# APPENDIX 9A

BOYNE CATCHMENT SHEETS

## Order of Catchments (from u/s to d/s)

- Boyne Main Channel (Upper)
- Castlejordan & Yellow Castlejordan
- Kinnegad
- Deel (Raharney)
- Blackwater (Longwood)
- Boyne Main Channel (Middle)
- Stonyford
- Athboy
- Knightsbrook
- Clady
- Skane
- Blackwater (Kells) Upper
- Moynalty
- Yellow (Blackwater)
- Blackwater (Kells) Lower
- Boyne Main Channel (Lower)
- Mattock & Devlins

## Boyne Main Channel (Upper) BOYNE

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 164 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** B04 Boyne<br>G02 Glash<br>**HABITAT:**<br>Main bankside vegetation Hawthorn and Sycamore<br>Very good salmonid habitat, fair nursery habitat<br>0% riffle, 100% glide | **POLLUTION LOADING**<br>**Est. Load TP** (kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): 0.24<br>**Point Source P** 25%<br>**Diffuse Source P** 75%<br>**Catchment P Load Rank = 8**<br>**MWWTP load Kg/yr**<br>Edenderry 2847<br>**LANDUSE:** Mainly high productivity pasture with pockets of arable land.<br>**AMENITY VALUE:** High amenity. The Boyne is also a Designated Salmonid River. |
| **RUN OFF RISK** - | | |



| Point Sources | Details |
|---|---|
| **IPC Authorisations** | Irish Country Meats- Edenderry (Food And Drink) Licensed<br>M.J. Bergin & Sons Ltd (Food and Drink), Waste Landspread. |
| **Section 4 Licences** | None |
| **MWWTP** | Edenderry MWWTP (6,000 p.e) discharges to the Boyne |

| Abstractions | Details |
|---|---|
| None | |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| All stations on the Boyne main channel breached the MRP quality criteria. Water quality deteriorates from Kinnafad Br and Edenderry MWWTP is thought to be the cause. High MRP and Ammonia and low daytime DO levels were found.<br>The Glash, a small tributary of the Boyne is slightly polluted with no known point sources. There are problem with DO% saturation and max. ammonia | Agriculture and sewage are both suspect as causes of poor water quality in the upper Boyne catchment.<br>Edenderry MWWTP has been a problem in recent years. It is currently being upgraded by Offaly Co. Co. and is due to be completed by the end of 2002.<br>The problems on the Glash are suspected to be due to agricultural sources. |
| **GOAL:** ***RETURN UPPER BOYNE TO GOOD ECOLOGICAL STATUS*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| MWWTP's discharging the Boyne, in particular Edenderry MWWTP. | Wastewater Discharges<br>Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQC`s. Edenderry MWWTP is currently receiving an Interim upgrade to 7000 p.e. A P reduction facility is included in the upgrade | Improvement in MRP loads in river. |
| Large areas of intense agriculture. | Introduction of Best Farm Management Practices | Ensures economic and environmental benefits |
| Farm Yard Point Sources | Farm surveys at a general level are currently being carried out as part of the Three Rivers Project Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents. | Enables significant point sources to be eliminated, dissemination of information to farmers, improved awareness. |
| Large nutrient inputs from polluted tributaries | Appropriate measures should be taken for individual subcatchments. Accurate calculation of nutrient loads is essential. | Improvement in water quality for tributaries contributing to the main channel. |
| Point Sources | Section 4 and IPC licences, check discharge licences in hotspots areas | |

**TABLE 1. WATER QUALITY CRITERIA AND RESULTS**

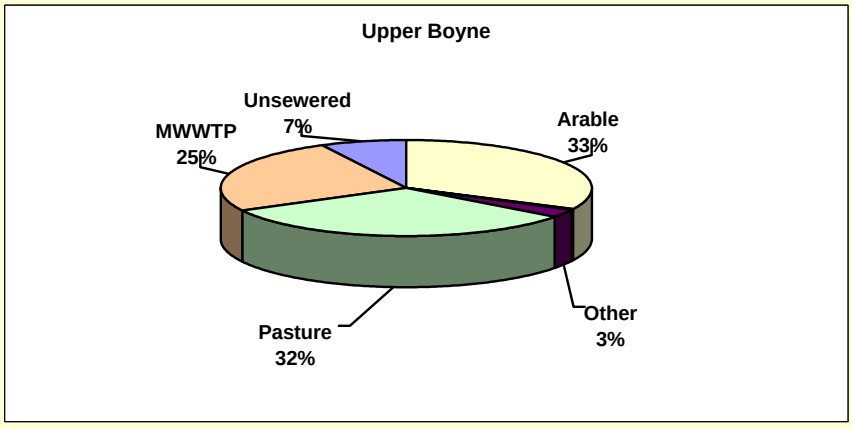
| | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| **B04** | ***Boyne Main Channel*** | | | | | | | | |
| 0100 | River Br | 3 | 3-4 | 3-4 | 3-4 | 3-4 | 0.05 | 0.04 | 0.05 |
| 0300 | Kinnafad Br | 2 | 2 | 1-2 | 2 | 3 | 0.31 | 0.22 | 0.07 |
| 0600 | Ashfield Br | 3-4 | 3-4 | 3 | 3-4 | 4 | 0.08 | 0.07 | 0.03 |
| 0800 | Inchamore Br | 3-4 | 3-4 | 3-4 | 3-4 | 4 | 0.04 | 0.04 | 0.03 |
| ***G02*** | ***Glash*** | | | | | | | | |
| 0600 | Br u/s Boyne R confl | 3 | 3 | 3-4 | 3-4 | 3-4 | 0.04 | 0.03 | 0.05 |

