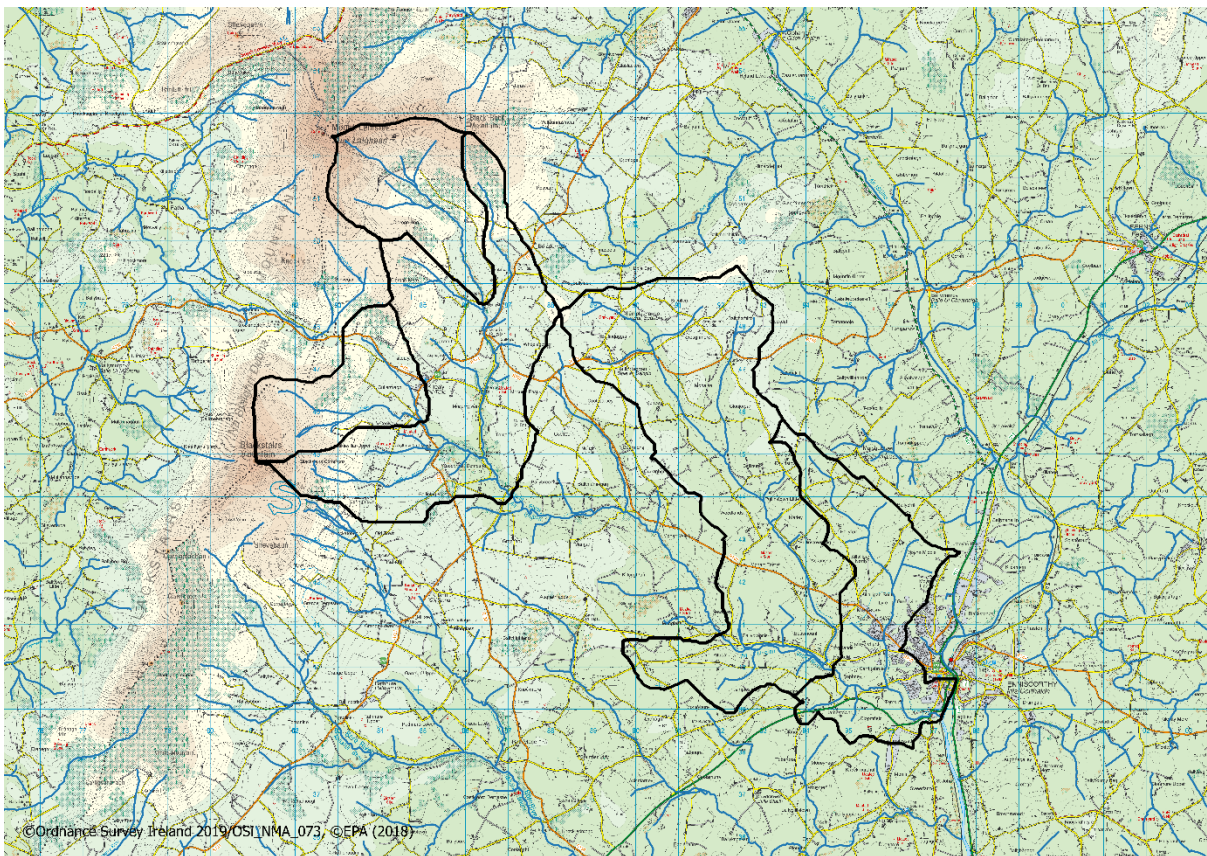


Urrin Priority Area for Action (AFA0184) Desk Study Report South East Region



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Acknowledgements

The author would like to acknowledge the contributions of Wexford County Council who have carried out a significant amount of work in the Urrin catchment in recent years and their support of the Local Authority Waters Programme.

Urrin PAA

1 Background

The Urrin PAA is located in Co. Wexford and is part of the Slaney and Wexford Harbour catchment.

Regional workshops were held in Roscrea on 6-9 June 2017 and were attended by representatives of local authorities (Kilkenny, Tipperary, Waterford City and County, Kildare, Laois, Offaly, Carlow, Wexford & Wicklow), and other agencies (Bord Iascaigh Mhara, DHPCLG, EPA, National Dairy Sustainability Forum, National Federation for Group Water Schemes, Sea Fisheries Protection Authority, Waterways Ireland, LAWCO, Irish Water, IFI, Forest Service, Coillte, NPWS, Teagasc, GSI, DAFM, Marine Institute and EPA). Based on the draft River Basin Management Plan priorities, a set of agreed principles and the priorities of the workshop attendees, 34 areas were recommended for action in the South East region and the Urrin was selected due to the following reasons:

- Building on completed and planned improvements from Enniscorthy upgrade works.
- Three deteriorated water bodies.
- Two of the three deteriorated water bodies are At Risk High Ecological Status objective water bodies.
- One potential 'quick win'.

The Urrin PAA consists of five river waterbodies: Askinvillar Stream_010, Urrin_010, Urrin_020, Urrin_040 and Urrin_050. These water bodies are illustrated in **Figure 1** and summarised in **Table 1**.

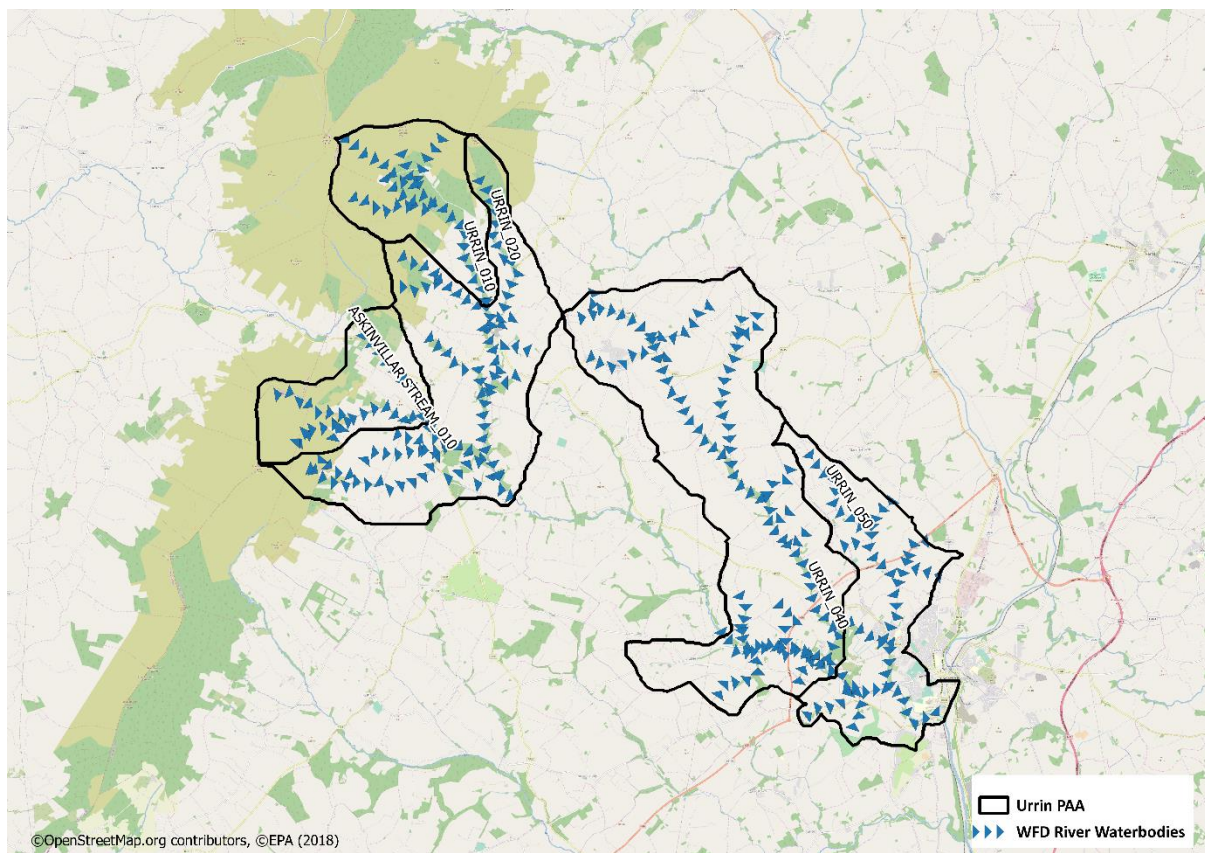


Figure 1 WFD river waterbodies within the Urrin PAA (The blue arrows indicate the water flow direction)

Urrin PAA

Table 1 Summary table of water bodies within the Urrin PAA

WB Code	WB Name	WFD Risk	Status Obj.	Status			Pressure Category	Pressure Subcat.	Sig. Pressure
				2009	2012	2015			
IE_SE_12A030200	Askinvillar Stream_010	At Risk	High	H	H	G	Forestry	Forestry	Yes
							Agriculture	Agriculture	Yes
IE_SE_12U010050	Urrin_010	At Risk	High	H	G	G	Forestry	Clearfelling	Yes
IE_SE_12U010200	Urrin_020	At Risk	Good	G	M	M	Agriculture	Pasture	Yes
							Forestry	Forestry	Yes
IE_SE_12U010360	Urrin_040	At Risk	Good	U	M	M	Domestic Waste Water	Communal System discharge	Yes
							Urban Waste Water	Agglomeration PE <500	No
IE_SE_12U010500	Urrin_050	At Risk	Good	M	M	M	Urban Run-off	Diffuse Surface Run-off	Yes
							Urban Waste Water	Combined Sewer Overflows	Yes

The initial characterisation sub-catchment assessments by The Environmental Protection Agency recommended that the following actions be undertaken:

- **Askinvillar Stream_010:** IA8 High status RWB pressures. Focus on sources of nutrients and sediment from agriculture and forestry. SSRS at catchment outlet, see if decline is still occurring.
- **Urrin_010:** IA8 High status RWB pressures. Focus on sources of sediment from forestry. This a HES - High Ecological Status Objective site.
- **Urrin_020:** IA7 Multiple Sources in Multiple Areas. Local catchment assessment: agriculture, cattle access, sediment issues, forestry. Details: catchment walk, identify areas where cattle access may issue WQ, sediment is a problem. Field parameters, SSRS and WQ.
- **Urrin_040:** IA1 Provision of Information. EPA to flag/take note the impact of unfinished housing estates, that are not connected to the network, on water quality. Discuss with DHPLG. Wexford County Council to send information on impact of wastewater from housing estates on the RWB.

