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## **5. Description of route options**

### **5.1. Option 1 + NFS**

#### **5.1.1. Introduction**

Option 1/1B + NFS connects to the M5 approximately 4km south of Junction 25 at a free flowing interchange. A variation of this option, with south facing interchange links only, has previously been considered, hence the suffix “NFS” (North Facing Slips) that distinguishes this version. This option joins the route of the existing A358 approximately half way along its length, and then follows the A358 through to the Southfields Roundabout (the A303/A358 junction at Ilminster). This option has the most significant section of offline construction of all the four options under consideration.

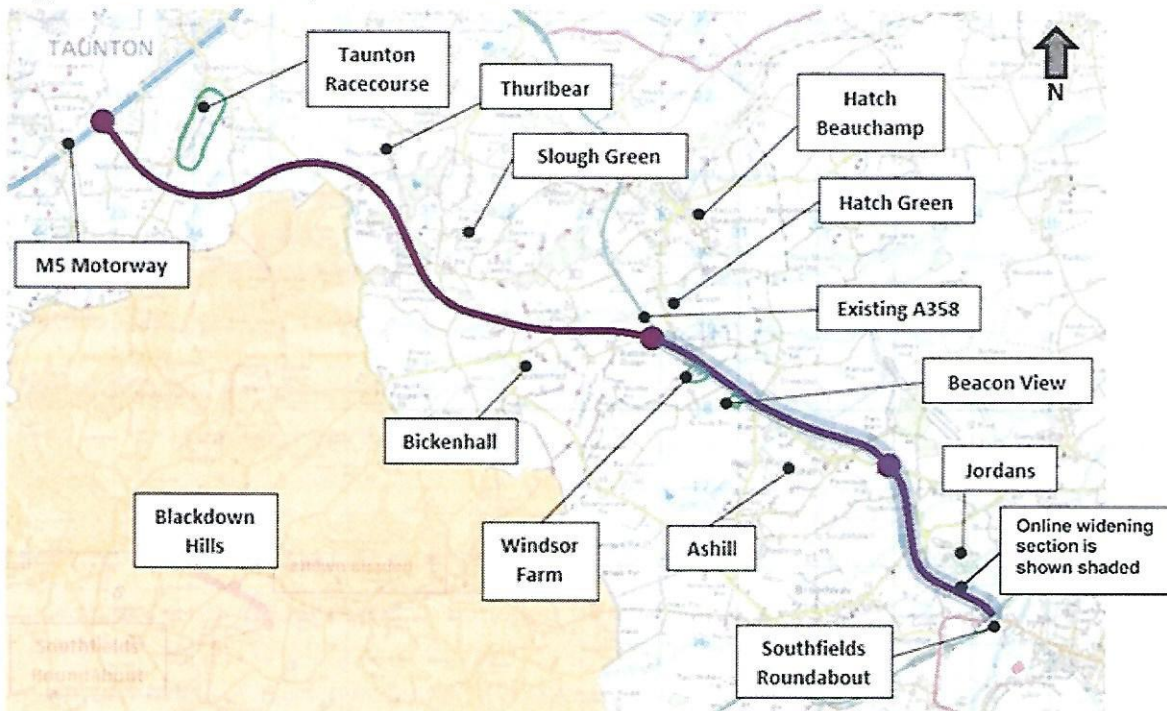
#### **5.1.2. Description of route**

Option 1/1B + NFS connects to the M5 Motorway via a three-way all movements grade separated junction approximately 4km south of Junction 25, adjacent to Taunton Racecourse. The new road initially takes a south-easterly course to run south of the racecourse before bearing northwards to avoid the Blackdown Hills AONB. The route takes an arching course between the Blackdown Hills and the villages of Slough Green and Thurlbear. At Bickenhall the expressway then bears east to join the existing A358 carriageway just south of Hatch Green. The offline section is approximately 8.5km in length.

The route then initially runs parallel to the existing A358 (to the north), for approximately 1km, enabling the existing carriageway to be retained as a local road between Ashill and Hatch Beauchamp. This will also enable the retention of access to existing properties along the route such as Windsor Farm and Beacon View.

Once at Ashill, the proposal involves the application of asymmetrical widening (i.e. the use of the existing single carriageway as one half of the new dual carriageway, and the construction of two new lanes alongside as the opposing carriageway) through to Southfields Roundabout. Around the north of Ashill, the existing carriageway will become the westbound carriageway and so the eastbound carriageway will be formed from new construction to the north. This will minimise impact on residential properties in the village. Between Ashill and Southfields this ‘asymmetrical’ widening is reversed to minimise impact on land associated with Jordans Park Local Wildlife Site.

