

# Appendix 3.9

## TAG Worksheets



**TAG Workbook: Noise**

**APPRAISAL - NOISE POLLUTION**

**Present value base year:**

**Current year:**

**Proposal Opening Year:**

**Average Household Size:**

**Project (Road or Rail):**



**No. of households experiencing 'without scheme' & 'with scheme' noise levels (given in dB<sub>Leq</sub>) in 15th Year After Opening**

	<b>With scheme</b>	<45	45-47.9	48-50.9	51-53.9	54-56.9	57-59.9	60-62.9	63-65.9	66-68.9	69-71.9	72-74.9	75-77.9	78-80.9	81+
<b>Without scheme</b>															
<45		437	26	0	0	0	0	0	0	0	0	0	0	0	0
45-47.9		3	486	62	0	0	0	0	0	0	0	0	0	0	0
48-50.9		0	24	350	15	0	0	0	0	0	0	0	0	0	0
51-53.9		0	4	16	242	37	2	0	0	0	0	0	0	0	0
54-56.9		0	0	6	15	251	67	0	0	0	0	0	0	0	0
57-59.9		0	0	0	6	14	88	6	0	0	0	0	0	0	0
60-62.9		0	0	0	0	0	5	100	33	0	0	0	0	0	0
63-65.9		0	0	0	0	2	2	25	100	19	0	0	0	0	0
66-68.9		0	0	0	0	0	1	0	8	311	57	0	0	0	0
69-71.9		0	0	0	0	0	0	0	16	16	204	3	0	0	0
72-74.9		0	0	0	0	0	0	0	0	0	6	34	2	0	0
75-77.9		0	0	0	0	0	0	0	0	0	0	0	0	0	0
78-80.9		0	0	0	0	0	0	0	0	0	0	0	0	0	0
81+		0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Net Present Value of Noise of Proposal  
(60 Year Period)**

-£399,648

\*positive value reflects a **net benefit**  
(i.e. noise reduction)

**Estimated Population Annoyed (Do-Minimum):**

1039

**Estimated Population Annoyed (Do-Something):**

1051

**Net Noise Annoyance Change in 15th Year After Opening  
(no. of people):**

12

\*positive value reflects an **increase** in  
people annoyed by noise

<b>Air Quality Valuation Summary Worksheet</b>			
<b>Stafford</b>			
<b>Air Quality appraisal</b>			
<b>Summary Assessment</b>			
	Central estimate	Lower estimate	Upper estimate
<b>Present Value of change in PM<sub>10</sub> concentrations:</b>	£1,540,705	£806,712	£1,749,231
<b>Present Value of change in NO<sub>x</sub> emissions:</b>	£6,662	£5,190	£7,568
<b>Total value of change in air quality: £NPV</b>	£1,547,366	£811,902	£1,756,800
Note: All Monetary Values are in 2010 Prices and Values. Positive values reflect a net benefit (ie air quality improvement)			
<b>Quantitative Assessment</b>			
<b>"Net Total Route Assessment" (opening year) for PM<sub>10</sub> :</b>	32		
<b>Change in NO<sub>x</sub> emissions over 60 year appraisal period:</b>	-11		

## 2018 Results

<b>NO<sub>2</sub>, SUMMARY OF ROUTES: THE AGGREGATED TABLE</b>	0-50m (i)	50-100m (ii)	100-150m (iii)	150-200m (iv)	0-200m (v=i+ii+iii+iv)
Total properties across all routes (min)	983	785	771	740	3279
Total properties across all routes (some)	978	787	773	741	3279
<i>Do-minimum</i> NO <sub>2</sub> assessment across all routes	19190.15	13716.24	12797.05	12272.87	Total assessment NO <sub>2</sub> (I): 57976.32
<i>Do-something</i> NO <sub>2</sub> assessment across all routes	19239.04	13763.00	12842.02	12295.51	Total assessment NO <sub>2</sub> (II): 58139.58
<b>Net total assessment for NO<sub>2</sub>, all routes (II-I)</b>					163.26
<i>Number of properties with an improvement</i>					762
<i>Number of properties with no change</i>					0
<i>Number of properties with a deterioration</i>					2517

<b>PM10, SUMMARY OF ROUTES: THE AGGREGATED TABLE</b>	0-50m (i)	50-100m (ii)	100-150m (iii)	150-200m (iv)	0-200m (v=i+ii+iii+iv)
Total properties across all routes (min)	983	785	771	740	3279
Total properties across all routes (some)	978	787	773	741	3279
<i>Do-minimum</i> PM10 assessment across all routes	15205.43	11846.21	11465.58	11024.49	Total assessment PM10 (I): 49541.70
<i>Do-something</i> PM10 assessment across all routes	15157.05	11878.72	11497.48	11040.49	Total assessment PM10 (II): 49573.74
<b>Net total assessment for PM10, all routes (II-I)</b>					32.04
<i>Number of properties with an improvement</i>					762
<i>Number of properties with no change</i>					0
<i>Number of properties with a deterioration</i>					2517

## 2025 Results

<b>PM10, SUMMARY OF ROUTES: THE AGGREGATED TABLE</b>	<b>0-50m</b>	<b>50-100m</b>	<b>100-150m</b>	<b>150-200m</b>	<b>0-200m</b>
	(i)	(ii)	(iii)	(iv)	(v=i+ii+iii+iv)
Total properties across all routes (min)	1064	839	771	740	3414
Total properties across all routes (some)	1059	787	773	741	3360
<i>Do-minimum PM10 assessment across all routes</i>	15990.49	12253.50	11446.29	10663.73	Total assessment PM10 (I): 50354.01
<i>Do-something PM10 assessment across all routes</i>	16146.31	11543.99	11290.24	10824.70	Total assessment PM10 (II): 49805.24
<b>Net total assessment for PM10, all routes (II-I)</b>					-548.78
<i>Number of properties with an improvement</i>					1394
<i>Number of properties with no change</i>					0
<i>Number of properties with a deterioration</i>					1966



