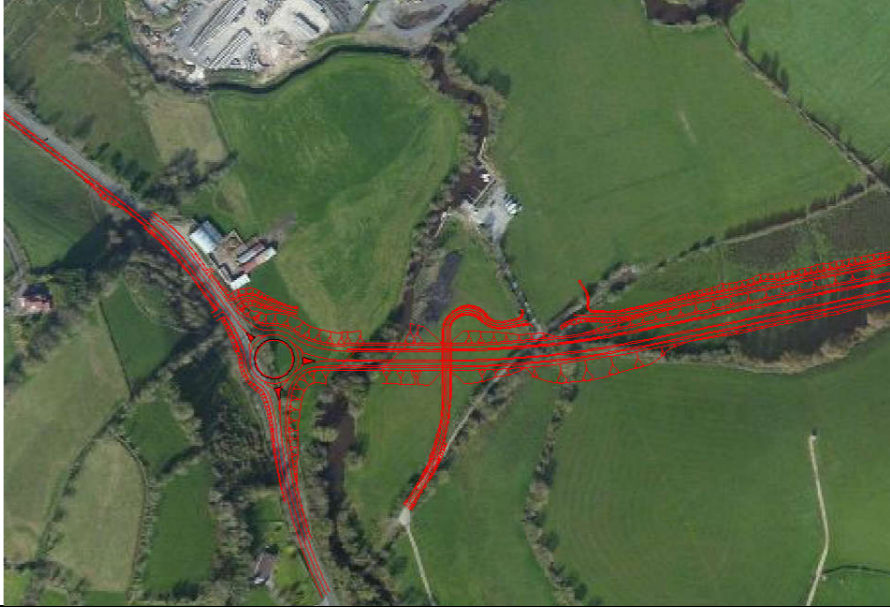
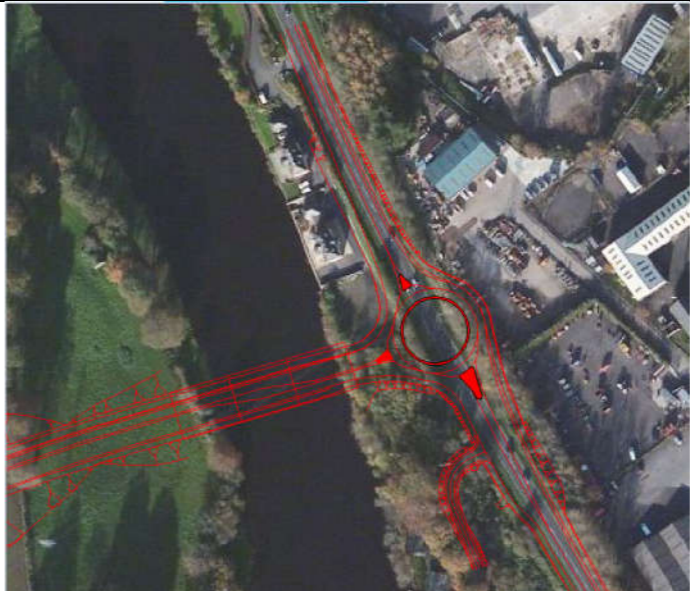



Section A: WFD Assessment Surface Water Impact

Project Component Data Sheet- Bypass Road Drainage into River Sillees- Component 1 (Outfalls A1, A2, B1, C1, D1 & F1)					
Location	Grid Reference	A1: 222656, 342275 A2: 222626, 342219 B1: 222600, 342155 C1: 222671, 342277 D1: 222727, 342417 F1: 223575, 342357		Aerial View Site Photograph	
	Chainage/ Map Ref	N/A			
	Waterbody Name	River Sillees (Drumkeen)			
	WFD Waterbody ID	UKGBNI1NW363601044			
Watercourse	Designations (within 1km of component)	None		Site Photograph	
	WFD Status (Obj 2021/2027)	Poor (Good/Good)			
	FFD Class. (Salmonid/ Cyprinid)	Salmonid			
	Abstractions in Vicinity	None			
WFD Assessment	WFD Element	Current Status	Assessed Post Works Status	Component Type	
	Benthic Invertebrates	Good	Good		
	Macrophytes	Good	Good		
	Phytobenthos	Good	Good		
	Fish	Poor	Poor		
	Biochemical oxygen demand	High	High		
	Temperature	High	High		
	Dissolved oxygen	Good	Good		
	pH	High	High		
	Soluble Reactive Phosphorus	Good	Good		
	Specific pollutants	Good	Good		
	Hydrological regime	High	High		
	Morphological conditions	Good	Good		
	Priority substances	Good	Good		
Does the component comply with WFD Objectives 1,2,3,4				Component ID	1
No	N/A	Do not proceed or complete Article 4.7 assessment		Component Type	Operational Site Drainage
Yes (Justification Provided)	Yes – See DMRB Assessments within Section 10 of EIAR	Proceed after NIEA agreement		Component Description, Dimensions, Length etc	Outfalls A1, A2, B1, C1, D1 & F1
Yes, with mitigation	N/A	Complete section B			

