



Department
for Transport

Appraisal Summary Table (AST)

TAG Reference

Guidance for the Senior Responsible Officer, Guidance for the Technical Project Manager

Version Control

Date	Description
Jan-14	Definitive release
17/10/2013	Release of restructured guidance

Contact

Transport Appraisal and Strategic Modelling (TASM) Division
Department for Transport
Zone 2/25 Great Minster House
33 Horseferry Road
London
SW1P 4DR
tasm@dft.gsi.gov.uk

Appraisal Summary Table		Date produced:	#VALUE!	Contact:																
Name of scheme:		Blofield Option 1		Name																
Description of scheme:		A47 Blofield to North Burlingham Dualling		Organisation																
				Role																
				Promoter/Official																
Impacts	Summary of key impacts	Assessment																		
		Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp													
Economy	Business users & transport providers	The scheme results in journey time benefits for all road users with a reduction in total time travelled across the network between the Do Minimum and Do Something in both 2021 and 2036 future year scenarios. The greatest journey time savings are for trips that have a journey time of between 0 to 2 minutes but there are still savings for trips greater than 2 mins.			<table border="1"> <tr><th colspan="3">Value of journey time changes(£)</th></tr> <tr><th colspan="3">Net journey time changes (£)</th></tr> <tr><th>0 to 2min</th><th>2 to 5min</th><th>> 5min</th></tr> <tr><td>£49,426,000</td><td>£5,598,000</td><td>£174,000</td></tr> </table>	Value of journey time changes(£)			Net journey time changes (£)			0 to 2min	2 to 5min	> 5min	£49,426,000	£5,598,000	£174,000	Large benefit	£48.4million	
	Value of journey time changes(£)																			
	Net journey time changes (£)																			
	0 to 2min	2 to 5min	> 5min																	
£49,426,000	£5,598,000	£174,000																		
Reliability impact on Business users	Large benefits impact due to new infrastructure and additional running lanes in each direction along with increased capacity of each lane accommodates positive impact for commuting. The stress levels below the WebTAG calculation threshold of 75% suggests that the scheme is an overall benefit				Large benefit															
Regeneration	The expected journey time benefits are likely to support regeneration along the A47, with associated reductions in unemployment levels.				Slight Benefit															
Wider Impacts	Not assessed				N/A															
Environmental	Noise	There is an overall adverse impact to the noise environment as shown by the negative value of the NPV for change in noise.	Households experiencing increased daytime noise in forecast year: 112 Households experiencing reduced daytime noise in forecast year: 40 Households experiencing increased night time noise in forecast year: 43 Households experiencing reduced night time noise in forecast year: 13			N/A	-£246,418	Moderate adverse for vulnerable groups												
	Air Quality	Overall a net improvement in local air quality is predicted under on-line option 1 and the main contribution to the improvement is made by reductions in PM10. No Air Quality Management Areas are affected by option 1. There is a negative impact on regional emissions of NOx. Option 1 does not result in any new exceedances of the NO2 or PM10 AQS objectives.	Quantitative summary for opening year: Assessment score PM10 = -927 NOx = +134 Emissions NOx = +18.7 tonnes			N/A	Change in PM10 concentrations = £2,757,778 Value of change in NOx emissions = £-85,515 Total value of change in air quality = £2,676,263	Moderate adverse for vulnerable groups												
	Greenhouse gases	Greenhouse gas emissions are related to traffic flows and traffic speed, based on the amount of fuel consumed and vehicle kilometres travelled. Traffic volumes and speeds are expected to increase as a result of the option 1 improvements and natural traffic growth while congestion would be reduced. An overall increase in fuel use is expected as result of option 1.	<table border="1"> <tr><td>+43,437 tonnes</td></tr> </table>	+43,437 tonnes	Change in traded carbon over 60y (CO2e)	0 tonnes	N/A	NPV of monetary change in non-traded CO2e -£1,730,563												
	+43,437 tonnes																			
	Landscape	Option 1 involves widening of the existing A47 alignment in addition to the creation of a 2.5km link road. Alteration to landscape fabric will be minor when compared to the other three options, and as vegetation will be replaced the impacts of widening on existing landscape fabric and landscape character will be minimal.				Slight adverse														
	Townscape	Option 1 is located approximately 500m east of Blofield and will not have an impact on the townscape character of the village. It will introduce a link road between North Burlingham, Yarmouth Road and South Walsham Road which may impact on pedestrians ability to access the village of North Burlingham. It will also affect the setting of St Andrew's church by introducing a new feature in the townscape, however this is not expected to be significant.				Neutral														
