A358 Taunton to Southfields Dualling Scheme

Preliminary Environmental Information Report - Appendix 3.2
Option Appraisals

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3 Option appraisals

3.1 Introduction

3.1.1 During the early stages of Highways England's Project Control Framework (PCF) stage 3, the scheme has undergone further consideration of options into specific design elements along the preferred Pink Modified route in collaboration with the wider scheme team.

3.1.2 Tables 3-1 to 3-11 below provide a summary of the option appraisals undertaken to date on key features of the preferred route, where the 'original' option forms the 'baseline' to which the other options were compared. The option appraisals that were undertaken comprise:

- M5 junction 25 southbound off-slip
- Stoke Road link
- Mattock's Tree Green junction
- Scout camp link
- Village Road link (north)
- Bickenhall Lane link
- Stewley link
- Ashill junction
- Village Road link (south) and Capland link
- Broadway Street link
- Southfields link

3.1.3 The appraisal of options was considered against a range of criteria, not only environmental. These included scheme objectives, technical issues for highways, structures, drainage and earthworks, maintenance and operational issues, buildability, cost, existing commitments, health and safety and carbon. The preferred option was taken on a balance of outcomes. For the purposes of the Preliminary Environmental Information (PEI) Report, only the individual scores for each environmental aspect and the overall score is provided.

3.1.4 The option appraisals used a scoring system, based on professional judgement, as follows when comparing to the original (baseline) design:

- Major adverse: -2 (significantly worse than the baseline)
- Moderate adverse: -1 (worse than the baseline)
- Neutral: 0 (no better/worse than the baseline)
- Minor beneficial: +1 (better than the baseline)
- Major beneficial: +2 (significantly better than the baseline)

Table 3-1 Stoke Road link option appraisals summary

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
Appraisal Objective: To provide a compliant crossing for Stoke Road that achieves the minimum headroom requirements over the mainline carriageway, whilst taking into consideration potential flood levels on the mainline, impact on the local properties and environmental constraints.				
Original	The A358 main carriageway would pass between Henlade to the north and Ruishton to the south and would cross Stoke Road. The baseline option would have the A358 dual carriageway in an 8m deep cutting with Stoke Road passing over. The baseline option did not fully consider the length of affected carriageway either side of the proposed overbridge and identified minimal impact on access to adjacent properties. The baseline option adversely impacted two properties, Henlade Farmhouse and Meadow View. Both were subject to blight applications which have been accepted by Highways England. The properties would be demolished in both the baseline and two options.	Air quality: n/a Carbon: n/a Climate resilience: n/a Cultural heritage: n/a Landscape and visual: n/a Biodiversity: n/a	Geology and soils: n/a Materials and waste: n/a Noise and vibration: n/a Population and human health: n/a Water environment: n/a Overall environment score: n/a	Preferred option: 2 Reasons: Overall, the majority of environmental topics consider Option 2 to be no worse than the baseline option. In terms of constructability, the proposed Option 2 bridge is located offline from existing Stoke Road, which provides opportunity to maintain access during construction. As Option 2 can be constructed offline, this would allow tighter control of site Health and Safety issues. This option shows the proposed road to have been moved slightly away from existing properties which will have a positive impact on the wellbeing of the residents in these dwellings and may also decrease the likelihood of accidents when residents pull out of their driveways onto Stoke Road.
1	The new A358 would be accommodated with a bridge over Stoke Road. This would remove the need for additional land acquisition or access alterations to properties on Stoke Road. **Overall appraisal score: -2**	Air quality: 0 Carbon: -1 Climate resilience: +1 Cultural heritage: -1 Landscape and visual: -2 Biodiversity: +1	Geology and soils: -1 Materials and waste: -2 Noise and vibration: -1 Population and human health: 0 Water environment: +1 Overall environment score: -1	
2	This would be an offline option whereby the proposed Stoke Road overbridge would be located approximately 20m west. The realignment would allow the proposed Stoke Road embankments to be provided without encroaching on adjacent properties to the east of Stoke Road and maintain access. Additional land would be required to the west of the existing Stoke Road. **Overall appraisal score: +1**	Air quality: 0 Carbon: +1 Climate resilience: 0 Cultural heritage: -1 Landscape and visual: 0 Biodiversity: 0	Geology and soils: 0 Materials and waste: +1 to -1 Noise and vibration: 0 Population and human health: 0 Water environment: -1 Overall environment score: 0	
3	Similar to Option 2 this would also be an offline option, however the proposed overbridge would be	Air quality: 0 Carbon: -1	Geology and soils: 0 Materials and waste: -1	

