Temple Sowerby to Appleby

Table 5-4: Summary of preliminary assessment of likely significant environmental effects - Temple Sowerby to Appleby

Factor	Preliminary assessment of likely significant environmental effects	
	Construction stage	**Operation stage**
Air Quality	• Preliminary assessment for air quality has been undertaken on the basis of the whole route (see route wide table above). Assessment at ES stage will be undertaken at a local geographic level.	• Preliminary assessment for air quality has been undertaken on the basis of the whole route (see route wide table above). Assessment at ES stage will be undertaken at a local geographic level. •
Biodiversity	Blue alternative • There is potential for significant adverse effects on River Eden SAC and River Eden and Tributaries SSSI, Chapel Wood CWS, Ross Wood CWS, Dowpits Wood CWS, Temple Sowerby Shingle Banks, Oglebird Scar, Acorn Bank and Bolton Shingle Bank Sites of Invertebrate Significance, relating to habitat loss. Subject to further design and mitigation. • There may also be significant effects on habitats (Oglebird Plantation AW, Chapel Wood AW, Ross Wood AW, Dowpits Wood AW, Veteran trees, Woodland, Hedgerow, Ponds, Open Mosaic habitat) due to loss of habitat or fragmentation. • Effects will be the same as River Eden SAC for rivers and streams. • Effects will be the same as route wide table above on bat roosts and bat activity, barn owls, amphibians, reptiles, terrestrial invertebrates and macrophytes, subject to ongoing surveys. • Effects will be the same as route wide table above on red squirrel and other terrestrial	Blue alternative • There is potential for significant adverse effects on River Eden SAC and River Eden and Tributaries SSSI, Chapel Wood CWS, Ross Wood CWS, Dowpits Wood CWS, Temple Sowerby Shingle Banks, Oglebird Scar, Acorn Bank and Bolton Shingle Bank Sites of Invertebrate Significance relating to air quality. Subject to further assessment • There may also be significant effects on habitats (Oglebird Plantation AW, Chapel Wood AW, Ross Wood AW, Dowpits Wood AW, Veteran trees, Woodland, Hedgerow, Ponds, Open Mosaic habitat) due to degradation of ancient woodland. • Effects will be the same as route wide table above for rivers and streams. • Effects will be the same as route wide table above on bat roosts and bat activity, barn owls, wintering birds and breeding birds, amphibians, reptiles, terrestrial invertebrates and macrophytes, subject to ongoing surveys. • Effects will be the same as route wide table above on red squirrel and other terrestrial mammal species due to habitat loss and possible fragmentation impacts.

Factor	Preliminary assessment of likely significant environmental effects	
	Construction stage	**Operation stage**
	mammal species due to habitat loss and possible fragmentation impacts. Orange alternative • The effects of the Orange alternative are expected to be similar to those described for the Blue alternative, with the following differences: • Greater construction risks to the River Eden SAC/SSSI due to the closer proximity to the main river. • Greater potential for losses to scattered semi-mature and mature trees (some of which may be veteran trees). • Localised impacts to Temple Sowerby SSSI with the potential to support great crested newts. Red alternative • The effects of the Red alternative are expected to be similar to those described for the Blue alternative, with the following differences: • Additional shading of Keld Sike, which is not within the River Eden SAC/SSSI but is functionally linked. • Greater loss and severance impacts to Chapel Wood CWS. • Greater loss of semi-mature to mature trees.	Orange alternative • The effects of the Orange alternative are expected to be similar to those described for the Blue alternative, with the following differences: • Localised impacts to Temple Sowerby SSSI with the potential to support great crested newts. Red alternative • The effects of the Red alternative are expected to be similar to those described for the Blue alternative, with the following differences: • Additional shading of Keld Sike, which is not within the River Eden SAC/SSSI but is functionally linked.
Climate	• No likely significant effects anticipated from all alternatives.	• No likely significant effects anticipated from all alternatives.
Cultural Heritage	Blue alternative • Permanent significant adverse effects are anticipated at the Roman Camp, 350m east of Redlands Bank.	• No likely significant effects anticipated from all alternatives.

