

TAG Water Environment Impacts Worksheet

Description of study area/ summary of potential impacts	Key environmental resource	Features	Quality	Scale	Rarity	Substitutability	Importance	Magnitude	Significance
Surface Water									
Pollution to River Severn from construction	Rivers River Severn (confl Bele Bk to Confl Sundorne Bk) WFD Ref GB109054049142	Water Quality	R. Severn WFD - Moderate Overall Status	Regional	High	Not Feasible	High	Slight Adverse	Low Significance
Pollution to River Severn from routine runoff	WFD - Moderate Overall Status - Moderate Ecol. Condition - Good Hydromorpho-logical Condition - Failed Chemical Condition	Water Quality	R. Severn WFD - Moderate Overall Status	Regional	High	Not Feasible	High	Negligible	Insignificant
Pollution to River Severn from accidental spillage		Water Quality	R. Severn WFD - Moderate Overall Status	Regional	High	Not Feasible	High	Slight Adverse	Low Significance
Alteration to River Severn flow characteristics that may affect channel, erosive or deposition processes	Most of the proposed scheme falls within and affects this stretch of the River	Channel Geomorphology	R. Severn WFD - Moderate Overall Status	Local	Medium	Limited	Medium	Negligible	Insignificant
Alteration to availability of surface water abstractions in the River Severn – notably for PWS abstraction by Severn Trent Water at Shelton.		Water Supply	Public Water Supplies and other surface water abstractions	Regional	High	Limited	Very High	Slight Adverse	Significant
Pollution to River Severn from construction	Rivers River Severn (confl Sundorne Bk to confl M. Wenlock-Farley Bk) WFD Ref GB109054049141	Water Quality	R. Severn WFD - Moderate Overall Status	Regional	High	Not Feasible	High	Negligible	Insignificant
Pollution to River Severn from routine runoff	WFD - Moderate Overall Status - Moderate Ecol. Condition - Good Chemical Condition	Water Quality	R. Severn WFD - Moderate Overall Status	Regional	High	Not Feasible	High	Negligible	Insignificant
Pollution to River Severn from accidental spillage		Water Quality	R. Severn WFD - Moderate Overall Status	Regional	High	Not Feasible	High	Slight Adverse	Low Significance
Alteration to River Severn flow characteristics that may affect channel, erosive or deposition processes	Only a small part of the scheme falls within but all of the proposed scheme affects this stretch of the River	Channel Geomorphology	R. Severn WFD - Moderate Overall Status	Local	Medium	Limited	Medium	Negligible	Insignificant
Alteration to availability of surface water abstractions from the River Severn		Water Supply	Public Water Supplies and other surface water abstractions	Local	Medium	Limited	Medium	Slight Adverse	Insignificant
Impact to local water dependant features from construction	Alkmund Park Pool (water dependant site)	lake	Unknown	Local	Low	Not Feasible	Low	None	None
Impact to local water dependant features from routine runoff						No hydrological pathway, site is up-gradient			
Impact to local water dependant features from accidental spillage						No hydrological pathway, site is up-gradient			
Impact to Hencott Pool SSSI/Ramsar from construction	Hencott Pool SSSI (water dependant SSSI)	Fen, marsh & swamp	Comprises 4 units all in unfavourable condition with 1 recovering	National	High	Not Feasible	Very High	Negligible	Low Significance
Impact to Hencott Pool SSSI/Ramsar from routine runoff						No hydrological pathway, site is up-dip & adjacent stretch of proposed road is embanked			
Impact to Hencott Pool SSSI/Ramsar from accidental spillage						No hydrological pathway, site is up-dip & adjacent stretch of proposed road is embanked			
Impact to Old River Bed SSSI from construction	Old River Bed SSSI (water dependant SSSI)	Fen, marsh & swamp	Comprises 2 units both in favourable condition	National	High	Not Feasible	Very High	Negligible	Low Significance
Impact to Old River Bed SSSI from routine runoff						Not Feasible	Very High	Negligible	Low Significance
Impact to Old River Bed SSSI from accidental spillage						Not Feasible	Very High	Slight Adverse	Significant
Groundwater									
Pollution to major aquifer from construction	Groundwater Shropshire Middle Severn -	Water Quality	WFD - Poor GV - Variable	Regional	High	Not Feasible	High	Slight Adverse	Low Significance