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
	located approximately 150m to the west, tying into a different section of Stoke Road to the south. A new simple T-junction and associated visibility splays would be required at the new tie-in. The existing Stoke Road would be stopped up and, only retained for access to existing properties. Access to severed agricultural fields would also be maintained from the stopped up Stoke Road. **Overall appraisal score: -2**	Climate resilience: -1 Cultural heritage: -1 Landscape and visual: -1 Biodiversity: 0	Noise and vibration: 0 Population and human health: 0 Water environment: -2 Overall environment score: -1	

Table 3-2 M5 junction 25 southbound off-slip option appraisals summary

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
Appraisal Objective: The scheme proposed capacity improvements at M5 junction 25 including widening of the existing southbound off-slip from three to four lanes on the off-side approach. The appraisal considers the option to widen on the near-side (left).				
Original	Capacity improvements at M5 junction 25 including widening of the existing southbound off-slip from three to four lanes on the off-side approach over a length of approximately 120m. A retaining wall would retain the existing embankment between the slip and M5 southbound carriageway	Air quality: n/a Carbon: n/a Climate resilience: n/a Cultural heritage: n/a Landscape and visual: n/a Biodiversity: n/a	Geology and soils: n/a Materials and waste: n/a Noise and vibration: n/a Population and human health: n/a Water environment: n/a Overall environment score: n/a	Preferred option: Original Reasons: The baseline option has significantly less environmental and construction related impacts compared to Option 1. The baseline option also offers better highways, geotechnics and drainage design opportunities. Option 1 has been assessed to provide insufficient capacity at PCF stage 2 and confirmed by PCF stage 3 interim traffic forecast.
1	Provision of the additional fourth lane on nearside would require approximately 120m of embankment widening. The option would remove the requirement for a retaining wall but the work zone would require access and work adjacent to the existing Blackbrook watercourse. **Overall appraisal score: -2**	Air quality: 0 Carbon: 0 Climate resilience: 0 Cultural heritage: 0 Landscape and visual: -1 Biodiversity: -1	Geology and soils: 0 Materials and waste: -1 Noise and vibration: 0 Population and human health: +1 Water environment: -1 Overall environment score: -1	

Table 3-3 Ashill junction option appraisals summary

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for chosen design option
Appraisal Objective: To define preferred location of junction, improve the highway alignment of the side road/overbridge and connectivity to the local properties, whilst considering visual impact, buildability and temporary traffic management.				
Original	A new 2-level junction with slip roads to accommodate traffic movement in all directions, is proposed at Ashill between the village of Ashill to the west and Rapps and Ilton to the east. The position of the new junction would be located directly over the existing at-grade major/minor junctions, with the proposed bridge sitting directly above the existing western junction (access/egress for Ashill). A little further to the east is Copse Lane, an existing private track, which would be upgraded to provide access to Park Barn Lane properties and emergency access to the Merryfield Airfield to the north.	Air quality: n/a Carbon: n/a Climate resilience: n/a Cultural heritage: n/a Landscape and visual: n/a Biodiversity: n/a	Geology and soils: n/a Materials and waste: n/a Noise and vibration: n/a Population and human health: n/a Water environment: n/a Overall environment score: n/a	Preferred option: 2 Reasons: Overall, the majority of environmental topics consider Option 2 to be no worse than the baseline option. Copse Lane and the ancient woodland would not be impacted by the preferred option. In terms of constructability, the bridge is located between the existing at-grade junctions, which would allow construction of the bridge abutments whilst maintaining traffic flows under temporary traffic management – this would not be possible with the baseline option. The proposed road alignment to the north/east avoids impacting the two existing properties on the existing eastern road leading to Rapps/Ilton.
1	Option 1 proposes a revised location for the junction approximately 300m further north. Existing properties on Park Barn Lane would be accessed directly from the proposed link road. Copse Lane would also be upgraded and connected into the existing road heading towards Rapps and Ilton. **Overall appraisal score: +1**	Air quality: 0 Carbon: +1 Climate resilience: 0 Cultural heritage: -1 Landscape and visual: +1 Biodiversity: -2	Geology and soils: -1 Materials and waste: -1 Noise and vibration: -1 Population and human health: +1 Water environment: -1 Overall environment score: -2	
2	Option 2 proposes that the junction position would stay in a similar location to the baseline option but the overbridge would move about 10m south so that it sits between both existing at-grade junctions. Copse Lane would also be upgraded heading northwards to reconnect Park Barn Lane properties and emergency access to Merryfield Airfield. **Overall appraisal score: +2**	Air quality: 0 Carbon: 0 Climate resilience: 0 Cultural heritage: 0 Landscape and visual: 0 Biodiversity: 0	Geology and soils: 0 Materials and waste: -1 Noise and vibration: 0 Population and human health: 0 Water environment: 0 Overall environment score: 0	