Factor	Preliminary assessment of likely significant environmental effects	
	Construction stage	**Operation stage**
	Orange alternative • Permanent significant adverse effects are anticipated at the Kirkby Thore Roman fort and associated Vicus, and the Roman Camp east of Redlands Bank. Red alternative • No likely significant effects anticipated.	
Geology and Soils	Blue alternative • Likely significant effects due to the potential permanent land take and loss of high value agricultural soil resource (Grade 2 and 3a agricultural land). • Likely significant effects on soils supporting SAC or SSSI. Orange alternative • Likely significant effects due to the potential permanent land take and loss of high value agricultural soil resource (Grade 2 and 3a agricultural land). • Likely significant effects on soils supporting SAC or SSSI. Red alternative • Likely significant effects due to the potential permanent land take and loss of high value agricultural soil resource (Grade 2 and 3a agricultural land).	• No likely significant effects anticipated from all alternatives.

Landscape and Visual Effects	Blue alternative
	• Likely significant effects on 8b Broad Valleys Landscape sub-type
		Blue alternative
		• Likely significant effects in year 1 on:
		  ○ 8b Broad Valleys Landscape sub-type
		  ○ 6 Intermediate Farmland Landscape sub-type

Factor	Preliminary assessment of likely significant environmental effects	
	Construction stage	**Operation stage**
	• Likely significant effects on 6 Intermediate Farmland Landscape sub-type • Likely significant effects on North Pennines AONB • Likely significant effects on the residents of Kirkby Thore, Spitals Farm, Priest Lane, Low Moor, between Low Moor and Kirkby Thore, between Sleastonhow Farm and Appleby • Likely significant effects on PRoW at Temple Sowerby, Prow at Kirkby Thore, PRoW 341017, PRoW 317008, PRoW 317009, PRoW between Powis House and Appleby Orange alternative • Likely significant effects on 8b Broad Valleys Landscape sub-type • Likely significant effects on 6 Intermediate Farmland Landscape sub-type • Likely significant effects on North Pennines AONB • Likely significant effects on the residents of Kirkby Thore, Spitals Farm, Priest Lane, Low Moor, between Low Moor and Kirkby Thore, between Bridge End Farm and Powis House, between Sleastonhow Farm and Appleby • Likely significant effects on PRoW at Kirkby Thore, PRoW 341017, PRoW 317008, PRoW 317009, PRoW between Powis House and Appleby Red alternative • Likely significant effects on 8b Broad Valleys Landscape sub-type	○ North Pennines AONB ○ Residents of Kirkby Thore, Spitals Farm, Priest Lane, Low Moor, between Sleastonhow Farm and Appleby ○ PRoW at Temple Sowerby, PRoW at Kirkby Thore, PRoW 341017, PRoW 317008, PRoW 317009, PRoW between Powis House and Appleby • Likely significant effects in year 15 on: ○ 8b Broad Valleys Landscape sub-type ○ 6 Intermediate Farmland Landscape sub-type ○ Residents of Kirkby Thore, Spitals Farm, Priest Lane, Low Moor, between Sleastonhow Farm and Appleby ○ PRoW at Kirkby Thore, PRoW 341017, PRoW 317008, PRoW 317009, PRoW between Powis House and Appleby Orange alternative • Likely significant effects in year 1 on: ○ 8b Broad Valleys Landscape sub-type ○ 6 Intermediate Farmland Landscape sub-type ○ North Pennines AONB ○ Residents of Kirkby Thore, Spitals Farm, Low Moor, between Low Moor and Kirkby Thore, between Bridge End Farm and Powis House, between Sleastonhow Farm and Appleby ○ PRoW at Kirkby Thore, PRoW 341017, PRoW 317008, PRoW 317009, PRoW between Powis House and Appleby • Likely significant effects in year 15 on: ○ 8b Broad Valleys Landscape sub-type ○ Residents of Kirkby Thore, Spitals Farm, Low Moor, between Low Moor and Kirkby Thore, between Bridge End Farm and Powis House, between Sleastonhow Farm and Appleby