Pollution to major aquifer from routine runoff	Permo Triassic Sandstone East Shropshire WFD Ref GB40901G300100	Water Quality	WFD - Poor GV - Variable	Regional	High	Not Feasible	High	Negligible	Insignificant
Pollution to major aquifer from accidental spillage		Water Quality	WFD - Poor GV - Variable	Regional	High	Not Feasible	High	Slight Adverse	Low Significance
Alteration to availability of groundwater abstractions from major aquifer		Water Supply	Groundwater Abstraction Supplies In Use	Regional	High	Not Feasible	Very High	Slight Adverse (via pollution)	Significant
Impacts to groundwater levels and flows in major aquifer		Water dependant nature conservation sites	Alkmund Park Pool Hencott Pool SSSI/Ramsar	Local	Medium	Not Feasible	Low	None	None
	Water dependant nature conservation sites	Old River Bed SSSI	National	High	Not Feasible	Very High	Negligible	Low Significance	
Pollution to minor drift aquifers from construction	Groundwater Local perched groundwater in drift deposits WFD Ref - None	Water Quality	WFD - Poor GV - Variable	Local	High	Not Feasible	Low	Slight Adverse	Insignificant
Pollution to minor drift aquifers from routine runoff		Water Quality	WFD - Poor GV - Variable	Local	High	Not Feasible	Low	Negligible	Insignificant
Pollution to groundwater from accidental spillage		Water Quality	WFD - Poor GV - Variable	Local	High	Not Feasible	Low	Moderate	Insignificant
Alteration to availability of groundwater abstractions from minor drift aquifers		Water Supply	Groundwater Abstraction Supplies In Use	Local	High	Not Feasible	Low	Slight Adverse (via pollution)	Insignificant
Impacts to groundwater levels and flows in minor drift aquifers		Water dependant nature conservation sites	Alkmund Park Pool Hencott Pool SSSI/Ramsar	Local	Medium	Not Feasible	Low	None	None
	Water dependant nature conservation sites	Old River Bed SSSI	National	High	Not Feasible	Very High	Negligible	Low Significance	
Flood Risk									
Crosses the River Severn to the north east of Shelton (SJ 46822 13702). In mitigation: The crossing over the River Severn will be engineered to avoid afflux from the new structure as far as practicable, piers will be kept out of the river channel and therefore will have no impact under normal flow conditions. +B3:K5B21B3:K6B3:K6B3:K7B21B3:K6B3:J9B3:J8B3:K9B3:K7B3:K9B3:K7B3:K9B3:L9B3:M9B3:N9B3:O9B3:L7B3:M9B3:L9B3:K9	River Severn	Conveyance of flow	Large flood risk area surrounding the River Severn, the river passes through high density development downstream. No significant increased flood risk anticipated with mitigating measures.	Local / Regional	Medium	Not Possible	High	With Mitigation: Negligible Without Mitigation: Large Adverse	With Mitigation: Insignificant Without Mitigation: Highly Significant
The proposed scheme crosses the Alkmund Park Wood watercourse (SJ 48394 14852). In mitigation: Openings of sufficient size to convey the design standard flows without undue afflux will be used.	Alkmund Park Wood watercourse	Conveyance of flow	Small flood risk area surrounding watercourse, no residential, industrial or commercial properties would be impacted by increased flood risk in the vicinity of the crossing. No increased flood risk anticipated with mitigating measures.	Local	Low	Not Possible	Low	With Mitigation: Negligible Without Mitigation: Large Adverse	With Mitigation: Insignificant Without Mitigation: Low Significance

<p>The proposed scheme crosses the watercourse leaving Hencott Wood (SJ 49329 15954).</p> <p>In mitigation: Openings of sufficient size to convey the design standard flows without undue afflux will be used.</p>	Hencott Wood watercourse / Bagley Brook / Old River Bed	Conveyance of flow	SSSI / Ramsar Site just upstream of watercourse crossing, limited impact of increased flood risk. Old River Bed SSSI. No increased flood risk anticipated with mitigating measures.	National	High	Not Possible	Very High	With Mitigation: Negligible Without Mitigation: Large Adverse	With Mitigation: Low Significance Without Mitigation: Very Highly Significant
<p>The proposed scheme damages foul, surface water or potable water services resulting in flooding, contamination or both.</p> <p>In mitigation: Utility asset plans will be reviewed and service clashes designed and mitigated for. Implementation of a Construction Environmental Management Plan (CEMP).</p>	River Severn / Alkmund Park Wood watercourse / Hencott Wood watercourse / Bagley Brook / Old River Bed / Surface water bodies / groundwater bodies / floodplain	Conveyance of flow	SSSI / Ramsar Site / Count Wildlife Site / Potable water supply	Regional	High	Possible: Services Diversions	Very High	With Mitigation: Negligible Without Mitigation: Slight Adverse	With Mitigation: Low Significance Without Mitigation: Significant
<p>Surface water runoff from the NWRR increasing the flood risk from smaller watercourses.</p> <p>In mitigation: Sustainable Drainage Systems (SuDS) such as ponds, swales and/or other features will be used to attenuate runoff to an agreed runoff rate.</p>	Alkmund Park Wood watercourse / Hencott Wood watercourse / Bagley Brook / Old River Bed	Conveyance of flow.	Discharge anticipated downstream of crossings. Old River Bed SSSI. Mitigating measures will prevent any increased flood risk.	Local	Low	Possible: Use of attenuation	Very High	With Mitigation: Negligible Without Mitigation: Large Adverse	With Mitigation: Low Significance Without Mitigation: Very Highly Significant
<p>The proposed scheme crosses the River Severn floodplain (Flood Zone 3) to the north east of Shelton (SJ 47024 13733). Displacement of floodplain storage capacity could lead to increased flood risk.</p> <p>In mitigation: Within the flood risk area there is a viaduct, as such, only the viaduct piers interact with the floodplain minimizing the loss of floodplain volume and connectivity. Any displacement of flood zone storage will be compensated for on a level by level / volume by volume basis.</p>	River Severn floodplain	Conveyance of flood flows.	The River Severn has a large area of floodplain which is important for the storage of flood water. Reducing storage and connectivity on this floodplain could result in a significant increased flood risk upstream and downstream. Mitigating measures would make the increase in flood risk negligible.	Local / Regional	Medium	Possible: scheme areas displacing flood storage can be compensated for using adjacent land	High	With Mitigation: Slight Adverse Without Mitigation: Large Adverse	With Mitigation: Low Significance Without Mitigation: Highly Significant
<p>The proposed scheme crosses the Alkmund Park Wood watercourses floodplain (Flood Zone 3). Displacement of floodplain storage capacity.</p> <p>In mitigation: Any displacement of flood zone storage will be compensated for on a level by level / volume by volume basis.</p>	Alkmund Park Wood floodplain	Conveyance of flood flows	This watercourse has a small floodplain. Reducing storage and connectivity of this floodplain would likely increase flood risk, but with limited implications. Mitigating measures would make the increase in flood risk negligible.	Local	Low	Possible: scheme areas displacing flood storage can be compensated for using adjacent land.	Low	With Mitigation: Negligible Without Mitigation: Large Adverse	With Mitigation: Insignificant Without Mitigation: Low Significance