Table 3-4 Bickenhall Lane link option appraisals summary

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
Appraisal Objective: Several concerns have been expressed in community forums and landowner meetings regarding the base option including: The scheme would cause severance as a result of several junctions that would be closed; The current provision for access to and from the A358 for the communities around Hatch Beauchamp and Ashill is not considered suitable as it would result in longer trip distance and travel time over local roads that may not be entirely suitable for increased traffic volume; Griffin Lane is not suitable for a cross link; and, concerns that Staple Fitzpaine Road is not currently suitable for farm vehicles and needs widening, passing places and visibility improvements. Therefore, this appraisal considers alternatives for a new road link (including walkers, cyclists and horse riders (WCH) provision) and bridge over the A358 at Bickenhall Lane.				
Original	The baseline option would provide a new bridge (A358 eastbound carriageway) over Griffin Lane at Ch 6+600, infill (or demolish) existing agriculture underpass (3m x 3m) at Ch 7+075, construction of a new Hatch Park underpass (8m x 5m) at Ch 7+100 and closure of the existing Bickenhall Lane staggered junction at Ch 7+600.	Air quality: n/a Carbon: n/a Climate resilience: n/a Cultural heritage: n/a Landscape and visual: n/a Biodiversity: n/a	Geology and soils: n/a Materials and waste: n/a Noise and vibration: n/a Population and human health: n/a Agriculture and farm holdings: n/a Water environment: n/a Overall environment score: n/a	Preferred option: 3 Reasons: The preferred option responds to community input for a link at this location, benefiting the widest population possible and supports scheme objectives.
1	New road link with bridge over A358 at Ch 7+550, comprising: • new 6.0m wide minimum single carriageway road link joining Bickenhall Lane to Staple Fitzpaine Road approximately 900m long • new bridge for link over A358 – approximately 40m long single span • removal of new Hatch Park underpass from the scheme • extension of existing agricultural underpass under proposed eastbound carriageway • upgrade to private access to Hatch Park estate from Griffin Lane • Option 1 alignment requires the new bridge to be constructed over the current junction including specific traffic	Air quality: -1 Carbon: -1 Climate resilience: -1 Cultural heritage: 0 Landscape and visual: -2 Biodiversity: -2	Geology and soils: 0 Materials and waste: -1 Noise and vibration: 0 Population and human health: +1 Agriculture and farm holdings: +2 Water environment: 0 Overall environment score: -1	

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
	management and temporary diversion (or closure) during construction **Overall appraisal score: 0**			
2	New road link with bridge over A358 at Ch 7+650, comprising: • variation on Option 1 approximately 100m south-east • a new 6.0m wide minimum single carriageway road link joining Bickenhall Lane to Staple Fitzpaine Road approximately 900m long • a new bridge for the link over A358 – approximately 40m long single span • removal of new Hatch Park underpass from the scheme • extension of existing agricultural underpass under proposed eastbound carriageway • upgrade to private access to Hatch Park estate from Griffin Lane • Option 2 alignment allows the new bridge to be constructed between the two current junctions thus allowing Bickenhall Lane to remain open during construction **Overall appraisal score: 0**	Air quality: -1 Carbon: -1 Climate resilience: -1 Cultural heritage: 0 Landscape and visual: -1 Biodiversity: -2	Geology and soils: 0 Materials and waste: -1 Noise and vibration: 0 Population and human health: +2 Agriculture and farm holdings: +2 Water environment: 0 Overall environment score: -1	
3	New road link with bridge over A358 at Ch7+350, comprising: • variation on Option 1 approximately 100m north-west • a new 6.0m wide minimum single carriageway road link joining Bickenhall Lane to Staple Fitzpaine Road approximately 780m long	Air quality: -1 Carbon: -1 Climate resilience: -1 Cultural heritage: 0 Landscape and visual: -1 Biodiversity: -2	Geology and soils: 0 Materials and waste: -1 Noise and vibration: 0 Population and human health: +2 Agriculture and farm holdings: +2 Water environment: 0 Overall environment score: -1	