	Historic Environment	This option will result in the total or partial removal of archaeological remains, relating to the late pre-historic or Roman settlement located to the north of the A47, as a result of the link road. There will be no significant change to the historic built environment. There will be a minor impact on the survival and integrity of the historic landscape character.				Moderate adverse														
	Biodiversity	This option will result in landtake from priority habitats, including 2 ponds due to the widening of the A47. The link road will result in severance to broadleaf woodland although this is not expected to be significant. With mitigation for badgers there will be minimal impact on them. There will be a slight to moderate effect on bats due to loss of potential roosts and bat habitat.				Slight adverse														
Water Environment	Option 1 may result in the loss/disruption of the existing swales along the A47. There is also a potential for pollution events during the operational phase (e.g. accidental spillages, Road Traffic Collisions) to adversely impact the water quality and the biodiversity of surface water features, as well as the underlying groundwater body (Groundwater source protection zone 3). Severe pollution events could result in the temporary cessation of the groundwater abstractions within the study area.				Slight adverse															
Social	Commuting and Other users	The scheme results in journey time benefits for cars with a reduction in total time travelled across the network between the Do Minimum and Do Something in both 2021 and 2036 future year scenarios. The greatest journey time savings are for trips that have a journey time of between 0 to 2 minutes. Benefits are higher in 2036 than in 2021 but there are still savings for trips greater than 2 mins.			<table border="1"> <tr><th colspan="3">Value of journey time changes(£)</th></tr> <tr><th colspan="3">Net journey time changes (£)</th></tr> <tr><th>0 to 2min</th><th>2 to 5min</th><th>> 5min</th></tr> <tr><td>£45,829,000</td><td>£10,942,000</td><td>£117,000</td></tr> </table>	Value of journey time changes(£)			Net journey time changes (£)			0 to 2min	2 to 5min	> 5min	£45,829,000	£10,942,000	£117,000		£44.3million	
	Value of journey time changes(£)																			
	Net journey time changes (£)																			
	0 to 2min	2 to 5min	> 5min																	
	£45,829,000	£10,942,000	£117,000																	
	Reliability impact on Commuting and Other users	The CRF is increased significantly due to additional running lanes in each direction and the increased capacity of each lane in one-way traffic. This more than accommodates the trip attraction due to the scheme. Resulting stress levels are below the WebTAG calculation threshold of 75%	Without scheme stress: 166% With scheme stress: 68% AADT: 53,291			Large benefit														
	Physical activity	Facilities provided to remove NMU/A47 conflicts, but benefits are limited due to very low NMU usage				Slight benefit														
	Journey quality	Reduction in driver frustration and fear of accidents. Neutral impact on other aspects of journey quality				Moderate benefit														
	Accidents	The scheme results show a theoretical decrease in accidents with the new dual carriageway and roundabout junction designed to modern standards and indicate a reduction in accident severity across fatal and serious injuries, however there is a increase in slight injuries which is likely due to more traffic allowance throughout the dual carriageway.	Predicted accident savings: Fatal: 2.48 Serious: 34.60 Slight: -29.14			Slight benefit	£5.3million													
	Security	The security impacts of the scheme are negligible and a neutral score has been assessed																		
Access to services	No impacts on user accessibility				Neutral															
Affordability	Personal affordability is worsened as private user costs are increased, mostly due to an overall increase in non-fuel vehicle operating costs.				Moderate adverse															
Severance	As the scheme has not been designed with pedestrian facilities, the scheme causes severance impacts. Vegetation surrounding the A47 and roadside signage block pedestrian access and force users to use longer routes. However, considering pedestrian numbers are very low, the scheme addresses these impacts with a footbridge which provides a safer but longer route for pedestrians.				Moderate benefit															
Option and non-use values	The scheme does not involve the loss or introduction of a new mode of transport. Option values are unaffected.				Neutral															
Public Accounts	Cost to Broad Transport Budget	Construction costs will be met directly from central government's broad transport budget.				£61.4million														
	Indirect Tax Revenues	There is a small benefit to wider public finances due to increased fuel use resulting in a net increase in tax revenues.				£17.6million														



