

Table 3-2 Route Refinements

Scheme	Summary of Refinements to Preferred Route
<b>M6 junction 40 to Kemplay Bank</b>	<p>Traffic modelling identified the need to upgrade junction 40 of the M6. Upgrade options considered included widening of both bridges over J40, and the use of a combination of improvements to traffic signals, widening of slip roads and use of road markings. The selected refinement comprises improvements to traffic signal arrangement, widening of slip roads and use of spiral road markings.</p>
	<p>Multiple design alternatives to the proposed underpass beneath the Kemplay Bank roundabout, which would require the removal of an existing A66 underpass that is a critical connection from Carleton Avenue into the emergency services compound, were considered. Options included an overpass over the new road, a replacement underpass further to the east of the location of the existing, a single access of the new roundabout, and an alternative involving a reduction in the speed limit to 50mph to allow the proposed Kemplay Bank roundabout underpass alignment to be adjusted to retain the existing access. A reduction in the speed limit to 50mph through the Kemplay Bank section of the A66 was selected as the preferred option.</p>
<b>Penrith to Temple Sowerby</b>	<p>Underpass and overbridge options considered in order to maintain connectivity for a landowner to land within central reservation. Overbridge selected as the preferred option.</p>
	<p>Alignment to be moved north of High Barn rather than south, to provide an alignment closer to the existing A66 and thereby reducing land take for landowner.</p>
	<p>Amendment to grade-separated junction arrangement at the Centre Parcs junction to better fit the new alignment.</p>
	<p>Overbridge and underpass options were considered at Winderwath Estate to provide improved landowner access. Overbridge with associated linked tracks was selected for inclusion in the design.</p>
<b>Bowes Bypass</b>	<p>Alternative alignment outside of North Pennines AONB considered but discounted as alternative would require more land take to the north of the alignment, thereby increasing potential impacts upon deciduous woodland and agricultural land in comparison with the Preferred Route design. Preferred Route design has been taken forward on the basis that it involves minimal works within the AONB (largely affecting land within the highways boundary) and greater environmental effects would occur for the alternative that remains outside the AONB.</p>
	<p>Consideration given to relocation of the westbound diverge at the end of The Street/Low Road which would allow diverging Heavy Goods Vehicles (HGVs) to access a local business without needing to travel through Bowes village. Environmental factors were taken into consideration alongside stakeholder engagement, and engineering and buildability factors and on balance it was determined that the Preferred Route design would be taken forward.</p>

<b>Stephen Bank to Carkin Moor</b>	<p>Alternative new link from Warrener Lane incorporated to avoid potentially dangerous U-turn manoeuvres at adjacent breaks in the central reserve. Design avoids Roman fort and prehistoric enclosed settlement 400m west of Carkin Moor Farm.</p>
	<p>Alternative grade separation at Collier Lane to place the A66 into a cutting to provide protection against side winds and reduce visual impact incorporated. Overbridge to be provided for Collier Lane.</p>
	<p>Options considered due to the need to incorporate a culvert to the watercourse immediately to the east of Moor Lane. These included raising the A66 alignment sufficiently whilst keeping the current grade-separated arrangement and placing Moor Lane in a cutting beneath the proposed A66 alignment. The option to switch the grade separation and place Moor Lane beneath the A66 was selected as preferred.</p>
	<p>Three alternative designs considered at Moor Lane following feedback from local parish council on the Preferred Route design. The selected alternative will provide a new grade-separated all movement junction to the western boundary of the existing alignment of Moor Lane, providing connectivity between the de trunked A66 and the proposed mainline.</p>