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- **Urrin_050:** *IA7 Multiple Sources in Multiple Areas. The EPA to compile a list of water bodies where wastewater discharge from private housing estates are the significant pressure. To be raised with the Department as a national issue.*
IA1 Provision of Information. Watching brief for IW: To update LA + EPA on upgrade progression and network issues.
IA6 Multiple Sources in Large Urban Area. Diffuse Urban pressure to be investigated.

Urrin PAA

2 Receptor Information and Assessment

The five river waterbodies located within the Urrin PAA and the associated monitoring stations are illustrated in **Figure 2**.

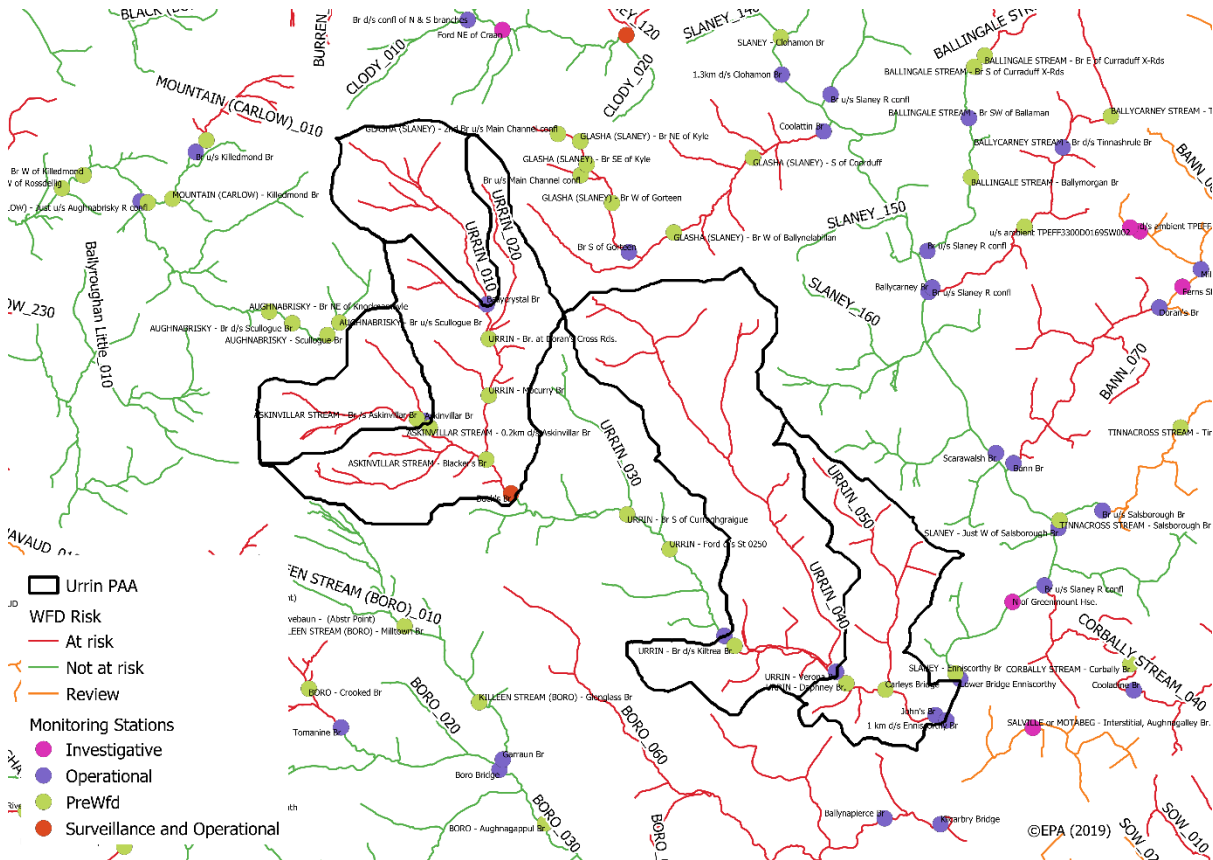


Figure 2 Monitoring stations located within the Urrin PAA

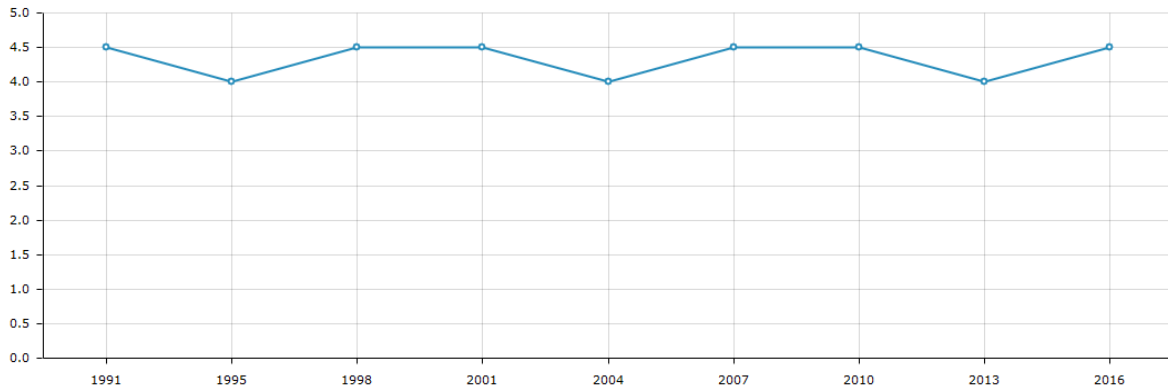
2.1 Askinvillar Stream_010

- The Askinvillar Stream_010 is situated in the headwaters of the river and is upstream of the Urrin_020 (currently at Moderate Status). The river waterbody has one operational monitoring station located at Askinvillar Br (RS12A030200) as illustrated in **Figure 2**. **Table 2** summarises the receptor information for the river waterbody and details the biological status.
- Significant issue(s) cannot be determined at this stage due to the absence of hydrochemistry data.

Table 2 Receptor information for the Askinvillar Stream_010

Factor	Figure	Comment/Description
Risk Category		<i>At Risk</i>
Biological Status Monitoring Station(s) with Q-Values 2009-2015 Status Trends in Q value since 2009 2016-2018 Q value data	Fig. 3	Askinvillar Br, 1991-2016 Good Increased from 4 (2013) to 4-5 (2016). Was 4-5 in 2010. 2016: Q value 4-5
Hydrochemistry Data Monitoring Station(s) with data Existing New		<i>No supporting chemistry monitoring site in this water body</i>
Summary & Trends in PO₄, NH₃ and NO₃ In App (until 2015) All available data Other water quality data Baseline Concentration (mg/l) Other relevant values Distance to H/G threshold		<i>No supporting chemistry monitoring site in this water body</i>
Supporting Conditions Chemical Conditions Oxygenation Conditions Acidification Conditions		<i>No supporting chemistry monitoring site in this water body</i>
Hydromorphology RHAT Score Evidence of arterial drainage		0.7969 (Good)
Ecological Status (2010-2015) Trends 2010-2015		Good Deteriorated High to Good
Protected Areas	Fig. 13	Blackstairs Mountains SAC. Overlapping / Partly within Protected Area
WFD Objective		High
EPA biologist notes (if any)		A good representation of pollution sensitive forms indicates a return to High ecological conditions.
Significant issue		Unknown as no hydrochemistry data available

Urrin PAA



	1991	1995	1998	2001	2004	2007	2010	2013	2016
Result	4.5	4	4.5	4.5	4	4.5	4.5	4	4.5
Classification	High	Good	High	High	Good	High	High	Good	High
Q-Value	4-5	4	4-5	4-5	4	4-5	4-5	4	4-5

Figure 3 Q-Values recorded at the Askinvillar Br Monitoring Station

2.2 Urrin_010

- The Urrin_010 is situated in the headwaters of the river and is upstream of Urrin_020 (currently at Moderate Status). The river waterbody has one operational monitoring station located at Ballycrystal Br (RS12U010050) as illustrated in **Figure 2**. **Table 3** summarises the receptor information for the river waterbody and details the biological status.
- Significant issue(s) cannot be determined at this stage due to the absence of hydrochemistry data.