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
	• a new bridge (link over A358) – approximately 40m long single span • removal of new Hatch Park underpass from the scheme • extension of existing agricultural underpass under proposed eastbound carriageway • upgrade to private access to Hatch Park estate from Griffin Lane • Option 3 alignment allows the new bridge to be constructed north of the two current junctions thus allowing both to remain open during construction • makes use of A358 cutting resulting in reduced earthworks (lower embankments). **Overall appraisal score: +2**			
4	New accommodation access with bridge over A358 at Ch 7+350, comprising: • variation on Option 3 • a new, approximately 4.0m wide agricultural crossing joining Bickenhall Lane to Staple Fitzpaine Road approximately 310m long • accommodation access to be designated as a bridleway to allow use by WCH • a new bridge (link over A358) – approximately 40m long single span • removal of new Hatch Park underpass from the scheme • extension of existing agricultural underpass under proposed eastbound carriageway	Air quality: -1 Carbon: -1 Climate resilience: -1 Cultural heritage: 0 Landscape and visual: -1 Biodiversity: -2	Geology and soils: 0 Materials and waste: -1 Noise and vibration: 0 Population and human health: +2 Agriculture and farm holdings: +2 Water environment: 0 <u>Overall environment score: -1</u>	

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal	Reason for preferred design option
	• upgrade to private access to Hatch Park estate from Griffin Lane • Option 4 alignment allows the new bridge to be constructed north of the two current junctions thus allowing both to remain open during construction **Overall appraisal score: +1**		

Table 3-5 Broadway Street link option appraisals summary

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
Appraisal Objective: Broadway Street/Cad Road junction would be stopped-up by the scheme and would introduce severance between communities. Access across the A358 is only available at Ashill or Southfields junctions. This appraisal evaluates high level options for a new link across the A358 between Ashill and Southfields.				
Original	The current junctions of Broadway Street/Cad Road with the A358 would be closed. Access to, from and across the A358 would be made via the new Ashill split-level junction with slips. During community forums, concerns were expressed about the severance caused by the scheme and the significant need for access to local businesses and employment opportunities at Ilton.	Air quality: n/a Carbon: n/a Climate resilience: n/a Cultural heritage: n/a Landscape and visual: n/a Biodiversity: n/a	Geology and soils: n/a Materials and waste: n/a Noise and vibration: n/a Population and human health: n/a Agriculture and farm holdings: n/a Water environment: n/a Overall environment score: n/a	Preferred option: 2 Reasons: Beneficial to local community in terms of connectivity. The inclusion of Option 2 would enhance connectivity for all road users alongside the route and maintain connections between communities on the western side of the A358.
1	Option 1 would provide a road link over the A358 linking Broadway Street and Cad Road approx. 150m west of the existing junction. Main features: • Approximate total length is 800m. • Approximately 6m wide single carriageway • Long bridge span – approximately 50m long single span • Existing hedging/vegetation around existing junction would be lost **Overall appraisal score: -2**	Air quality: 0 Carbon: -2 Climate resilience: -1 Cultural heritage: -2 Landscape and visual: -2 Biodiversity: -1	Geology and soils: -1 Materials and waste: -1 Noise and vibration: -2 Population and human health: +2 Agriculture and farm holdings: +2 Water environment: -1 Overall environment score: -2	

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
2	Option 2 would provide a new link road parallel to the westbound carriageway, connecting Broadway Street to the proposed Ashill junction via Ashill Road. Main features: • Approximate total length is 1500m. • Approximately 6m wide single carriageway • Existing vegetation along the new link would be lost • No bridge crossing over the A358 although a new drainage structure would be required under the link road for Cad Brook **Overall appraisal score: -1**	Air quality: 0 Carbon: -2 Climate resilience: -1 Cultural heritage: -1 Landscape and visual: -1 Biodiversity: -2	Geology and soils: 0 Materials and waste: -1 Noise and vibration: -1 Population and human health: +1 Agriculture and farm holdings: +1 Water environment: -2 Overall environment score: -2	