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for Transport

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Guidance for the Senior Responsible Officer, Guidance for the Technical Project Manager

Version Control

Date	Description
Jan-14	Definitive release
17/10/2013	Release of restructured guidance

Contact

Transport Appraisal and Strategic Modelling (TASM) Division
Department for Transport
Zone 2/25 Great Minster House
33 Horseferry Road
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Appraisal Summary Table		Date produced:	04/05/2018		Contact:			
Name of scheme:		Blofield Option 2			Name			
Description of scheme:		A47 Blofield to North Burlingham Dualling			Organisation			
					Role		Promoter/Official	
Impacts	Summary of key impacts	Assessment						
		Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp	
Economy	Business users & transport providers	Value of journey time changes(£) Net journey time changes (£) 0 to 2min 2 to 5min > 5min £48,431,000 £8,699,000 £192,000			Large benefit	£50million		
	Reliability impact on Business users	Large benefits impact due to new infrastructure and additional running lanes in each direction along with increased capacity of each lane accommodates positive impact for commuting. The stress levels below the WebTAG calculation threshold of 75% suggests that the scheme is an overall benefit			Large benefit			
	Regeneration	The expected journey time benefits are likely to support regeneration along the A47, with associated reductions in unemployment levels.			Slight Benefit			
	Wider Impacts	Not assessed			N/A			
Environmental	Noise	There is an overall adverse impact to the noise environment as shown by the negative value of the NPV for change in noise.			Households experiencing increased daytime noise in forecast year: 141 Households experiencing reduced daytime noise in forecast year: 31 Households experiencing increased night time noise in forecast year: 47 Households experiencing reduced night time noise in forecast year: 9	N/A	-£379,534	Moderate adverse for vulnerable groups
	Air Quality	Overall a net improvement in local air quality is predicted under off-line option 2 and the main contribution to the improvement is made by reductions in PM10. No Air Quality Management Areas are affected by option 2. There is a negative impact on regional emissions of NOx. Option 2 does not result in any new exceedances of the NO2 or PM10 AQS objectives.			Quantitative summary for opening year: Assessment score PM10 = -998 NOx = +104 Emissions NOx = +15.2 tonnes	N/A	Change in PM10 concentrations = £2,967,889 Value of change in NOx emissions = £-50,220 Total value of change in air quality = £2,917,679	Moderate adverse for vulnerable groups
	Greenhouse gases	Greenhouse gas emissions are related to traffic flows and traffic speed, based on the amount of fuel consumed and vehicle kilometres travelled. Traffic volumes and speeds are expected to increase as a result of the option 2 improvements and natural traffic growth while congestion would be reduced. An overall increase in fuel use is expected as result of option 2.			Change in non-traded carbon over 60y (CO2e) +21,366 tonnes Change in traded carbon over 60y (CO2e) 0 tonnes	N/A	NPV of monetary change in non-traded CO2e -£861,102	
	Landscape	Option 2 involves a new alignment to the north and south of the existing A47 with a substantial underbridge at North Burlingham. The proposed main line passes through an area where trees and woodland are prevalent, as well as affecting some Public Rights of Way, of value in the local area. While the option will be a very noticeable feature from some locations and cannot be fully integrated into the landscape such impacts will be localised.				Moderate Adverse		
	Townscape	There will be no impact on Blofield with this option. Option 2 will realign the A47 by placing it in a cutting under the existing A47 close to North Burlingham. This has potential to result in limited impacts on pedestrian movements at the western end of the village. The new main line will be present in a deep cutting and the existing A47 will cross it on an at grade overbridge. This will affect the setting of North Burlingham, having a moderate adverse effect.				Moderate adverse		