**Worksheet 2 - Regional Air Quality**Option name StaffordOpening year 2018 Forecast year 2025

		Without scheme		With scheme		Change in emissions	
		Opening year	Forecast year	Opening year	Forecast year	Opening year	Forecast year
NOx emissions in tonnes per year	Areas not exceeding limit values	14.7	8.8	14.0	8.6	-0.7	-0.1
	Areas exceeding limit values	0.0	0.0	0.0	0.0	0.0	0.0

Qualitative comments: \_\_\_\_\_

Data Sources: \_\_\_\_\_

## APPRAISAL - Greenhouse Gases

Proposal Name: **Stafford Western Access Road**

Present Value Base Year: **2010**

Current Year: **2014**

Proposal Opening year: **2018**

Project (Road/Rail or Road and Rail): **Road**

### Overall Assessment Score:

Net Present Value of Carbon dioxide Emissions of Proposal (£):

**-£32,886**

(60 Year Period)

\*positive value reflects a net benefit (i.e. CO2E emissions reduction)

### Quantitative Assessment:

Change in Carbon dioxide Emissions over 60 year appraisal period (tonnes):

**527**

(between 'with scheme' and 'without scheme' scenarios)

Of which Traded

**0**

Change in Carbon dioxide Emissions in Opening year (tonnes):

**-210**

(between 'with scheme' and 'without scheme' scenarios)

### Qualitative Comments:

Emissions were calculated using the Emission Factor Toolkit v6.01 rather than TUBA.

For this assessment only non traded vehicle carbon dioxide emissions have been determined.

Change in emissions 2018-2022 in MtCO<sub>2</sub> = -0.00008

Change in emissions 2023-2027 in MtCO<sub>2</sub> = -0.0003

Change in emissions over 60 year appraisal period 2021 - 2080 in MtCO<sub>2</sub> = 0.0005

### Sensitivity Analysis:

Description: Only Core traffic scenario analysed

Upper Estimate Net Present Value of Carbon dioxide Emissions of Proposal (£):

**-£52,597**

Lower Estimate Net Present Value of Carbon dioxide Emissions of Proposal (£):

**-£13,175**

### Data Sources:

Traffic data supplied by Atkins Highways and Transportation

Carbon dioxide emissions for 2019 to 2024 based on linear interpolation between 2018 and 2025.

Carbon dioxide emissions for 2026 to 2032 based on linear interpolation between 2025 and 2033.

**TAG Worksheet: Landscape**

<b>Features</b>	<b>Description</b>	<b>Scale it matters</b>	<b>Rarity</b>	<b>Importance</b>	<b>Substitutability</b>	<b>Impact</b>	<b>Additional* Mitigation</b>
Pattern	<p>Low lying marshland subdivided by water courses, and areas of scrub and damp woodland. Enclosure provided by woodland and scrub and surrounding urban development.</p> <p>Beyond the marshland, to the north, landscape is open rolling pastoral with irregular field pattern of low hedges. Occasional over-grown hedges limit views.</p>	local	Locally uncommon	High importance at local level	Internal pattern 20 - 50 years; 50 – 100 years to replace mature trees and woodland.	<p>Loss of wet woodland is compensated in the scheme, and additional planting provides landscape enhancement.</p> <p>Slight beneficial</p>	
Tranquillity	Sense of separation from urban surroundings, but intrusion from local road and rail noise.	Local	common	Low importance	N/A	Neutral	
Cultural	<p>Marsh with drainage control, relic water meadows. Traditional field pattern evident.</p> <p>Network of paths provide for informal recreation.</p>	Local	Uncommon	High importance at local level	10-15 years to develop replacement marsh habitat and informal recreation area of similar character.	<p>New ‘nature conservation’ amenity area created to north east of SSSI with interpretation.</p> <p>New amenity area north of Castletown.</p> <p>Moderate beneficial</p>	
Landcover	<p>Doxey Marshes SSSI; semi natural reedbeds and marshland with damp woodland managed for nature conservation.</p> <p>Beyond marshes pastoral small irregular fields bounded by hedgerows beginning to break down/</p>	Local, regional	Rare	High importance at national level	10-15 years	Neutral	

<b>Features</b>	<b>Description</b>	<b>Scale it matters</b>	<b>Rarity</b>	<b>Importance</b>	<b>Substitutability</b>	<b>Impact</b>	<b>Additional* Mitigation</b>
Summary of character	<p>Ancient Clay Farmlands in the Staffordshire Plain. Landscape quality is high; policy objective is landscape maintenance: substantial emphasis should be placed on ensuring development blends unobtrusively into the landscape.</p> <p>Influenced by adjacent development, but currently well contained by characteristic vegetation on urban fringe.</p>	local	Uncommon	Medium importance at local level		Neutral	

Reference Source(s): *Planning for Landscape Change* – Supplementary Planning Guidance to the Staffordshire and Stoke on Trent Structure Plan, 1996-2011.