- Three Rivers Project sites



| HYDROMETRIC NETWORK | | | | |
|---|---|---|---|---|
| **River** | **Code** | **Station Name** | **Gauge Type** | **Owner** |
| B04 | 07026 | KISHAWANNY BR | | OFFALY |
| B04 | 07007 | BOYNE AQUEDUCT | AR & SG | OPW |
| G02 | 07206 | BUNGLASS BR. | | Kildare Co. Co. |

**TOTAL P SECTORAL LOADS-**



## Castlejordan, BOYNE

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 9531 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:**<br>C04 Castlejordan<br>Y02 Yellow (Castlejordan)<br>**HABITAT:**<br>The dominant bankside vegetation is Ash and Willow, but the summer cover of vegetation is low.<br>Good salmonid adult habitat.<br>0% riffle, 100% glide<br>The river substrate is cobble with mud and sand | **POLLUTION LOADING**<br>**Est. Load TP** (kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.):0. 11<br>**Point Source P**: 20%<br>**Diffuse Source P** 80%<br>**Catchment P Load Rank =13**<br>**LANDUSE:** Large areas of mainly high productivity pasture, with some small areas of natural grassland. A large area of Peat bog exploited and a lot of natural grass area.<br>**AMENITY VALUE:** Fair |
| **RUN OFF RISK** | | |



| Point Sources | Details |
|---|---|
| **IPC Authorisations** | ESB Rhode discharges to the Yellow River, a tributary of the Castlejordan<br>Patrick Moore (Pig Unit), Old Croghan, Rhode. Waste Landspread |
| **Section 4** | None |
| **MWWTP** | Rochfortbridge MWWTP, Rochfortbridge Stream (1,200 p.e.)<br>Rhode MWWTP, Receiving Waters, Yellow R. (500 p.e.)<br>Ballinabrackey Receiving Waters, Castlejordan R. (100 p.e)<br>Milltownpass MWWTP, Receiving Waters Milltownpass R. (80 p.e.) |
| **Other Point Sources** | None known |

| Abstractions | Details |
|---|---|
| None | |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| Southeast of Rahinine on the Castlejordan has poor water quality with respect to minimum DO and max. ammonia and has a Q3 rating. However median MRP levels are not elevated. | Agriculture and Sewage are suspected as the cause of poor WQ upstream on the Castlejordan. |
| The problem appears to be u/s, however this improves to unpolluted d/s at the confl. | |
| The Yellow is unpolluted but had high maximum ammonia levels at Sheep Br | Possibly agriculture. |
| **GOAL: RETURN THE CASTLEJORDAN AND YELLOW R. TO GOOD ECOLOGICAL STATUS** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Large areas of Agriculture | **Agricultural** - Introduction of Best Farm Management Practices | Ensures economic and environmental benefits. |
| Farm Yard Point Sources and Septic Tanks | Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents. | Enables potential point sources to be eliminated with significant water quality improvements. |
| MWWTP's | **Wastewater Discharges** – Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQC`s. | Improvement in MRP load in river |

**TABLE 1. WATER QUALITY CRITERIA AND RESULTS**

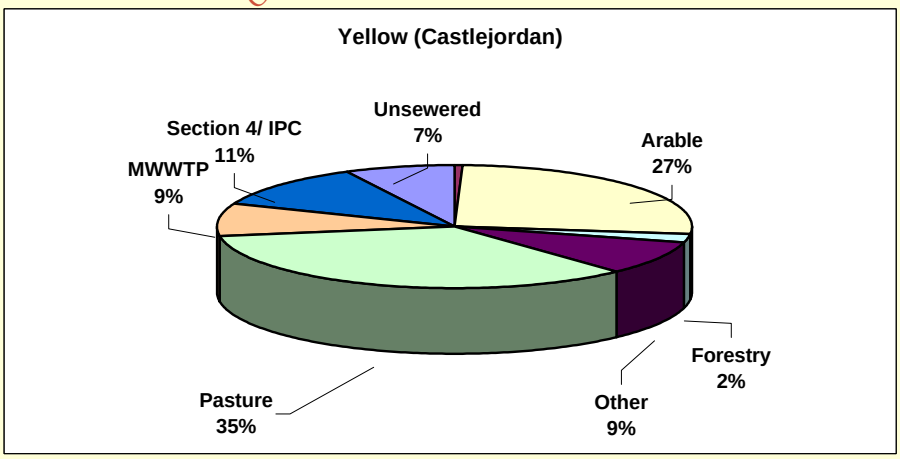
| | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| **C04** | **Castlejordan** | | | | | | | | |
| 0060 | SE of Rahinine | 2-3 | 3 | 3 | 3 | 3 | 0.01 | 0.01 | 0.07 |
| 0190 | Castlejordan Br | 3-4 | 2-3 | 4 | 4 | 4 | 0.01 | 0.01 | 0.03 |
| ***Y02*** | ***Yellow (Castlejordan)*** | | | | | | | | |
| 200 | Sheep Br. | 4 | 3-4 | | 4 | 4 | | 0.03 | 0.03 |