Figure 5.1: Route Option 1/1B + NFS



### 5.1.3. Possible junctions

An all movements free flowing interchange is proposed at the M5 (Kibbear Farm). An all movements grade separated junction would be provided at Hatch Green to enable interchange with the existing A358 to and from Taunton and access to Hatch Beauchamp. A grade separated junction would be provided at Ashill to provide access to villages near Ashill and Ilton. An at-grade connection would be provided to the Southfields Roundabout with the A303, although local improvements may be required at that junction.

The proposed size and layout of these junctions would be determined during further design development and would be based upon predicted traffic volumes and relevant design standards. Junction locations may also vary to avoid constraints and optimise service to local traffic and non-motorised users.

### 5.1.4. Structures

Structures, primarily overbridges, will be required at each of the interchanges and junctions highlighted in Section 5.1.3. Structures, again primarily overbridges, will also be required in order to carry side roads across the proposed new road and maintain local road connectivity.

Culverts will be required in order to convey existing watercourses under the proposed road and side roads. In some instances these culverts will comprise simple piped cross sections, although for more significant watercourses these structures may need to have rectangular cross sections or be simple integral bridges. It is noted that watercourses such as Broughton Brook, Venners Water and Fivehead River, all of which are crossed

by the route of Option 1/1B + NFS, have flood plains. Depending upon the flood risk assessment, which will be undertaken in full during Stage 3, the structures associated with these watercourses may be significant.

Retaining walls may be required to minimise impact on adjacent property. For Option 1/1B + NFS it is not anticipated that these walls will be significant in quantity or size.

#### **5.1.5. Compliance with standards**

The horizontal and vertical alignment of this option would be fully compliant with geometric design standards for dual two-lane all-purpose roads.

The layout of junctions is generally anticipated to be compliant with the geometric standards for each junction type. However as design development progresses and impact on constraints becomes clear, it may be necessary to relax the standard of provision in which case the appropriate technical approval would be obtained prior to incorporating any reduced elements into the design.

#### **5.1.6. Drainage**

##### **Hydrology**

From the proposed junction with the M5, the first 5km of this route passes through the Black Brook and Broughton Brook catchments. These watercourses eventually drain to the River Tone just downstream of Taunton. As this section comprises a new offline route and there are flood plains associated with the watercourses it is expected that the drainage scheme through this section, which will include new culverts for watercourses and new outfalls from the highway drainage system, will need to meet stringent performance requirements particularly regarding the control of flooding.

The remaining 3.5km of offline section passes through the Fivehead River catchment, which is a tributary of the River Isle. As this section is also new construction the performance requirements for the drainage are also expected to be particularly high.

Along the online widening sections between Hatch Beauchamp and Southfields works will essentially involve the extension of existing crossings of watercourses such as Fivehead River, Venners Water and other tributaries of the River Isle and modifications to existing drainage outfalls. It has been noted that flood mapping obtained from the Environment Agency indicates that some of the existing watercourse crossings appear to act as a throttle, increasing the extents of existing upstream flood plains.

Requirements for these culverts with regards to alleviating existing flooding problems will need to be considered as design progresses.

##### **Design**

Edge of pavement detailing will follow the conventions set out in the Design Manual for Roads and Bridges and Highway Construction Details. Concrete channels will be used for the collection of surface runoff and these channels will outfall to adjacent watercourses via sustainable treatment systems. The treatment measures will vary from

site to site depending upon aspects such as available space and sensitivity of the receiving watercourses, although ponds and basins are expected to be the appropriate method along route Option 1/1B + NFS which runs through a rural area.

Earthworks drainage and pavement foundation drainage will be provided as required in accordance with the Design Manual for Roads and Bridges and where necessitated by geotechnical design.

#### **5.1.7. Summary of benefits**

- This option is likely to involve the highest quality alignment as it will not be subject to constraints such as the alignment of the existing A358 around Hatch Beauchamp Bypass.
- More direct route to the south-west peninsula (SWP).
- Significant amount of construction offline therefore simpler to construct than other options;
- This option is likely to improve network resilience as it involves an additional route and new junction with the M5, enabling separation of strategic traffic to the SWP from other traffic, including local traffic at Henlade.
- Based on correspondence with the utility companies, this option would affect the least amount of existing services compared with other route options.

#### **5.1.8. Summary of issues**

- This is the option that comprises the most amount of offline construction (8.5km) and so the associated environmental and community impacts are likely to be highest for this option. In particular this route would pass very close to the Blackdown Hills AONB.
- This option includes the greatest potential to impact upon side road and NMU crossings.