Project Component Data Sheet- Bypass Road Drainage into River Erne- Component 2 (Outfalls E1 & H1)										
Location	Grid Reference	E1: 223575, 342519 H1: 224485, 342838		Aerial View Site Photograph						
	Chainage/ Map Ref	N/A								
	Waterbody Name	River Erne (Enniskillen)								
	WFD Waterbody ID	UKGBNI1NW363602039								
Watercourse	Designations (within 1km of component)	None		Aerial View Site Photograph						
	WFD Status (Obj 2021/2027)	Poor (Good/Good)								
	FFD Class. (Salmonid/ Cyprinid)	Salmonid								
	Abstractions in Vicinity	None								
WFD Assessment	WFD Element	Current Status	Assessed Post Works Status	Site Photograph						
	Benthic Invertebrates	Good	Good							
	Macrophytes	Good	Good							
	Phytobenthos	Good	Good							
	Fish	Poor	Poor							
	Biochemical oxygen demand	High	High							
	Temperature	High	High							
	Dissolved oxygen	Good	Good							
	pH	High	High							
	Soluble Reactive Phosphorus	Good	Good							
	Specific pollutants	Good	Good							
	Hydrological regime	High	High							
	Morphological conditions	Good	Good							
	Priority substances	Good	Good							
Does the component comply with WFD Objectives 1,2,3,4			Component Type	<table border="1"> <tr> <td>Component ID</td> <td>2</td> </tr> <tr> <td>Component Type</td> <td>Operational Site Drainage</td> </tr> <tr> <td>Component Description, Dimensions, Length etc</td> <td>Outfalls E1 & H1</td> </tr> </table>	Component ID	2	Component Type	Operational Site Drainage	Component Description, Dimensions, Length etc	Outfalls E1 & H1
Component ID	2									
Component Type	Operational Site Drainage									
Component Description, Dimensions, Length etc	Outfalls E1 & H1									
No	N/A	Do not proceed or complete Article 4.7 assessment								
Yes (Justification Provided)	Yes – See DMRB Assessments within Section 10 of EIAR	Proceed after NIEA agreement								
Yes, with mitigation	N/A	Complete section B								

Project Component Data Sheet- River Sillees Bridge- Component 3												
Location	Grid Reference	222641, 342250			Aerial View Site Photograph							
	Chainage/ Map Ref	c40-66 (main line)										
	Waterbody Name	River Sillees (Drumkeen)										
	WFD Waterbody ID	UKGBNI1NW363601044										
Watercourse	Designations (within 1km of component)	None										
	WFD Status (Obj 2021/2027)	Poor (Good/Good)										
	FFD Class. (Salmonid/ Cyprinid)	Salmonid										
	Abstractions in Vicinity	None										
WFD Assessment	WFD Element	Current Status	Assessed Post Works Status				Site Photograph					
	Benthic Invertebrates	Good	Good									
	Macrophytes	Good	Good									
	Phytobenthos	Good	Good									
	Fish	Poor	Poor									
	Biochemical oxygen demand	High	High									
	Temperature	High	High									
	Dissolved oxygen	Good	Good									
	pH	High	High									
	Soluble Reactive Phosphorus	Good	Good									
	Specific pollutants	Good	Good									
	Hydrological regime	High	High									
	Morphological conditions	Good	Good									
	Priority substances	Good	Good									
Does the component comply with WFD Objectives 1,2,3,4					Component Type	<table border="1"> <tr> <td>Component ID</td> <td>3</td> </tr> <tr> <td>Component Type</td> <td>River Sillees Bridge</td> </tr> <tr> <td>Component Description, Dimensions, Length etc</td> <td>Bridge Span c36m</td> </tr> </table>	Component ID	3	Component Type	River Sillees Bridge	Component Description, Dimensions, Length etc	Bridge Span c36m
Component ID	3											
Component Type	River Sillees Bridge											
Component Description, Dimensions, Length etc	Bridge Span c36m											
No	N/A	Do not proceed or complete Article 4.7 assessment										
Yes (Justification Provided)	N/A	Proceed after NIEA agreement										
Yes, with mitigation	Yes	Complete section B										

Project Component Data Sheet- River Erne Bridge- Component 4							
Location	Grid Reference	224520, 342771		Aerial View Site Photograph			
	Chainage/ Map Ref	c2005-2086 (main line)					
	Waterbody Name	River Erne (Enniskillen)					
	WFD Waterbody ID	UKGBNI1NW363602039					
Watercourse	Designations (within 1km of component)	None					
	WFD Status (Obj 2021/2027)	Poor (Good/Good)					
	FFD Class. (Salmonid/ Cyprinid)	Salmonid					
	Abstractions in Vicinity	None					
WFD Assessment	WFD Element	Current Status	Assessed Post Works Status			Site Photograph	
	Benthic Invertebrates	Good	Good				
	Macrophytes	Good	Good				
	Phytobenthos	Good	Good				
	Fish	Poor	Poor				
	Biochemical oxygen demand	High	High				
	Temperature	High	High				
	Dissolved oxygen	Good	Good				
	pH	High	High				
	Soluble Reactive Phosphorus	Good	Good				
	Specific pollutants	Good	Good				
	Hydrological regime	High	High				
	Morphological conditions	Good	Good				
	Priority substances	Good	Good				
Does the component comply with WFD Objectives 1,2,3,4			Component Type	Component ID	4		
No	N/A	Do not proceed or complete Article 4.7 assessment					
Yes (Justification Provided)	N/A	Proceed after NIEA agreement					
Yes, with mitigation	Yes	Complete section B					
			Component Type	Component Type	River Erne Bridge		
				Component Description, Dimensions, Length etc	Bridge span c81m		

Project Component Data Sheet- General Construction Activities Potentially Impacting River Sillees (including Outfall and Bridge Construction)- Component 5							
Location	Grid Reference	222641, 342250		Aerial View Site Photograph			
	Chainage/ Map Ref	Misc					
	Waterbody Name	River Sillees (Drumkeen)					
	WFD Waterbody ID	UKGBNI1NW363601044					
Watercourse	Designations (within 1km of component)	None					
	WFD Status (Obj 2021/2027)	Poor (Good/Good)					
	FFD Class. (Salmonid/ Cyprinid)	Salmonid					
	Abstractions in Vicinity	None					
WFD Assessment	WFD Element	Current Status	Assessed Post Works Status			Site Photograph	
	Benthic Invertebrates	Good	Good				
	Macrophytes	Good	Good				
	Phytobenthos	Good	Good				
	Fish	Poor	Poor				
	Biochemical oxygen demand	High	High				
	Temperature	High	High				
	Dissolved oxygen	Good	Good				
	pH	High	High				
	Soluble Reactive Phosphorus	Good	Good				
	Specific pollutants	Good	Good				
	Hydrological regime	High	High				
	Morphological conditions	Good	Good				
	Priority substances	Good	Good				
Does the component comply with WFD Objectives 1,2,3,4				Component Type	Component ID	5	
No	N/A	Do not proceed or complete Article 4.7 assessment	Component Type		River Sillees – General construction activities		
Yes (Justification Provided)	N/A	Proceed after NIEA agreement	Component Description, Dimensions, Length etc		General construction activities		
Yes, with mitigation	Yes	Complete section B					