Urrin PAA

Table 3 Receptor information for the Urrin_010

Factor	Figure	Comment/Description
Risk Category		<i>At Risk</i>
Biological Status Monitoring Station(s) with Q-Values 2009-2015 Status Trends in Q value since 2009 2016-2018 Q value data	Fig. 4	Ballycrystal Br, 1989-2016 Good Decreased from 5 (2007) to 4 (2010). Q value 4 since 2010. 2016: Q value 4
Hydrochemistry Data Monitoring Station(s) with data Existing New		<i>No supporting chemistry monitoring site in this water body</i>
Summary & Trends in PO₄, NH₃ and NO₃ In App (until 2015) All available data Other water quality data Baseline Concentration (mg/l) Other relevant values Distance to H/G threshold		<i>No supporting chemistry monitoring site in this water body</i>
Supporting Conditions Chemical Conditions Oxygenation Conditions Acidification Conditions		<i>No supporting chemistry monitoring site in this water body</i>
Hydromorphology RHAT Score Evidence of arterial drainage		
Ecological Status (2010-2015) Trends 2010-2015		Good Good status since 2010
Protected Areas	Fig. 13	Blackstairs Mountains SAC. Overlapping / Partly within Protected Area
WFD Objective		High
EPA biologist notes (if any)		A very welcome improvement in the overall ecological condition of the Urrin has occurred since 2013, reversing the gradual deterioration that had been noted previously. With increased numbers of pollution sensitive invertebrates in the fauna, all five sites are now in satisfactory condition.
Significant issue		Unknown as no hydrochemistry data available

Urrin PAA

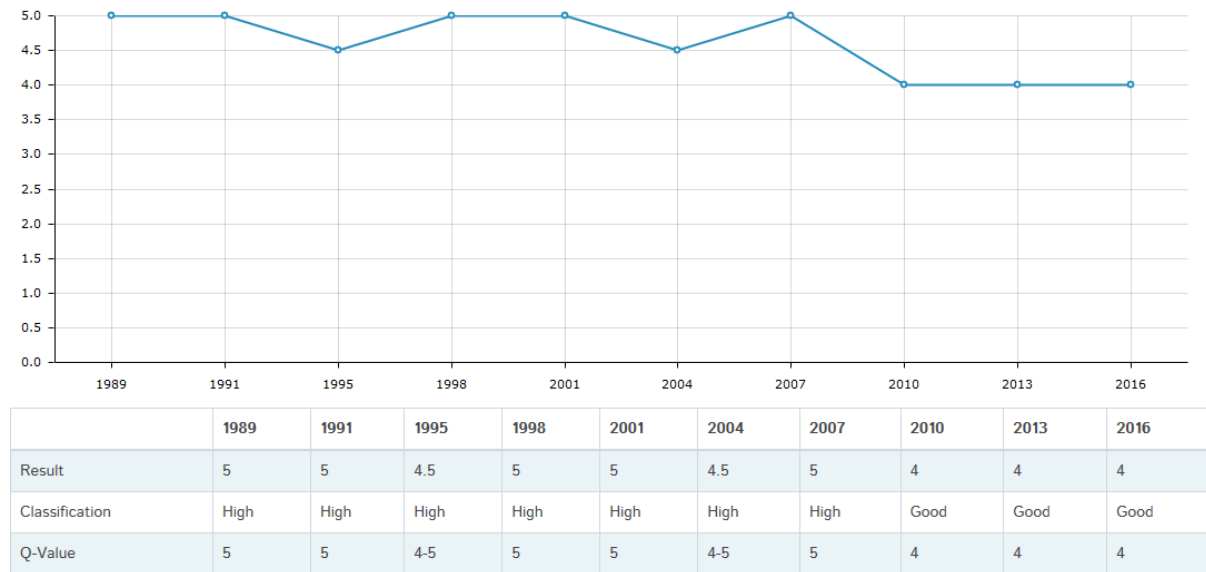


Figure 4 Q-Values recorded at the Ballycrystal Br Monitoring Station

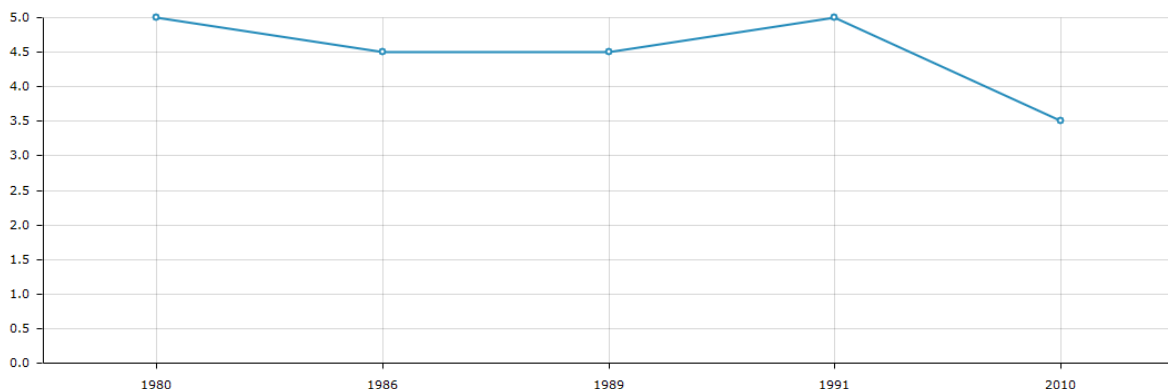
2.3 Urrin_020

- The Urrin_020 has two inputting surface waterbodies; Askinvillar Stream_010 and the Urrin_010. The Askinvillar Stream_010 is at Good Status having previously been at High Status in 2012. The Urrin_010 is at Good Status having previously been at High Status in 2009. The Urrin_020 is a tributary of the Urrin_030 which is currently at Good Status and *Not at Risk* of failing to meet its WFD objectives. **Table 4** summarises the receptor information for the river water body and details the biological status, hydrochemistry data and water quality trends. There are two monitoring stations for the river waterbody with monitoring data (**Figure 2**):
 - Urrin - Mocurry Br (RS12U010100): Pre Wfd
 - Buck's Br (RS12U010200): Surveillance
- From the available data there are no identifiable significant issues for the Urrin_020. The Q value classification at Buck's Br monitoring station returned to High in 2016. Concentrations of Phosphate and Ammonia are well below their relevant Environmental Quality Standards (EQS) while levels of Total Oxidised Nitrogen are below the Action Threshold of 3.5 mg/l TON-N.

Table 4 Receptor information for the Urrin_020

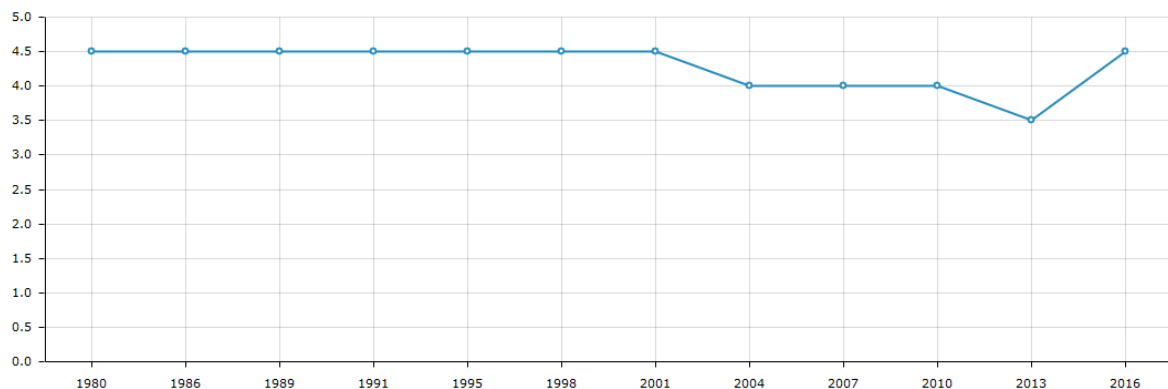
Factor	Station		
	Figure	Urrin – Moceruy Br	Buck’s Br
Risk Category		<i>At Risk</i>	<i>At Risk</i>
Biological Status Monitoring Station(s) with Q-Values 2009-2015 Status Trends in Q value since 2009 2016-2018 Q value data	Fig. 5-6	1980-2010 Moderate (2010)	1980-2016 Moderate Increased from 4 (2010) to 4-5 (2016) 2016: Q value 4-5
Hydrochemistry Data Existing New	Fig. 7	<i>No supporting chemistry data at this monitoring station</i>	BOD: 2007-2018 PO ₄ , NH ₃ , & TON: 2007-2015
Summary & Trends in PO₄, NH₃ and NO₃ In App All available data Other water quality data Baseline Concentration (mg/l) 2014 Other relevant values	Fig. 7	<i>No supporting chemistry data at this monitoring station</i>	PO ₄ : Downwards NH ₃ : Downwards TON: Downwards BOD: Spikes in 2017 (4.5 mg/l), 2015 (2.6 mg/l) and 2014 (4.0 mg/l) Specific Pollutants, Priority Substances, Priority Hazard Substances: 2007 PO ₄ : 0.012 mg/l NH ₃ : 0.016 mg/l TON: 1.8 mg/l 2018 PO ₄ mean (5 values): 0.006 mg/l 2018 NH ₃ mean (5 values): 0.012 mg/l

Distance to threshold			PO ₄ : Far (G/H) NH ₃ : Far (G/H)
Supporting Conditions			
Chemistry Conditions		<i>No supporting chemistry data at this monitoring station</i>	Pass
Oxygenation Conditions			Pass
Acidification Conditions			Pass
Hydromorphology			
RHAT Score			0.7969 (Good)
Evidence of arterial drainage			
Ecological Status (2010-2015)			Moderate
Trends 2010-2015			Deteriorated Good to Moderate
Protected Areas	Fig. 13	Blackstairs Mountains SAC. Overlapping / Partly within Protected Area	Blackstairs Mountains SAC. Overlapping / Partly within Protected Area
WFD Objective		Good	Good
EPA biologist notes (if any)			A very welcome improvement in the overall ecological condition of the Urrin has occurred since 2013, reversing the gradual deterioration that had been noted previously. With increased numbers of pollution sensitive invertebrates in the fauna, all five sites are now in satisfactory condition. The most significant improvement is seen at Buck's Bridge (0200) where the ecological condition improved from Moderate in 2013 to High in 2016.
Significant issue		Unknown	Unknown



	1980	1986	1989	1991	2010
Result	5	4.5	4.5	5	3.5
Classification	High	High	High	High	Moderate
Q-Value	5	4-5	4-5	5	3-4

Figure 5 Q-Values recorded at the Urrin - Mocurry Br Monitoring Station



	1980	1986	1989	1991	1995	1998	2001	2004	2007	2010	2013	2016
Result	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4	4	4	3.5	4.5
Classification	High	High	High	High	High	High	High	Good	Good	Good	Moderate	High
Q-Value	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4	4	4	3-4	4-5