	Historic Environment	This option will impact upon known below ground remains, including the site of late pre-historic and Roman settlements. There will be a slight impact on the historic landscape with the realignment of link roads and main A47. There may be slight effects upon the intervisibility between the Grade I listed churches. It is not expected that there will be a significant impact on the integrity of the historic landscape character.				Moderate adverse		
	Biodiversity	There will be landtake from priority habitats with this option and it will affect the greatest number of trees with bat roost potential. This is a potentially significant impact on a protected species. With mitigation impacts on bats will be reduced. There will be minimal impact on badgers.				Slight Adverse		
	Water Environment	Option 2 may result in the loss/disruption of the existing swales along the A47. There is also a potential for pollution events during the operational phase (e.g. accidental spillages, Road Traffic Collisions) to adversely impact the water quality and the biodiversity of surface water features, as well as the underlying groundwater body. Due to the groundwater source protection zone 3, a severe pollution event could result in the temporary cessation of the groundwater abstractions within the study area. However effective road drainage will ensure effects on groundwater are not significant.				Neutral		
Social	Commuting and Other users	Value of journey time changes(£) Net journey time changes (£) 0 to 2min 2 to 5min > 5min £47,455,000 £11,404,000 £133,000				£45.3million		
	Reliability impact on Commuting and Other users	The CRF is increased significantly due to additional running lanes in each direction and the increased capacity of each lane in one-way traffic. This more than accommodates the trip attraction due to the scheme. Resulting stress levels are below the WebTAG calculation threshold of 75%			Without scheme stress: 166% With scheme stress: 67% AADT: 52,176	Large benefit		
	Physical activity	Facilities provided to remove NMU/A47 conflicts, but benefits are limited due to very low NMU				Slight benefit		
	Journey quality	Reduction in driver frustration and fear of accidents. Neutral impact on other aspects of journey quality				Moderate benefit		
	Accidents	The scheme results show a theoretical decrease in accidents with the new dual carriageway and roundabout junction designed to modern standards and indicate a reduction in accident severity across fatal and serious injuries, however there is an increase in slight injuries which is likely due to more traffic allowance throughout the dual carriageway.			Predicted accident savings: Fatal: 2.39 Serious: 34.14 Slight: -37.37	Slight benefit	£5.1million	
	Security	The security impacts of the scheme are negligible and a neutral score has been assessed						
	Access to services	No impacts on user accessibility				Neutral		
	Affordability	Personal affordability is worsened as private user costs are increased, mostly due to an overall increase in non-fuel vehicle operating costs.				Moderate adverse		
	Severance	As the scheme has not been designed with pedestrian facilities, the scheme causes severance impacts. Vegetation surrounding the A47 and roadside signage block pedestrian access and force users to use longer routes. However, considering pedestrian numbers are very low, the scheme addresses these impacts with a footbridge which provides a safer but longer route for pedestrians.				Moderate benefit		
	Option and non-use values	The scheme does not involve the loss or introduction of a new mode of transport. Option values are unaffected.				Neutral		
Public Accounts	Cost to Broad Transport Budget	Construction costs will be met directly from central government's broad transport budget.				£62.1million		
	Indirect Tax Revenues	There is a small benefit to wider public finances due to increased fuel use resulting in a net increase in tax revenues.				£17.5million		



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Jan-14	Definitive release
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Transport Appraisal and Strategic Modelling (TASM) Division
Department for Transport
Zone 2/25 Great Minster House
33 Horseferry Road
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tasm@dft.gsi.gov.uk