### **5.2. Option 2A/2B**

#### **5.2.1. Introduction**

This option involves the re-use of the greatest amount of the existing A358 corridor of all four options, taking the route much further north than Option 1/1B + NFS between Hatch Beauchamp and Taunton. The unique feature of this option is that the route passes close enough to the A378 junction at Mattocks Tree Hill to enable direct interchange between the proposed road and the A378.

#### **5.2.2. Description of route**

Starting from the west, Option 2A/2B commences at the M5 approximately 2km south of Junction 25. South facing interchange links commence just north of Shoreditch Road Overbridge and pass over the M5 carriageway to become the new road, which initially passes south of Haydon and north of Stoke Hill.

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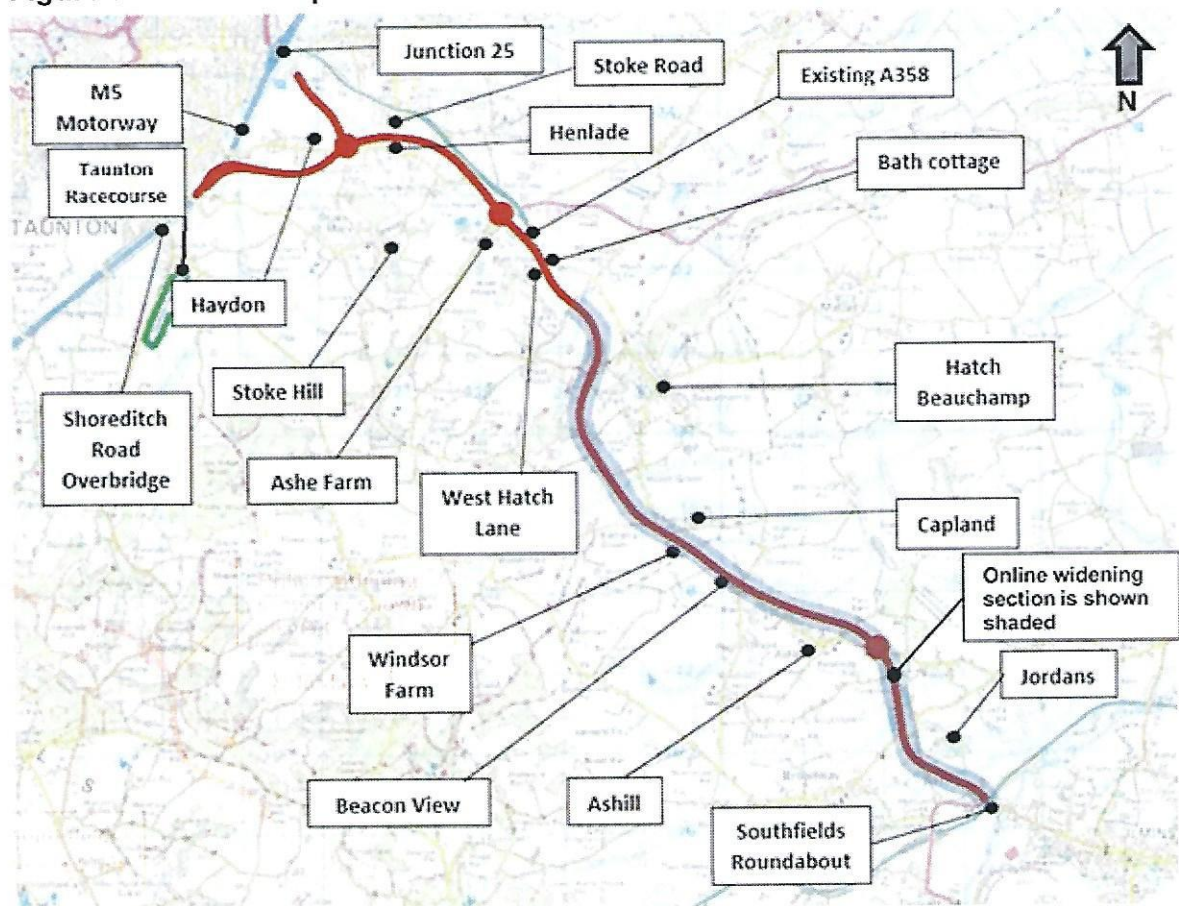
Between Haydon and Henlade a junction is proposed which allows traffic to interchange between the new road and Junction 25 via a new 1.5km dual carriageway link. This link would connect to a new roundabout and link road that are proposed as part of the strategic employment site adjacent to Junction 25.