Project Component Data Sheet- General Construction Activities Potentially Impacting River Erne (including Outfall and Bridge Construction)- Component 6					
Location	Grid Reference	224520, 342771		Aerial View Site Photograph	
	Chainage/ Map Ref	Misc			
	Waterbody Name	River Erne (Enniskillen)			
	WFD Waterbody ID	UKGBNI1NW363602039			
Watercourse	Designations (within 1km of component)	None		Site Photograph	
	WFD Status (Obj 2021/2027)	Poor (Good/Good)			
	FFD Class. (Salmonid/ Cyprinid)	Salmonid			
	Abstractions in Vicinity	None			
WFD Assessment	WFD Element	Current Status	Assessed Post Works Status	Site Photograph	
	Benthic Invertebrates	Good	Good		
	Macrophytes	Good	Good		
	Phytobenthos	Good	Good		
	Fish	Poor	Poor		
	Biochemical oxygen demand	High	High		
	Temperature	High	High		
	Dissolved oxygen	Good	Good		
	pH	High	High		
	Soluble Reactive Phosphorus	Good	Good		
	Specific pollutants	Good	Good		
	Hydrological regime	High	High		
	Morphological conditions	Good	Good		
	Priority substances	Good	Good		
Does the component comply with WFD Objectives 1,2,3,4			Component Type	Component ID	6
No	N/A	Do not proceed or complete Article 4.7 assessment		Component Type	River Erne – General construction activities
Yes (Justification Provided)	N/A	Proceed after NIEA agreement		Component Description, Dimensions, Length etc	General construction activities
Yes, with mitigation	Yes	Complete section B			

Project Component Data Sheet- River Sillees Boat Turning Pool - Component 7							
Location	Grid Reference	222641, 342250		Aerial View Site Photograph			
	Chainage/ Map Ref	Misc					
	Waterbody Name	River Sillees (Drumkeen)					
	WFD Waterbody ID	UKGBNI1NW363601044					
Watercourse	Designations (within 1km of component)	None					
	WFD Status (Obj 2021/2027)	Poor (Good/Good)					
	FFD Class. (Salmonid/ Cyprinid)	Salmonid					
	Abstractions in Vicinity	None					
WFD Assessment	WFD Element	Current Status	Assessed Post Works Status			Site Photograph	
	Benthic Invertebrates	Good	Good				
	Macrophytes	Good	Good				
	Phytobenthos	Good	Good				
	Fish	Poor	Poor				
	Biochemical oxygen demand	High	High				
	Temperature	High	High				
	Dissolved oxygen	Good	Good				
	pH	High	High				
	Soluble Reactive Phosphorus	Good	Good				
	Specific pollutants	Good	Good				
	Hydrological regime	High	High				
	Morphological conditions	Good	Good				
	Priority substances	Good	Good				
Does the component comply with WFD Objectives 1,2,3,4				Component Type	Component ID	7	
No	N/A	Do not proceed or complete Article 4.7 assessment	Component Type		River Sillees – Boat turning pool		
Yes (Justification Provided)	N/A	Proceed after NIEA agreement	Component Description, Dimensions, Length etc		Excavation of material and bank/bed protection measures		
Yes, with mitigation	Yes	Complete section B					

Section B: Details of Mitigation required to Comply with WFD Objectives

Scheme Component e.g. Culvert, bridge, other crossing, diversion, outfall, etc..	Objective 1: To prevent deterioration in the ecological status of the water body.	Objective 2 To prevent the introduction of impediments to the attainment of Good WFD status for the water body.	Objective 3: To ensure that the attainment of the WFD objectives for the water body are not compromised.	Objective 4: To ensure the achievement of the WFD objectives in other water bodies within the same catchment are not permanently excluded or compromised.
	Describe mitigation required to meet objective 1:	Describe mitigation required to meet objective 2:	Describe mitigation required to meet objective 3:	Describe mitigation required to meet objective 4:
Component 3: River Sillees Bridge	Construction Environmental Management Plan (CEMP) in place and method statements will be prepared and agreed with the relevant statutory bodies. Fluvial geomorphologist to be involved in detail design of bridge. Please refer to Section 10 of the Environmental Statement for detailed information.	<i>As stated under objective 1.</i>	<i>As stated under objective 1.</i>	<i>As stated under objective 1.</i>
Component 4: River Erne Bridge	Construction Environmental Management Plan (CEMP) in place and method statements will be prepared and agreed with the relevant statutory bodies. Fluvial geomorphologist to be involved in detail design of bridge. Please refer to Section 10 of the Environmental Statement for detailed information.	<i>As stated under objective 1.</i>	<i>As stated under objective 1.</i>	<i>As stated under objective 1.</i>
Component 5: General Construction Activities Potentially Impacting River Sillees (including Outfall and Bridge Construction)	Construction Environmental Management Plan (CEMP) in place and method statements will be prepared and agreed with the relevant statutory bodies. Please refer to Section 10 of the Environmental Statement for detailed information.	<i>As stated under objective 1.</i>	<i>As stated under objective 1.</i>	<i>As stated under objective 1.</i>
Component 6: General Construction Activities Potentially Impacting River Erne (including Outfall and Bridge Construction)	Construction Environmental Management Plan (CEMP) in place and method statements will be prepared and agreed with the relevant statutory bodies. Please refer to Section 10 of the Environmental Statement for detailed information.	<i>As stated under objective 1.</i>	<i>As stated under objective 1.</i>	<i>As stated under objective 1.</i>
Component 7: River Sillees - Boat Turning Pool	Construction Environmental Management Plan (CEMP) in place and method	<i>As stated under objective 1.</i>	<i>As stated under objective 1.</i>	<i>As stated under objective 1.</i>



	statements will be prepared and agreed with the relevant statutory bodies. Fluvial geomorphologist to be involved in detail design of pool. Please refer to Section 10 of the EIAR for detailed information.			
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Annual Average Concentration			Soluble - Acute Impact		Sediment - Chronic Impact			
	Copper	Zinc	Copper	Zinc	Sediment deposition for this site is judged as:			
Step 2	0.00	0.01	Pass	Pass		Accumulating?		Low flow Vel m/s
Step 3	-	-				Extensive?		Deposition Index