Appraisal Summary Table		Date produced:	04/05/2018		Contact:			
Name of scheme:	Blofield Option 3				Name			
Description of scheme:	A47 Blofield to North Burlingham Dualling				Organisation			
				Role	Promoter/Official			
Impacts	Summary of key impacts	Assessment						
		Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp	
Economy	Business users & transport providers	The scheme results in journey time benefits for all road users with a reduction in total time travelled across the network between the Do Minimum and Do Something in both 2021 and 2036 future year scenarios. The greatest journey time savings are for trips that have a journey time of between 0 to 2 minutes but there are still savings for trips greater than 2 mins.			Value of journey time changes(£) Net journey time changes (£) 0 to 2min 2 to 5min > 5min £48,576,000 £8,660,000 £191,000	Large benefit	£49.5million	
	Reliability impact on Business users	Large benefits impact due to new infrastructure and additional running lanes in each direction along with increased capacity of each lane accommodates positive impact for commuting. The stress levels below the WebTAG calculation threshold of 75% suggests that the scheme is an overall benefit				Large benefit		
	Regeneration	The expected journey time benefits are likely to support regeneration along the A47, with associated reductions in unemployment levels.				Slight Benefit		
	Wider Impacts	Not assessed				N/A		
Environmental	Noise	There is an overall adverse impact to the noise environment as shown by the negative value of the NPV for change in noise.			Households experiencing increased daytime noise in forecast year: 147 Households experiencing reduced daytime noise in forecast year: 33 Households experiencing increased night time noise in forecast year: 46 Households experiencing reduced night time noise in forecast year: 9	N/A	-£413,780	Moderate adverse for vulnerable groups
	Air Quality	Overall a net improvement in local air quality is predicted under off-line option 3 and the main contribution to the improvement is made by reductions in PM10. No Air Quality Management Areas are affected by option 3. There is a negative impact on regional emissions of NOx. Option 3 does not result in any new exceedances of the NO2 or PM10 AQS objectives.			Quantitative summary for opening year: Assessment score PM10 = -948 NOx = +608 Emissions NOx = +28.0 tonnes	N/A	Change in PM10 concentrations = £2,817,963 Value of change in NOx emissions = £-382,745 Total value of change in air quality = £2,435,218	Moderate adverse for vulnerable groups
	Greenhouse gases	Greenhouse gas emissions are related to traffic flows and traffic speed, based on the amount of fuel consumed and vehicle kilometres travelled. Traffic volumes and speeds are expected to increase as a result of the option 3 improvements and natural traffic growth while congestion would be reduced. An overall increase in fuel use is expected as result of option 3.			+170,294 tonnes Change in traded carbon over 60y (CO2e) 0 tonnes	N/A	NPV of monetary change in non-traded CO2e -£6,807,126	
	Landscape	Option 3 involves a new alignment through farmland to the south of the existing A47 within an area where currently large scale infrastructure is absent and the influence of the existing A47 is minimal. The alignment will affect enclosure pattern and result in the removal of woodland leading to substantial change in landscape character in a limited area. While the option will be a very noticeable feature from some locations and cannot be fully integrated into the landscape such impacts will be localised.				Moderate adverse		
	Townscape	Option 3 is located approximately 500m east of Blofield and will not have an impact on the townscape character of the village. The new alignment of the A47 moves further away from North Burlingham. The link road will maintain the connection between Blofield and North Burlingham.				Neutral		