**HYDROMETRIC NETWORK**

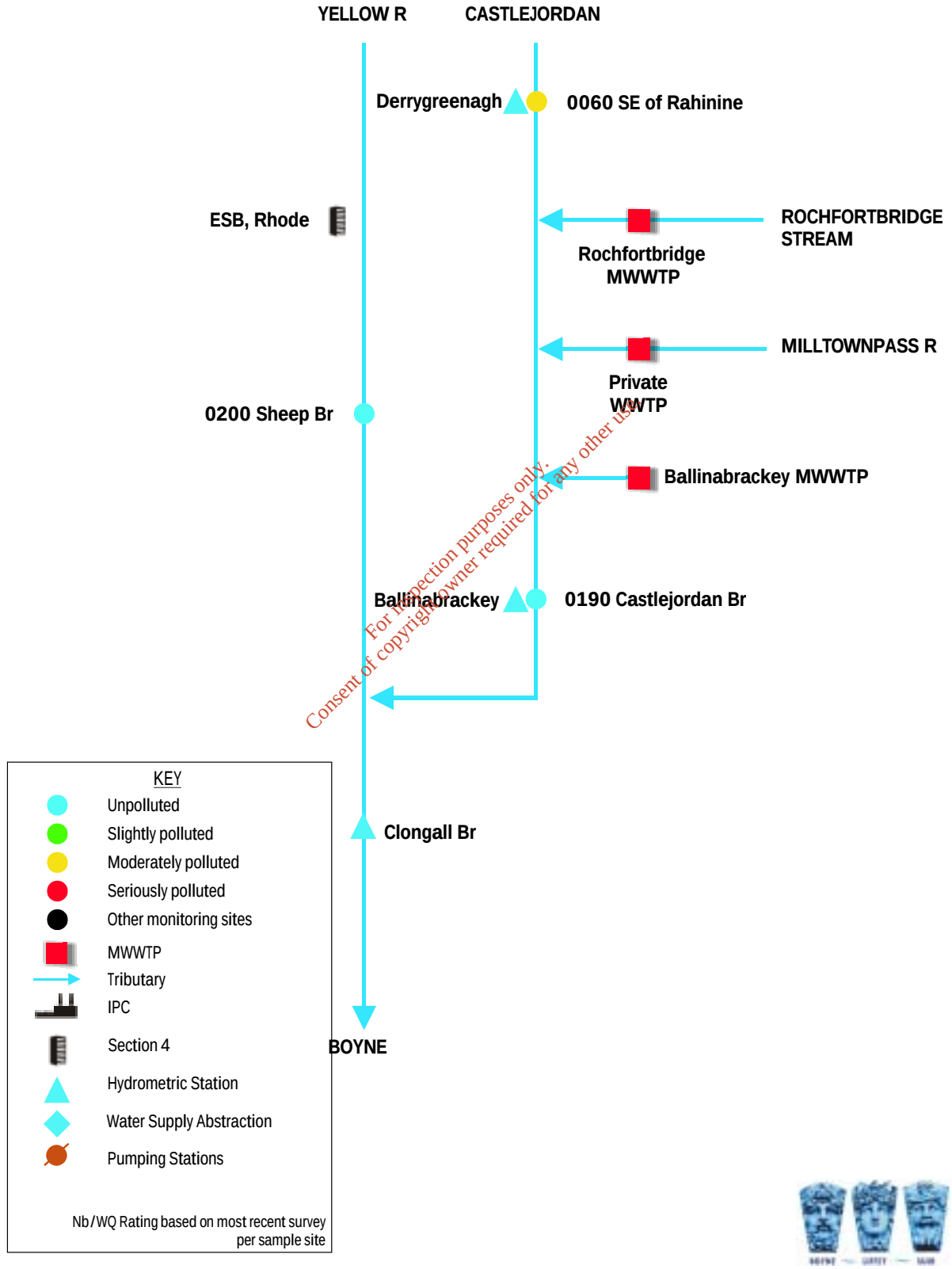
| River | Code | Station Name | Guage Type | Owner |
|---|---|---|---|---|
| C04 | 07028 | DERRYGREENAGH | SG | Offaly Co. Co. |
| C04 | 07099 | BALLINABRACKEY | SG | Meath Co.Co |