Summary assessment score: Slight beneficial

## TAG Worksheet: Townscape

Features	Description	Scale at which it matters	Rarity	Importance	Substitutability	Changes in do minimum	Impact	Additional Mitigation
<b>Layout</b>	<p>An industrial estate of loose grain, comprising large, single use units with associated parking/ servicing areas. (map ref 1)</p> <p>Open, surface car parking areas. (map ref 5)</p> <p>Very close grain terraced houses fronting Doxey Rd. Traditional 'grid iron' street pattern. (map ref 4)</p> <p>Remnant railway structures/ routes. (map ref 3)</p> <p>Looser grain terraced houses are set back off Spruce Way. Modern cul-de-sac road layout. (map ref 2)</p> <p>Large footprint, purpose-built works and office buildings. (map ref 6)</p>	<p>Majority local.</p> <p>Castletown and Unicorn Works are local – sub-regional. (map ref 1)</p>	Locally – sub-regionally distinctive.	Elements of local – sub-regional importance.	<p>Existing areas of adjacent street layout are unaffected by this route.</p> <p>It would be difficult to replicate historic street patterns, given modern highways standards.</p>	<p>Majority of area is unlikely to change in the foreseeable future.</p> <p>However, the former Unicorn Works is a development site.</p>	<p>Proposed route links various elements of existing roadway (through the industrial estate, alongside the surface car park, along Doxey Rd then to Martin Drive).</p> <p>Greatest impacts are on the loosest grained areas – namely, the former/ present industrial areas.</p>	Attention to detailed design where the proposed route connects with the existing highway network.
<b>Density &amp; Mix</b>	<p>Townscape is mostly 'zoned' into single uses. Lowest density in industrial areas (map ref1); highest density in traditional housing area (of Castletown) (map</p>	Local	Common	Low	Unaffected		Largely unaffected, given the accepted redevelopment potential of the former Unicorn Works site.	

	ref 4).							
<b>Scale</b>	Large scale industrial/ warehouse buildings (map ref 1). Modern, 3-storey, 'town house' terraced properties (map ref 2). Intimate, 2 storey, former workers' 'terraced cottages' (map ref 4).	Local	Common  Some local distinction.	Some local importance.	Unaffected		Largely unaffected. Only demolition of buildings will occur on the former Unicorn Works site.	
<b>Appearance</b>	Modern industrial buildings are indistinctive. Modern housing is indistinctive. Former Unicorn Works is locally distinctive (map ref 1). Terraced housing in Castletown is locally distinctive (map ref 4). Existing and remnant railway structures add local distinction (map ref 3).	Local – sub-regional.	Some local distinction.	Some local – sub-regional importance.	Edges of existing townscape are affected, for as long as the route is in existence.		Proposed position of new traffic island, away from the edge of Castletown, reduces the potential physical impact on the townscape edge.  Demolition of former Unicorn Works office is a physical impact.	Indigenous tree and shrub planting to ameliorate the impact of the road, particularly on the open edges of the townscape, such as alongside Doxey Marshes (adjacent the new traffic island) and towards the connection with Martin Drive.
<b>Human Interaction</b>	Some pedestrian activity between car parks and industrial/ retail warehouse units (map ref 5 and 6). Normal domestic interactions within housing areas – possibly more in Castletown due to	Local	Common	Low	Pedestrian movements between car parking and uses will be affected, but should be able to be adapted/ adjusted.		Will redefine some peripheral pedestrian movement patterns associated with car parks. Potentially increases severance between new residential areas	Design and frequency of pedestrian crossing points, in order to perpetuate existing pedestrian movements/ desire lines.

	density.						either side of Doxey Rd.	
<b>Cultural</b>	Castletown is an architectural and cultural asset. Parts of the Unicorn Works, primarily the former office buildings, are also of notable architectural value. Remnant railway features provide local enrichment.	Local	Some local – sub-regional distinction.	Some local, possibly sub-regional, importance.	Historic environment is a non-renewable resource. Former Unicorn Works will be permanently affected. There will be minimal permanent impact on the north eastern aspect of Castletown.		Demolition of former Unicorn Works office.	
<b>Land Use</b>	Industrial Commercial Residential Car parking	Local	Common	Low	Open/ circulatory areas can be adjusted.		Minimal	
<b>Summary of Character</b>	A series of ‘single use’ townscape areas, of varying quality. Most valuable are the traditional, historical areas, existing and remnant.	Local – sub-regional.	Mainly common.  Some local – sub-regional rarity in remaining historic townscape elements.	Mainly low.  Some local and sub-regional importance.	n/a	Low anticipated level of change, overall, excepting the potential redevelopment of the former Unicorn Works.	Low impact overall, given extant permissions/ intentions.	

#### Reference sources:

Primarily site observation, but also Staffordshire CC Historic Environment Record. (Cross-referenced with Environment Landscape assessment.)

#### Summary Assessment score:

Minor negative.

#### Qualitative comments:

This option runs along existing highway and open car park. Where it deviates from this, it creates additional space between the proposed routeway and the edge of Castletown, providing the opportunity for amelioration.