	Historic Environment	The option will result in the partial or total removal of archaeological remains. It will potentially have a minor impact upon the inter-visibility of the church towers at North Burlingham and Lingwood which are listed. The offline nature of the option will have a moderate impact upon the integrity of the historic landscape character.				Slight adverse		
	Biodiversity	This is the least preferred option for biodiversity. It requires significant land take of priority habitats, particularly ponds with the loss of 5 ponds. It will sever the broadleaved plantation woodland located around Poplar Farm. With mitigation there will be a minimal impact on badgers and a moderate impact on bats. There are 28 trees that have potential to be affected that are suitable for bat roosts.				Moderate adverse		
	Water Environment	There is potential for pollution events during the operational phase (e.g. accidental spillages, Road Traffic Collisions) to adversely impact the water quality and the biodiversity of surface water features, as well as the underlying groundwater body (groundwater source protection zone 3). Severe pollution events could result in the temporary cessation of the groundwater abstractions within the study area. This option will also result in the loss of ponds along its alignment.				Slight adverse		
Social	Commuting and Other users	The scheme results in journey time benefits for cars with a reduction in total time travelled across the network between the Do Minimum and Do Something in both 2021 and 2036 future year scenarios. The greatest journey time savings are for trips that have a journey time of between 0 to 2 minutes. Benefits are higher in 2021 than in 2036 but there are still savings for trips greater than 2 mins.			Value of journey time changes(£) Net journey time changes (£) 0 to 2min 2 to 5min > 5min £49,954,000 £10,612,000 £147,000		£45.5million	
	Reliability impact on Commuting and Other users	The CRF is increased significantly due to additional running lanes in each direction and the increased capacity of each lane in one-way traffic. This more than accommodates the trip attraction due to the scheme. Resulting stress levels are below the WebTAG calculation threshold of 75%			Without scheme stress: 166% With scheme stress: 68% AADT: 53,331	Large benefit		
	Physical activity	Facilities provided to remove NMU/A47 conflicts, but benefits are limited due to very low NMU usage			-	Slight benefit	-	
	Journey quality	Reduction in driver frustration and fear of accidents. Neutral impact on other aspects of journey quality			-	Moderate benefit	-	
	Accidents	The scheme results show a theoretical decrease in accidents with the new dual carriageway and roundabout junction designed to modern standards and indicate a reduction in accident severity across fatal and serious injuries, however there is a increase in slight injuries which is likely due to more traffic allowance throughout the dual carriageway.			Predicted accident savings: Fatal: 2.38 Serious: 34.06 Slight: -36.76	Slight benefit	£5.1million	
	Security	The security impacts of the scheme are negligible and a neutral score has been assessed				-	-	
	Access to services	No impacts on user accessibility				Neutral		
	Affordability	Personal affordability is worsened as private user costs are increased, mostly due to an overall increase in non-fuel vehicle operating costs.				Moderate adverse		
	Severance	As the scheme has not been designed with pedestrian facilities, the scheme causes severance impacts. Vegetation surrounding the A47 and roadside signage block pedestrian access and force users to use longer routes. However, considering pedestrian numbers are very low, the scheme addresses these impacts with a footbridge which provides a safer but longer route for pedestrians.				Moderate benefit		
	Option and non-use values	The scheme does not involve the loss or introduction of a new mode of transport. Option values are unaffected.				Neutral		
Public Accounts	Cost to Broad Transport Budget	Construction costs will be met directly from central government's broad transport budget.					£56.3million	
	Indirect Tax Revenues	There is a small benefit to wider public finances due to increased fuel use resulting in a net increase in tax revenues.					£17.5million	