Figure 6 Q-Values recorded at the Buck's Br Monitoring Station

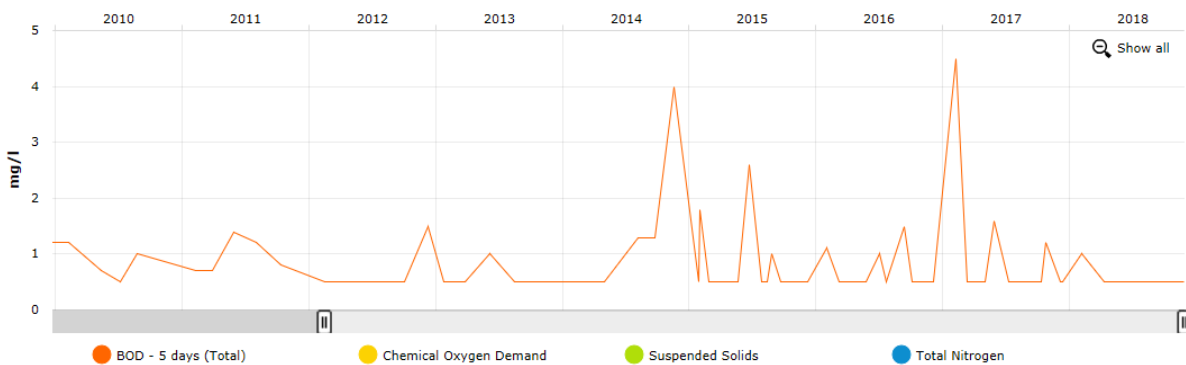


Figure 7 Chemistry data recorded at the Buck's Br Monitoring Station

Urrin PAA

2.4 Urrin_040

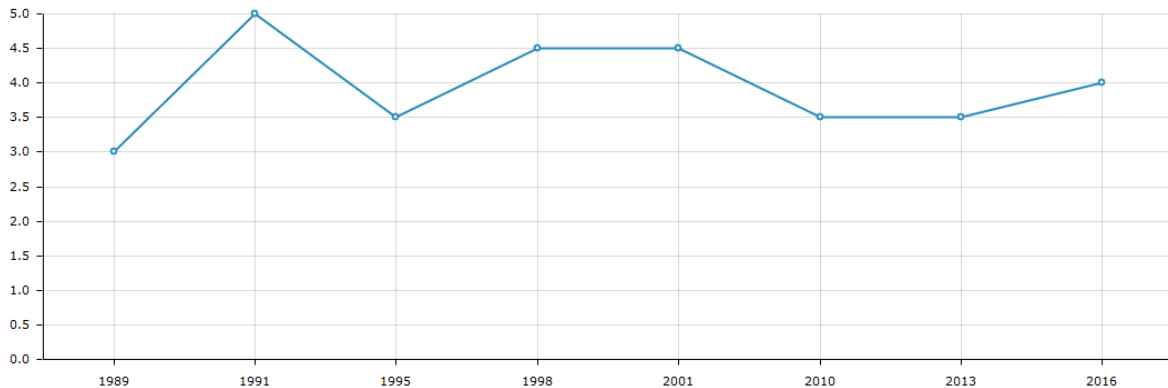
- The Urrin_040 has one inputting surface waterbody; the Urrin_030 which is currently at Good Status, *Not at Risk* of failing to meet its WFD objectives and has not been included as a prioritised area for action in the River Basin Management Plan 2018-2021. The Urrin_040 is a tributary of the Urrin_050 which is currently at Moderate Status. The river waterbody has one pre WFD monitoring station located at URRIN - Verona Br (RS12U010360) as illustrated in **Figure 2. Table 5** summarises the receptor information for the river water body and details the biological status.
- Significant issue(s) cannot be determined at this stage due to the absence of hydrochemistry data.

Table 5 Receptor information for the Urrin_040

Factor	Figure	Comment/Description
Risk Category		<i>At Risk</i>
Biological Status Monitoring Station(s) with Q-Values 2009-2015 Status Trends in Q value since 2009 2016-2018 Q value data	Fig. 8	URRIN - Verona Br, 1989-2016 Moderate Increased from 3-4 (2010) to 4 (2016). 2016: Q value 4
Hydrochemistry Data Monitoring Station(s) with data Existing New		<i>No supporting chemistry monitoring site in this water body</i>
Summary & Trends in PO₄, NH₃ and NO₃ In App (until 2015) All available data Other water quality data Baseline Concentration (mg/l) Other relevant values Distance to H/G threshold		<i>No supporting chemistry monitoring site in this water body</i>
Supporting Conditions Chemical Conditions Oxygenation Conditions Acidification Conditions		<i>No supporting chemistry monitoring site in this water body</i>
Hydromorphology RHAT Score Evidence of arterial drainage		
Ecological Status (2010-2015) Trends 2010-2015		Moderate Moderate status since 2010
Protected Areas		

Urrin PAA

WFD Objective	Good
EPA biologist notes (if any)	A very welcome improvement in the overall ecological condition of the Urrin has occurred since 2013, reversing the gradual deterioration that had been noted previously. With increased numbers of pollution sensitive invertebrates in the fauna, all five sites are now in satisfactory condition.
Significant issue	Unknown as no hydrochemistry data available



	1989	1991	1995	1998	2001	2010	2013	2016
Result	3	5	3.5	4.5	4.5	3.5	3.5	4
Classification	Poor	High	Moderate	High	High	Moderate	Moderate	Good
Q-Value	3	5	3-4	4-5	4-5	3-4	3-4	4

Figure 8 Q-Values recorded at the URRIN - Verona Br Monitoring Station

2.5 Urrin_050

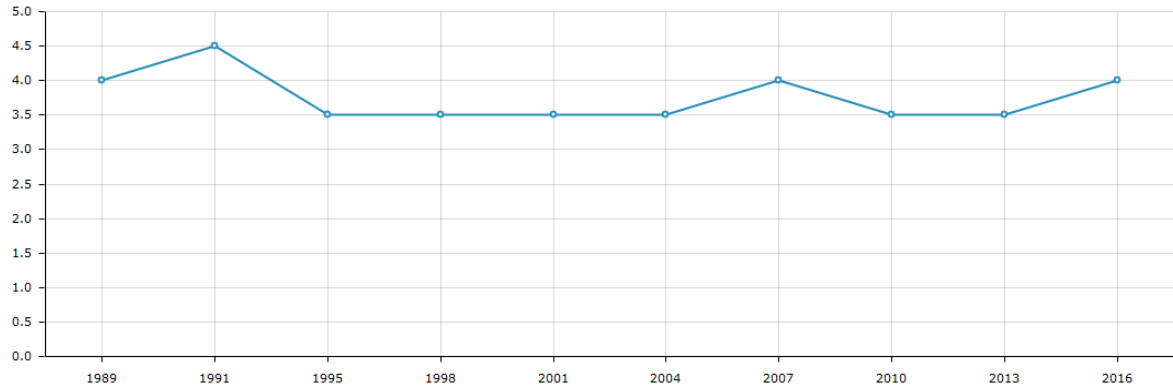
- The Urrin_050 has one inputting surface waterbody; the Urrin_040 which is currently at Moderate Status and *At Risk* of failing to meet its WFD objectives. The receiving waterbody for the Urrin_050 is the Upper Slaney Estuary which is currently at Good Status and *Not at Risk* of failing to meet its WFD objectives. The river waterbody has one operational monitoring station located at John’s Br (RS12U010500) as illustrated in **Figure 2**. **Table 6** summarises the receptor information for the river water body and details the biological status, hydrochemistry data, water quality trends and the significant issue.
- Nitrate is the significant issue identified for the Urrin_050. The Q value classification at John’s Br monitoring station returned to Good in 2016. However, concentrations of Total Oxidised Nitrogen are consistently above the Action Threshold level of 3.5 mg/l (**Figures 11 & 12**).

Urrin PAA

Table 6 Receptor information for the Urrin_050

Factor	Figure	Comment/Description
Risk Category		<i>At Risk</i>
Biological Status Monitoring Station(s) with Q-Values 2009-2015 Status Trends in Q value since 2009 2016-2018 Q value data	Fig. 9	John's Br, 1989-2016 Moderate Increased from 3-4 (2010) to 4 (2016). 2016: Q value 4
Hydrochemistry Data Monitoring Station(s) with data Existing New	Fig. 10-11 Fig. 12	John's Br PO ₄ , NH ₃ , & TON: 2007-2015, BOD: 2007-2018 PO ₄ , NH ₃ , & TON: 2016-2018
Summary & Trends in PO₄, NH₃ and NO₃ In App (until 2015) All available data Other water quality data Baseline Concentration (mg/l) 2014 Other relevant values Distance to threshold	Fig. 10	PO ₄ : Downwards NH ₃ : Downwards TON: Downwards BOD: Spike in 2015 (3.2 mg/l) PO ₄ : 0.009 mg/l NH ₃ : 0.015 mg/l TON: 4.143 mg/l 2018 PO ₄ mean (5 values): 0.01 mg/l 2018 NH ₃ mean (5 values): 0.012 mg/l 2018 TON mean (5 values): 4.58 mg/l PO ₄ : Far (G/H) NH ₃ : Far (G/H)
Supporting Conditions Chemical Conditions Oxygenation Conditions Acidification Conditions		Pass Pass Pass
Hydromorphology RHAT Score Evidence of arterial drainage		
Ecological Status (2010-2015) Trends 2010-2015		Moderate Moderate status since 2010
Protected Areas	Fig. 13	Slaney River Valley SAC. Overlapping / Partly within Protected Area
WFD Objective		Good
EPA biologist notes (if any)		A very welcome improvement in the overall ecological condition of the Urrin has occurred since 2013, reversing the gradual deterioration that had been noted previously. With increased numbers of pollution sensitive invertebrates in the fauna, all five sites are now in satisfactory condition.
Significant issue		Nitrate