Location Details

Road number	A4 Enniskillen Southern Bypass		HA Area / DBFO number	
Assessment type	Cumulative assessment excluding sediments (outfalls between 100m and 1km apart)			
OS grid reference of assessment point (m)	Easting	222727	Northing	342417
OS grid reference of outfall structure (m)	Easting	222727	Northing	342417
Outfall number			List of outfalls in cumulative assessment	A1 A2 B1
Receiving watercourse	River Sillees		C1	D1
EA receiving water Detailed River Network ID	WFD ID: UKGBNI1NW363610144		Assessor and affiliation	
Date of assessment	29/11/2017		Version of assessment	
Notes				

Step 1 Runoff Quality

AADT Climatic region Rainfall site

Step 2 River Impacts

Annual 95%ile river flow (m³/s) (Enter zero in Annual 95%ile river flow box to assess Step 1 runoff quality only)

Impermeable road area drained (ha) Permeable area draining to outfall (ha)

Base Flow Index (BFI) Is the discharge in or within 1 km upstream of a protected site for conservation?

For dissolved zinc only

Water hardness

For sediment impact only

Is there a downstream structure, lake, pond or canal that reduces the velocity within 100m of the point of discharge?

Tier 1 Estimated river width (m)

Tier 2 Bed width (m) Manning's n Side slope (m/m) Long slope (m/m)

Step 3 Mitigation

	Brief description	Estimated effectiveness					
		Treatment for solubles (%)		Attenuation for solubles - restricted discharge rate (l/s)		Settlement of sediments (%)	
Existing measures		0	<input type="text" value="D"/>	Unlimited	<input type="text" value="D"/>	0	<input type="text" value="D"/>
Proposed measures		0	<input type="text" value="D"/>	Unlimited	<input type="text" value="D"/>	0	<input type="text" value="D"/>

Predict Impact
Show Detailed Results
Exit Tool

Annual Average Concentration			Soluble - Acute Impact		Sediment - Chronic Impact				
	Copper	Zinc	Copper	Zinc	Sediment deposition for this site is judged as:				
Step 2	0.00	0.01	Pass	Pass	Alert. Protected Area.	Accumulating?	No	0.35	Low flow Vel m/s
Step 3	-	-				Extensive?	No	-	Deposition Index

Location Details

Road number	A4 Enniskillen Southern Bypass		HA Area / DBFO number		
Assessment type	Cumulative assessment including sediments (outfalls within 100m)				
OS grid reference of assessment point (m)	Easting	222671	Northing	342277	
OS grid reference of outfall structure (m)	Easting	222671	Northing	342277	
Outfall number	List of outfalls in cumulative assessment		A1	A2	C1
Receiving watercourse	River Sillees				
EA receiving water Detailed River Network ID	WFD ID: UKGBNI1NW363610144		Assessor and affiliation		
Date of assessment	29/11/2017		Version of assessment		
Notes					

Step 1 Runoff Quality

AADT	>10,000 and <50,000	Climatic region	Colder Wet	Rainfall site	Ardtnaig (SAAR 1343.9mm)
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Step 2 River Impacts

Annual 95%ile river flow (m ³ /s)	0.43	(Enter zero in Annual 95%ile river flow box to assess Step 1 runoff quality only)		
Impermeable road area drained (ha)	0.883	Permeable area draining to outfall (ha)	0	
Base Flow Index (BFI)	0.51	Is the discharge in or within 1 km upstream of a protected site for conservation?		Yes <input type="checkbox"/>

For dissolved zinc only

Water hardness	Medium = 50-200 CaCO ₃ /l
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For sediment impact only

Is there a downstream structure, lake, pond or canal that reduces the velocity within 100m of the point of discharge?					No <input type="checkbox"/>			
Tier 1	Estimated river width (m)	24.65						
Tier 2	Bed width (m)	8.202	Manning's n	0.04	Side slope (m/m)	1	Long slope (m/m)	0.0016

Step 3 Mitigation

	Brief description	Estimated effectiveness					
		Treatment for solubles (%)		Attenuation for solubles - restricted discharge rate (l/s)		Settlement of sediments (%)	
Existing measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>
Proposed measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>

Predict Impact
Show Detailed Results
Exit Tool

Annual Average Concentration			Soluble - Acute Impact		Sediment - Chronic Impact	
	Copper	Zinc	Copper	Zinc	Sediment deposition for this site is judged as:	
Step 2	0.00	0.00	Pass	Pass	Alert. Protected Area.	Accumulating? No 0.35 Low flow Vel m/s
Step 3	-	-				Extensive? No - Deposition Index

Location Details

Road number	A4 Enniskillen Southern Bypass		HA Area / DBFO number	
Assessment type	Non-cumulative assessment (single outfall)			
OS grid reference of assessment point (m)	Easting	222626	Northing	342219
OS grid reference of outfall structure (m)	Easting	222626	Northing	342219
Outfall number	A2		List of outfalls in cumulative assessment	
Receiving watercourse	River Sillees			
EA receiving water Detailed River Network ID	WFD ID: UKGBNI1NW363601044		Assessor and affiliation	
Date of assessment	28/11/2017		Version of assessment	
Notes				

Step 1 Runoff Quality

AADT	>10,000 and <50,000	Climatic region	Colder Wet	Rainfall site	Ardtnaig (SAAR 1343.9mm)
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Step 2 River Impacts

Annual 95%ile river flow (m ³ /s)	0.43	(Enter zero in Annual 95%ile river flow box to assess Step 1 runoff quality only)			
Impermeable road area drained (ha)	0.307	Permeable area draining to outfall (ha)	0		
Base Flow Index (BFI)	0.51	Is the discharge in or within 1 km upstream of a protected site for conservation?			Yes <input type="checkbox"/>

For dissolved zinc only

Water hardness	Medium = 50-200 CaCO ₃ /l
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For sediment impact only