## TAG Worksheet: Historic Environment

Part 1		Part 2			Part 3
Feature	Description	Scale it matters	Significance	Rarity	Impact
Form	<p>This option indirectly impacts upon the Stafford Foregate Conservation Area (CA No.137).</p> <p>The route clips the corner of a series of well preserved 19<sup>th</sup> century water meadow (PRN 52113) which lie within the Doxey Marsh SSSI.</p> <p>The routes bisects two dismantled railway lines; the Stafford &amp; Uttoxeter and the Stafford to Wellington Railways (PRN 50735 &amp; 50655).</p> <p>It is possible that palaeoenvironmental remains are present within the impacted area.</p>	<p>Local.</p> <p>As above.</p> <p>As above.</p> <p>As above.</p>	<p>National</p> <p>Local</p> <p>As above.</p> <p>As above.</p>	<p>This Conservation Area represents a unique historic character area within Stafford.</p> <p>Moderately rare taking into consideration their survival and condition.</p> <p>Not rare.</p> <p>Unknown.</p>	<p>Concerns were raised regarding the potential slight adverse impact (vibration, noise light and vehicle pollution) an increase in traffic numbers could have upon the character of the nearby Foregate Conservation Area (CA No.137).</p> <p>A traffic study undertaken by WS Atkins indicates that the new route will result in a reduction in traffic entering from the west. It is anticipated that if this reduction is realised the scheme will have a neutral impact upon the Conservation Area.</p> <p>The course of the route will clip the corner of the water meadow system and will bisect the lines of the two railways. The course of the route may also impact locally upon any surviving palaeoenvironmental remains.</p>



Part 1		Part 2			Part 3
Survival	<p>The boundary of the current Conservation Area is recorded on the Historic Environment record. This boundary may change during future Conservation Area Appraisals.</p> <p>The water meadows survive in good condition although along the proposed route all earthworks have been removed.</p> <p>The line of the Stafford &amp; Uttoxeter railway survives as a cycle path while the line of the Stafford to Wellington Railway does not survive as a visible feature.</p> <p>Taking into consideration low lying and water logged nature of Doxey marshes it is likely that palaeoenvironmental remains will survive.</p>	<p>The historic buildings within this Conservation Area are important elements in forming its unique character.</p> <p>Local.</p> <p>Local.</p> <p>Potentially nationally important.</p>	<p>National</p> <p>Undesignated.</p> <p>Undesignated.</p> <p>Potentially nationally important.</p>	<p>Many of the historic built assets can be found elsewhere although the Stafford Infirmary building is unique within the town.</p> <p>Upstanding remains do not survive in this area.</p> <p>The line of the Stafford to Uttoxeter railway survives as a track although it will not be impacted by this option.</p> <p>Similar remains have been recovered from elsewhere in Stafford</p>	<p>The route will not physically affect the survival of historic character elements of the Conservation Area.</p> <p>It is calculated that the overall impact of the route will be neutral.</p> <p>Impact will be neutral upon both railway lines.</p> <p>The route will have a localised impact upon any palaeoenvironmental remains present.</p>
Condition	<p>The character of the Stafford Foregate Conservation Area has been impacted by twentieth century developments including the construction of a commercial retail park. Elements do survive including the hospital and areas of nineteenth century terraced housing and factory buildings.</p> <p>This option will not impact upon the form of the surviving water meadow system.</p> <p>The railway lines survive in relatively poor condition.</p> <p>No palaeoenvironmental work has been conducted in this area to test the potential condition of surviving remains.</p>	<p>Local.</p> <p>Local.</p> <p>Local.</p> <p>Potentially nationally important.</p>	<p>National.</p> <p>Undesignated.</p> <p>Undesignated.</p> <p>Undesignated.</p>	<p>N/A.</p> <p>N/A.</p> <p>Not rare.</p> <p>Unknown.</p>	<p>The route will not physically affect the condition of historic character elements of the Conservation Area. The general impacts may be through increases in noise levels, light pollution and vehicle pollution.</p> <p>The route will not impact upon upstanding remains of the water meadow system. Impact will be neutral.</p> <p>The overall condition on these two historic assets will be neutral.</p> <p>Minimal direct impact. However, there could be more widespread indirect impacts in the area of the route through changes to the water table.</p>

Part 1		Part 2			Part 3
Complexity	<p>The character of the Conservation Area is dominated by a mixture of nineteenth and twentieth century development. No earlier architectural features are present within the area.</p> <p>From available documentary evidence these features represent single phase construction episodes.</p> <p>The two railway lines are part of the transport network for Stafford but do not add significantly to the historic character of the area.</p> <p>The HER suggests low potential for archaeological remains to be associated with <u>palaeoenvironmental remains</u>.</p>	<p>National.</p> <p>Local.</p> <p>Local.</p> <p>Not known.</p>	<p>Designated nationally important as a Conservation Area.</p> <p>Undesignated.</p> <p>Undesignated.</p> <p>Undesignated.</p>	<p>N/A.</p> <p>N/A.</p> <p>Not rare.</p> <p>N/A.</p>	<p>N/A.</p> <p>The route will interrupt the water meadow system and could potential impact upon the legibility of this feature in the landscape.</p> <p>Minimal impact.</p> <p>N/A.</p>
Context	<p>The Stafford Foregate Conservation Area sits within a broader historic townscape as identified in the Stafford Extensive Urban Survey. The area originated as 12<sup>th</sup>/13<sup>th</sup> century suburban expansion but is now characterised by 19<sup>th</sup>/20<sup>th</sup> century development.</p> <p>The water meadows sit with Doxey marshes. Originally these agricultural features sat hinterland of Stafford. Currently they are surrounded by residential, industrial and commercial development.</p> <p>The railways help to define the nineteenth century townscape. While they have been dismantled their routes have influenced the wider development of the town in this area.</p> <p>The HER suggests low potential for archaeological remains to be associated with <u>palaeoenvironmental remains</u>.</p>	<p>National.</p> <p>The water meadow exists as a landscape feature. However, much of its context has been lost through 20<sup>th</sup> century development.</p> <p>Local.</p> <p>Potentially nationally important.</p>	<p>Designated nationally important as a Conservation Area.</p> <p>Undesignated.</p> <p>Undesignated.</p> <p>Undesignated.</p>	<p>N/A.</p> <p>Not rare.</p> <p>Not rare.</p> <p>Unknown.</p>	<p>The route will impact upon the context of the Conservation Area. However, the degree of impact will be minimal and will extend over what traditionally has functioned as agricultural land.</p> <p>There are no recorded historic features directly associated with the surviving water meadows. The route would therefore not impact upon the context of the water meadows.</p> <p>The extant railway line survives within a significantly altered landscape; however elements do survive.</p> <p>The HER suggests low potential for associated archaeological remains.</p>