Table 3-6 Village Road (south) and Capland link option appraisals summary

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
Appraisal Objective: This appraisal reviews the relocation of Village Road (south) overbridge and introduction of Capland link to connect Village Road South and Capland Lane (Capland Lane junction with A358 would be closed in the baseline).				
Original	In accordance with the requirement to provide GD 300 Level 2 compliance, all at-grade junctions along the A358 are proposed to be closed by the scheme. Access to Stewley and Capland is currently made from Capland Lane and Stewley Lane and the closure of these lanes with the A358 would require access via the proposed Village Road overbridge or Stewley Link (both accessed via Ashill junction). Journeys using these local lanes are longer and it has been reported that Stocks Lane is susceptible to flooding. There is a risk during flood events that residents may be temporarily isolated from the wider road network as a combination of the direct access on	Air quality: n/a Carbon: n/a Climate resilience: n/a Cultural heritage: n/a Landscape and visual: n/a Biodiversity: n/a	Geology and soils: n/a Materials and waste: n/a Noise and vibration: n/a Population and human health: n/a Agriculture and farm holdings: n/a Water environment: n/a Overall environment score: n/a	Preferred option: 2 Reasons: The relocation of Village Road overbridge (Option 2) has been based on reduced embankments compared with the baseline and Option 1, minimising impact to the properties on the existing Village Road both visually and regarding blight and additional land acquisition. The proposed scheme boundary would retain the area required for Capland

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
	to the A358 being removed and local routes being flooded. In particular Stocks Lane is understood to experience flood events near Frog Street junction (anticipated at least yearly for several hours). Similar is expected at Stocks Lane near Capland Lane junction. Assessment of the PCF stage 2 design showed that the vertical alignment of the approach embankments to the Village Road overbridge was understated. This resulted in the embankments being modelled in PCF stage 3 being longer, wider and higher than shown in the baseline design. One side effect of this was that the at-grade junction between the original and new Village Road on the northern side of the A358 could not be provided and that the junction would actually be raised on an embankment. It has been concluded that the PCF stage 2 design would feature embankments that would impact the properties on the existing Village Road both visually and could result in blight and additional land acquisition. Providing access to the properties from the new Village Road may require additional land acquisition.			link (connecting Capland Lane with Village Road) in case this is implemented at a later stage. This decision is to be considered for the ES. The proposed scheme boundary currently includes sections of Stocks Lane near Frog Street and Capland Lane junctions for potential local flood mitigation works, if Capland link is not implemented at a later stage.
1	A new single carriageway link road with minimum width 6m linking Capland Lane to Village Road (south) was proposed originally during development of the Pink Route but was omitted from the Pink Modified Route. Village Road realignment (and its associated overbridge) is located approximately in the same location as the PCF Stage 2 design. This 300m long link would provide a more direct link to the villages of Stewley and Capland, removing the need for road users to be diverted	Air quality: 0 Carbon: +1 Climate resilience: 0 Cultural heritage: 0 Landscape and visual: -1 Biodiversity: -1	Geology and soils: 0 Materials and waste: -1 Noise and vibration: 0 Population and human health: -1 Agriculture and farm holdings: -1 Water environment: -1 <u>Overall environment score: -1</u>	

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
	on to the wider local road network. It would also provide access to the villages during flood events which can close Stocks Lane in various locations. At the western end of Capland Link, the alignment would have to be raised on embankment to tie-in with the vertical alignment of the realigned Village Road (south). This would result in a number of properties being affected by earthworks. The alignment of Capland Link would also sever an existing farm holding from its associated land. Village Road (south) realignment and overbridge are approximately in the same location as proposed by the PCF Stage 2 design. **Overall appraisal score: -2**			
2	This option would be a development of Option 1 with the Village Road Overbridge moved approximately 250m west, further away from the properties along the existing Village Road. A new junction would be provided for Capland link from the extension of Village Road (south). The topography at the revised overbridge location is more favourable and results in the approach embankments being lower and shorter, reducing visual impact in the nearby properties. With the bridge moved further to the west, Capland link would tie into a section of the existing Village Road in front of the properties minimising direct impact on these. The tie-in between the new and existing Village Road would be at grade, rather than on embankment as per Option 1. **Overall appraisal score: +1**	Air quality: 0 Carbon: +1 Climate resilience: -1 Cultural heritage: 0 Landscape and visual: -1 Biodiversity: -1	Geology and soils: 0 Materials and waste: -1 Noise and vibration: 0 Population and human health: +1 Agriculture and farm holdings: -1 Water environment: -1 Overall environment score: -1	