Is there a downstream structure, lake, pond or canal that reduces the velocity within 100m of the point of discharge?					No <input type="checkbox"/>			
Tier 1	Estimated river width (m)	24.65						
Tier 2	Bed width (m)	8.202	Manning's n	0.04	Side slope (m/m)	1	Long slope (m/m)	0.0016

Step 3 Mitigation

	Brief description	Estimated effectiveness					
		Treatment for solubles (%)		Attenuation for solubles - restricted discharge rate (l/s)		Settlement of sediments (%)	
Existing measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>
Proposed measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>

Predict Impact
Show Detailed Results
Exit Tool

Annual Average Concentration			Soluble - Acute Impact		Sediment - Chronic Impact				
	Copper	Zinc	Copper	Zinc	Sediment deposition for this site is judged as:				
Step 2	0.00	0.00	Pass	Pass	Alert. Protected Area.	Accumulating?	No	0.35	Low flow Vel m/s
Step 3	-	-				Extensive?	No	-	Deposition Index

Location Details

Road number			HA Area / DBFO number		
Assessment type	Non-cumulative assessment (single outfall)				
OS grid reference of assessment point (m)	Easting	222656	Northing	342276	
OS grid reference of outfall structure (m)	Easting	222656	Northing	342276	
Outfall number	A1	List of outfalls in cumulative assessment			
Receiving watercourse	River Sillees				
EA receiving water Detailed River Network ID	WFD ID: UKGBNI1NW363601044	Assessor and affiliation			
Date of assessment	27/11/2017	Version of assessment			
Notes					

Step 1 Runoff Quality

AAOT	>10,000 and <50,000	Climatic region	Colder Wet	Rainfall site	Ardalnaig (SAAR 1343.9mm)
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Step 2 River Impacts

Annual 95%ile river flow (m ³ /s)	0.43	(Enter zero in Annual 95%ile river flow box to assess Step 1 runoff quality only)			
Impermeable road area drained (ha)	0.547	Permeable area draining to outfall (ha)	0		
Base Flow Index (BFI)	0.51	Is the discharge in or within 1 km upstream of a protected site for conservation?			Yes <input type="checkbox"/>

For dissolved zinc only

Water hardness	Low = <50mg CaCO ₃ /l	<input type="checkbox"/> D
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For sediment impact only

Is there a downstream structure, lake, pond or canal that reduces the velocity within 100m of the point of discharge?					No <input type="checkbox"/> D			
Tier 1	Estimated river width (m)	24.65						
Tier 2	Bed width (m)	8.202	Manning's n	0.04	Side slope (m/m)	1	Long slope (m/m)	0.0016

Step 3 Mitigation

	Brief description	Estimated effectiveness			
		Treatment for solubles (%)	Attenuation for solubles - restricted discharge rate (l/s)	Settlement of sediments (%)	
Existing measures		0 <input type="checkbox"/> D	Unlimited <input type="checkbox"/> D	0 <input type="checkbox"/> D	0 <input type="checkbox"/> D
Proposed measures		0 <input type="checkbox"/> D	Unlimited <input type="checkbox"/> D	0 <input type="checkbox"/> D	0 <input type="checkbox"/> D

Predict Impact
Show Detailed Results
Exit Tool

Annual Average Concentration			Soluble - Acute Impact		Sediment - Chronic Impact				
	Copper	Zinc	Copper	Zinc	Sediment deposition for this site is judged as:				
Step 2	0.00	0.01	Pass	Pass	Alert. Protected Area.	Accumulating?	No	0.35	Low flow Vel m/s
Step 3	-	-				Extensive?	No	-	Deposition Index

Location Details

Road number	A4 Enniskillen Southern Bypass		HA Area / DBFO number	
Assessment type	Non-cumulative assessment (single outfall)			
OS grid reference of assessment point (m)	Easting	222727	Northing	342417
OS grid reference of outfall structure (m)	Easting	222727	Northing	342417
Outfall number	D1		List of outfalls in cumulative assessment	
Receiving watercourse	River Sillees			
EA receiving water Detailed River Network ID	WFD ID : UKGBN11NW363601044		Assessor and affiliation	
Date of assessment	29/11/2017		Version of assessment	
Notes				

Step 1 Runoff Quality

AADT Climatic region Rainfall site

Step 2 River Impacts

Annual 95%ile river flow (m³/s) (Enter zero in Annual 95%ile river flow box to assess Step 1 runoff quality only)
 Impermeable road area drained (ha) Permeable area draining to outfall (ha)
 Base Flow Index (BFI) Is the discharge in or within 1 km upstream of a protected site for conservation?

For dissolved zinc only

Water hardness

For sediment impact only

Is there a downstream structure, lake, pond or canal that reduces the velocity within 100m of the point of discharge?

Tier 1 Estimated river width (m)
 Tier 2 Bed width (m) Manning's n Side slope (m/m) Long slope (m/m)

Step 3 Mitigation

	Brief description	Estimated effectiveness					
		Treatment for solubles (%)		Attenuation for solubles - restricted discharge rate (l/s)		Settlement of sediments (%)	
Existing measures		0	<input type="text" value="D"/>	Unlimited	<input type="text" value="D"/>	0	<input type="text" value="D"/>
Proposed measures		0	<input type="text" value="D"/>	Unlimited	<input type="text" value="D"/>	0	<input type="text" value="D"/>

Predict Impact
Show Detailed Results
Exit Tool

Annual Average Concentration			Soluble - Acute Impact		Zinc		Sediment - Chronic Impact			
	Copper	Zinc	Copper	Zinc			Sediment deposition for this site is judged as:			
Step 2	0.00	0.00	Pass	Pass	Alert. Protected Area.		Accumulating?	No	0.35	Low flow Vel m/s
Step 3	-	-					Extensive?	No	-	Deposition Index

Location Details

Road number	A4 Enniskillen Southern Bypass		HA Area / DBFO number	
Assessment type	Cumulative assessment including sediments (outfalls within 100m)			
OS grid reference of assessment point (m)	Easting	222626	Northing	342219
OS grid reference of outfall structure (m)	Easting	222626	Northing	342219
Outfall number			List of outfalls in cumulative assessment	A2
Receiving watercourse	River Sillees			B1
EA receiving water Detailed River Network ID	WFD ID: UKGBNI1NW363601044		Assessor and affiliation	
Date of assessment	28/11/2017		Version of assessment	
Notes				