Part 1		Part 2			Part 3
Period	The historic assets are largely associated with 19 <sup>th</sup> century activity. Palaeoenvironmental remains will potentially span a much greater period.	Local.	Undesignated	Not rare throughout the county.	N/A

Reference Source(s): Staffordshire County Council Historic Environment Record, the Stafford Historic Character Assessment, the Staffordshire Water Meadows Survey and the Stafford Extensive Urban Survey.

Summary assessment score: Slight negative adverse effect.

Qualitative comments: **Option 3** will impact upon a range of largely 19<sup>th</sup> century historic assets; only one of which is designated (ie the Stafford Foregate Conservation Area). However, the WS Atkins traffic assessment suggests that the proposed scheme will result in a reduction in traffic numbers entering the Conservation Area from the West. It is therefore considered that the impact of the proposed scheme on the Conservation Area will be neutral. Option 3 will clip the southern extent of the water meadow system as identified on the HER although it is unlikely that archaeological remains of the water meadow survive within this area. There still remains the potential for the route to impact upon surviving palaeoenvironmental remains, prehistoric trackways etc.

**Worksheet 1 Environment: Biodiversity - Plan Level**

**Scheme / option: Stafford Western Access Route**

Area	Description of feature / attribute	Scale (at which attribute matters)	Importance (of attribute)	Trend (in relation to target)	Biodiversity and earth heritage value	Magnitude of impact	Assessment score
Doxey & Tillington Marshes SSSI Map Ref 1	An extensive area of low-lying damp grassland, marsh, swamp and pools in the flood plain of the River Sow, reaching almost into the centre of Stafford. The site is of ornithological importance all year round and has special significance for the numbers of breeding snipe <i>Gallinago gallinago</i> . This species has seriously declined in lowland Britain through land drainage and the population at Doxey and Tillington Marshes is the largest in lowland Staffordshire. There is also one of the largest areas of reed sweet-grass <i>Glyceria maxima</i> swamp in the county. Records of several protected species including otter, bats, badger, kingfisher common toad. Hydrology is a key factor in maintenance of SSSI condition.	National	Very High – for nationally rare habitat, breeding and wintering bird assemblage	98.8% meets PSA target 22.27% favourable 76.61% unfavourable recovering 1.12% destroyed	High	Minor negative Potential to be neutral by inclusion of restoration of already destroyed area and adjacent habitat map ref 2, 3 & 4	Neutral
Doxey Marshes Nature Reserve Map Ref 1	As above. A wardened nature reserve with dedicated staff. Many thousands of visitors per year including high educational value. Access to wildlife close to residential areas.	Regional	Very High – close to residential area, “flagship” nature reserve	Unknown	High	Potential to be positive by inclusion of restoration of adjacent habitat and link to recreational routes Map ref 3	Slight beneficial
Protected and Biodiversity Action Plan species	Records for otter, water vole, bats, badger, kingfisher common toad, reptiles, breeding birds	County	High – rare to find a site that supports such a wide assemblage	Mixed, depending on species	High	Minor negative, potential to be neutral through mitigation	Neutral
UK & Staffordshire Biodiversity Action Plan habitat River Map ref 5	River Sow, relatively natural river profile. East bank lined by mature willows and poplars. West bank by a few scattered young willow. Nettle dominated with Himalayan balsam frequent at river edge, other species include branched bur-reed, white water lily, reed sweet-grass and reed canary-grass. River narrow, water clear, bottom silty.	County	High – one of the County’s larger waterways	Improving	High	Minor negative, potential to be neutral	Slight adverse/ Neutral
Doxey Drain (Railway sidings to Martin Drive) Map ref 6	Area of mixed scrub, tall ruderals, ditches, marsh and rough grassland habitat along Doxey Drain. No habitat or species information available, requires survey.	Local	Needs survey to allow assessment	Needs survey to allow assessment	Needs survey to allow assessment	Major negative	Slight adverse? ?

Reference Source(s):\_ Natural England [http://www.sssi.naturalengland.org.uk/Special/sssi/sssi\\_details.cfm?sssi\\_id=1001006](http://www.sssi.naturalengland.org.uk/Special/sssi/sssi_details.cfm?sssi_id=1001006) Staffordshire Biodiversity Action Plan, <http://www.sbap.org.uk/> Staffordshire Ecological Record <http://www.staffs-ecology.org.uk/> Walkover survey Ali Glaisher August 2009 site meeting with Grady Mclean Natural England & Kate Dewey Staffordshire Wildlife Trust March 19<sup>th</sup> 2010 \_

Summary assessment score: \_\_\_\_\_ Neutral \_\_\_\_\_

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Qualitative comments: The Doxey & Tillington Marshes SSSI is unique in quality and extent of habitat to the West Midlands Region. The Wildlife Trust Nature Reserve is unusual in its proximity and accessibility to residential communities. The likely extent of impact on the SSSI has been assessed by Natural England who has advised on mitigation and compensation requirements. This will be achieved through restoration of the sections of the car and lorry parks to the west of the road route. The destroyed SSSI area will be restored to wetland habitats while the area outside the SSSI will be restored to grassland habitats. Construction methods will minimise impacts on the SSSI and include restoration of affected habitat adjacent to Doxey Road. There will be inevitable loss of habitat of probable local importance to the western stretch of the road between the railway sidings and Martin Drive. There may be protected species issues, including otters, badgers, bats, water vole, amphibians, reptiles and birds. Mitigation of impacts on protected and Biodiversity Action Plan priority species will be included in the scheme. Survey and assessment will be carried out, including hydrological assessment, to inform design, mitigation and compensation. Japanese knotweed is present near Doxey Road. This will be treated appropriately.