The main route then passes in a retained cutting through a gap between properties along Stoke Road, Henlade, before running roughly parallel to the existing A358 (approximately 100-200m to the south) and to the north of Diary House Farm and Ashe Farm. The proposed road then meets up with the route of the existing A358 at West Hatch Lane, passing through a gap between Bath Cottage and the Somerset Progressive School. The proposed road then follows the existing A358 Hatch Beauchamp Bypass for 3.5km using asymmetrical widening, the southbound carriageway being formed from the existing road and the northbound carriageway being formed from new construction.

The route is identical to Option 1/1B + NFS from this point onwards. Between Capland and Ashill (approximately 1km) the proposed road takes an offline route just to the north of the existing road. This enables the existing road to be retained as a local route between Ashill and Hatch Beauchamp, and to provide access to existing properties along the route such as Windsor Farm and Beacon View.

Once at Ashill, the proposal involves the application of asymmetrical widening once more through to Southfields Roundabout. Around the north of Ashill, the existing carriageway will become the westbound carriageway and so the eastbound carriageway will be formed from new construction to the north, minimising impact on residential properties in the village. Between Ashill and Southfields this 'asymmetrical' widening is reversed to minimise impact on land associated with Jordans Park Local Wildlife Site.

Figure 5.2: Route Option 2A/2B



### 5.2.3. Possible junctions

A free flowing interchange is proposed with the M5. However this will cater for limited movements, namely westbound A358 traffic joining the M5 southbound and vice versa. Another limited movements junction will be provided to the east which will enable traffic to interchange between the new road and Junction 25 of the M5, subsequently enabling movements to and from the M5 (north) and to and from Taunton.

An all movements grade separated junction would be provided at Mattocks Tree Green to enable interchange with the existing A378. This junction could also serve communities to the south of the route such as Slough Green, Thurlbear and Stoke St Mary, and Hatch Beauchamp. A grade separated junction would be provided at Ashill to provide access to communities near Ashill and Ilton. An at-grade connection would be provided to the Southfields Roundabout with the A303, although local improvements may be required at that junction.

The proposed size and layout of these junctions would be determined during further design development and would be based upon predicted traffic volumes and relevant design standards. Junction locations may also vary to avoid constraints and optimise service to local traffic and non-motorised users.

#### **5.2.4. Structures**

Structures, primarily overbridges, will be required at each of the interchanges and junctions highlighted in Section 5.3.3. Structures, again primarily overbridges, will also be required in order to carry side roads across the proposed new road and maintain local road connectivity.

Culverts will be required to convey existing watercourses under the proposed road and side roads. In some instances these culverts will comprise simple piped cross sections, although for more significant watercourses these structures may need to have rectangular cross sections or be simple integral bridges. It is noted that watercourses such as Broughton Brook, Venners Water and Fivehead River, all of which are crossed by the route of Option 2A/2B, have flood plains. Depending upon the flood risk assessment the structures associated with these watercourses may be significant.

Retaining walls will be required to minimise impact on adjacent property. This will include a retained cutting to the south of Ruishton as the proposed road passes through the gap in property along Stoke Road, and retaining structures to accommodate carriageway widening of the M5 motorway associated with the south facing interchange links. These walls will be necessary to minimise impact upon adjacent residential property, allotments and open space adjacent to the motorway.

#### **5.2.5. Compliance with standards**

An objective of the design development of this option will be to maximise retention of the existing A358 alignment, particularly the Ashill and Hatch Beauchamp Bypasses which were constructed in the 1980s and 1990s and as such are relatively high standard single carriageway construction. However the pair of sweeping bends that carry the A358 around the western periphery of Hatch Beauchamp have been assessed to have substandard horizontal and vertical alignment based on relevant geometric standards for the proposed dual carriageway. These elements are also likely to contribute to sub-standard visibility. It is considered that there is sufficient justification for the retention of this alignment on the basis that it would minimise construction disruption, waste and visual intrusion. There is also precedent in the proposal to incorporate this alignment in the proposed scheme as this was the intention in the previous Announced scheme. It is therefore the intention that technical approval will be obtained for this aspect early in Stage 2.

The layout of junctions is generally anticipated to be compliant with the geometric standards for each junction type. However as design development progresses and constraints become clear, it may be necessary to relax the standard of provision in which case the appropriate technical approval would be obtained prior to incorporating any reduced elements into the design.

### 5.2.6. Drainage

#### Hydrology

From the proposed junction with the M5, the first 4km of this route passes through the Black Brook and Broughton Brook catchments. These watercourses eventually drain to the River Tone just downstream of Taunton. As this section comprises a new offline route and there are flood plains associated with most the watercourses it is expected that the drainage scheme through this section will need to meet stringent performance requirements, particularly regarding the control of flooding.