Urrin PAA



	1989	1991	1995	1998	2001	2004	2007	2010	2013	2016
Result	4	4.5	3.5	3.5	3.5	3.5	4	3.5	3.5	4
Classification	Good	High	Moderate	Moderate	Moderate	Moderate	Good	Moderate	Moderate	Good
Q-Value	4	4-5	3-4	3-4	3-4	3-4	4	3-4	3-4	4

Figure 9 Q-Values recorded at the John's Br Monitoring Station

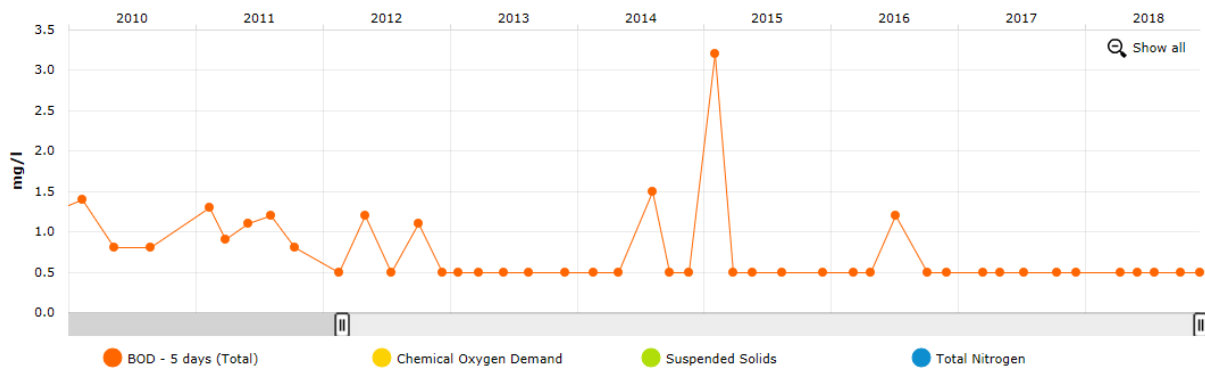


Figure 10 Chemistry data recorded at the John's Br Monitoring Station

Urrin PAA

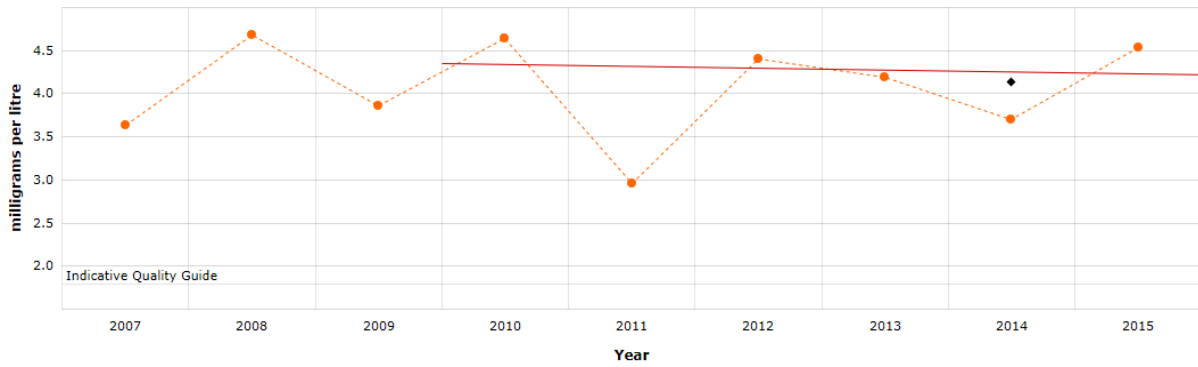


Figure 11 Average Total Oxidised Nitrogen concentrations recorded at the John's Br Monitoring Station

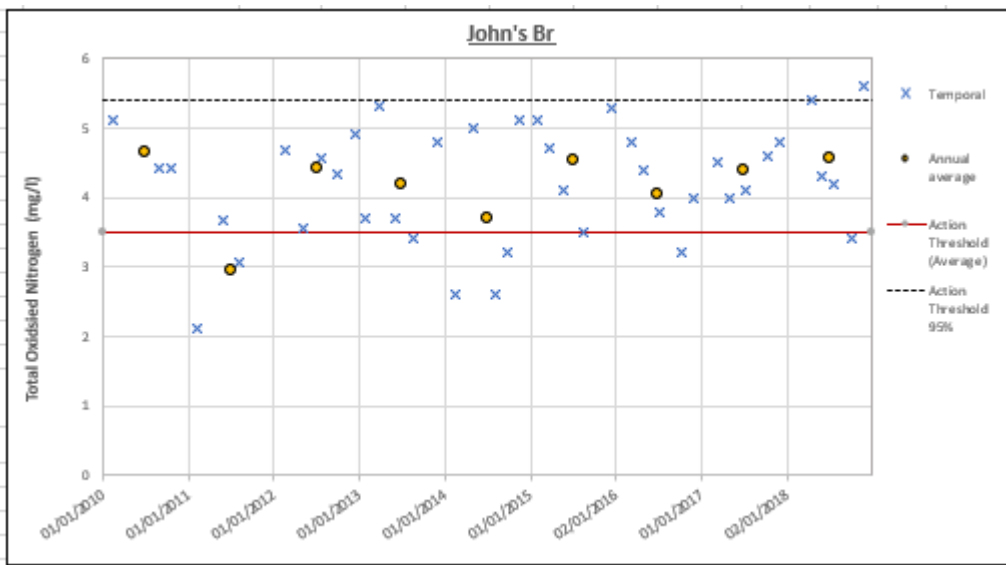


Figure 12 Total Oxidised Nitrogen concentrations recorded at the John's Br Monitoring Station

Urrin PAA

2.6 Protected Areas

Table 7 Protected Areas within the Urrin PAA

Water Body	Protected Area	Type	Association Type
Askinvillar Stream_010	Blackstairs Mountains SAC	SAC	Overlapping / partly within Protected Area
Urrin_010	Blackstairs Mountains SAC	SAC	Overlapping / partly within Protected Area
Urrin_020	Blackstairs Mountains SAC	SAC	Overlapping / partly within Protected Area
Urrin_050	Slaney River Valley SAC	SAC	Overlapping / partly within Protected Area

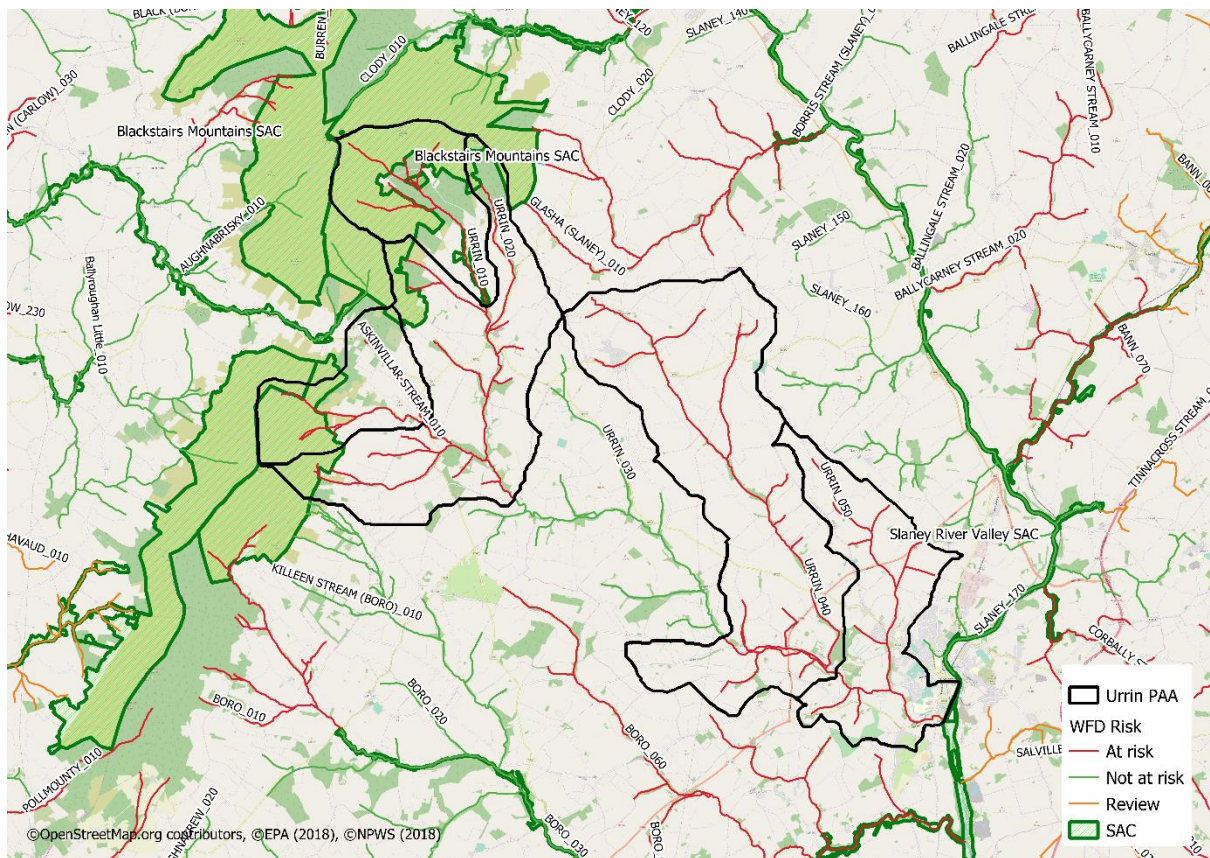


Figure 13 Special Areas of Conservation within the Urrin PAA

Urrin PAA

3 Significant Pressures

The significant pressures identified by EPA for the Urrin PAA through the initial characterisation process are presented in **Table 8**. The Pollution Impact Potential (PIP) map for Nitrate is illustrated in **Figure 16**.