**TP SECTORAL LOADS- CASLTLEJORDAN R.**



# Castlejordan River and Tributaries - Biological Water Quality



## Kinnegad

**BOYNE**

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 73.7 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** K01 Kinnegad<br>**HABITAT:**<br>Good adult salmonid habitat, poor spawning habitat<br>0% riffle, 100% glide<br>Main river substrate is sand, gravel and pebbles | **POLLUTION LOADING**<br>**Est. Load TP** (kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): no flows available therefore no loads.<br>**Point Source P** 17%<br>**Diffuse Source P** 83%<br>**Catchment P Load Rank n/a**<br>MWWTP TP Loads Kinnegad<br>kgs/yr 949<br>**LANDUSE:** Mainly pasture of high productivity with some areas of Peat bogs exploited/ unexploited with low productive pasture and pasture.<br>**AMENITY VALUE:** Fair |
| **RUN OFF RISK** - | | |



| Point Sources | Details |
|---|---|
| **IPC Authorisations** | None |
| **Section 4** | None |
| **MWWTP** | Kinnegad (2000 p.e.) discharges to the Kinnegad R. |

| Abstractions | Details |
|---|---|
| No known abstractions | |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| Both sites were slightly polluted in 2001. The downstream station (Clonard Br) had a median MRP of 0.05 mg/P and daytime DO levels ranging from 69%-132% saturation. | Kinnegad MWWTP is the only known point source in the vicinity. Agriculture could also be a factor. |
| **GOAL:** ***RETURN KINNEGAD RIVER TO GOOD ECOLOGICAL STATUS*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Kinnegad MWWTP | **Wastewater Discharges** – Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQC`s. | Improvement in MRP load in river |
| Large areas of Agriculture, | **Agricultural** - Introduction of Best Farm Management Practices | Ensures economic and environmental benefits. |
| Farm Yard Point Sources and Septic Tanks | Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents. | Enables potential point sources to be eliminated with significant water quality improvements. |

**TABLE 1. WATER QUALITY CRITERIA AND RESULTS**

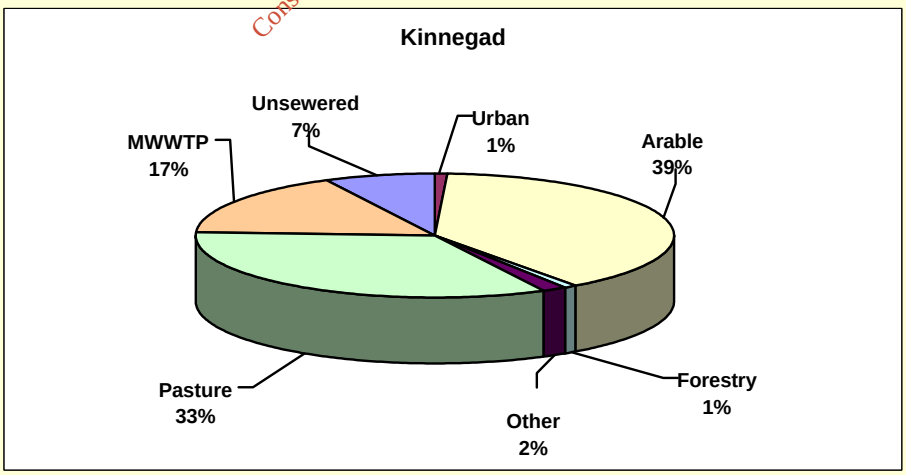
| | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| **K01** | **Kinnegad R.** | | | | | | | | |
| 0060 | Br SE of Cloonfad Ho | 3 | 4 | 3-4 | 3-4 | 3-4 | 0.01 | 0.01 | 0.05 |
| 0300 | Clonard Br | 3 | 3-4 | 3 | 3-4 | 3-4 | 0.04 | 0.05 | 0.05 |

- Three Rivers Project sites

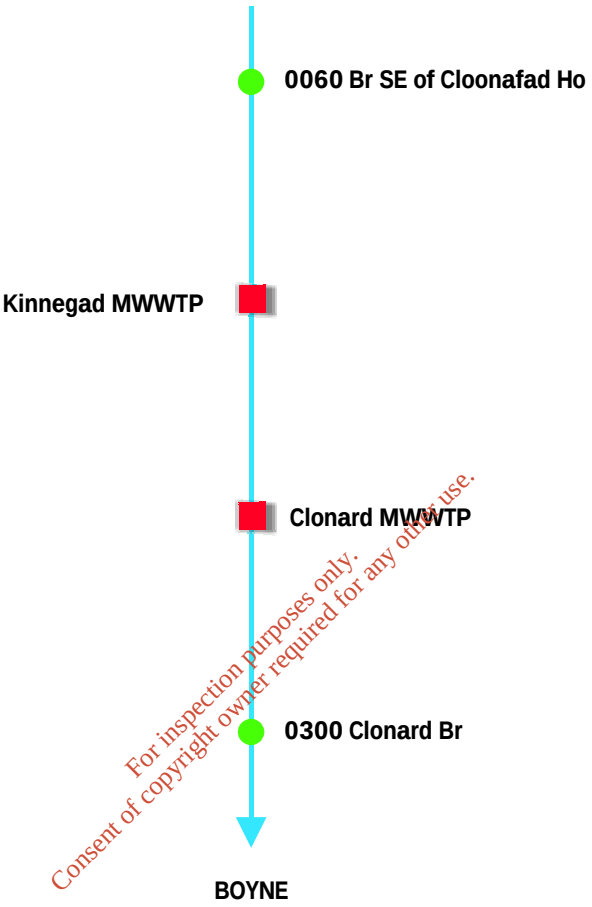


| HYDROMETRIC NETWORK | | | | |
|---|---|---|---|---|
| **River** | **Code** | **Station Name** | **Gauge Type** | **Owner** |
| K01 | 07031 | Kinnegad | SG | Westmeath |

