Lancashire County Council expects to bring forward other proposals to prioritise, public transport, walking and cycling measures along the A6.

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