Step 1 Runoff Quality

AADT	>10,000 and <50,000	Climatic region	Colder Wet	Rainfall site	Ardtnaig (SAAR 1343.9mm)
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Step 2 River Impacts

Annual 95%ile river flow (m ³ /s)	0.43	(Enter zero in Annual 95%ile river flow box to assess Step 1 runoff quality only)			
Impermeable road area drained (ha)	0.449	Permeable area draining to outfall (ha)	0		
Base Flow Index (BFI)	0.51	Is the discharge in or within 1 km upstream of a protected site for conservation?			Yes <input type="checkbox"/>

For dissolved zinc only

Water hardness	Medium = 50-200 CaCO ₃ /l
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For sediment impact only

Is there a downstream structure, lake, pond or canal that reduces the velocity within 100m of the point of discharge?					No <input type="checkbox"/>			
Tier 1	Estimated river width (m)	24.65						
Tier 2	Bed width (m)	8.202	Manning's n	0.04	Side slope (m/m)	1	Long slope (m/m)	0.0016

Step 3 Mitigation

	Brief description	Estimated effectiveness					
		Treatment for solubles (%)		Attenuation for solubles - restricted discharge rate (l/s)		Settlement of sediments (%)	
Existing measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>
Proposed measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>

Predict Impact
Show Detailed Results
Exit Tool

Annual Average Concentration			Soluble - Acute Impact		Zinc		Sediment - Chronic Impact		
	Copper	Zinc	Copper	Zinc	Sediment deposition for this site is judged as:				
Step 2	0.00	0.00	Pass	Pass	Alert. Protected Area.	Accumulating?	No	0.35	Low flow Vel m/s
Step 3	-	-				Extensive?	No	-	Deposition Index

Location Details

Road number	A4 Enniskillen Southern Bypass		HA Area / DBFO number	
Assessment type	Non-cumulative assessment (single outfall)			
OS grid reference of assessment point (m)	Easting	222600	Northing	342155
OS grid reference of outfall structure (m)	Easting	222600	Northing	342155
Outfall number	B1		List of outfalls in cumulative assessment	
Receiving watercourse	River Sillees			
EA receiving water Detailed River Network ID	WFD ID: UKGBNI1NW363601044		Assessor and affiliation	
Date of assessment	28/11/2017		Version of assessment	
Notes				

Step 1 Runoff Quality

AADT	>10,000 and <50,000	Climatic region	Colder Wet	Rainfall site	Ardtnaig (SAAR 1343.9mm)
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Step 2 River Impacts

Annual 95%ile river flow (m ³ /s)	0.43	(Enter zero in Annual 95%ile river flow box to assess Step 1 runoff quality only)			
Impermeable road area drained (ha)	0.143	Permeable area draining to outfall (ha)	0		
Base Flow Index (BFI)	0.51	Is the discharge in or within 1 km upstream of a protected site for conservation?			Yes <input type="checkbox"/>

For dissolved zinc only

Water hardness	Medium = 50-200 CaCO ₃ /l
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For sediment impact only

Is there a downstream structure, lake, pond or canal that reduces the velocity within 100m of the point of discharge?					No <input type="checkbox"/>			
Tier 1	Estimated river width (m)	24.65						
Tier 2	Bed width (m)	8.202	Manning's n	0.04	Side slope (m/m)	1	Long slope (m/m)	0.0016

Step 3 Mitigation

	Brief description	Estimated effectiveness					
		Treatment for solubles (%)		Attenuation for solubles - restricted discharge rate (l/s)		Settlement of sediments (%)	
Existing measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>
Proposed measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>

Predict Impact
Show Detailed Results
Exit Tool

Annual Average Concentration			Soluble - Acute Impact		Sediment - Chronic Impact	
	Copper	Zinc	Copper	Zinc	Sediment deposition for this site is judged as:	
Step 2	0.00	0.00	Pass	Pass	Alert. Protected Area.	Accumulating? No 0.35 Low flow Vel m/s
Step 3	-	-				Extensive? No - Deposition Index

Location Details

Road number	A4 Enniskillen Southern Bypass		HA Area / DBFO number	
Assessment type	Non-cumulative assessment (single outfall)			
OS grid reference of assessment point (m)	Easting	222671	Northing	342277
OS grid reference of outfall structure (m)	Easting	222671	Northing	342277
Outfall number	C1		List of outfalls in cumulative assessment	
Receiving watercourse	River Sillees			
EA receiving water Detailed River Network ID	WFD ID : UKGBN11NW363601044		Assessor and affiliation	
Date of assessment	29/11/2017		Version of assessment	
Notes				

Step 1 Runoff Quality

AADT	>10,000 and <50,000	Climatic region	Colder Wet	Rainfall site	Ardtnaig (SAAR 1343.9mm)
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Step 2 River Impacts

Annual 95%ile river flow (m ³ /s)	0.43	(Enter zero in Annual 95%ile river flow box to assess Step 1 runoff quality only)			
Impermeable road area drained (ha)	0.029	Permeable area draining to outfall (ha)	0		
Base Flow Index (BFI)	0.51	Is the discharge in or within 1 km upstream of a protected site for conservation?			Yes <input type="checkbox"/>

For dissolved zinc only

Water hardness	Medium = 50-200 CaCO ₃ /l
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For sediment impact only

Is there a downstream structure, lake, pond or canal that reduces the velocity within 100m of the point of discharge?					No <input type="checkbox"/>			
Tier 1	Estimated river width (m)	24.65						
Tier 2	Bed width (m)	8.202	Manning's n	0.04	Side slope (m/m)	1	Long slope (m/m)	0.0016

Step 3 Mitigation

	Brief description	Estimated effectiveness					
		Treatment for solubles (%)		Attenuation for solubles - restricted discharge rate (l/s)		Settlement of sediments (%)	
Existing measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>
Proposed measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>