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33 Horseferry Road
London
SW1P 4DR
tasm@dft.gsi.gov.uk

Appraisal Summary Table		Date produced:	04/05/2018		Contact:																
Name of scheme:		A47 Blofield to North Burlingham; HE PCF stage-2, Scheme Option 4.			Name																
Description of scheme:		A strategic trunk road initiative, which will improve the existing A47 highway alignment, carriageway standard, junction arrangement and level of service. The			Organisation																
					Role																
Impacts	Summary of key impacts	Assessment																			
		Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp														
Economy	Business users & transport providers	The scheme results in journey time benefits for all road users with a reduction in total time travelled across the network between the Do Minimum and Do Something in both 2021 and 2036 future year scenarios. The greatest journey time savings are for trips that have a journey time of between 0 to 2 minutes but there are still savings for trips greater than 2 mins.			<table border="1"> <tr> <th colspan="3">Value of journey time changes(£)</th> </tr> <tr> <th colspan="3">Net journey time changes (£)</th> </tr> <tr> <th>0 to 2min</th> <th>2 to 5min</th> <th>> 5min</th> </tr> <tr> <td>£50,859,000</td> <td>£5,767,000</td> <td>£180,000</td> </tr> </table>		Value of journey time changes(£)			Net journey time changes (£)			0 to 2min	2 to 5min	> 5min	£50,859,000	£5,767,000	£180,000	Large benefit	£49million	
	Value of journey time changes(£)																				
	Net journey time changes (£)																				
	0 to 2min	2 to 5min	> 5min																		
£50,859,000	£5,767,000	£180,000																			
Reliability impact on Business users	Large benefits impact due to new infrastructure and additional running lanes in each direction along with increased capacity of each lane accommodates positive impact for commuting. The stress levels below the WebTAG calculation threshold of 75% suggests that the scheme is an overall benefit				Large benefit																
Regeneration	The expected journey time benefits are likely to support regeneration along the A47, with associated reductions in unemployment levels.				Slight Benefit																
Wider Impacts	Not assessed				N/A																
Environmental	Noise	There is an overall adverse impact to the noise environment as shown by the negative value of the NPV for change in noise.	Households experiencing increased daytime noise in forecast year: 125 Households experiencing reduced daytime noise in forecast year: 57 Households experiencing increased night time noise in forecast year: 44 Households experiencing reduced night time noise in forecast year: 10		N/A	-£278,478	Moderate adverse for vulnerable groups														
	Air Quality	Overall a net improvement in local air quality is predicted under off-line option 4 and the main contribution to the improvement is made by reductions in PM10. No Air Quality Management Areas are affected by option 4. There is a negative impact on regional emissions of NOx. Option 4 does not result in any new exceedances of the NO2 or PM10 AQS objectives.	<p>Quantitative summary for opening year:</p> <p>Assessment score PM10 = -905 NOx = +182</p> <p>Emissions NOx = +28.0 tonnes</p>		N/A	<p>Change in PM10 concentrations = £2,692,086</p> <p>Value of change in NOx emissions = £-161,260</p> <p>Total value of change in air quality = £2,530,826</p>	Moderate adverse for vulnerable groups														
	Greenhouse gases	Greenhouse gas emissions are related to traffic flows and traffic speed, based on the amount of fuel consumed and vehicle kilometres travelled. Traffic volumes and speeds are expected to increase as a result of the option 4 improvements and natural traffic growth while congestion would be reduced. An overall increase in fuel use is expected as result of option 4.	<table border="1"> <tr> <th>Change in non-traded carbon over 60y (CO2e)</th> <td>+108,861 tonnes</td> </tr> <tr> <th>Change in traded carbon over 60y (CO2e)</th> <td>0 tonnes</td> </tr> </table>	Change in non-traded carbon over 60y (CO2e)	+108,861 tonnes	Change in traded carbon over 60y (CO2e)	0 tonnes	N/A	NPV of monetary change in non-traded CO2e -£4,360,416												
	Change in non-traded carbon over 60y (CO2e)	+108,861 tonnes																			
	Change in traded carbon over 60y (CO2e)	0 tonnes																			
	Landscape	Option 4 involves a new alignment that runs parallel to the existing A47 a short distance to the south. It will result in the removal of mature trees at the north end of Lingwood Lane and conifers in the field boundary to the east. To the west of Lingwood Lane small amounts of woodland will be removed at the north end of two woodland belts before the alignment passes through fields to the west where boundaries consist of clipped hedges. While the option will affect landscape fabric and character such effects will occur within a corridor already influenced by the A47 and will therefore result in change within a limited geographical area.			Moderate adverse																
	Townscape	Option 4 is located approximately 500m east of Blofield and will not have an impact on the townscape character of the village. It will move the new alignment of the A47 slightly further away from North Burlingham. The link road and pedestrian overbridge for the PRoW will maintain the connections for pedestrians between Blofield and North Burlingham.			Neutral																