There are areas at a high risk of surface water flooding along the road alignment. Increase in surface water flood risk. In mitigation: Storage is to be provided for the loss of volume on a level for level basis for displaced surface water.	East of the River Severn: area south of Willow Pool, just west of the railway line crossing, area in the vicinity of the Severn Trent Water Access Track, south east of Hencott Wood, west of the Ellesmere Road roundabout.	Conveyance of flow.	Predominantly surrounded by rural land. Potential interaction with railway line. Displacement of surface water storage could increase flood risk. Mitigating measures will prevent any increased flood risk.	Local	Low	Possible: scheme areas displacing flood storage can be compensated for using adjacent land, rural area – abundance of land	Low	With Mitigation: Negligible Without Mitigation: Large Adverse	With Mitigation: Insignificant Without Mitigation: Low Significance
Parts of the scheme are in Source Protection Zone 1, 2 and 3. The scheme has a principal aquifer bed rock designation under its entirety and a superficial aquifer designation of Secondary Undifferentiated and Secondary A. Construction of the roads foundations could interfere with the flow of the aquifer resulting in an increased groundwater flood risk.	Aquifer	Conveyance of flood flows.	The bedrock aquifer's principal designation would suggest that it is highly productive.	Local	Medium	Not Possible	Medium	Slight Adverse	Insignificant
The proposed scheme crosses and is within the area indicated by the Environment Agency mapping as being the maximum extent of flooding from reservoirs along the course of the River Severn. Any structure in this area could constrict flows, which will in turn may increase flood risk. In mitigation: Within the flood risk area there is a viaduct, as such, only the viaduct piers would constrict flows minimising increase in flood risk.	River Severn and River Severn floodplain	Conveyance of flood flows.	The River Severn has a large area of floodplain which is important for the storage of flood waters in the unlikely event of a reservoir breach. Reducing storage and connectivity on this floodplain could result in an increased flood risk upstream and downstream. Mitigating measures would make the increase in flood risk negligible.	Local	Low	Possible: minimising scheme pier areas to minimize flow constriction.	Medium	With Mitigation: Negligible Without Mitigation: Moderate Adverse	With Mitigation: Insignificant Without Mitigation: Low Significance

Reference Sources

Flood Map for Planning, Environment Agency, 2017
Geology of Britain Viewer, British Geological Survey, 2017
Catchment Data Explorer, Environment Agency 2017
Designated Sites View, Natural England, 2017
Shrewsbury North West Relief Road, Environmental Scoping Report, Shropshire County Council, 2007
MAGIC, Defra, 2017
Mouchel (2011). Shrewsbury NWRR- Preferred Route plan & long section drawings. Drawings 1022459-P-HWY-002 to 006.
Envirocheck report (Feb 2007).
Environment Agency - Catchment data explorer system for River Basin Management Plans
Environment Agency - Severn Corridor Abstraction Licensing Strategy (Feb 2013)
Department for Transport (DfT) Transport Appraisal Guidance (TAG) Unit A3 - Environmental Impact Appraisal (Dec. 2015)

Summary Assessment Score

Moderate Adverse Impact.

Qualitative Comments

Surface and groundwater

The potential impact to Shelton intake on the River Severn concerns a possible accidental spillage into the river over the river crossing (located approximately 75m downstream of the intake). This possible threat requires further investigation. Following further investigations, mitigation measures may be required as part of the design.
Any works on the proposed scheme should look to facilitate mitigation by way of designing/ deploying drainage containment facilities on the road scheme from Holyhead Road roundabout extending over the River Severn crossing

to the limit of the SPZ2 delineation.

The potential impact of pollution/ contamination to the Old River Bed SSSI can be mitigated by facilitating improved drainage containment in the proposed scheme and/or, if feasible, including a wetland buffer zone upstream to better protect the SSSI.

Potentially significant impacts in relation to surface and groundwater include potential impacts (via pollution/contamination) to public water supply sources (both surface and groundwater) operated by Severn Trent Water associated with their Shelton works operation and possible impact to the Old River Bed SSSI. Collectively these give rise to an overall Moderate Adverse Impact.

Flood Risk

A precautionary approach where information has been insufficient to make an assessment the worst case scenario has been considered. Where there is more than one resource being assessed the resource giving the largest magnitude has been used in the assessment.

With mitigation the overall impact of the proposed scheme has on flood risk is considered to be slight adverse. The proposed scheme will be at risk of fluvial and pluvial flooding and as such the road should be designed to manage these flood risks.

Where the route has potential to adversely impact on groundwater flows and levels, whether during construction or operation, measures should be taken to mitigate these effects.