Table 8 Significant Pressures identified for the Urrin PAA by the Initial Characterisation process

Waterbody	Pressure Category	Sub-category	Significant Pressure
Askinvillar Stream_010	Forestry	Forestry	Yes
	Agriculture	Agriculture	Yes
Urrin_010	Forestry	Clearfelling	Yes
Urrin_020	Forestry	Forestry	Yes
	Agriculture	Pasture	Yes
Urrin_040	Domestic Waste Water	Waste Water Discharge	Yes
Urrin_050	Urban Run-Off	Diffuse Sources Run-Off	Yes
	Urban Waste Water	Combined Sewer Overflows	Yes

3.1 Askinvillar Stream_010

- Due to an absence of hydrochemistry data for the Askinvillar Stream_010, significant issue(s) could not be identified for this waterbody.
- The EPA identified Forestry and Agriculture as the likely significant pressures for the Askinvillar Stream_010 during the initial characterisation stage.
- The evidence of clearfelling as seen in **Figure 14** would indicate that Forestry is a possible significant pressure for this waterbody. Clearfelling occurred in this area in a period between May 2016 and April 2018.
- The Askinvillar Stream_010 returned to Q Value 4-5 in 2016 and it is considered that there are currently no significant pressures on water quality in this waterbody.

3.2 Urrin_010

- Due to an absence of hydrochemistry data for the Urrin_010, significant issue(s) could not be identified for this waterbody.
- The EPA identified Forestry as the likely significant pressures for the Urrin_010 during the initial characterisation stage.
- Evidence of clearfelling as seen in **Figure 15** would indicate that Forestry is a possible significant pressure for this waterbody. Clearfelling occurred in this area in a period between May 2016 and April 2018.

Urrin PAA

- The Urrin_010 is currently at Good Status, however, unidentified pressures may be preventing its return to High Status.

3.3 Urrin_020

- Biological and Hydrochemistry data do not identify a significant issue for this waterbody.
- Concentrations of Phosphate and Ammonia are below their relevant EQS while levels of Total Oxidised Nitrogen are below the Action Threshold.
- The EPA identified Forestry and Agriculture as the likely significant pressures for the Urrin_020 during the initial characterisation stage.
- Evidence of clearfelling as seen in **Figure 15** would indicate that Forestry is a possible significant pressure for this waterbody. Clearfelling occurred in this area in a period between August 2018 and March 2019.
- Quarrying activity near the Urrin-Br at Doran's Cross Rds monitoring station (**Figure 19**) may also be acting as a pressure on the waterbody.
- The Urrin_020 returned to Q Value 4-5 in 2016 and it is considered that there are currently no significant pressures on water quality in this waterbody.

3.4 Urrin_040

- Due to an absence of hydrochemistry data for the Urrin_040, significant issue(s) could not be identified for this waterbody.
- The EPA identified Domestic Waste Water as the likely significant pressures for the Urrin_040 during the initial characterisation stage.
- Construction of the Enniscorthy Bypass may also be acting as a pressure on the waterbody.
- The Urrin_040 returned to Q Value 4 in 2016 and it is considered that there are currently no significant pressures on water quality in this waterbody.

3.5 Urrin_050

- Nitrate is the significant issue affecting water quality in the Urrin_050.
- Concentrations of TON at the John's Br monitoring station are consistently greater than the Action Threshold of 3.5 mg/l (**Figures 11 and 12**).
- Agriculture may be contributing to elevated levels of nitrate in the waterbody and high risk PIP ranking areas for NO₃ can be seen throughout the sub basin for the Urrin_050 (**Figure 16**).
- The EPA identified Urban Run-Off and Urban Waste Water as the likely significant pressures for the Urrin_050 during the initial characterisation stage.
- Discharge from St. John's Pumping Station (SW-3) to the Urrin_050 may be acting as a pressure on the waterbody.
- Construction of the Enniscorthy Bypass may also be acting as a pressure on the waterbody.
- The Urrin_050 returned to Q Value 4 in 2016 and it is considered that there are currently no significant pressures on water quality in this waterbody.

Urrin PAA



Figure 14 Forestry Cover in the Askinvillar Stream_010 catchment (Stream in blue, clearfelled area in red)



Figure 15 Forestry Cover in the Urrin_010 and Urrin_020 catchments (Clearfelled areas in red)

Urrin PAA

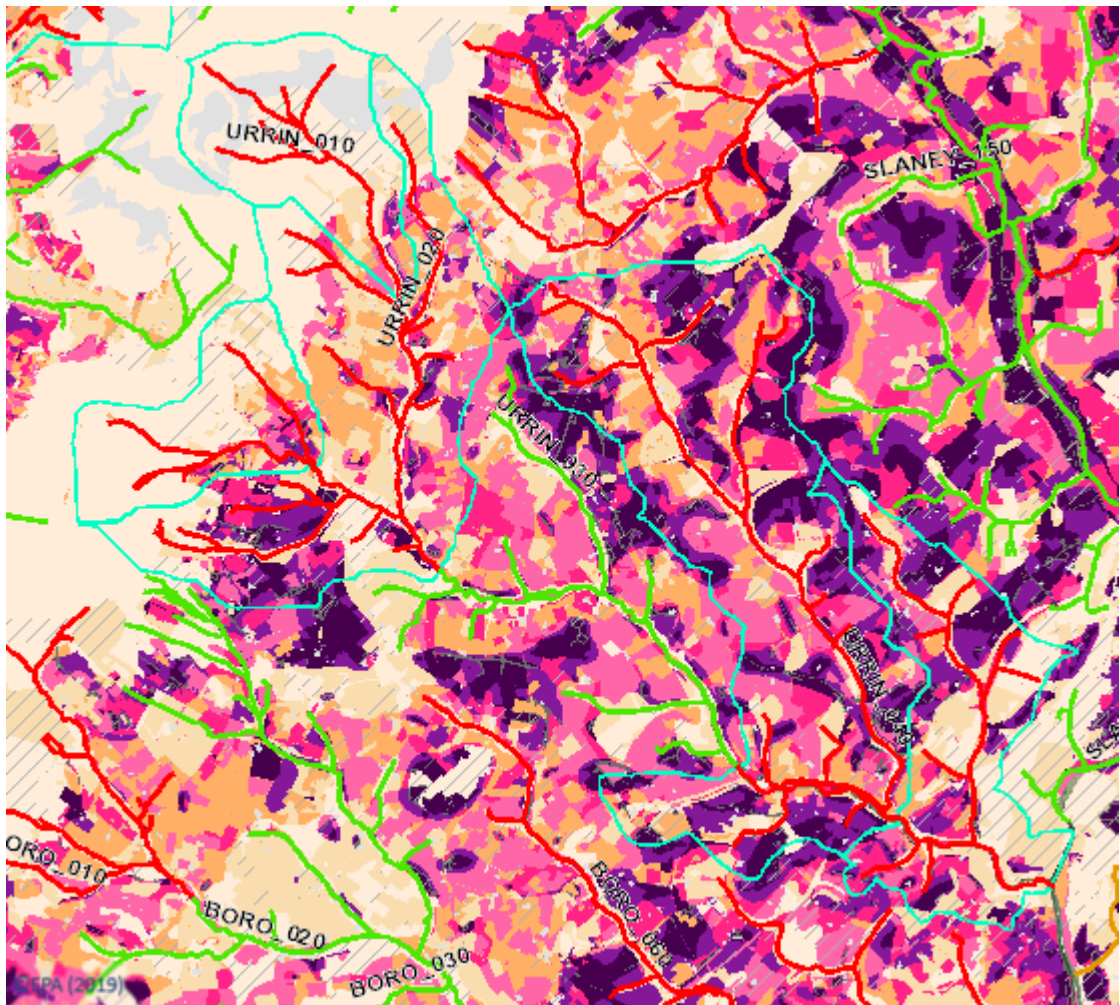


Figure 16 Surface water nitrate PIP map

Urrin PAA

4 Pathway Information and Analysis

4.1 Overview of Pathways in the PAA

The only identifiable significant issue in this catchment is Nitrate in the Urrin_050 waterbody. Two main pathway compartments have been identified for the significant issue and they are described in **Table 9**. The regional pathway framework is provided by the aquifer map (**Figure 17**) and the soil type map (**Figure 18**) as follows:

- Compartment 1 is made up of a Locally Important Aquifer, which is moderately productive only in local zones. The main flow path in this compartment is near-surface flow in the thin upper fractured zone.
- Compartment 2 is made up of a regionally important aquifer that has fissured bedrock. This aquifer is characterised by substantial fissure permeability with a highly permeable upper fractured zone. The principal flow paths for this compartment will be underground flow and near-surface flow.