**TP SECTORAL LOADS – KINNEGAD R.**



# Kinnegad River - Biological Water Quality






KEY

- Unpolluted
- Slightly polluted
- Moderately polluted
- Seriously polluted
- Other monitoring sites
- MWWTP
- Tributary
- IPC
- Section 4
- Hydrometric Station
- Water Supply Abstraction
- Pumping Stations

Nb/WQ Rating based on most recent survey per sample site

## Deel (Raharney) BOYNE

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 283 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** D01 Deel<br>**HABITAT:**<br>Willow is common as bankside vegetation. The Deel has good salmonid adult habitat, nursery and spawning habitat.<br>25% riffle, 75% glide<br>The river substrate is mainly boulders, sand and gravel. | **POLLUTION LOADING**<br>**Est. Load TP** (kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): 0.10<br>**Point Source P** 1%<br>**Diffuse Source P** 99%<br>**Catchment P Load Rank =** 14<br>**MWWTP Loads**, Killucan – Rathwire (to Riverstown R.)<br>TP Loads 190 kgs/yr.<br>**LANDUSE:** Mainly pasture of high productivity. Some areas of Peat bogs exploited/ unexploited with low productive pasture and pasture mix.<br>**AMENITY VALUE:** Good |
| **RUN OFF RISK** - | | |

| Point Sources | Details |
|---|---|
| **IPC Authorisations** | Murphy Piggeries, Cloghan, Killucan. Waste landspread. |
| **Section 4** | None |
| **MWWTP** | Killucan Rathwire WWTP (300 p.e) discharges to the Riverstown |



| Abstractions | Details |
|---|---|
| Killucan/Rathwire, **Source** Riverstown River | **Abstraction Point** Killucan (trib of the Deel) **Quantity m³/day** 2275 **Local Authority** Westmeath Co. Co. |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| At the start of the project (1999) all sites were slightly polluted on the Deel.<br>In 2001 Median MRP and Q ratings were unpolluted (<0.03 mg/l P) and Ammonia is satisfactory.<br>The Riverstown however was slightly polluted in 2001 and in previous years has been moderately polluted. | The present water quality in the Deel is good.<br>Agriculture and Sewage are suspected for the Riverstown. |
| **GOAL:** ***MAINTAIN THE CURRENT GOOD WATER QUALITY OF THE DEEL*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Killucan – Rathwire WWTP | Wastewater Discharge<br>Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQO`s. | Improvement in MRP Loads |
| Increased nutrient levels due to slurry spreading | **Agricultural** - Introduction of Best Farm Management Practices. Farm Campaign encouraging all farmers to have NMP`s and to adhere to them. Farmers should be audited to ensure adherence to NMP and Code of Good Practice. | Ensures economic and environmental benefits. |
| Farm Yard Point Sources and Septic Tanks | Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents. | Enables potential point sources to be eliminated with significant water quality improvements. |

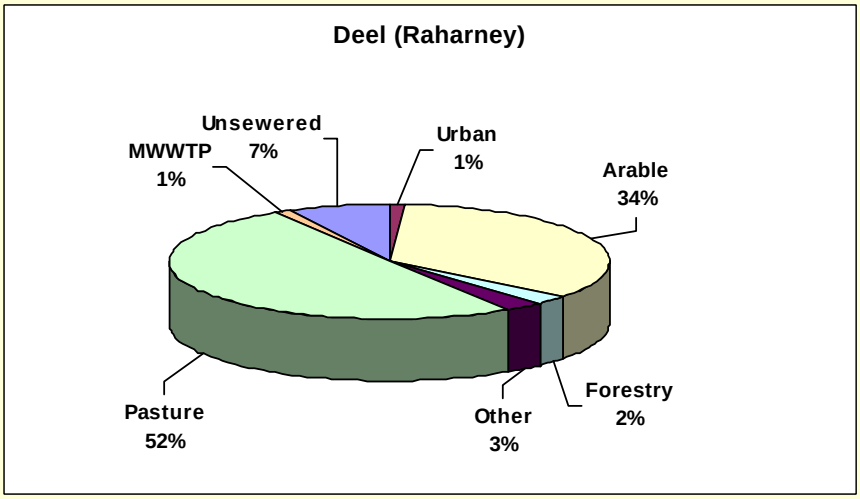
**TABLE 1. WATER QUALITY CRITERIA AND RESULTS**

| | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| **D01** | ***Deel*** | | | | | | | | |
| 0040 | Br u/s Lough Adeel | 3-4 | 3-4 | 4 | 4 | 4 | 0.00 | 0.01 | 0.03 |
| 0300 | Raharney Br | 3-4 | 3-4 | 3-4 | 4 | 4 | 0.01 | 0.01 | 0.03 |
| 0600 | Br u/s Boyne R confl | 3-4 | 3-4 | 4 | 4 | 4 | 0.01 | 0.02 | 0.03 |
| **R01** | **Riverstown** | | | | | | | | |
| 0200 | Br u/s Deel R. confl | 3 | | 3 | 3-4 | 3-4 | | 0.03 | 0.05 |