TAG Landscape Impacts Worksheet

Features	Step 2	Step 3				Step 4
	Description	Scale it matters	Rarity	Importance	Substitutability	Impact
Pattern	A medium scale agricultural landscape which is characterised by medium to large irregular arable agricultural fields with established hedgerow boundaries and frequent mature trees, predominantly oak and ash. The landscape gently undulates limiting long distance views. Streams and ponds are common as they drain towards the River Severn that winds through this landscape, with steep valley sides in places and extensive flood plains. It is sparse in broader woodland cover, however a combination of small belts of woodland, often associated with ponds and along water courses and large field trees give the appearance of a well wooded landscape. The contrast between smooth irregular agricultural fields and textured belts of trees gives an unplanned chaotic appearance to the landscape. The landscape is sparsely settled with isolated farmsteads and houses with occasional larger properties, most notable is the Berwick Estate, a parkland landscape. The Shrewsbury to Chester train line, a strong linear feature cuts through the landscape, altering the pattern where it has divided fields drawing attention to the train line.	Matters at a local scale	Is a common landscape pattern	High importance at the local scale	Could be replaced, in the short to medium term through re-establishment of field boundaries	The proposed road will likely introduce a noticeable strong linear feature through this otherwise irregular pattern landscape. Although at odds with the scale of existing features, it would not be a totally uncharacteristic element as there are existing linear features. Affected fields will be divided into small and medium sized irregular fields, former a finer grain of landscape pattern. The proposed bridge crossing the River Severn is anticipated to be a strong and uncharacteristic feature and be out of scale. It is considered that the impact would be at the high end of a Moderate Adverse Impact.
Tranquillity	The landscape is sparsely populated with few minor roads, however there is an awareness of the commercial buildings on the northern edge of Shrewsbury and of energy infrastructure crossing the landscape. The River Severn is predominately void of development and has characteristics that suggest some level of tranquillity, isolated development such as the pumping station and energy infrastructure are noticeable in places.	Matters at a local scale	A local sense of tranquillity, but there is an awareness of urban influences	Medium importance at the local scale	Not easily replaced	The introduction of the road into this landscape will likely reduce the low levels of tranquillity currently experienced. The introduction of the proposed road bridge over the River Severn is anticipated to have the greatest effect on the tranquillity, however the presence of the overhead lines and pumping station nearby reduce this effect. The impact is considered to be a Slight Adverse Impact.
Cultural	There are a number of listed properties within this landscape. The Registered Park and Garden that is the Berwick Estate is a notable feature in the landscape. The Ancient replanted Woodland of Alkmund Park Coppice is an important belt of woodland in this otherwise sparsely wooded landscape. The Berwick Crop mark Complex is an important heritage feature but isn't easily perceived within the landscape. Numerous footpaths cross this landscape. Sustrans Route 81 crosses the south west of this landscape.	Matters at a local scale.	Not a rare cultural landscape nationally but is rare in the local landscape	High importance at the local scale	Not easily replaced	The scheme doesn't directly impact on designated landscapes, however it will likely have indirect impact on the Berwick Estate registered Park and Garden and its setting. There will be a small loss of part of south part of Alkmund Ancient Woodland but will not have a great effect on the remaining woodland. Slight Adverse Impact.
Land cover	Land cover is predominately arable fields with some pasture fields. The Berwick Estate is an important Parkland landscape, here the fields and field boundaries have large mature trees dotted through them. Woodland within the wider landscape is generally sparse but belts are found around the ponds and along tributaries which are common in this landscape. The Ancient replanted woodland of Alkmund Park Coppice is an important feature along with the Registered Park and Garden parkland of Berwick Estate. Woodland cover is generally sparse but there are belts of woodland which typically run adjacent to water courses and ponds which are common throughout this landscape. Mature Oaks dominant in the landscape along with field boundary trees giving the appearance of a well wooded landscape.	Matters at a local scale.	Is a common land cover.	Medium importance at the local scale	The landscape elements are heavily influenced by man and readily replaced. Veteran Oaks will likely take longer to replace.	There is likely to be the loss of agricultural fields, ponds and trees, sections of hedgerow, small part of Alkmund Ancient woodland, hedgerow trees and field trees, however there anticipated be replacement and restoration of some of these features. There anticipated be alteration to the topography at the local scale. The road is not a totally uncharacteristic feature but the scale is at odds with the surrounding landscape with the proposed over bridges and combined cycleway. The proposed road bridge is uncharacteristic and out of scale of the surrounding landscape. Moderate Adverse Impact.
Summary of character	The proposed scheme is located within a rural estate farmlands that is reflective of the wider landscape type. Gently rolling topography with medium to large irregular fields bounded by established hedgerows and mature oaks. Small isolated farmsteads are scattered through the landscape. The parkland landscape of Berwick Estate and associated buildings are a notable feature in the landscape and gives a different feel to the wider agricultural rural landscape. Extensive woodland cover is generally sparse but hedgerow trees, field trees and belts of woodland following water courses are common, giving the appearance of a well wooded landscape. The fields are predominantly given over to arable land uses with pockets of pasture. The landform is gently rolling as the landform descends towards the river to the west of the study area, becoming elevated and flatter to the east. Within the landscape, views are medium in their extent due to the rolling topography and are often framed by trees, there are some detracting elements such as energy transmission lines and the pumping station on the River Severn along with the awareness of the commercial area on the northern edge of Shrewsbury.	Matters at a local scale.	Not a rare landscape type.	Medium importance at the local scale	Elements of the landscape are heavily influenced by man and are relatively easily replaced in the medium to long term.	The overall character of the landscape anticipated be noticeably and permanently impacted by the proposed scheme. The scheme, particularly the proposed bridge anticipated be out of scale with the surrounding landscape, however other parts of the road anticipated be in scale and could be appropriately mitigated, but other sections on raised embankments and through large cuttings and construction of over bridges anticipated be more difficult to mitigate and anticipated have an impact on the local landscape character. Moderate Adverse impact.