The following 3.5km will drain into the Widness Rhyne which, via West Sedgemoor, is a tributary of the River Parrett. A significant flood plain is associated with West Sedgemoor, and this is likely to be a factor in the design of drainage for these sections.

Along the online widening sections between Hatch Beauchamp and Southfields works will essentially involve the extension of existing crossings of watercourses such as Fivehead River, Venners Water and other tributaries of the River Isle and modifications to existing drainage outfalls. It has been noted that flood mapping obtained from the Environment Agency indicates that some of the existing watercourse crossings appear to act as a throttle, increasing the extents of existing upstream flood plains.

Requirements for these culverts with regards to alleviating existing flooding problems will need to be considered as design progresses.

#### Design

Edge of pavement detailing will follow the conventions set out in the Design Manual for Roads and Bridges and Highway Construction Details. Concrete channels will be used for the collection of surface runoff, and these channels will outfall to adjacent watercourses via sustainable treatment systems. The treatment measures will vary from site to site depending upon aspects such as available space and sensitivity of the receiving watercourses, although ponds and basins are expected to be the appropriate method along the majority of route Option 2A/2B. The exception to this will be the tie in works at the M5 motorway which are likely to be constrained by the need to minimise impact on adjacent property. In this area flood and pollution control measures are likely to comprise more heavily engineered facilities such as enlarged pipes, tanks and valves.

Earthworks drainage and pavement foundation drainage will be provided as required in accordance with the Design Manual for Roads and Bridges and where necessitated by geotechnical design.

### 5.2.7. Summary of benefits

- This option would use the existing road corridor as much as possible and thus minimise new or increased environmental impact to properties that are remote from the existing road.



- It would include the potential to re-use the existing carriageway construction, subject to condition surveys and geometric design development
- This option is likely to be the optimum solution with respect to impact on local side roads. Furthermore, because it most closely follows the existing route it also offers the greatest potential for remedying severance experienced by communities north and south of the existing A358 as a result of historical upgrades and increases in traffic volumes

### 5.2.8. Summary of issues

- This option is not as direct as Option 1/1B + NFS with regards to strategic traffic to the SWP.
- This option would benefit<sup>3</sup> from the adoption of departures from standards associated with the alignment of two bends around the Hatch Beauchamp Bypass. This would obviously represent a reduction in the quality of the route, although part of the basis of the departures would be that potential safety implications are avoided or adequately mitigated.
- As a result of this option being closest to the existing A358 this option is likely to have the greatest potential impact on traffic during construction.
- Due to its proximity to Henlade and Ruishton this option has the least potential to improve aspects such as noise and air quality to adjacent residents.

## 5.3. Option 8 +J25

### 5.3.1. Introduction

The online section for this option is almost identical to that proposed for Option 2A/2B. However the offline section takes a more southerly route than Option 2A/2B, passing to the south of Ashe Farm and Diary House Farm and around the northern slope of Stoke Hill.

### 5.3.2. Description of route

Option 8/8B +Jct25 commences at the M5 approximately 2km south of Junction 25. South facing interchange links commence just north of Shoreditch Road Overbridge and pass over the M5 carriageway to become the new road, which initially passes south of Haydon. At Stoke Hill a junction is proposed which allows traffic to interchange between the road and Junction 25 via a new 2km dual carriageway link which connects to a roundabout and link road that are proposed as part of the strategic employment site adjacent to Junction 25. The road then continues in a south easterly direction for 2.5km passing to the south of Diary House Farm, Ashe Farm, skirting the northern boundary of Huish Woods and then joining up with the existing A358 corridor at West Hatch Lane.