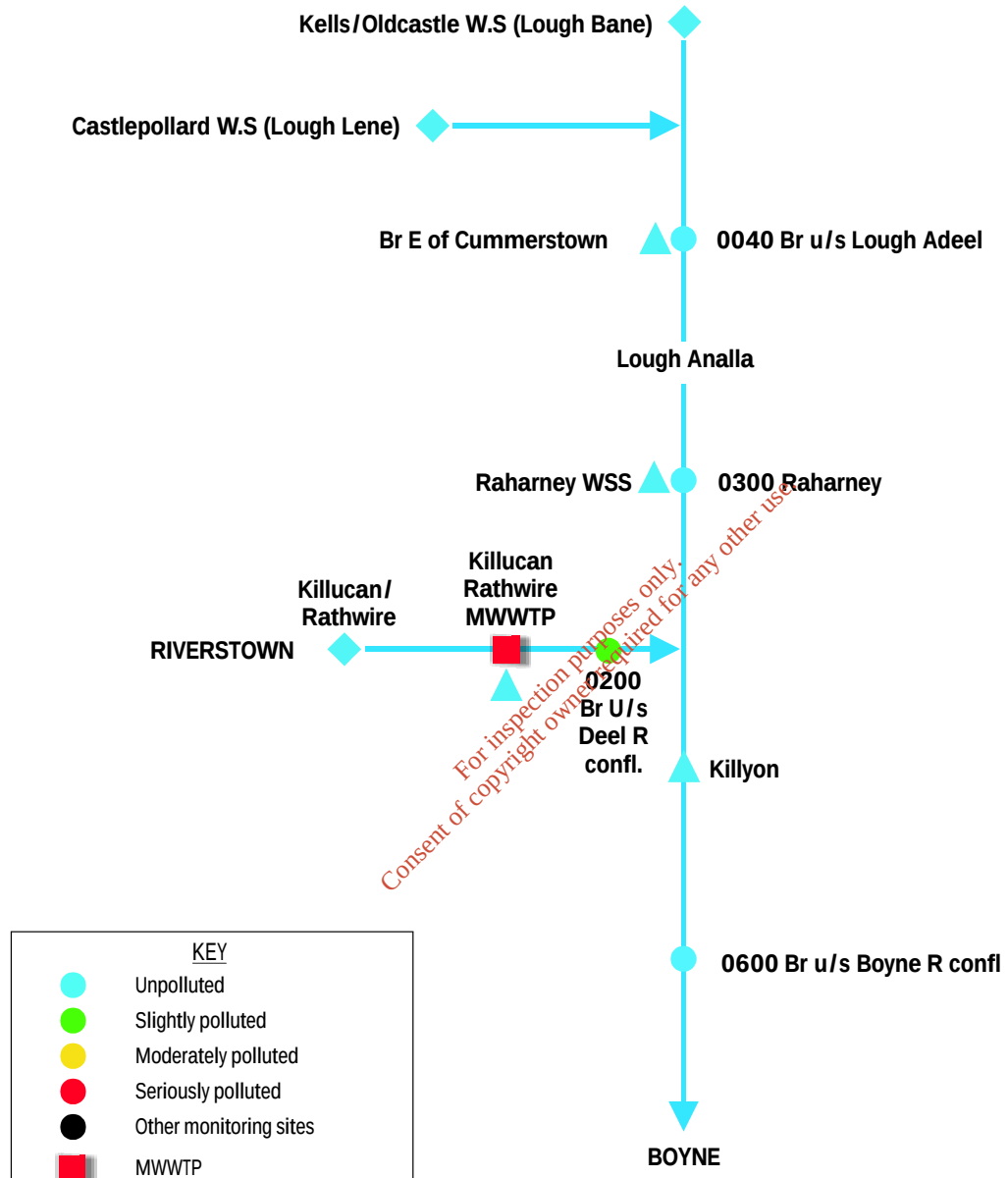


| HYDROMETRIC NETWORK | | | | |
|---|---|---|---|---|
| **River** | **Code** | **Station Name** | **Guage Type** | **Owner** |
| D01 | 07052 | Br. E of Cummerstown | SG as WQ | OPW |
| D01 | 07002 | KILLYON | OPW AR & SG | EPA |
| D01 | 07030 | Raharney WSS | | Westmeath Co. Co. |

**TP SECTORAL LOADS**



# Deel (Raharney) - Biological Water Quality






KEY

- Unpolluted
- Slightly polluted
- Moderately polluted
- Seriously polluted
- Other monitoring sites
- MWWTP
- Tributary
- IPC
- Section 4
- Hydrometric Station
- Water Supply Abstraction
- Pumping Stations