Table 3-7 Mattock's Tree Green junction option appraisals summary

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
Appraisal Objective: To provide a workable solution for the link from the proposed southern Mattock's Tree Green junction roundabout to the existing Ash Road. The aim is to improve the horizontal and vertical alignment from PCF stage 2, whilst considering access and visual impact on the Grade II listed property, The Thatch.				
Original	A new 2-level junction with slip roads to accommodate traffic movement in all directions, is proposed at Mattock's Tree Green / A378. The proposed Mattock's Tree Green junction would be a grade separated junction, located to the east of Henlade village. The junction is located on the crest of a hill which falls away steeply from north to south and the new A358 alignment would be in a deep cutting. The westbound and eastbound slip roads would connect to the A358 with a dumbbell roundabout configuration, and a proposed overbridge would connect the two roundabouts at a skew of approximately 25 degrees to the mainline alignment. The roundabout on the southern side of the mainline would accommodate Ash Road (the existing junction of Ash Road with the A358 would be severed by the new route). The proposed link to Ash Road would be steep (>8% grade) and, due to the existing topography, would require a large embankment next to a Grade II listed property, 'The Thatch'. It is considered that the embankment would degrade the setting of the listed property and it is noted that no access was provided in the preferred route to the property. Technically there are design concerns with the baseline design as the vertical alignment does not tie into the existing topographical survey before an existing non-listed bridge on Ash Road.	Air quality: n/a Carbon: n/a Climate resilience: n/a Cultural heritage: n/a Landscape and visual: n/a Biodiversity: n/a	Geology and soils: n/a Materials and waste: n/a Noise and vibration: n/a Population and human health: n/a Water environment: n/a Overall environment score: n/a	Preferred option: 3 Reasons: Overall, the majority of environmental topics consider Option 3 to be slightly worse than the baseline option (score of -1). However, the baseline option would require demolition of the existing non-listed bridge. Regarding highways, the horizontal alignment has reduced bendiness than the baseline. Vertical alignment is less steep than the baseline (maximum vertical gradient would be 8%). The realigned Ash Road allows local road connectivity and access to The Thatch. The preferred option proposes a reduced skew on the proposed Mattock's Tree Green Junction overbridge, resulting in a shorter bridge span. Regarding Public Rights of Way (PRoW), the reduced bendiness and steepness

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
1	The dumbbell arrangement and overbridge have been relocated slightly north with a reduced skew of 8 degrees, which reduces the span and structural depth of the proposed structure over the A358. The Ash Road link from the southern roundabout ties in further south on the other side of the existing bridge, which requires the existing non-listed bridge to be demolished. This provides the opportunity to move the new link further away from the listed property and provide an access, as well as improving the length of the horizontal alignment, which in turn allows for an improved vertical gradient. **Overall appraisal score: -2**	Air quality: 0 Carbon: +1 Climate resilience: -1 Cultural heritage: +1 Landscape and visual: -2 Biodiversity: 0	Geology and soils: -1 Materials and waste: -1 Noise and vibration: 0 Population and human health: +1 Water environment: 0 Overall environment score: 0	would be less hazardous than the baseline scheme. Regarding construction, there is no need for either of the bridges to be demolished. Works above the historic landfill will be required, however the road can be built offline with little impact on the existing Ash Road. Access to properties can be maintained easily during construction. Murless Cottage south of Ash road is also unaffected. Some modifications would be required to the camp site and container yard / business accesses. However, there is a potential option for the access onto Ash Road to be closed and an alternative junction to be provided onto the proposed Scout camp link. The Scout camp link has been assessed in a separate options appraisal report. This design option can be built offline which would also allow tighter control of construction site Health and Safety issues.
2	The dumbbell arrangement and overbridge have been relocated slightly north as per Option 1. However, the new Ash Road link from the southern roundabout is located further from the existing listed property, and ties-in south of the listed bridge to the east of Ash Road bridge. This realignment allows the existing Ash Road to be retained for access to the existing properties. A new access would be provided for Eclipse Event Solutions. **Overall appraisal score: -2**	Air quality: 0 Carbon: -1 Climate resilience: -1 Cultural heritage: +1 Landscape and visual: -1 Biodiversity: 0	Geology and soils: -1 Materials and waste: -1 Noise and vibration: 0 Population and human health: -1 Water environment: 0 Overall environment score: -1	
3	The dumbbell arrangement and overbridge have been relocated slightly north as per Option 1. The Ash Road link from the southern roundabout ties in between the two existing bridges, which would not need to be demolished. This option would allow access provision to the existing Ashe Farm, the listed property (The Thatch), Ashe Farm camp site and container yard / business (Eclipse Event Solutions) with only minor junction / access modifications. No other existing properties would	Air quality: 0 Carbon: +1 Climate resilience: -1 Cultural heritage: 0 Landscape and visual: -1 Biodiversity: 0	Geology and soils: -1 Materials and waste: -1 Noise and vibration: 0 Population and human health: 0 Water environment: 0 Overall environment score: -1	