Factor	Preliminary assessment of likely significant environmental effects	
	Construction stage	**Operation stage**
	• Likely significant effects on 6 Intermediate Farmland Landscape sub-type • Likely significant effects on North Pennines AONB • Likely significant effects on the residents of Kirkby Thore, Spitals Farm, Priest Lane, Low Moor, between Low Moor and Kirkby Thore, between Sleastonhow Farm and Appleby • Likely significant effects on PRoW at Temple Sowerby, PRoW at Kirkby Thore, PRoW 341017, PRoW 317008, PRoW 317009, PRoW between Powis House and Appleby	○ PRoW at Kirkby Thore, PRoW 341017, PRoW 317008, PRoW 317009, PRoW between Powis House and Appleby Red alternative • Likely significant effects in year 1 on: ○ 8b Broad Valleys Landscape sub-type ○ 6 Intermediate Farmland Landscape sub-type ○ North Pennines AONB ○ Residents of Kirkby Thore, Spitals Farm, Priest Lane, Low Moor, between Sleastonhow Farm and Appleby ○ PRoW at Temple Sowerby, PRoW at Kirkby Thore, PRoW 341017, PRoW 317008, PRoW 317009, PRoW between Powis House and Appleby • Likely significant effects in year 15 on: ○ 8b Broad Valleys Landscape sub-type ○ 6 Intermediate Farmland Landscape sub-type ○ Residents of Kirkby Thore, Spitals Farm, Priest Lane, Low Moor, between Sleastonhow Farm and Appleby ○ PRoW at Kirkby Thore, PRoW 341017, PRoW 317008, PRoW 317009, PRoW between Powis House and Appleby
Material Assets and Waste	• Preliminary assessment for material assets and waste has been undertaken on the basis of the whole route (see route wide table above).	• Preliminary assessment for material assets and waste has been undertaken on the basis of the whole route (see route wide table above).
Noise and Vibration	• There is potential for significant effects across the scheme. Effects will be temporary and localized depending on the specific activity and construction stage. • The location and duration of these effects are yet to be determined and are subject to further assessment.	Blue alternative • Significant adverse effects are predicted to 256 residential receptors and four non-residential receptors. Subject to on-going mitigation design and further assessment. • Significant beneficial effects are predicted to 124 residential receptor and eight non-residential receptors. Orange alternative

Factor	Preliminary assessment of likely significant environmental effects	
	Construction stage	Operation stage
		• Significant adverse effects are predicted to 20 residential receptors and three non-residential receptors. Subject to on-going mitigation design and further assessment. • Significant beneficial effects are predicted to 61 residential receptors and four non-residential receptors. Red alternative • Significant adverse effects are predicted to 260 residential receptors and nine non-residential receptors. Subject to on-going mitigation design and further assessment. • Significant beneficial effects are predicted to 120 residential receptors and three non-residential receptors.
Population and Human Health	All alternatives: • Walkers, cyclists and horse riders – potential for likely significant effects due to the severance of PRoW and other WCH provisions due to the land required for the construction of the project. • Agricultural land holdings – potential for likely significant effects as a result of the loss of or damage to key characteristics, features or elements of the agricultural holdings and potential effect of this change on viability. • Local residents – potentially negative effect on wellbeing due to a perceived reduction in the quality of the living environment and concerns about air quality and road safety due to increased HGV movements. • Local residents – potentially negative effects on wellbeing, including increased annoyance and	All alternatives • Walkers, cyclists and horse riders – potential for beneficial significant effects if additional formal crossing points are introduced across the A66, that will bring improvements to WCH journey times, in some cases. However, there is also the potential for adverse significant effects due to increased journey times dependent upon the permanent scheme design. • Local residents - potentially positive and negative health effects due to impacts on quality of life from noise and visual effects • Rural communities - potentially positive health effect due to improved access to community facilities resulting from improved traffic flows on the A66.

Factor	Preliminary assessment of likely significant environmental effects	
	Construction stage	Operation stage
	reduced enjoyment of outside space due to construction noise. • Local residents - Potentially negative effects on wellbeing and quality of life due to noise and visual effects. • Rural communities – potentially negative health effect due to severance caused by construction activities and traffic, leading to reduced access to services and facilities Blue alternative • Common Moss – potential for likely significant effects due to land take. • Property would require acquisition and demolition as part of the scheme. At this stage potential significant effects cannot be ruled out Orange alternative • Land adjacent to primary school allocation – potential for likely significant effects due to temporary land take as approximately 30% of this allocation lies within the draft DCO boundary. • Acorn Bank (National Trust) - potential for likely significant effects as there is potential for a portion of land to be required for this scheme during construction. • Common Moss - potential for likely significant effects as there is potential for a portion of land to be required for this scheme during construction. • Piper Lane Recreational ground - potential for likely significant effects as there is potential for a	

Factor	Preliminary assessment of likely significant environmental effects	
	Construction stage	**Operation stage**
	portion of land to be required for this scheme during construction. • Property would require acquisition and demolition as part of the scheme. At this stage potential significant effects cannot be ruled out Red alternative • Town housing allocation – potential for likely significant effects as the allocation lies within the draft DCO boundary and will be required for the construction of the scheme. Common Moss - potential for likely significant effects as there is potential for a portion of land to be required for this scheme during construction.	
Road Drainage and the Water Environment	• No likely significant effects anticipated from all alternatives.	• No likely significant effects anticipated from all alternatives.