Nb/WQ Rating based on most recent survey per sample site

## Blackwater (Longwood) BOYNE

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 198.62 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** B02 Blackwater (Longwood)<br>**HABITAT:**<br>Dominant bankside vegetation is Willow.<br>Good adult salmonid habitat, but poor spawning habitat<br>0% riffle, 100% glide<br>Main substrate is sand, gravel/ pebbles and large rocks. | **POLLUTION LOADING**<br>**Est. Load TP** (kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): 0.24<br>**Point Source P** 5%<br>**Diffuse Source P** 95%<br>**Catchment P Load Rank =** 7<br>WWTP Load Longwood<br>TP Load kgs/yr 569<br>**LANDUSE:** Mainly pasture of high productivity with some areas of Peat bogs exploited/ unexploited at the bottom of this area with low productive pasture and pasture mix.<br>**AMENITY VALUE:** Fair |
| **RUN OFF RISK** - | | |



| Point Sources | Details |
|---|---|
| **IPC Authorisations** | Irish Industrial Explosives Ltd. Chemical, waste landspread. |
| **Section 4** | Brady Meats, Timahoe (Effulent treatment plant) discharging to a tributary of the Blackwater |
| **MWWTP** | Johnstown Bridge MWWTP (1500 p.e) discharges to the Blackwater (Longwood)<br>Longwood MWWTP (300 p.e) discharging to the Blackwater (Longwood) |

| Abstractions | Details |
|---|---|
| No known abstractions | |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| Br at Johnstown (u/s) is unpolluted but had a minimum daytime DO level of 64%. The downstream station had a median MRP in 2001 of 0.05 mg/l P. | Two MWWTP discharge to the Blackwater (Longwood), See above. |
| **GOAL:** ***RETURN BLACKWATER (LONGWOOD) TO GOOD ECOLOGICAL STATUS*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Longwood (300 p.e), MWWTP and Johnstown Bridge (1500 p.e.) MWWTP | Wastewater Discharge –<br>Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQC`s. | Improvement in MRP loads in the river. |
| Increased MRP/NH3 from spreading slurries. | **Agricultural** -Farm Campaign encouraging all farmers to have NMP`s and to adhere to them. Farmers should be audited to ensure adherence to NMP and Code of Good Practice. | Reduce inputs from poorly spread slurries. Reduce input from chem. Fertilisers due to more efficient use of slurry, cost savings to farmers. |
| Farm Yard Point Sources | **Agricultural** - Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. | Enables significant point sources to be eliminated, dissemination of information to farmers, improved awareness. |

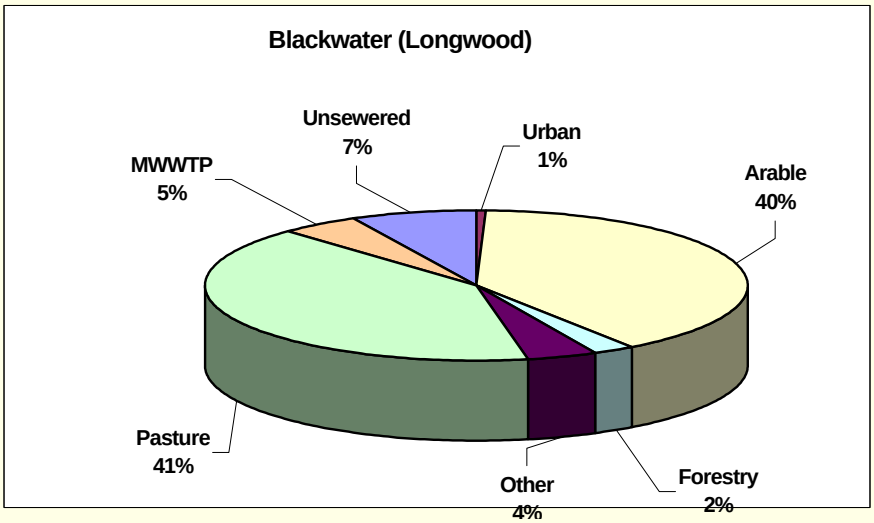
**TABLE 1. WATER QUALITY CRITERIA AND RESULTS**

| Site Code | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| | ***Blackwater (Longwood)*** | | | | | | | | |
| 0100 | Br at Johnstown | 4 | 4 | 4 | 4 | 4 | 0.03 | 0.03 | 0.03 |
| 0600 | Br u/s Boyne confl (NE Inchamore) | 3-4 | 4 | 3-4 | 3-4 | 4 | 0.05 | 0.05 | 0.03 |