Reference Sources

Google Earth, OS Base mapping, MAGIC.gov, NCA 61- Shropshire, Cheshire and Staffordshire Plain (2014), The Shropshire Landscape Typology (2006), Site Visit and photographs

Step 5 - Summary Assessment Score

Moderate Adverse

Qualitative Comments

The landscape is typical of the wider area, demonstrating landscape features that are common throughout Shropshire and which within the medium to long term are relatively easily replaced. There is anticipated to be some loss of existing landscape features and disruption to landscape pattern and land cover. Visually the scheme corridor is likely be relatively well contained and localised due to the tree cover along field boundaries and rolling topography which limits long distance views. The crossing of the River Severn is likely to be a highly conspicuous element of the proposed scheme.

TAG Historic Environment Impacts Worksheet

Step 2		Step 3			Step 4
Feature	Description	Scale it matters	Significance	Rarity	Impact
Form	The historic resource of the study area is characterised predominately by agricultural land, comprising both arable and pasture. There is one Scheduled Monument, one Registered Park and Garden (Grade II), one Registered Battlefield and 27 Listed Buildings (3 Grade II* and 24 Grade II) in a 1km buffer zone around the proposed works. The designated heritage assets are mainly associated with domestic buildings and represent occupation on the outskirts of Shrewsbury, including some high status examples. Seven of the Listed Buildings lie in the registered park, Berwick Park. No conservation areas or World Heritage Sites have been identified in the 1km buffer zone. There are four non-designated built heritage assets in a proximity to the proposed scheme, including agricultural buildings of potential post-medieval date. Previous archaeological evaluation at the Berwick cropmark site, which includes potential ring ditches and enclosures, has identified buried archaeological remains, although not as extensive as suggested by the cropmarks and geophysical survey. There is a potential for as yet unidentified buried archaeological assets to be present within the proposed scheme footprint.	The protection and enhancement of heritage assets is of national concern as set out in the National Planning Policy Framework, which sets out to conserve heritage assets in a manner appropriate to their significance.	The Scheduled Monument, Grade II* Listed Buildings and Registered Battlefield are of National Significance. The Grade II Listed Buildings and the Grade II Park and Garden are of Regional Significance. The non-designated built heritage assets are of Local Significance. The significance of the Berwick cropmark complex has the potential to be of Regional significance, although the limited trial trench evaluation undertaken in 2007 suggests the anomalies identified from the aerial photographs and geophysical survey maybe geological in nature. There is a potential for as yet unidentified buried archaeological assets of unknown significance.	The Listed Buildings, Scheduled Monument and Registered Park and Garden are fairly common. The Registered Battlefield is one of 46 designated in England and is therefore judged to be rare. If confirmed to be of prehistoric date, the Berwick cropmark complex will represent a regionally rare asset. The rarity of the remaining buried archaeological resource is judged to be unknown.	The proposed scheme has the potential to have an adverse impact on designated heritage assets and non-designated built heritage assets through the change in their settings, and through non-direct impacts such as changes to lighting and sound. The proposed scheme has the potential to directly impact on buried archaeological remains which could result in the permanent and irreversible loss of assets.
Survival	Survival of the Scheduled Monument, Registered Park and Garden, Registered Battlefield and Listed Buildings is Good to Moderate. The survival of buried archaeological remains is unknown but is expected to be Good to Moderate as the land is predominately agricultural.	The protection and enhancement of heritage assets is of national concern as set out in the National Planning Policy Framework, which sets out to conserve heritage assets in a manner appropriate to their significance. The survival of heritage assets is a contributing factor to its significance	The Scheduled Monument, Grade II* Listed Buildings and Registered Battlefield are of National Significance. The Grade II Listed Buildings and the Grade II Park and Garden are of Regional Significance. The non-designated built heritage assets are of Local Significance. The significance of the Berwick cropmark complex has the potential to be of Regional significance, although the limited trial trench evaluation undertaken in 2007 suggests the anomalies identified from the aerial photographs and geophysical survey maybe geological in nature. There is a potential for as yet unidentified buried archaeological assets of unknown significance.	Survival of the heritage assets and areas is relatively typical in the region.	The proposed scheme would not have an effect on the survival of designated assets. The scheme will have an adverse effect on the Berwick cropmark complex and other as yet unidentified buried archaeological remains within the route of the scheme, but this is not quantifiable at this stage.
Condition	The condition of the Scheduled Monument, Registered Park and Garden, Registered Battlefield and Listed Buildings is Good to Moderate. The condition of buried archaeological remains is unknown but is expected to be Good to Moderate as the land is predominately agricultural in nature.	The protection and enhancement of heritage assets is of national concern as set out in the National Planning Policy Framework, which sets out to conserve heritage assets in a manner appropriate to their significance. The condition of heritage assets contributes to their significance and sensitivity to impacts	The condition of designated and non-designated assets is important as, in good condition, they can inform our understanding of the history of the region and contribute to the economic wellbeing of the local area.	The condition of the heritage assets and areas is relatively typical in the region. The condition of the Berwick cropmark site and any other yet to be identified buried archaeological assets is unknown.	The scheme would not directly impact on the condition of designated heritage assets and areas. The scheme will have an adverse effect on the Berwick cropmark complex and other as yet unidentified buried archaeological remains within the route of the scheme, but this is not quantifiable at this stage.
Complexity	Seven of the Listed Buildings lie within Berwick Registered Park and Garden. The remaining designated assets and the non-designated built assets are not overly complex and represent a mix of agricultural and residential buildings. The Berwick cropmark complex has not been fully evaluated and therefore no assessment can be made	The protection and enhancement of heritage assets is of national concern as set out in the National Planning Policy Framework, which sets out to conserve heritage assets in a manner appropriate to their significance. The complexity of assets, including individually complex assets or groups of assets contributes to their significance.	The designated heritage assets and areas, and the non-designated heritage assets represent a mix of forms and purposes from the medieval through to the 19th century that is significant to Shrewsbury and the region. The significance of the Berwick cropmark complex and any additional buried archaeological remains has not been assessed and is unknown.	The level of complexity of the majority of the designated assets are not uncommon in the region. The level of complexity of the Berwick cropmark site and any other yet to be identified buried archaeological assets is unknown.	The proposed scheme would not have an affect on the complexity of designated assets. The proposed scheme has to potential to impact on the complexity of the Berwick cropmark complex and any other buried archaeological assets, however due to the lack of assessment and evaluation the effect of this is unknown.