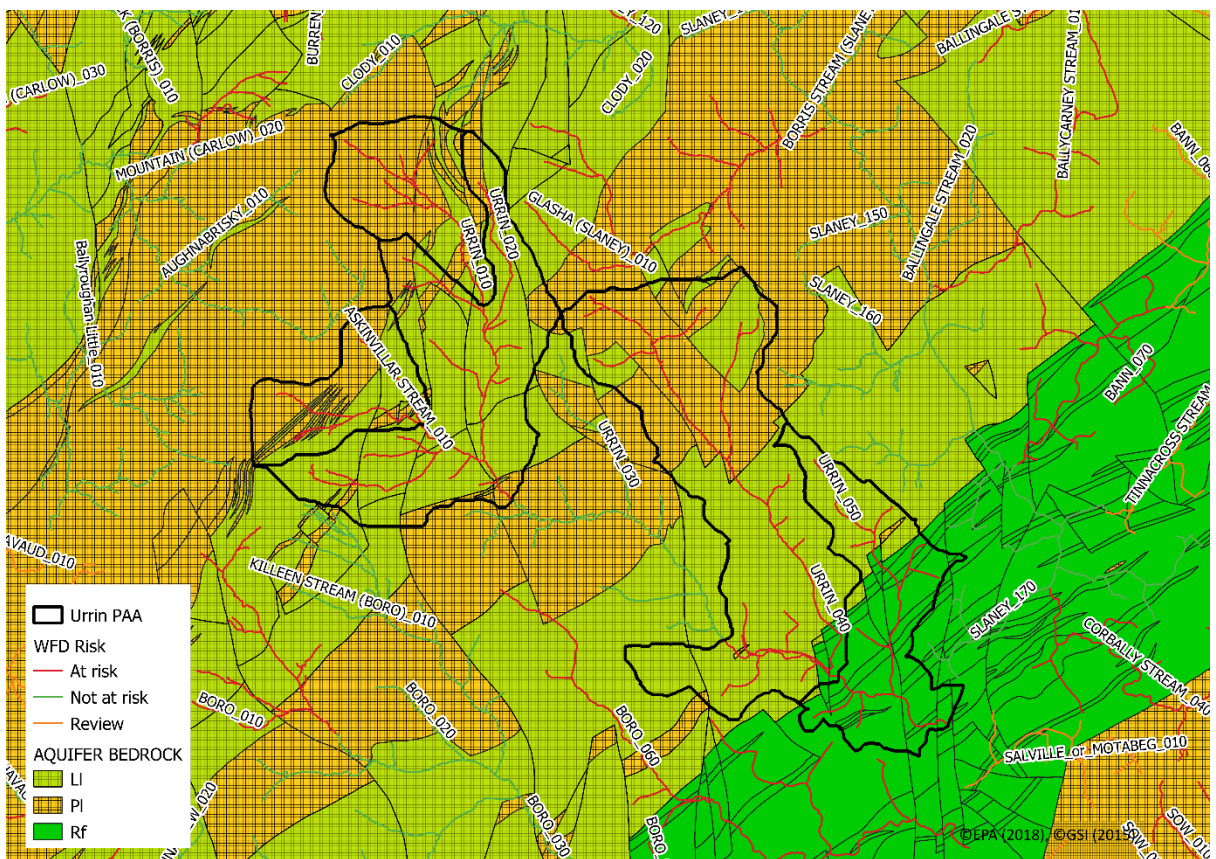


Figure 17 Aquifer map for the Urrin PAA

Urrin PAA

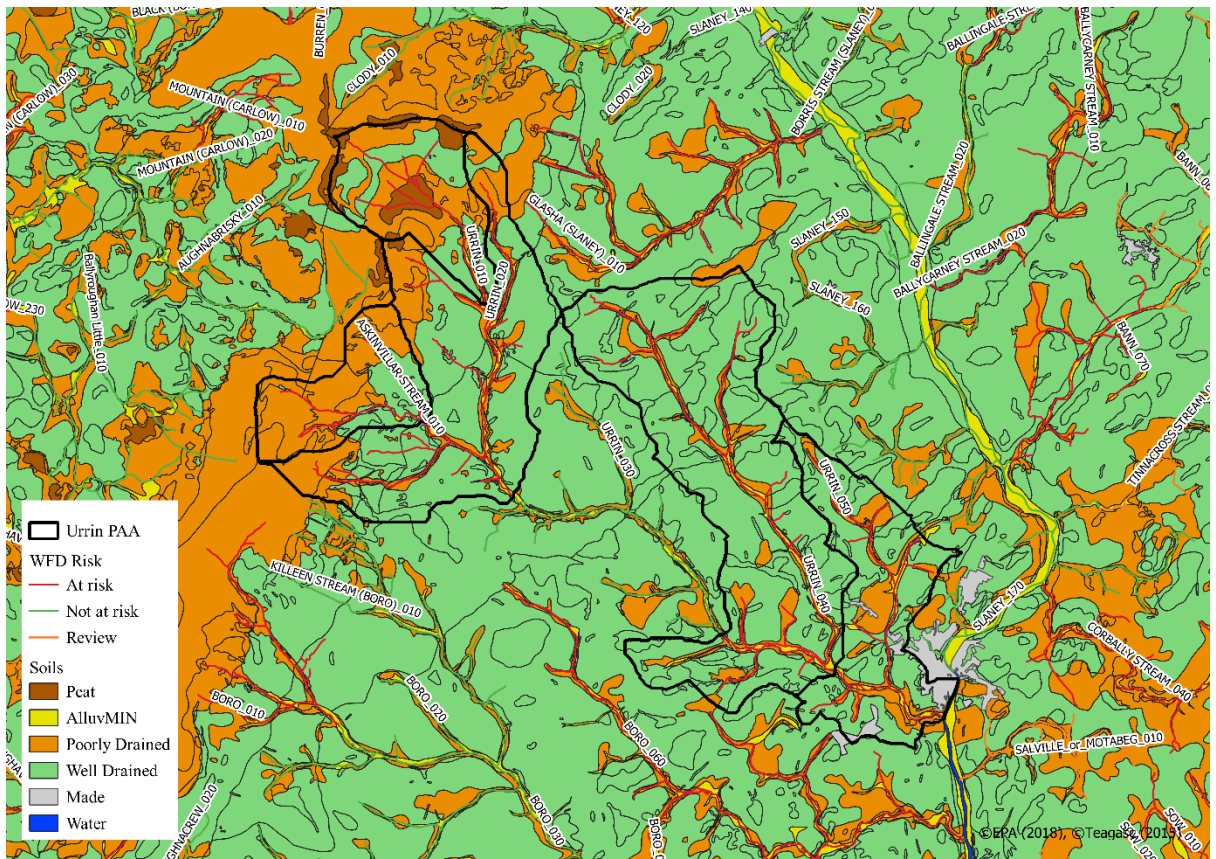


Figure 18 Soils map for the Urrin PAA

Table 9 Main pathways identified in each compartment

	Compartment 1	Compartment 2
Direct ¹		Enniscorthy WWTP (St. John's Pumping Station SW-3)
Aquifer	L1	Rf
Rock Units	Ordovician Metasediments	Ordovician Volcanics, Granites and other Igneous intrusive rocks
Soil type	Well Drained	Well Drained
Subsoil	Shale Till, Bedrock at Surface	Shale Till, Bedrock at Surface, Sandstone and shale sands and gravels
Groundwater Vulnerability	X, E, H	X, E, H, M
NO ₃ Susceptibility	Mostly High to Moderate	High to Low
Main Flow Paths	Near-surface flow	Underground and near-surface flow

¹ Point discharges to the water body

Urrin PAA

Another relevant pathway which may be present in the catchment is sediment loss from poorly drained soils in the headwaters of the Askinvillar Stream_010, Urrin_010 and Urrin_020. This will be in the form of overland flow and may occur during forestry clear felling operations.

4.2 Askinvillar Stream_010

- Significant issue: Unknown
- Significant pressure: Possibly Forestry
- Relevant pathways: Direct connectivity through drains and streams

4.3 Urrin_010

- Significant issue: Unknown
- Significant pressure: Possibly Forestry
- Relevant pathways: Direct connectivity through drains and streams

4.4 Urrin_020

- Significant issue: Unknown
- Significant pressure: Possibly Forestry and/or Quarrying activity
- Relevant pathways: Direct connectivity through drains and streams

4.5 Urrin_040

- Significant issue: Unknown
- Significant pressure: Possibly Domestic Waste Water
- Relevant pathways: Unknown

4.6 Urrin_050

- Significant issue: Nitrate
- Significant pressure: Possibly Agriculture
- Relevant pathways: Underground and near-surface flow in areas of free draining soils.
- Critical source areas are: The high risk PIP ranking areas for nitrate underlain by free draining soils.

4.7 Pathways Conceptual Model and Likely Critical Source Areas

- The main significant issue identified in the PAA is nitrate in the Urrin_050 waterbody. As detailed previously in this section, the likely Critical Source Areas (CSA) for nitrate are the high risk PIP ranking areas for nitrate on free draining soils. The main pathways for nitrate will be near-surface flow where the Locally Important aquifer dominates and underground and near-surface flow where the Regionally Important aquifer dominates.

Urrin PAA

- The other relevant pathway in this PAA will be the areas of poorly draining soils in the headwaters of the Askinvillar Stream_010, Urrin_010 and Urrin_020. These areas may act as pathways for sediment transfer during times of forestry clear felling.

5 Interim Story of the Urrin PAA

5.1 Askinvillar Stream_010

- The Askinvillar Stream is *Not at Risk* of achieving High Status.
- A 2016 Q-value of 4-5 was recorded at the Askinvillar Br monitoring station. The waterbody was previously at High Status in 2012.
- There is no hydrochemistry data available for this waterbody.
- No significant issues can be determined from the available water data.
- No significant pressures could be identified for this waterbody, but forestry is possibly a periodic pressure.
- Any sediment arising from clearfelling is likely to be transferred to the waterbody via overland flow in the areas of poorly draining soils.

5.2 Urrin_010

- The Urrin_010 is *At Risk* of not achieving High Status.
- The waterbody is currently at Good Status with a 2016 Q-value of 4 recorded at the Ballycrystal Br monitoring station. It has been at Good Status since 2010 having previously been at High Status in 2007.
- There is no hydrochemistry data available for this waterbody.
- No significant issues can be determined from the available water data.
- No significant pressures could be identified for this waterbody, but forestry is possibly a periodic pressure.
- Any sediment arising from clearfelling is likely to be transferred to the waterbody via overland flow in the areas of poorly draining soils.

5.3 Urrin_020

- The Urrin_020 is *Not at Risk* of achieving Good Status.
- A 2016 Q-value of 4-5 was recorded at the Buck's Br monitoring station. The waterbody has been at Moderate Status since 2012 having previously been at Good Status in 2009.
- Ortho-phosphate, Ammonia and Total Oxidised Nitrogen concentrations have been on a downward trend at the Buck's Br monitoring station since 2010. Recent data for 2018 shows that annual average concentrations for Ortho-phosphate and Ammonia are below the relevant EQS and levels of Total Oxidised Nitrogen are below the Action Threshold.
- No significant issues could be identified for the waterbody.
- No significant pressures could be identified for this waterbody, but forestry and quarrying are possible pressures.
- Any sediment arising from clearfelling is likely to be transferred to the waterbody via overland flow in the areas of poorly draining soils. Any impact from quarrying activity is likely to be in the form of a point source discharge to the waterbody.

