Table 5-1: Summary of preliminary assessment of likely significant environmental effects - Route wide

Factor	Preliminary assessment of likely significant environmental effects	
	Construction stage	**Operation stage**
Air Quality*	• Potential for likely significant effects from construction-related traffic movements (in terms of flows and routes taken) or diverted local traffic, due to a deterioration in air quality for human receptors or as a result of elevated nitrogen deposition at designated ecological receptors. A particular concern would be if construction-related vehicles affected or diverted local traffic within the currently proposed Penrith Castlegate Air Quality Management Area (AQMA) or other locations with sensitive receptors close to these routes approaching the Air Quality Objective (AQO). This will be assessed further in the ES and mitigation developed.	• There are 15 designated ecological sites as follows where nutrient nitrogen deposition is anticipated to fall as a consequence of the project. These locations have the potential to experience likely significant effects[9]. o North Pennine Moors Special Protection Area (SPA) o North Pennine Moors Special Area of Conservation (SAC) o Argill Woods and Pasture Site of Special Scientific Interest (SSSI) o Augill Valley Pasture SSSI o Bowes Moor SSSI o Pallet Hill Local Wildlife Site (LWS) o Stephen Bank Road Verge LWS o Augill Beck Wood Ancient Woodland (AW) o Augill Bridge Wood AW o Deepdale Wood AW o Graham's Gill/Jack-Wood AW o Newbiggin Wood AW o Oglebird Plantation AW o Raughtonguill Wood AW o Thorsgill Wood AW

[9] Highways England is developing a tool for determining the additional contribution of ammonia (NH3) emissions from vehicles to deposited nitrogen. It is expected that this method will be available for use at the ES stage and therefore the potential ecological impacts will be updated accordingly.

Factor	Preliminary assessment of likely significant environmental effects	
	Construction stage	**Operation stage**
		• Thirty-five veteran and ancient trees have been identified within 200m of the ARN. Likely significant effects at these locations cannot be ruled at this stage. This will be reviewed as part of the EIA stage.
Biodiversity	• Potential likely significant effects anticipated during construction for the following, subject to further survey and mitigation design: o Habitats o Bat roosts o Bat activity o Terrestrial mammals, including Red squirrel o Wintering and breeding birds o Barn owl o Reptiles o Amphibians o Terrestrial invertebrates o Macrophytes	• Potential likely significant effects anticipated during operation for the following, subject to further survey and mitigation design: o Habitats o Bat roosts o Bat activity o Terrestrial mammals, including Red squirrel o Wintering and breeding birds o Barn owl o Reptiles o Amphibians o Terrestrial invertebrates o Macrophytes
Climate	• No likely route wide significant effects anticipated.	• No likely route wide significant effects anticipated.
Cultural Heritage	• No likely route wide significant effects anticipated.	• No likely route wide significant effects anticipated.
Geology and Soils	• Likely significant effects due to the potential permanent land take and loss of high and medium value agricultural soil resource (Grade 2, 3a and 3b agricultural land). • Likely significant effects on soils supporting the River Eden SAC, River Eden and Tributaries SSSI.	• No likely route wide significant effects anticipated.
Landscape and Visual Effects	• No likely route wide significant effects anticipated.	• No likely route wide significant effects anticipated.

Factor	Preliminary assessment of likely significant environmental effects	
	Construction stage	**Operation stage**
Material Assets and Waste*	• A likely significant effect is anticipated in relation to the sterilisation of Mineral Safeguarding Sites. • Likely significant effects cannot be ruled out at this stage with regards to aggregates imported to site. The potential for importation of aggregates with low recycled content will be assessed in the ES when information becomes available.	• No likely route wide significant effects anticipated.
Noise and Vibration	• There is potential for significant effects across the project route wide. Effects will be temporary and localised depending on the specific activity and construction stage, and will be assessed further in the ES.	• Significant adverse effects are predicted to 979 residential receptors and 37 non-residential receptors. Subject to on-going mitigation design and further assessment. • Significant beneficial effects are predicted to 530 residential receptors and 79 non-residential receptors.
Population and Human Health	• There is potential for significant effects on agricultural land holdings due to loss of land. • There is potential for temporary significant effects to private property and housing, community land and assets, and development land and businesses, due to disruption to access. • There is potential for temporary significant effects due to construction related nuisance and distribution. • There is a potential for positive health effects resulting from jobs created during construction, though at the current stage it is not known how many jobs will be created.	• There is a potential for positive health effects resulting from the economic benefits of reduced severance and shorter commuting times.
Road Drainage and the Water Environment	• No likely route wide significant effects anticipated.	• No likely route wide significant effects anticipated.