Context	The study area lies to the north-west of the historic core of Shrewsbury. The Listed Buildings, non-designated built heritage assets and Registered Park and Garden represent rural settlement activity in the post-medieval and early modern period, following the establishment of Shrewsbury and includes high status dwellings along with examples associated with agricultural activity. The Registered Battlefield is location of the Battle of Shrewsbury (1403) and is evidence for the political unrest which predominated through the 14th and 15th centuries in the country. The Scheduled Monument comprises a medieval moated building of Harlescott Grange and is associated with the manorial administration of the area. The Berwick cropmark complex has still to be fully evaluated but has the potential to represent human activity outside of Shrewsbury from the prehistoric period through the present era. There is a potential for as yet identified buried archaeological remains within the study area and scheme of prehistoric to modern date, providing evidence of the use of the landscape over time.	The context and setting of most cultural heritage assets is a material consideration at the local and national policy level.	The context of related groups of Listed Buildings and the Registered Park and Garden is regionally significant. The context of the Scheduled Monument and Registered Battlefield is nationally significant. The context of the Berwick cropmark complex has yet to be fully assessed so the significance is currently unknown. The context of as yet identified buried archaeological remains has not been assessed and the significance is therefore unknown.	The context of the heritage assets and areas is relatively typical in the region. The context of the Registered Battlefield is typical nationally. The context of the Berwick cropmark complex and any additional buried archaeological remains is unknown.	The proposed scheme has the potential to have an adverse impact on the context of the Listed Buildings, non-designated built heritage assets and the Registered Park and Garden by altering their setting. The effect on the context of the Registered Battlefield and the Scheduled Monument is likely to be neutral. Due to the lack of assessment of the context of the Berwick cropmark complex and any other yet to be identified buried archaeological asset, the effect of the scheme on these is unknown.
Period	The Scheduled Monument and Registered Battlefield are of medieval date, while the Listed Buildings and Registered Park and Garden are of later medieval to 19th century date. The non-designated built heritage assets are of 18th to early 20th century date. The date of the Berwick cropmark complex is currently unknown, although has the potential to be prehistoric in date. The date of any additional buried archaeological assets in the scheme is also unknown.	Period does not necessarily determine the importance of the historic resource although, it can affect it. Policies within the Local and Regional Plans make reference to the safeguarding and enhancement of cultural heritage assets. The protection of designated assets and areas regardless of their period is of national concern as set out in the National Planning Policy Framework.	The range of periods of the designated assets, non-designated built heritage assets and potential buried archaeological resource is wide, and important in terms of understanding the development of Shrewsbury and the surrounding area on a local and regional level.	Medieval and post-medieval sites are not uncommon locally. Prehistoric and Romano-British activity is less common in the area.	The proposed scheme would not have an affect on the periods of heritage assets and areas.

Reference Sources

Historic England, National Heritage List. Central Shropshire Conservation Area boundaries. Shropshire HER (via Heritage Gateway).

Step 5 - Summary Assessment Score

Moderate Adverse

Qualitative Comments

Summary Assessment Score derives from: Moderate adverse impact on the buried archaeological resource located along the scheme, including the Berwick cropmark complex of potential prehistoric date. Potential for adverse effects to be mitigated through preservation in-situ or through archaeological recording (i.e. excavation). Neutral direct impacts on designated and non-designated heritage assets but potential for moderate to low adverse impact on settings/context of Listed Buildings (Grade II* and Grade II) and the Registered Park and Garden (Grade II). Neutral impacts on the settings of Scheduled Monument the Registered Battlefield. Potential for the adverse effects to be mitigated through design.