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal	Reason for preferred design option
	be affected by this option. Maximum vertical gradient would be 8%. To address concerns regarding the proposed battered slopes encroaching with the listed bridge there may be a need to consider retaining solutions as part of design development. **Overall appraisal score: +2**		

Table 3-8 Scout camp link option appraisals summary

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
Appraisal Objective: Existing access arrangements to the Somerset Progressive School (as well as the Scout camp and local businesses) would be impacted by the scheme. The current scheme would provide access via a new link from West Hatch Lane. Feedback received at recent community forums centred around the proposal being impractical due to the longer trip times along lower standard local roads. This option looks at an alternative direct access link from the proposed Mattock's Tree Green junction south roundabout as requested in stakeholder correspondence following community forums.				
Original	West Hatch Lane junction would be stopped up at the A358 as part of the scheme. A new link from West Hatch Lane would provide access to the Somerset Progressive School, scout camp and local business in the area. • Length of link = 650m • Single carriageway roadway with width = 6m minimum The baseline route passes through the car park of Somerset Progressive School.	Air quality: n/a Carbon: n/a Climate resilience: n/a Cultural heritage: n/a Landscape and visual: n/a Biodiversity: n/a	Geology and soils: n/a Materials and waste: n/a Noise and vibration: n/a Population and human health: n/a Agriculture and farm holdings: n/a Water environment: n/a Overall environment score: n/a	Preferred option: 1 Reasons: The appraisal concludes that Option 1 presents a major beneficial improvement over the baseline option. Key drivers for this decision were as listed below. Both the baseline scenario and Option 1 score neutral in the environmental matrix and therefore other elements have primarily driven the choice of option. The baseline option has not received support during the community forums, whereas the response to Option 1 was largely favourable.
1	Option 1 would provide a direct link from the proposed Mattocks Tree Green junction south roundabout. • Length of link = 700m • Single carriageway roadway with width = 6m minimum **Overall appraisal score: +2**	Air quality: 0 Carbon: 0 Climate resilience: +1 Cultural heritage: 0 Landscape and visual: -1 Biodiversity: 0	Geology and soils: -1 Materials and waste: -1 Noise and vibration: 0 Population and human health: +1 Agriculture and farm holdings: -1 Water environment: +1 Overall environment score: 0	

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal	Reason for preferred design option
			Closure of the existing local access on to the A358 and the baseline proposals to provide a link to the local highway network at West Hatch Lane will result in a diversion of approximately 3 miles. The diversion route is along unclassified sections of the local road network which are narrow, with tight bends and limited visibility which are likely to be unsuitable for all the diverted traffic. This has the potential to increase conflict points between vehicles and walkers, cyclists and horse riders (WCH). For the baseline option it is highly likely that localised improvements and passing bays would be required on the diversion route to mitigate the additional traffic flows. The location and scope of the improvements would have to be identified in consultation with stakeholders, including Somerset County Council (SCC). Additional land would likely be needed for these, as yet, unidentified improvements and included within the Red Line

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal	Reason for preferred design option
			Boundary. Option 1 avoids these unknowns. Option 1 also provides an opportunity to provide an alternative access to the existing business(es) occupying part of the former railway line to the east of Ash Road. This would enable the existing access on to Ash Road to be closed removing traffic from the locality and an access with reduced visibility.

Table 3-9 Southfields link option appraisals summary

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
Appraisal Objective: This option considers proposals to provide access to farm land in the proximity of Southfields roundabout, which would be seriously severed by the proposed scheme.				
Original	PCF stage 2 scheme design does not provide access to large portions of farmland between Ashill junction and Southfields roundabout.	Air quality: n/a Carbon: n/a Climate resilience: n/a Cultural heritage: n/a Landscape and visual: n/a Biodiversity: n/a	Geology and soils: n/a Materials and waste: n/a Noise and vibration: n/a Population and human health: n/a Agriculture and farm holdings: n/a Water environment: n/a Overall environment score: n/a	Preferred option: 1 Reasons: The preferred option provides a substantial improvement to accessibility for local communities, providing walking, cycling and horse-riding routes and means of access for landowners that would be severely severed based on the baseline option.
1	It would provide access to farmland by a new access-way running along the north-east of the A358. • Length approx. = 1km • Width of access-way = 3.5m	Air quality: 0 Carbon: -1 Climate resilience: -1 Cultural heritage: -1 Landscape and visual: -1 Biodiversity: -2	Geology and soils: 0 Materials and waste: -1 Noise and vibration: 0 Population and human health: +2 Agriculture and farm holdings: +1 Water environment: -1 Overall environment score: -1	