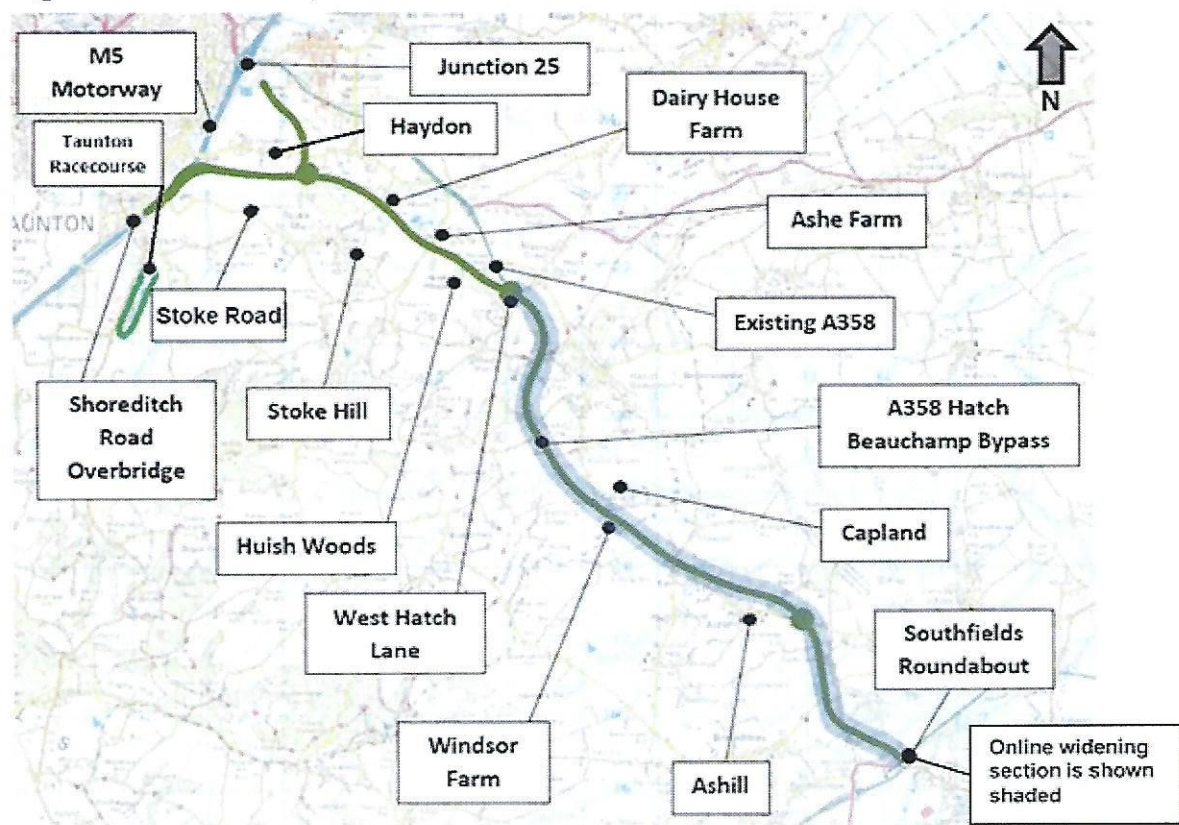
<sup>3</sup> Option 2A/2B is not entirely dependent upon the approval of departures. If departures are rejected this will mean that it will be necessary for the route to take a straightened path through the Hatch Beauchamp Bypass, reducing the amount of online widening.

This option is identical to Option 2A/2B from this point onwards.

The proposed road then follows the existing A358 Hatch Beauchamp Bypass for 3.5km using asymmetrical widening, the southbound carriageway being formed from the existing road and the northbound carriageway being formed from new construction. Between Capland and Ashill, approximately 1km, the proposed road takes an offline route just to the north of the existing road. This enables the existing road to be retained as a local route between Ashill and Hatch Beauchamp, and to provide access to existing properties along the route such as Windsor Farm.

Once at Ashill, the proposal involves the application of asymmetrical widening once more through to Southfields Roundabout. Around the north of Ashill, the existing carriageway will become the westbound carriageway and so the eastbound carriageway will comprise new construction to the north, minimising impact on residential properties in the village. Between Ashill and Southfields this 'asymmetrical' widening is reversed to minimise impact on land associated with Jordans.

**Figure 5.3: Route option 8/8B + Jct25**



### 5.3.3. Possible junctions

A free flowing interchange is proposed with the M5. This will cater for limited movements, namely westbound A358 traffic joining the M5 southbound and vice versa. Another limited movements junction will be provided to the east which will enable traffic

Earthworks drainage and pavement foundation drainage will be provided as required in accordance with the Design Manual for Roads and Bridges and where necessitated by geotechnical design.

#### **5.3.7. Summary of benefits**

- This option would use a significant amount of the existing road corridor and thus minimise new or increased environmental impact to properties that are remote from the existing road.
- It would include the potential to re-use the existing carriageway construction, subject to condition surveys and geometric design development.
- This option offers an alternative route to Option 2A/2B that passes further to the south of Henlade, thus increasing any noise and air quality benefits at Henlade.