Predict Impact
Show Detailed Results
Exit Tool

Annual Average Concentration			Soluble - Acute Impact		Sediment - Chronic Impact				
	Copper	Zinc	Copper	Zinc	Sediment deposition for this site is judged as:				
Step 2	0.00	0.00	Pass	Pass	Alert. Protected Area.	Accumulating?	No	1.58	Low flow Vel m/s
Step 3	-	-				Extensive?	No	-	Deposition Index

Location Details

Road number	A4 Enniskillen Southern Bypass		HA Area / DBFO number	
Assessment type	Non-cumulative assessment (single outfall)			
OS grid reference of assessment point (m)	Easting	224485	Northing	342838
OS grid reference of outfall structure (m)	Easting	224485	Northing	342838
Outfall number	E1	List of outfalls in cumulative assessment		
Receiving watercourse	River Erne			
EA receiving water Detailed River Network ID	WFD ID: UKGBNI1NW363602039		Assessor and affiliation	
Date of assessment	29/11/2017		Version of assessment	
Notes				

Step 1 Runoff Quality

AADT	>10,000 and <50,000	Climatic region	Colder Wet	Rainfall site	Keighley (SAAR 1000mm)
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Step 2 River Impacts

Annual 95%ile river flow (m ³ /s)	50	(Enter zero in Annual 95%ile river flow box to assess Step 1 runoff quality only)			
Impermeable road area drained (ha)	1.676	Permeable area draining to outfall (ha)	0		
Base Flow Index (BFI)	0.371	Is the discharge in or within 1 km upstream of a protected site for conservation?			Yes <input type="checkbox"/>

For dissolved zinc only

Water hardness	Medium = 50-200 CaCO ₃ /l
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For sediment impact only

Is there a downstream structure, lake, pond or canal that reduces the velocity within 100m of the point of discharge?					No <input type="checkbox"/>
Tier 1	Estimated river width (m)	89			
Tier 2	Bed width (m)	43.5	Manning's n	0.03	Side slope (m/m)
				0.31	Long slope (m/m)
					0.003

Step 3 Mitigation

	Brief description	Estimated effectiveness					
		Treatment for solubles (%)		Attenuation for solubles - restricted discharge rate (l/s)		Settlement of sediments (%)	
Existing measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>
Proposed measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>

Predict Impact
Show Detailed Results
Exit Tool

Abbreviations

RL	Road Length in kilometres
SS	Spillage Rates (DMRB Vol 11, Section 3, Part 10, HD 45/09 - Table D1.1 Serious Spillages in Billion Annual Average Daily Traffic (use Design year for new road))
AADT	Annual Average Daily Traffic (use Design year for new road)
%HGV	percentage of HGVs
RTR	Rural Trunk Road (Table D1.1)

Source Data

RL No Junction	1.210404 km
RL Roundabout	0.419105 km
RL Side Road	0 km
SS No Junction (RTR)	0.29 km/year
SS Roundabout (RTR)	3.09 km/year
SS Side Road (RTR)	0.93 km/year
AADT No Junction	9647 vehicles
AADT Roundabout	22259 vehicles
AADT Side Road	0 vehicles
%HGV No Junction	4 %
%HGV Roundabout	6 %
%HGV Side Road	0 %

P_{SPL} Annual Probability of a spillage for each section of road
 $P_{SPL} = RL * SS * (AADT * 365 * 10^{-9}) * (\%HGV/100)$

River Erne Reach: P_{SPL}

P_{SPL} No Junction	4.94394E-05
P_{SPL} Roundabout	0.000631293
P_{SPL} Side Road	0
Total	0.000437014

P_{INC} Annual Probability of a serious pollution incident for each section of road

$P_{INC} = P_{SPL} * P_{POL}$ where:
 P_{POL} the probability, given a spillage, that a serious pollution incident will result. Probability selected from table D1.2

$P_{POL} = 0.45$ (Surface watercourse, Urban)

River Erne Reach: P_{INC}

P_{INC} No Junction	2.22477E-05
P_{INC} Roundabout	0.000284082
P_{INC} Side Road	0
Total	0.03% therefore acceptable risk

Annual Average Concentration			Soluble - Acute Impact		Sediment - Chronic Impact	
	Copper	Zinc	Copper	Zinc	Sediment deposition for this site is judged as:	
Step 2	0.00	0.00	Pass	Pass	Alert. Protected Area.	Accumulating? No 0.35 Low flow Vel m/s
Step 3	-	-				Extensive? No - Deposition Index

Location Details

Road number	A4 Enniskillen Southern Bypass		HA Area / DBFO number	
Assessment type	Non-cumulative assessment (single outfall)			
OS grid reference of assessment point (m)	Easting	223076	Northing	342276
OS grid reference of outfall structure (m)	Easting	223076	Northing	342276
Outfall number	F1		List of outfalls in cumulative assessment	
Receiving watercourse	River Sillees			
EA receiving water Detailed River Network ID	WFD ID: UKGBNI1NW363601044		Assessor and affiliation	
Date of assessment	29/11/2017		Version of assessment	
Notes				

Step 1 Runoff Quality

AADT	>10,000 and <50,000	Climatic region	Colder Wet	Rainfall site	Ardtnaig (SAAR 1343.9mm)
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Step 2 River Impacts

Annual 95%ile river flow (m ³ /s)	0.43	(Enter zero in Annual 95%ile river flow box to assess Step 1 runoff quality only)			
Impermeable road area drained (ha)	0.011	Permeable area draining to outfall (ha)	0		
Base Flow Index (BFI)	0.51	Is the discharge in or within 1 km upstream of a protected site for conservation?			Yes <input type="checkbox"/>

For dissolved zinc only

Water hardness	Medium = 50-200 CaCO ₃ /l
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For sediment impact only

Is there a downstream structure, lake, pond or canal that reduces the velocity within 100m of the point of discharge?					No <input type="checkbox"/>			
Tier 1	Estimated river width (m)	24.65						
Tier 2	Bed width (m)	8.202	Manning's n	0.04	Side slope (m/m)	1	Long slope (m/m)	0.0016