	Historic Environment	The option will result in the partial or total removal of archaeological remains. The option may have an impact upon the inter-visibility between the two Grade I listed churches at Lingwood and North Burlingham. It will also have an impact upon the context of one of the undesignated historic buildings (Poplar Farm). It will have a minor impact upon the integrity of the historic landscape character.			Slight adverse																
	Biodiversity	This is the preferred option for ecology. There will be some land take from priority habitats, notably two ponds. It will impact the northern boundary of the broad leaved plantation woodland close to the A47 but not sever the habitat. It will impact the least number of trees with low to high bat roost potential. With mitigation there will be minimal impact on badger and a slight to moderate impact on bats through effects on potential roosts and bat habitat.			Slight adverse																
	Water Environment	Option 4 may result in the loss/disruption of the existing swales along the A47. There is also a potential for pollution events during the operational phase (e.g. accidental spillages, Road Traffic Collisions) to adversely impact the water quality and the biodiversity of surface water features, as well as the underlying groundwater body (groundwater source protection zone 3). Severe pollution events could result in the temporary cessation of the groundwater abstractions within the study area. Effective road drainage will ensure impacts on groundwater are not significant.			Neutral																
Social	Commuting and Other users	The scheme results in journey time benefits for cars with a reduction in total time travelled across the network between the Do Minimum and Do Something in both 2021 and 2036 future year scenarios. The greatest journey time savings are for trips that have a journey time of between 0 to 2 minutes. Benefits are higher in 2021 than in 2036 but there are still savings for trips greater than 2 mins.			<table border="1"> <tr> <th colspan="3">Value of journey time changes(£)</th> </tr> <tr> <th colspan="3">Net journey time changes (£)</th> </tr> <tr> <th>0 to 2min</th> <th>2 to 5min</th> <th>> 5min</th> </tr> <tr> <td>£48,347,000</td> <td>£10,956,000</td> <td>£121,000</td> </tr> </table>		Value of journey time changes(£)			Net journey time changes (£)			0 to 2min	2 to 5min	> 5min	£48,347,000	£10,956,000	£121,000	Large benefit	£43.8million	
	Value of journey time changes(£)																				
	Net journey time changes (£)																				
	0 to 2min	2 to 5min	> 5min																		
	£48,347,000	£10,956,000	£121,000																		
	Reliability impact on Commuting and Other users	The CRF is increased significantly due to additional running lanes in each direction and the increased capacity of each lane in one-way traffic. This more than accommodates the trip attraction due to the scheme. Resulting stress levels are below the WebTAG calculation threshold of 75%	Without scheme stress: 166% With scheme stress: 73% AADT: 57,407		Large benefit																
	Physical activity	Facilities provided to remove NMU/A47 conflicts, but benefits are limited due to very low NMU usage			Slight benefit	-															
	Journey quality	Reduction in driver frustration and fear of accidents. Neutral impact on other aspects of journey quality			Moderate benefit	-															
	Accidents	The scheme results show a theoretical decrease in accidents with the new dual carriageway and roundabout junction designed to modern standards and indicate a reduction in accident severity across fatal and serious injuries, however there is a increase in slight injuries which is likely due to more traffic allowance throughout the dual carriageway.	Predicted accident savings: Fatal: 2.42 Serious: 34.05 Slight: -36.05		Slight benefit	£5.1million															
	Security	The security impacts of the scheme are negligible and a neutral score has been assessed			-	-															
Access to services	No impacts on user accessibility			Neutral																	
Affordability	Personal affordability is worsened as private user costs are increased, mostly due to an overall increase in non-fuel vehicle operating costs.			Moderate adverse																	
Severance	As the scheme has not been designed with pedestrian facilities, the scheme causes severance impacts. Vegetation surrounding the A47 and roadside signage block pedestrian access and force users to use longer routes. However, considering pedestrian numbers are very low, the scheme addresses these impacts with a footbridge which provides a safer but longer route for pedestrians.			Moderate benefit	-																
Option and non-use values	The scheme does not involve the loss or introduction of a new mode of transport. Option values are unaffected.			Neutral																	
Public Accounts	Cost to Broad Transport Budget	Construction costs will be met directly from central government's broad transport budget.				£54.6million															
	Indirect Tax Revenues	There is a small benefit to wider public finances due to increased fuel use resulting in a net increase in tax revenues.				£17.6million															