#### **5.3.8. Summary of issues**

- This option is not as direct as Option 1/1B + NFS with regards to strategic traffic to the SWP.
- This option would require the adoption of departures from standards to reuse the alignment of two bends around the existing Hatch Beauchamp Bypass. This would obviously represent a reduction in the quality of the route, although part of the basis of the departures would be that potential safety implications are avoided or adequately mitigated.
- As this option follows a significant length of existing A358 there are likely to be challenges associated with the management of traffic during construction.

### **5.4. Option 8 +NFS**

#### **5.4.1. Introduction**

The online section of this option is almost identical to that proposed for Option 2A/2B. The offline section takes a similar route to Option 8/8B + Jct25, although the link to Junction 25 is omitted in favour of a new all-movements junction with the M5, approximately 3.5km south of Junction 25. This option provides an additional north facing connection to the M5 that is not available with Option 8/8B + Jct25, hence the "NFS" (North Facing Slips) suffix.

#### **5.4.2. Description of route**

Option 8/8B + NFS commences at the M5 approximately 3.5km south of Junction 25 at a new two-bridge roundabout which forms a new all-movements junction with the motorway. The proposed road initially takes a north-easterly course past Shoreditch, crossing the B3170 and Stoke Road before arcing around the north of Stoke Hill. In contrast to Option 8/8B + Jct25, there is no link to Junction 25 from this location, and therefore no junction at Stoke Hill.

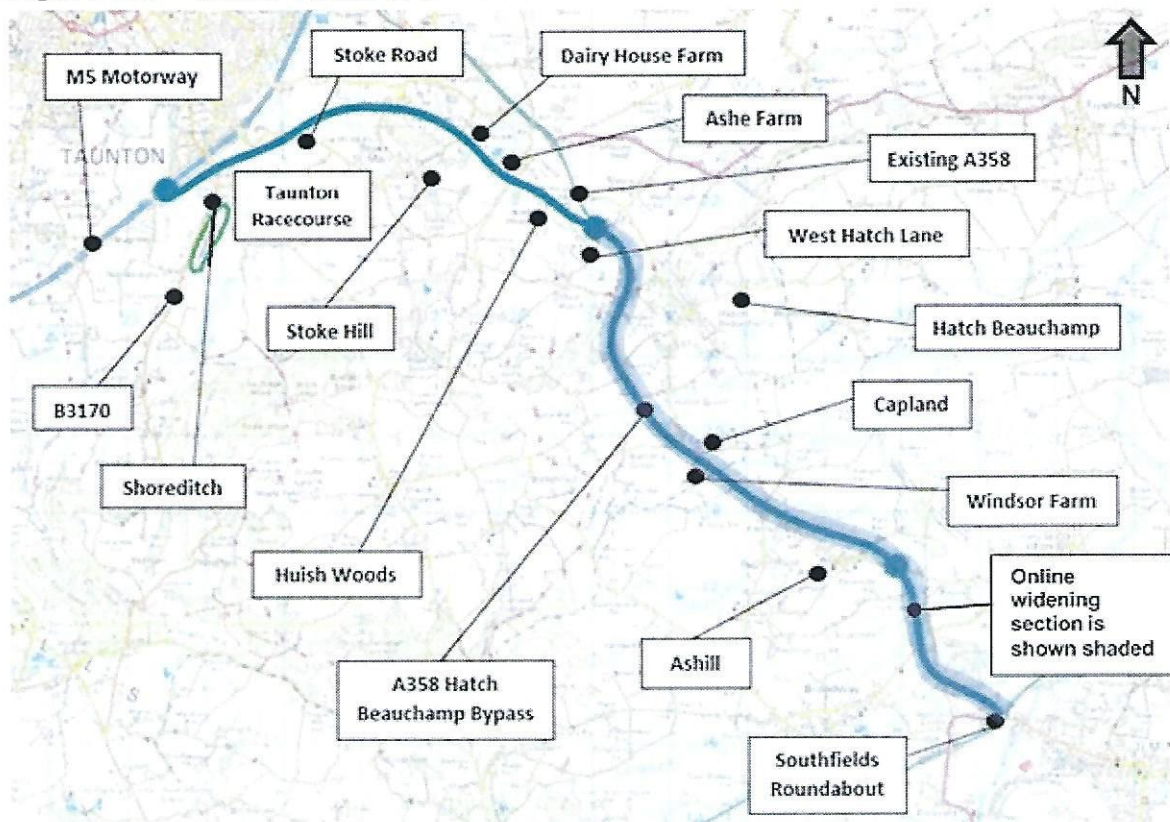
This option is identical to Option 8/8B + Jct25 from this point onwards.

From Stoke Hill the proposed road continues in a south easterly direction for 2.5km passing to the south of Dairy House Farm, Ashe Farm, skirting the northern boundary of Huish Woods and then joining up with the existing A358 corridor at West Hatch Lane.