Step 3 Mitigation

	Brief description	Estimated effectiveness					
		Treatment for solubles (%)		Attenuation for solubles - restricted discharge rate (l/s)		Settlement of sediments (%)	
Existing measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>
Proposed measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>

Predict Impact
Show Detailed Results
Exit Tool

Annual Average Concentration			Soluble - Acute Impact		Sediment - Chronic Impact				
	Copper	Zinc	Copper	Zinc	Sediment deposition for this site is judged as:				
Step 2	0.00	0.00	Pass	Pass	Alert. Protected Area.	Accumulating?	No	1.66	Low flow Vel m/s
Step 3	-	-				Extensive?	No	-	Deposition Index

Location Details

Road number	A4 Enniskillen Southern Bypass		HA Area / DBFO number	
Assessment type	Non-cumulative assessment (single outfall)			
OS grid reference of assessment point (m)	Easting	224485	Northing	342838
OS grid reference of outfall structure (m)	Easting	224485	Northing	342838
Outfall number	H1		List of outfalls in cumulative assessment	
Receiving watercourse	River Erne			
EA receiving water Detailed River Network ID	WFD ID: UKGBNI1NW363602039		Assessor and affiliation	
Date of assessment	29/11/2017		Version of assessment	
Notes				

Step 1 Runoff Quality

AADT	>10,000 and <50,000	Climatic region	Colder Wet	Rainfall site	Keighley (SAAR 1000mm)
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Step 2 River Impacts

Annual 95%ile river flow (m ³ /s)	50	(Enter zero in Annual 95%ile river flow box to assess Step 1 runoff quality only)			
Impermeable road area drained (ha)	0.329	Permeable area draining to outfall (ha)	0		
Base Flow Index (BFI)	0.371	Is the discharge in or within 1 km upstream of a protected site for conservation?			Yes <input type="checkbox"/>

For dissolved zinc only

Water hardness	Medium = 50-200 CaCO ₃ /l
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For sediment impact only

Is there a downstream structure, lake, pond or canal that reduces the velocity within 100m of the point of discharge?					No <input type="checkbox"/>
Tier 1	Estimated river width (m)	74			
Tier 2	Bed width (m)	38	Manning's n	0.03	Side slope (m/m)
				0.35	Long slope (m/m)
					0.003

Step 3 Mitigation

	Brief description	Estimated effectiveness					
		Treatment for solubles (%)		Attenuation for solubles - restricted discharge rate (l/s)		Settlement of sediments (%)	
Existing measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>
Proposed measures		0	<input type="checkbox"/>	Unlimited	<input type="checkbox"/>	0	<input type="checkbox"/>

Predict Impact

Show Detailed Results

Exit Tool

Abbreviations

RL	Road Length in kilometres
SS	Spillage Rates (DMRB Vol 11, Section 3, Part 10, HD 45/09 - Table D1.1 Serious Spillages in Billion Annual Average Daily Traffic (use Design year for new road))
AADT	Annual Average Daily Traffic (use Design year for new road)
%HGV	percentage of HGVs
RTR	Rural Trunk Road (Table D1.1)

Source Data

RL No Junction	1.210404 km
RL Roundabout	0.419105 km
RL Side Road	0 km
SS No Junction (RTR)	0.29 km/year
SS Roundabout (RTR)	3.09 km/year
SS Side Road (RTR)	0.93 km/year
AADT No Junction	9647 vehicles
AADT Roundabout	22259 vehicles
AADT Side Road	0 vehicles
%HGV No Junction	4 %
%HGV Roundabout	6 %
%HGV Side Road	0 %

P_{SPL}	Annual Probability of a spillage for each section of road
P_{SPL}	$RL * SS * (AADT * 365 * 10^{-9}) * (\%HGV/100)$

River Erne Reach: P_{SPL}

P_{SPL} No Junction	4.94394E-05
P_{SPL} Roundabout	0.000631293
P_{SPL} Side Road	0
Total	0.000437014

P_{INC}	Annual Probability of a serious pollution incident for each section of road
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P_{INC}	$P_{SPL} * P_{POL}$ where:
P_{POL}	the probability, given a spillage, that a serious pollution incident will result. Probability selected from table D1.2

P_{POL}	0.45 (Surface watercourse, Urban)
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River Erne Reach: P_{INC}

P_{INC} No Junction	2.22477E-05
P_{INC} Roundabout	0.000284082
P_{INC} Side Road	0
Total	0.03% therefore acceptable risk

Abbreviations

RL	Road Length in kilometres
SS	Spillage Rates (DMRB Vol 11, Section 3, Part 10, HD 45/09 - Table D1.1 Serious Spillages in Billion)
AADT	Annual Average Daily Traffic (use Design year for new road)
%HGV	percentage of HGVs
RTR	Rural Trunk Road (Table D1.1)

Source Data

RL No Junction	0.698802 km
RL Roundabout	0.419476 km
RL Side Road	0 km
SS No Junction (RTR)	0.29 km/year
SS Roundabout (RTR)	3.09 km/year
SS Side Road (RTR)	0.93 km/year
AADT No Junction	9647 vehicles
AADT Roundabout	12642 vehicles
AADT Side Road	0 vehicles
%HGV No Junction	4 %
%HGV Roundabout	6 %
%HGV Side Road	0 %

P_{SPL}	Annual Probability of a spillage for each section of road
P_{SPL}	$RL * SS * (AADT * 365 * 10^{-9}) * (\%HGV/100)$

River Sillees Reach: P_{SPL}

P_{SPL} No Junction	2.85428E-05
P_{SPL} Roundabout	0.00035886
P_{SPL} Side Road	0

P_{INC}	Annual Probability of a serious pollution incident for each section of road
P_{INC}	$P_{SPL} * P_{POL}$ where:
P_{POL}	the probability, given a spillage, that a serious pollution incident will result. Probability selected from table D1.2
P_{POL}	0.45 (Surface watercourse, Urban)

River Sillees Reach: P_{INC}

P_{INC} No Junction	1.28443E-05
P_{INC} Roundabout	0.000161487
P_{INC} Side Road	0
Total	0.02% therefore acceptable risk