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**Construction Impacts including Mitigation**

Study Area Description (junction)	Feature	Potential Impacts	Attributes/ Services	Quality*	Scale	Rarity	Substitutability	Importance	Magnitude	Significance
Stafford Western Access Improvement Road Green Option Construction Impacts including Mitigation	Doxey Drain	Reduction in water quality	Local drain, feeds in to larger river downstream	Fair/Good	Local	Medium	Low	Medium	Minor	Insignificant
		Change in flow conditions	Surface water drain and flood plain	Fair	Local	Medium	Low	Medium	Minor	Insignificant
	Tillington Drain	Reduction in water quality	Biodiversity and aesthetics	Unknown	Local	Low	Medium	Medium	Minor	Insignificant
		Change in flow conditions	Surface water drain and flood plain	Unknown	Local	Low	Medium	Medium	Minor	Insignificant
	Doxey and Tillington Marshes SSSI and watercourse within SSSI	Changes in groundwater and surface water flow within the SSSI. and flood risk	Flow regime and flooding	Good	National	High	Low	Very High	Negligible	Low Significance
		Changes in water quality and habitat of the SSSI	Biodiversity and aesthetics	Good	National	High	Low	Very High	Negligible	Low Significance
	River Sow	Reduction in water quality	Biodiversity and aesthetics	Good/Fair	Regional	Medium	Low	Medium	Minor	Insignificant
		Change in flow conditions	Large water course and flood plain	Good/Fair	Regional	Medium	Low	Medium	Minor	Insignificant
	Groundwater	Reduction in the water quality	Groundwater contamination of base flow to Doxey Drain.	Unknown	Local	Low	Medium	Low	Moderate	Insignificant
		Reduction in infiltration and flow of groundwater	Minor contribution of base flow to water courses	Medium	Local	Low	Medium	Low	Minor	Insignificant

**Operational Impacts with Mitigation**

Study Area Description (junction)	Feature	Potential Impacts	Attributes/ Services	Quality*	Scale	Rarity	Substitutability	Importance	Magnitude	Significance
Stafford Western Access Improvement Road Green Option  Operational Impacts including Mitigation	Doxey Drain	Reduction in water quality	Local drain, feeds in to larger river downstream	Fair/Good	Local	Medium	Low	Medium	Minor	Insignificant
		Change in flow conditions	Surface water drain and flood plain	Fair	Local	Medium	Low	Medium	Minor	Insignificant
	Tillington Drain	Reduction in water quality	Biodiversity and aesthetics	Unknown	Local	Low	Medium	Medium	Minor	Insignificant
		Change in flow conditions	Surface water drain and flood plain	Unknown	Local	Low	Medium	Medium	Minor	Insignificant
	Doxey and Tillington Marshes SSSI and watercourse within SSSI	Change to surface and groundwater flow (flood risk)	Flow regime and flooding	Good	National	High	Low	Very High	Negligible	Low Significance
		Viaduct foundations change groundwater flow							Negligible	Low Significance
		Changes in water quality and habitat of the SSSI	Biodiversity and aesthetics	Good	National	High	Low	Very High	Negligible	Low Significance
	River Sow	Reduction in water quality	Biodiversity and aesthetics	Good/Fair	Regional	Medium	Low	Medium	Minor	Insignificant
		Change in flow conditions	Large water course and flood plain	Good/Fair	Regional	Medium	Low	Medium	Minor	Insignificant
		Change in flow conditions due to viaduct	Flood plain	Good/Fair	Regional	Medium	Low	Medium	Moderate	Low Significance
	Groundwater	Reduction in the water quality	Groundwater contamination of base flow to Doxey Drain.	Unknown	Local	Low	Medium	Low	Negligible	Insignificant
		Reduction in infiltration and flow of groundwater	Minor contribution of base flow to water courses	Medium	Local	Low	Medium	Low	Negligible	Insignificant

**Reference Sources:**

- Data from the Environment Agency consisting of flow and water quality data for a number of watercourses, groundwater vulnerability maps, flood maps and the identification of Source Protection Zones (SPZs).
- The Water Environment Sub-Objectives, Tag Unit 3.3.11, June 2003, Department for Transport, Transport Analysis Guide (TAG).

**Summary Assessment Score:** Neutral impacts for quality in the water environment with the implementation of good practice mitigation measures and Slight Adverse impacts for hydrological changes within the SSSI, water courses and groundwater and also for quality changes within the SSSI.

**Qualitative Comments:** The Scheme does not affect any Source Protection Zones in the area, although it does affect the floodplains of the water courses to which the road scheme crosses. At three locations work across the watercourses would be within the flood plain. The increase in impermeable surface area will cause run-off rates from the road's surface to increase but would be managed within the road drainage system.