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal	Reason for preferred design option
	• The accessway would further provide access for maintenance to drainage attenuation/ storage ponds • Not surfaced/unbound • Follows natural ground levels typically **Overall appraisal score: +2**		

Table 3-10 Stewley link option appraisals summary

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
Appraisal Objective: This option considers alternatives to the Kenny Road link, which would be stopped-up by the proposed A358.				
Original	The baseline option would provide a road link from Stewley Lane to Ashill Road via a new overbridge over the A358. This was called Kenny link and would also include a new accessway to the sewage treatment works. • Length of link = 0.8km • Single carriageway road 6m minimum width	Air quality: n/a Carbon: n/a Climate resilience: n/a Cultural heritage: n/a Landscape and visual: n/a Biodiversity: n/a	Geology and soils: n/a Materials and waste: n/a Noise and vibration: n/a Population and human health: n/a Agriculture and farm holdings: n/a Water environment: n/a Overall environment score: n/a	Preferred option: 1 Reasons: The endorsed alignment would provide better access to private properties as well as for maintenance of attenuation ponds on the northern side of A358. Further the endorsed option would be an efficiency of design by omitting Kenny Road bridge over A358 reducing earthworks substantially. This is beneficial for reduction of carbon emissions.
1	Option 1 would omit the Kenny link and instead provide a new link (east of the proposed A358) to connect Stocks Lane with Ashill junction. It would also connect to Park Barn Lane which would remove the requirement to upgrade Copse Lane as part of the Ashill junction proposals. • Length of link = 2,300m • Single carriageway road 6m minimum width. • No bridge structure proposed. **Overall appraisal score: +1**	Air quality: 0 Carbon: +1 Climate resilience: -1 Cultural heritage: 0 Landscape and visual: 0 Biodiversity: -1	Geology and soils: 0 Materials and waste: +1 Noise and vibration: 0 Population and human health: 0 Agriculture and farm holdings: -1 Water environment: -1 Overall environment score: -1	

Table 3-11 Village Road (north) link option appraisals summary

Feature / option	Summary description of option and overall appraisal score	Environmental appraisal		Reason for preferred design option
Appraisal Objective: The scheme would close the existing junction of Village Road (north) with the A358. Road users would use existing local roads to access the new Mattock's Tree junction via the A378. Following response from community forum and stakeholder consultations, an alternative option was considered that would provide a more direct link from Hatch Beauchamp to Mattock's Tree Green junction via Village Road. This options appraisal looks only at the baseline option (no Village Road (north) Link) vs Option 1 (its inclusion).				
Original	All at-grade junctions along the A358 would be closed by the scheme. This includes Village Road which forms a junction with the existing A358 and provides access to the villages of Hatch Beauchamp, Stewley and Capland. A new grade separated junction would be provided west of the existing A358 / A378 signalised junction. This is referred to as the Mattock's Tree Green junction and is the subject of a separate options appraisal. The baseline option provides no access from Mattock's Tree Green junction to Village Road. Instead, road users would access the local villages via the A378 and Meare Green Lane which is approximately 2.5km longer and makes use of narrow single-lane roadways with limited passing opportunities.	Air quality: n/a Carbon: n/a Climate resilience: n/a Cultural heritage: n/a Landscape and visual: n/a Biodiversity: n/a	Geology and soils: n/a Materials and waste: n/a Noise and vibration: n/a Population and human health: n/a Agriculture and farm holdings: n/a Water environment: n/a Overall environment score: n/a	Preferred option: 1 Reasons: Significant support has been shown from the community forums for Village Road (north) link to be included within the design particularly in order to address safety concerns related to increased use of the local road network making up the diversion route. The baseline option would require further consultation with the Local Highway Authority and other stakeholders to identify if and where passing places and other minor improvements would be required.
1	The option would provide a 600m long section of new single carriageway, approximately 7.3m wide to provide a direct link to the village of Hatch Beauchamp from Mattock's Tree Green junction, via Village Road. The vertical alignment largely follows existing ground levels and would require minimal earthworks. **Overall appraisal score: +2**	Air quality: 0 Carbon: 0 Climate resilience: -1 Cultural heritage: +1 Landscape and visual: 0 Biodiversity: -1	Geology and soils: 0 Materials and waste: -1 Noise and vibration: 0 Population and human health: +1 Agriculture and farm holdings: 0 Water environment: -1 Overall environment score: -1	

Abbreviations List

Please refer to PEI Report Chapter 17 Abbreviations.

Glossary

Please refer to PEI Report Chapter 18 Glossary.