TAG Biodiversity Impacts Worksheet

Step 2		Step 3				Step 4	Step 5
Area	Description of feature/ attribute	Scale (at which attribute matters) National Regional County Local	Importance (of attribute)	Trend (in relation to target)	Biodiversity and earth heritage value	Magnitude of impact	Assessment Score
Hencott Pool, Part of Midland Meres & Mosses (Phase 2) Ramsar	Hencott Pool is one of nineteen SSSIs which form the Midland Meres and Mosses (Phase 2) international site. They have developed in natural depressions in the glacial drift left by receding ice sheets, which formerly covered this plain. The majority lie in Cheshire and north Shropshire. The proposed scheme runs directly adjacent to the Ramsar site.	International	The Meres and Mosses of Clwyd-Shropshire-Cheshire -Staffordshire plain form an internationally important series of open water and peatland sites. Phase 2 qualifies as a Ramsar as it is a particularly good example of natural or near-natural wetland, characteristic of this biogeographical region, supports a number of rare species of plants associated with wetland and contains an assemblage of invertebrates including several rare wetland species.	Unfavourable: Recovering (56%), Unfavourable, No Change (44%)	Very High	Neutral	Neutral
Hencott Pool Site of Special Scientific Interest (SSSI)	A peat filled basin supporting fen and carr vegetation, representing a stage in succession from open water to carr woodland and peat bog. The site also includes areas of dry woodland. The proposed scheme runs adjacent to the SSSI site.	National	There is a rich flora of fen plants. The site is notable for the size of its population of elongated sedge. And other uncommon species such as purple smallreed, cyerus sedge, cowbane, great spearwort and fine-leaved water dropwort.	Unfavourable: Recovering (56%), Unfavourable, No Change (44%)	High	Minor negative	Slight adverse
Old River Bed, Shrewsbury Site of Special Scientific Interest (SSSI)	~15 hectares ~0.85km north-west of the proposed scheme. Part of the former bed of the River Severn cut off from the main river since the last glaciation. It is of particular value for its extensive sedge fen. The site also includes areas of scrub and a series of ditches.	National	This site is of particular value for the extensive sedge fen which now fills the cut-off meander.	Favourable Status	High	Neutral	Neutral
Old River Bed, Shrewsbury Local Wildlife Site (LWS)	A continuation of the Old River Bed SSSI with grass and sedges and willow carr.	Regional	See above.	Favourable Status	Low	Neutral	Neutral
River Severn (Montford Shrewsbury) Local Wildlife Site (LWS)	The river is a major ecological corridor running through the county comprised of riparian habitat and associated species. The proposed scheme crosses the river.	Regional	This site is a classic example of an underfit stream of the Osage type. The river is a major ecological corridor running through the county comprised of riparian habitat and associated species.	Favourable Status	Low	Minor negative	Slight adverse
Shelton Rough Local Wildlife Site (LWS)	11.14 hectares. Directly adjacent to the proposed scheme to the east. Large meadow with damp eastern edge and riverside oak and elm dominated woodland. Nearby housing development listed as threat/management issue.	Regional	The site is designated due to ground floor flora and MG5 grassland.	Unknown	Low	Neutral	Neutral
Alkmund Park Pool Local Wildlife Site (LWS)	See also Alkmundpark Coppice Planted Ancient Woodland Site (PAWS). ~4.4 hectares located directly adjacent to the proposed scheme with the bottom corner directly under the footprint of the scheme. Comprises nutrient poor open water with marginal vegetation.	Regional	A small lowland lake	Unknown	Low	Major negative	Slight adverse

Oxon Pool Local Wildlife Site (LWS)	1.45 hectares ~100m north-west of the proposed scheme. Open pool with alder carr and interesting flora. Great crested newt recorded in area of Oxon Pool. Pollution run-off and development/ road construction listed as threats/ management issues.	Regional	The site is designated due to marsh plant species.	Unknown	Low	Neutral	Neutral
Foraging and Roosting Bats	All bats are European Protected Species. Seven species of bat are UK Priority Species. Trees or buildings within the scheme with features suitable to support roosting bats may be present. Hedgerows and woodland across the scheme may provide commuting and foraging lines for bats in a landscape predominantly dominated by arable fields. Pipistrelle and Daubenton's bats have been recorded within 1km of the scheme.	Local	All bat species receive legal protection under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2010 (as amended), and have the status of European Protected Species (EPS).	In the UK, bat populations have declined considerably over the last century. Bats are under threat from building and development work that affects roosts, and loss of habitat, and from road construction which can sever commuting routes used by bats.	Medium	Minor negative	Slight adverse
Hazel Dormouse	Hazel dormice are a European Protected Species. There are habitats within the footprint of the scheme that are suitable for supporting this species.	Regional	Hazel dormice receive legal protection under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2010 (as amended), and have the status of European Protected Species (EPS).	The UK population is unknown but there has been a long term decline in both number and range. Threats include inappropriate management of woodlands and hedgerows.	Medium	Unknown	Slight adverse (if hazel dormice present)
Otters	The River Severn and surrounding wet ditches provide suitable commuting and foraging habitat for otter and otter may rest in these areas using holts or couches. Otter have been recorded within 1km of the scheme.	Regional	Otter receive legal protection under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulation 2010. They are a European Protected Species (EPS).	Persecution, habitat loss and the impact of toxic organochlorine insecticides have resulted in a reduction in the range of otter which is only recently recovering. The otter is scarce over much of England although recent data suggests that the otter population is recovering and recolonising parts of its former range. Otters are listed on the IUCN red list as being near threatened. There is a decline across their range and the species is sensitive to sudden changes in threats.	Medium	Unknown	Slight adverse (if otter resting places or commuting routes across scheme present)
Water Vole	Water vole have been recorded within 1km of the scheme.	Regional	Water voles receive full legal protection through inclusion in Schedule 5 of the Wildlife and Countryside Act 1981, following an amendment in April 2008.	Water voles are listed a moderately common in the UK but declined substantially in the 1990s due to habitat loss, degradation, pollution, fragmentation and predation by American mink. The decline is thought to have stabilised in recent years.	Medium	Unknown	Slight adverse (if water vole present)
Badger	Badgers are protected in order to prevent illegal badger baiting activities, but are common and widespread. As native mammals their presence can increase the value of wildlife sites. The habitats within the scheme have been identified as suitable foraging habitat for these animals. Badger are widespread in the surrounding area.	Local	Badgers are protected under the Protection of Badgers Act 1992.	Badger population across the UK are increasing.	Low	Minor negative	Slight adverse