The Slight Adverse Impact score has been achieved by implementing mitigation measures so that no discharges from the road scheme will be made to water courses within the SSSI however implications on the SSSI as a result of the construction and operation of the road scheme need further consideration in terms of the mitigation measures to be employed in order to minimise such risks.

Once hydrological, hydrogeological and geotechnical information from ground investigations has been obtained, the level of impact and potential mitigation measures will be reassessed during the next stage of assessment



### TAG Worksheet: Journey Quality

Factor	Sub-factor	Better	Neutral	Worse
Traveller Care	Cleanliness		n/a	
	Facilities		n/a	
	Information		✓	
	Environment		n/a	
Travellers' Views	-	✓		
Traveller Stress	Frustration	✓		
	Fear of potential accidents	✓		
	Route uncertainty		✓	

Reference Source(s): Webtag 3.3.13 and Stafford Saturn Model

Summary assessment score: **Large Beneficial**

Qualitative comments: Frustration will be reduced as the road layout and geometry, condition of the network and ability to make good progress along a route are all better with the Green route in place. Fear of potential accidents will also reduce as the new highway will be built to superior design standards and avoid areas where there is a high pedestrian movement. As the AADT for this route is over 10,000, the summary assessment score is large beneficial.

## TAG Worksheet: Security

Security Indicator	Relative importance (High/Medium/Low)	Without strategy (Poor/Moderate/High)	With strategy (Poor/Moderate/High)
Site perimeters, entrances and exits	N/A	N/A	N/A
Formal surveillance	Medium	High	High
Informal surveillance	Medium	Moderate	Moderate
Landscaping	Medium	Moderate	Moderate
Lighting and visibility	High	High	High
Emergency call	N/A	N/A	N/A
Pedestrian and cyclist facilities	Medium	High	High

Approximate numbers of users affected:

Overall assessment of impact on Security sub-objective (slight/moderate/large positive/negative or neutral): **Neutral**

Reference Source(s): Webtag 3.4.2

Qualitative comments: Existing routes are well lit with good informal surveillance as part of the town centre. New route will be designed to a high standard as regards security with good informal surveillance as passing through existing residential and retail areas.

## TAG worksheet: Severance

Change in Severance	Population Affected								
	Chell Road	Rail Station	Doxey Road adjacent to rail bridge	Doxey Road adjacent to Castletown (North of Sainsburys roundabout)	Grey Friars Place	A34 Foregate Street/ Grey Friars Place junction	A34 Grey Friars/ Foregate Street/ Browning Street	West Way/ A518 Newport Road	Total Affected
Large negative									
Moderate negative									
Slight negative			85						85
Neutral			419			1693	908		3020
Slight positive	5624	2415							8039
Moderate positive									
Large positive									

### Reference Source

Webtag Unit A4.1 Social Impact Appraisal, Stafford Saturn Model and pedestrian count data. All pedestrian data quoted is total 12 hour flows (0700 - 1900) on a weekday. Surveys were undertaken between March and July 2014.

### Summary Assessment Score

Large beneficial

### Qualitative Comments

As the net total number of people for whom severance will reduce is greater than 1000, there is a large beneficial change in severance



Worksheet: SDI Matrix

	Distributional impact of income deprivation					Are the impacts distributed evenly?	Key impacts - Qualitative statements				
	0-20% (1)	20-40% (2)	40-60% (3)	60-80% (4)	80-100% (5)						
User benefits	✓	✓✓	✓✓	✓	✓✓✓	No	There are overall net benefits for all quintiles. The value of user benefits for quintiles 1 and 4 are smaller than expected. The value of user benefits for quintiles 2 and 3 are in line with expected. The value of user benefits for quintile 5 is more than expected.				
Noise	0	✓✓✓	XXX	0	XXX	No	The most deprived income quintile and quintile 4 do not experience any change in noise, whilst the least deprived quintile and quintile 3 experience higher than expected proportion of dis-benefits. Significant benefits are experienced by quintile 2.				
Air quality	0	XX	XX	0	XX	No	There are no properties affected by air quality in income quintiles 1 and 4. The least deprived quintile and quintiles 2 and 3 experience dis-benefits in line with expected.				
Affordability	✓	✓✓	✓✓	✓	✓✓✓	No	There are overall net benefits for all quintiles. The value of affordability benefits for quintiles 1 and 4 are smaller than expected. The value of affordability benefits for quintiles 2 and 3 are in line with expected. The value of affordability benefits for quintile 5 is more than expected.				
Accessibility	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
<b>AST entry</b>											
Impact	Social groups						User groups				Qualitative statement (including any impact on residential population AND identified amenities)
	Children & young people	Older people	No car households	Women	Disabled	BME	Pedestrians	Cyclists	Motor-cyclists	Young male drivers	
Noise	N/A										There are two schools within the noise impact area, and not a significant proportion of under 16 year olds.