Urrin PAA

5.4 Urrin_040

- The Urrin_040 is *Not at Risk* of achieving Good Status.
- A 2016 Q-value of 4 was recorded at the Urrin - Verona Br monitoring station. It has been at Moderate Status since 2012.
- There is no hydrochemistry data available for this waterbody.
- No significant issues could be identified for the waterbody.
- No significant pressures could be identified for this waterbody, but Domestic Waste Water and road construction may be possible pressures.

5.5 Urrin_050

- The Urrin_050 is *Not at Risk* of achieving Good Status.
- A 2016 Q-value of 4 was recorded at the John's Br monitoring station. The waterbody has been at Moderate Status since 2009.
- Ortho-phosphate, Ammonia and Total Oxidised Nitrogen concentrations have been on a downward trend at the John's Br monitoring station since 2010. Recent data for 2018 shows that annual average concentrations for Ortho-phosphate and Ammonia are below the relevant EQS. However, annual average concentrations of TON remain high and data for 2018 show an average concentration of 4.58 mg/l which is above the Action Threshold of 3.5 mg/l.
- Nitrate is a significant issue in this waterbody.
- The significant pressure is likely to be agriculture for this waterbody.
- The main pathways for nitrate will be by underground flow and near surface flow. These will be in areas where there are free draining soils. In Compartment 1 where free draining soils overlay a locally important aquifer, a near-surface pathway for nitrate will exist. Underground and near-surface pathways for nitrate are more likely in Compartment 2 where free draining soils overlay the regionally important aquifer.
- The critical source areas (CSA) for nitrate are likely to be in areas of free draining soils with high risk PIP rankings (**Figure 16**). These can be found throughout both compartments but in particular the middle and upper parts of the sub-basin.

5.6 Overview

- All five waterbodies in the PAA are at a satisfactory ecological status.
- Four of the waterbodies (Askinvillar Stream_010, Urrin_020, Urrin_040 and Urrin_050) have seen an improvement in their ecological status since 2013.
- The Urrin_010 has a High Status objective and is currently at Good Status. A Q Value of 4 was recorded in 2016. It is *At Risk* of not achieving High Status.
- The only significant issue identified for the PAA is nitrate in the Urrin_050 waterbody.
- Agriculture is the likely significant pressure driving the nitrate issue in the Urrin_050.
- Forestry, Quarrying, Domestic Waste Water and Road Construction are other possible pressures affecting the waterbodies in the PAA.
- Clearfelling of forestry in the upper reaches of the catchment may have caused a deterioration in status for the Askinvillar Stream_010, Urrin_010 and Urrin_020 waterbodies.

6 Work Plan

6.1 Askinvillar Stream_010

- Carry out an SSIS at the Askinvillar Br monitoring station to confirm that the waterbody is *Not at Risk* of achieving High Status.
- Look for evidence of sedimentation at the monitoring location.
- Communicate with the Forest Service to determine dates of clearfelling in the upland area of this waterbody. Determine whether best practice was followed and whether forestry activity played a role in the deterioration in status of the waterbody.

6.2 Urrin_010

- Carry out an SSIS at the Ballycrystal Br monitoring station to determine whether the waterbody is *At Risk* of not achieving High Status.
- Look for evidence of sedimentation at the monitoring location.
- Communicate with the Forest Service to determine dates of clearfelling in the upland area of this waterbody. Determine whether best practice was followed and whether forestry activity played a role in the deterioration in status of the waterbody.

6.3 Urrin_020

- Carry out an SSIS at the Buck's Br monitoring station to confirm that the waterbody is *Not at Risk* of achieving Good Status.
- Communicate with the Forest Service to determine dates of clearfelling in the upland area of this waterbody. Determine whether best practice was followed and whether forestry activity played a role in the deterioration in status of the waterbody.
- If any deterioration in status observed, identify whether Quarry near Doran's Cross Roads is having any noticeable impact.

6.4 Urrin_040

- Carry out an SSIS at the Urrin - Verona Br monitoring station to confirm that the waterbody is *Not at Risk* of achieving Good Status.
- Carry out SSIS at locations downstream of where the Enniscorthy Bypass works traverse the waterbody.
- Work with Wexford County Council to identify any wastewater discharges from housing estates and assess any impacts arising from them

6.5 Urrin_050

- Carry out an SSIS at the John's Br monitoring station to confirm that the waterbody is *Not at Risk* of achieving Good Status.
- If any deterioration in status observed, identify whether the Pumping Station (SW-3) is having any noticeable impact. Check with Irish Water as to whether the St. John's Pumping Station

Urrin PAA

(SW-3) has been upgraded to a Storm Water Overflow (SWO) to conform to the requirements of DoEHLG 'Procedures & criteria in relation to SWOs'.

- Work with Wexford County Council to identify any wastewater discharges from housing estates and assess any impacts arising from them
- Take water samples at designated locations on the waterbody to pinpoint areas where elevated levels of nitrate are present.
- Carry out SSIS at locations downstream of where the Enniscorthy Bypass works traverse the waterbody.

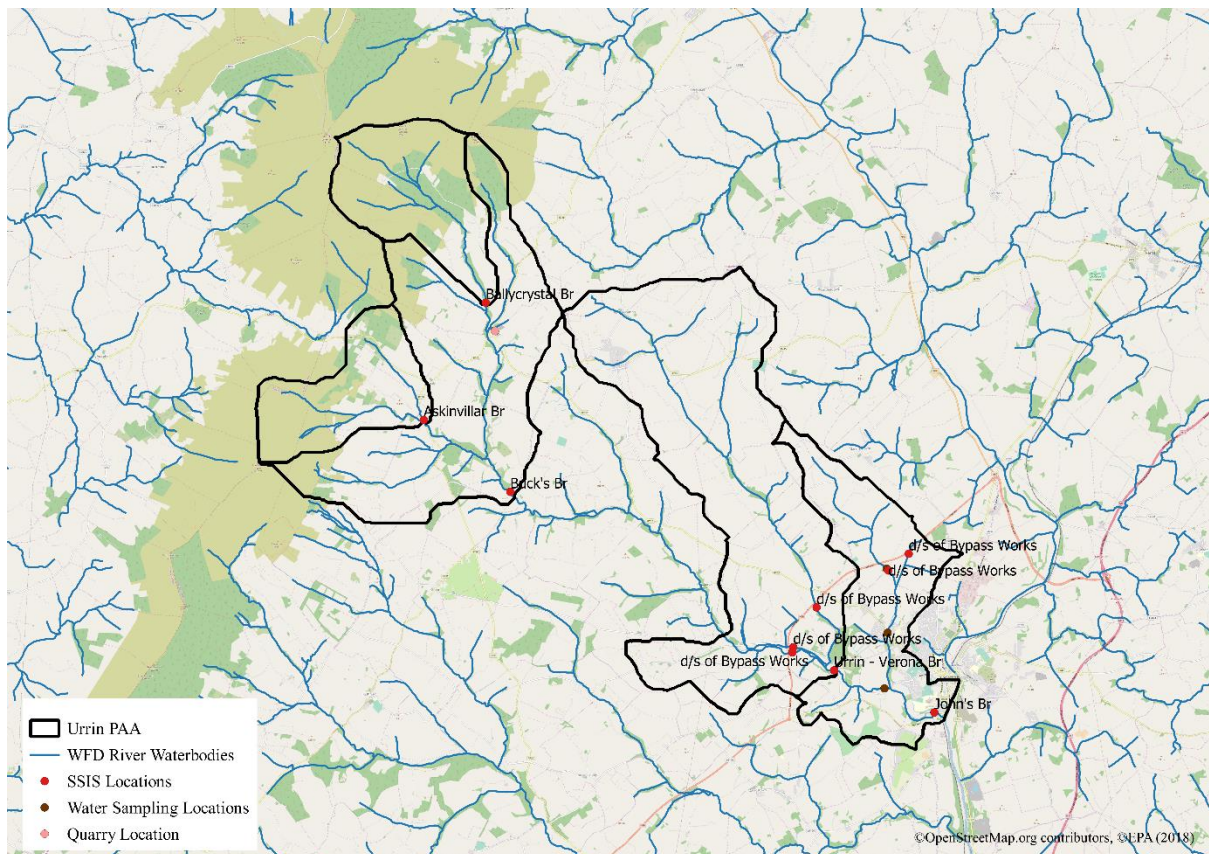


Figure 19 Work Plan for the Urrin PAA

Urrin PAA

7 Possible Mitigation Options

Work with ASSAP to implement mitigation measures for elevated nitrate levels in the Urrin_050. These will include nutrient management planning, reduced levels of nitrogen application and ensuring that application occurs at appropriate times and conditions.

For waterbodies (Askinvillar Stream_010, Urrin_010 and Urrin_020) potentially affected by clear felling activities, liaise with Forest Service to ensure that appropriate mitigation measures are implemented. These will include buffer zones, log bridges, brash mats, silt traps and/or silt fences.

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8 Communications

8.1 Community Information Meeting

- Held on 20th March 2019 at Riverside Park Hotel, Enniscorthy, Co. Wexford.
- There were 11 attendees present including representatives of LAWPRO and ASSAP.
- Issues raised included: Statutory powers of LAWPRO, effect of non-compliance by individuals, cause of deterioration in water quality in the upper Urrin, engagement with schools.

8.2 Farmers Information Meeting

- Held on 8th May 2019 at Mocurry Bridge, Killealy, Co. Wexford.

Date of completion of Desk Study: March 25th, 2020.