The proposed road then follows the existing A358 Hatch Beauchamp Bypass for 3.5km using asymmetrical widening, the southbound carriageway being formed from the existing road and the northbound carriageway being formed from new construction. Between Capland and Ashill, approximately 1km, the proposed road takes an offline route just to the north of the existing road. This enables the existing road to be retained as a local route between Ashill and Hatch Beauchamp, and to provide access to existing properties along the route such as Windsor Farm.

Once at Ashill, the proposal involves the application of asymmetrical widening once more through to Southfields Roundabout. Around the north of Ashill, the existing carriageway will become the westbound carriageway and so the eastbound carriageway will comprise new construction to the north, minimising impact on residential properties in the village. Between Ashill and Southfields this 'asymmetrical' widening is reversed to minimise impact on land associated with Jordans Park Local Wildlife Site.

**Figure 5.4: Route Option 8/8B + NFS**



disruption, waste and visual intrusion. There is also precedent in the proposal to incorporate this alignment in the proposed scheme as this was the intention in the previous Announced scheme. It is therefore the intention that technical approval will be obtained for this aspect early in Stage 2.

The layout of junctions is generally anticipated to be compliant with the geometric standards for each junction type. However as design development progresses and constraints become clear, it may be necessary to relax the standard of provision in which case the appropriate technical approval would be obtained prior to incorporating any reduced elements into the design.

#### **5.4.6. Drainage**

##### **Hydrology**

From the proposed junction with the M5, the first 5km of this route passes through the Black Brook and Broughton Brook catchments. These watercourses eventually drain to the River Tone just downstream of Taunton. As this section comprises a new offline route and there are flood plains associated with most the watercourses it is expected that the drainage scheme through this section will need to meet stringent performance requirements, particularly regarding the control of flooding.

The following 3.5km will drain into the Widness Rhyne which, via West Sedgemoor, is a tributary of the River Parrett. A significant flood plain is associated with West Sedgemoor, and this is likely to be a factor in the design of drainage for these sections.

Between Hatch Beauchamp and Southfields, drainage outfalls will be to the Fivehead River, Venners Water and other tributaries of the River Isle. Works will essentially involve the extension of existing watercourse crossings, including those that currently already have flood plains. It has been noted that flood mapping obtained from the Environment Agency indicates that some of these existing watercourse crossings appear to act as a throttle, increasing the extents of existing upstream flood plains. Requirements for these culverts and any associated outfalls from the upgraded road with regards to alleviating existing flooding problems will need to be considered as design progresses.

##### **Design**

Edge of pavement detailing will follow the conventions set out in the Design Manual for Roads and Bridges and Highway Construction Details. Concrete channels will be used for the collection of surface runoff, and these channels will outfall to adjacent watercourses via sustainable treatment systems. The treatment measures will vary from site to site depending upon aspects such as available space and sensitivity of the receiving watercourses, although ponds and basins are expected to be the appropriate method along the majority of route Option 8/8B + NFS. The exception to this will be the tie in works at the M5 motorway which are likely to be constrained by the need to minimise impact on adjacent property. In this area flood and pollution control measures

are likely to comprise more heavily engineered facilities such as enlarged pipes, tanks and valves.

Earthworks drainage and pavement foundation drainage will be provided as required in accordance with the Design Manual for Roads and Bridges and where necessitated by geotechnical design.

#### **5.4.7. Summary of benefits**

- This option would use a significant amount of the existing road corridor and thus minimise new or increased environmental impact to properties that are remote from the existing road.
- It would include the potential to re-use the existing carriageway construction, subject to condition surveys and geometric design development.
- This option offers an alternative route to Option 2A/2B that passes further to the south of Henlade, thus increasing any noise and air quality benefits.
- This option is likely to improve network resilience as it involves an additional route and new junction with the M5, enabling separation of strategic traffic to the SWP from other traffic, including local traffic at Henlade.

#### **5.4.8. Summary of issues**

- This option is not as direct as Option 1/1B + NFS with regards to strategic traffic to the SWP.
- This option would require the adoption of departures from standards in order to reuse the alignment of two bends around the existing Hatch Beauchamp Bypass. This would obviously represent a reduction in the quality of the route, although part of the basis of the departures would be that potential safety implications are avoided or adequately mitigated.
- This option does not include a link to Junction 25. As such Taunton bound traffic will either have to briefly join the M5 motorway via the new junction and then leave the motorway at Junction 25, or leave the proposed route at the West Hatch Junction and travel through Henlade.