Air Quality	N/A										There are no schools within the air quality impact area, and not a significant proportion of under 16 year olds.
Accidents	✓✓	xx					✓✓	✓✓	0	✓✓	Children are likely to benefit from reduced accident rates although older people may not. Pedestrians, cyclists and young male drivers will also benefit. This is particularly relevant for pedestrians and cyclists as current rates are slightly higher than expected for these groups.
Security	N/A	N/A		N/A							N/A
Severance	✓✓	✓✓	✓✓		✓✓						There is reduced severance for all vulnerable users in the town centre where there are high pedestrian movements. This outweighs any severance created in residential areas where there are likely to be higher proportions of the vulnerable users (particularly no car households), but at locations with lower pedestrian activity.
Accessibility	N/A	N/A	N/A	N/A	N/A	N/A					N/A

Key: ✓✓✓ = Large Beneficial  
 ✓✓ = Moderate Beneficial  
 ✓ = Slight Beneficial  
 0 = Neutral

x = Slight Adverse  
 xx = Moderate Adverse  
 xxx = Large Adverse

## Worksheet: Distributional Impacts: User Benefits

	Income Quintile					Total
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	
Total population	219,298	230,217	222,293	286,013	241,102	1,198,924
Proportion of overall population	18.3%	19.2%	18.5%	23.9%	20.1%	-
Overall net user benefits	£1,332,212	£9,916,940	£7,048,266	£2,708,343	£22,602,602	£43,608,362
Distribution of Overall benefits	3.1%	22.7%	16.2%	6.2%	51.8%	-
Sum of benefits	£1,357,560	£9,939,051	£7,105,218	£2,777,496	£22,718,367	£43,897,692
Distribution of benefits	3.1%	22.6%	16.2%	6.3%	51.8%	-
Sum of disbenefits	-£25,348	-£22,111	-£56,952	-£69,153	-£115,765	-£289,330
Distribution of disbenefits	8.8%	7.6%	19.7%	23.9%	40.0%	-
<b>Assessment</b>	✓	✓✓	✓✓	✓	✓✓✓	
<b>Key to individual assessment of each Income quintile</b>						
<i>Beneficial and 5% greater (or more) than the proportion of the group in the total population</i>						<i>Large Beneficial</i>
<i>Beneficial and in line (+/-5%) with the proportion of the group in the total population</i>						<i>Moderate Beneficial</i>
<i>Beneficial and 5% smaller (or less) than the proportion of the group in the total population</i>						<i>Slight Beneficial</i>
<i>There are no user benefits or dis-benefits experienced by the group</i>						<i>Neutral</i>
<i>A dis-benefit which is 5% smaller (or less) than the proportion of the group in the total population</i>						<i>Slight Adverse</i>
<i>A dis-benefit which is in line (+/-5%) with the proportion of the group in the total population</i>						<i>Moderate Adverse</i>
<i>A dis-benefit which is 5% greater (or more) than the proportion of the group in the total population</i>						<i>Large Adverse</i>

## Worksheet Distributional Impacts: Noise

	IoD Income Domain					Total
	Most deprived					
	Least deprived					
	0-20%	20-40%	40-60%	60-80%	80-100%	
Population in each group with increased noise	0	166	88	0	322	575
Population in each group with decreased noise	0	284	0	0	149	433
Population in each group with no change in noise	0	2,394	1,684	358	1,006	5,441
Net no of Winners / Losers in each group	0	119	-88	0	-173	-142
Net winners/losers in each area as percentage of total	0.0%	-83.9%	61.9%	0.0%	122.0%	100.0%
Share of total population in the impact area	0.0%	44.1%	27.5%	5.5%	22.9%	100.0%
Assessment	0	✓✓✓	XXX	0	XXX	



### Worksheet Distributional Impacts: Air Quality

	IoD Income Domain					Total
	Most deprived					
	Least deprived					
	0-20%	20-40%	40-60%	60-80%	80-100%	
Properties in each group with increase	0	1,252	894	0	371	2,517
Properties in each group with decrease	0	383	234	0	145	762
Properties in each group with no change	0	0	0	0	0	0
Net no of Winners / Losers in each group	0	-869	-660	0	-226	-1,755
Net winners/losers in each area as percentage of total	0.0%	49.5%	37.6%	0.0%	12.9%	100.0%
Share of total population in the impact area	0.0%	49.9%	34.4%	0.0%	15.7%	100.0%
Assessment	<b>0</b>	<b>XX</b>	<b>XX</b>	<b>0</b>	<b>XX</b>	

### Worksheet for Distributional Impact: Personal Affordability

	Income Quintile					Total
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	
Total population	219,298	230,217	222,293	286,013	241,102	1,198,924
Proportion of population	18.3%	19.2%	18.5%	23.9%	20.1%	-
Overall net benefits	£25,375	£386,988	£397,408	£199,581	£1,232,520	£2,241,873
Distribution of net benefits	1.1%	17.3%	17.7%	8.9%	55.0%	-
Sum of benefits	£33,203	£416,155	£421,137	£230,164	£1,317,877	£2,418,537
Distribution of benefits	1.4%	17.2%	17.4%	9.5%	54.5%	-
Sum of disbenefits	-£7,828	-£29,167	-£23,729	-£30,584	-£85,356	-£176,664
Distribution of disbenefits	4.4%	16.5%	13.4%	17.3%	48.3%	-
<b>Assessment</b>	✓	✓✓	✓✓	✓	✓✓✓	
<b>Key to individual assessment of each Income quintile</b>						
<i>Beneficial and 5% greater (or more) than the proportion of the group in the total population</i>					<i>Large Beneficial</i>	
<i>Beneficial and in line (+/-5%) with the proportion of the group in the total population</i>					<i>Moderate Beneficial</i>	
<i>Beneficial and 5% smaller (or less) than the proportion of the group in the total population</i>					<i>Slight Beneficial</i>	
<i>There are no user benefits or dis-benefits experienced by the group</i>					<i>Neutral</i>	
<i>A dis-benefit which is 5% smaller (or less) than the proportion of the group in the total population</i>					<i>Slight Adverse</i>	
<i>A dis-benefit which is in line (+/-5%) with the proportion of the group in the total population</i>					<i>Moderate Adverse</i>	
<i>A dis-benefit which is 5% greater (or more) than the proportion of the group in the total population</i>					<i>Large Adverse</i>	