Breeding Birds	Common and widespread breeding birds are likely to use a range of habitats within or adjacent to the scheme, including woodland, scrub and arable fields.	Local	There is suitable habitat to support breeding birds on site. This is most likely to be used by common species. All birds receive protection when breeding through National legislation.	Historic decline. Current slight increase in some species, otherwise unknown.	Low	Neutral	Neutral
Great Crested Newt	Great crested newts are a European Protected Species. There are records of great crested newts within 1km of the scheme.	Regional	Great crested newts receive legal protection under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2010 (as amended), and have the status of European Protected Species (EPS).	In the UK the population of great crested newts have declined over recent years. Threats include destruction and fragmentation of the habitats they breed and forage in.	Medium	Unknown	Slight adverse (if great crested newts present)
Reptiles (Slow worm and Common Lizard)	The habitats within the scheme may be suitable for supporting slow worm and common lizard.	Local	The slow worm and common lizard receives legal protection through inclusion in Schedule 5 of the Wildlife and Countryside Act 1981.	The slow worm and common lizard are locally common reptile species in England, although some localised decline has been noted.	Low	Unknown	Slight adverse (if reptiles present)
White Clawed Crayfish	The watercourses within the scheme may be suitable for supporting white clawed crayfish.	Regional	White clawed crayfish receive legal protection under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2010 (as amended), and have the status of European Protected Species (EPS).	There has been a reduction in the extent of the distribution of white clawed crayfish in recent years due to reduced water quality and pollution of watercourses, competition and disease spread by introduced species of crayfish and habitat modification. Populations of these crayfish are becoming increasingly isolated or lost.	Medium	Unknown	Slight adverse (if white clawed crayfish present)
Priority Species	Priority Species (formally Biodiversity Action Plan BAP Species) including hedgehog <i>Erinaceus europaeus</i> , brown hare <i>Lepus europaeus</i> , harvest mouse <i>Micromys minutus</i> , common toad <i>Bufo bufo</i> . The habitats within the footprint of the scheme are suitable for supporting these species.	Local	There is suitable habitat to support Priority Species on site. These species do not receive strict legal protection under wildlife legislation, but are of principal importance for the purpose of conserving biodiversity. Local authorities have a responsibility to ensure that potential impacts of the planning decisions on Priority Species and biodiversity are fully considered.	Hedgehog, brown hare, harvest mouse and common toad populations are in decline in the UK. The local planning authority is encouraged to retain and protect of boundary features such as hedgerows and rough field margins on development sites to support connectivity through the countryside and ensure that measures are put in place to protect these species during construction.	Low	Unknown	Slight adverse (if Priority Species present)
Kesters Coppice Ancient Replanted Woodland	Kesters Coppice was located ~1.9km north-east of the proposed scheme. This site totals 7.8ha.	Regional	Woodland habitat is a Priority Habitat. Ancient woodland has unique features such as relatively undisturbed soil and unique plant and animal communities. Due to the long time it takes to establish it is irreplaceable and cannot be effectively mitigated for.	Ancient woodland covers only around 2% of the land in the UK	Medium	Neutral	Neutral
Alkmondpark Coppice Planted Ancient Woodland Site (PAWS)	Alkmondpark Coppice planted ancient woodland site (PAWS) is located directly adjacent to the proposed scheme with the south-west corner of the site directly under the footprint of the proposed scheme. This site totals 17.8ha and is a mixed woodland.	Regional	Woodland habitat is a Priority Habitat. Ancient woodland has unique features such as relatively undisturbed soil and unique plant and animal communities. Due to the long time it takes to establish it is irreplaceable and cannot be effectively mitigated for.	Ancient woodland covers only around 2% of the land in the UK	Medium	Major negative	Moderate adverse

Important Hedgerows	There are several hedgerows across the scheme. Several of these have the potential to be Important hedgerows.	Local	Important hedgerows are an important habitat for many plant and animal species. They are particular significance for butterflies, moths, birds, bats and hazel dormice. They also provide links between areas of suitable habitat for a number of species including mammals, reptiles and amphibians.	There has been a dramatic decline in hedgerows since the 1940s. Important hedgerows are under treat from removal for development, neglect, poor cutting, senescence, herbicides, pesticides an fertilisers, increased stocking rates and ranching.	Low	Minor negative	Slight adverse (if Important hedgerows present)
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Reference Sources

Ordnance Survey (OS) website (www.ordnancesurvey.co.uk).
 The Multi-agency Geographic Information for the Countryside (MAGIC) service.
 Shropshire Ecological Data Network (SEDN) from Shropshire Council including data from Bird Atlas and on Local Wildlife Sites (LWSs).
 Mouchelparkman. (2007). Shrewsbury North West Relief Road - Environmental Scoping Report. Shrewsbury, UK.

Summary Assessment Score

Moderate adverse

Qualitative Comments

The overall assessment score of Moderate Adverse has been determined due to the presence of a moderate adverse assessment score as the proposed scheme would require land-take from the Alkmondpark Coppice PAWS. Further data including protected species surveys are required and potential mitigation activities should be recommended.