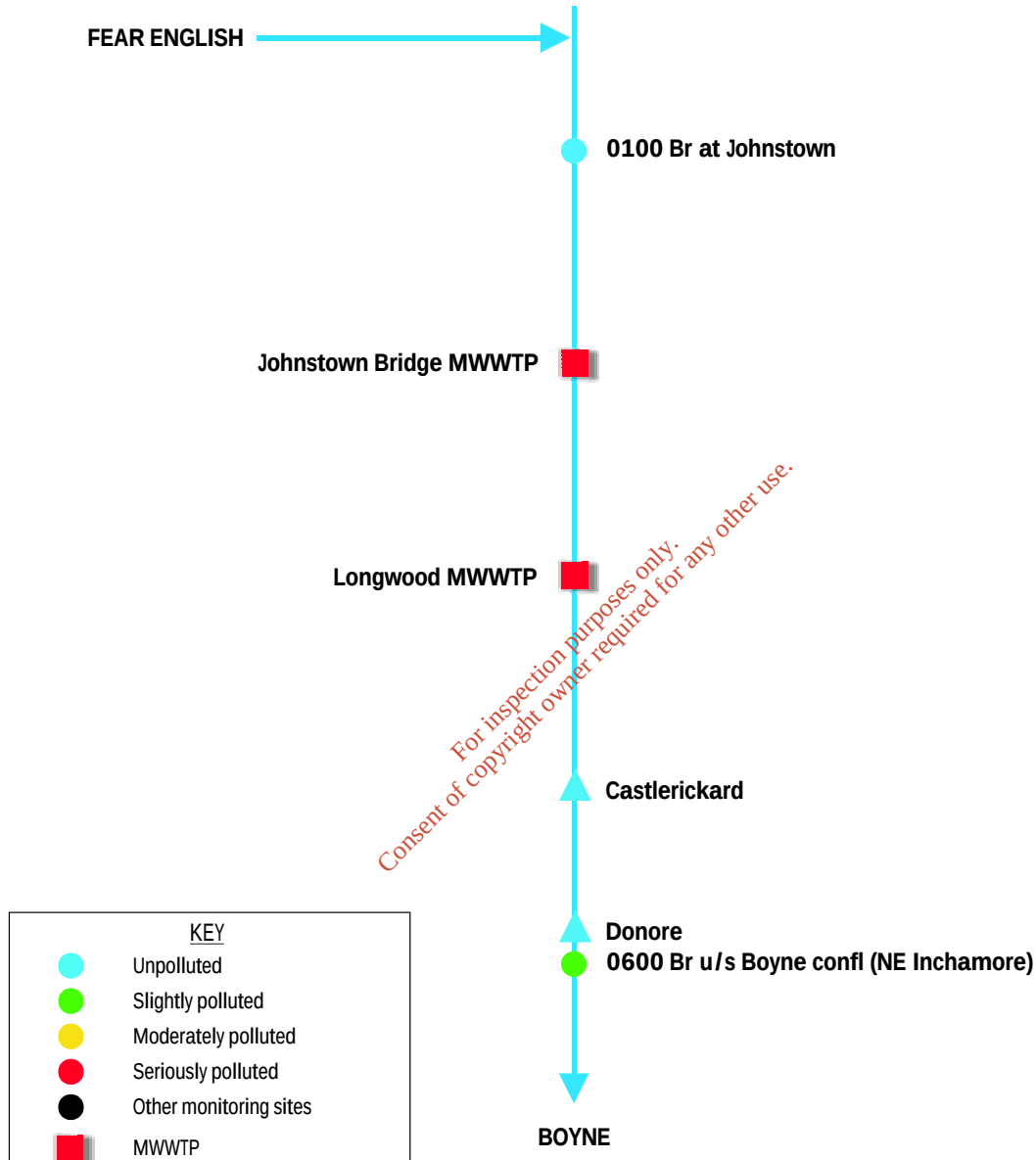


| HYDROMETRIC NETWORK | | | | |
|---|---|---|---|---|
| **River** | **Code** | **Station Name** | **Guage Type** | **Owner** |
| D01 | 07039 | JOHNSTOWN BR | AR & SG | KID |
| D01 | 07003 | CASTLERICKARD | AR & SG | OPW |
| D01 | 07099 | DONORE BR | SG as WQ | MEATH |

**TP SECTORAL LOADS- BLACKWATER (LONGWOOD)**



# Blackwater (Longwood) - Biological Water Quality






KEY

- Unpolluted
- Slightly polluted
- Moderately polluted
- Seriously polluted
- Other monitoring sites
- MWWTP
- Tributary
- IPC
- Section 4
- Hydrometric Station
- Water Supply Abstraction
- Pumping Stations

Nb/WQ Rating based on most recent survey per sample site

## Boyne Main Channel (Middle)

**BOYNE**

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 166 Km2<br>(To B04 1900, d/s of Navan)<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** B04 Boyne<br>T01 Tromann<br>B03 Boycetown<br>**HABITAT:**<br>Main bankside vegetation is grass<br>Very high salmonid adult habitat, fair nursery habitat<br>5-15% riffle, with the remainder glide | **POLLUTION LOADING**<br>**Est. Load TP** kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): 0.67<br>**Point Source P** 26%<br>**Diffuse Source P** 74%<br>**Catchment P Load Rank = 1**<br>**MWWTP load Kg/yr**<br>Trim 3464<br>**LANDUSE:** Mainly pasture of high intensity and arable<br>**AMENITY VALUE:** Very good, water based activities, canoeing, fishing. It is a Designated Salmonid River |
| **RUN OFF RISK** - | | |

| Point Sources | Details |
|---|---|
| **IPC Authorisations** | Sherlock Brothers Ltd (Surface Coating) Receiving Water Boyne<br>Tara Mines Limited (Minerals and other materials) receiving waters Boyne Applied<br>Xtratherm Limited (Chemicals) receiving water Boyne applied |
| **Section 4 Licences** | Boyne Valley Visitors Centre receiving waters Boyne, Meath Co. Co Domestic<br>Columban Fathers Dalgan Park receiving water Boyne, Meath Co Co. Domestic<br>Readymix (Dublin) Ltd. Receiving Waters Tromman R. Type trade effluent, Meath Co. Co. |
| **MWWTP** | Trim (New plant) (6500 p.e) discharging to the Boyne |

| Abstractions | Details |
|---|---|
| Trim, **Source** River Boyne | **Abstraction Point** u/s Knightsbrook confl.<br>**Quantity m³/day** 2200**,** Meath Co. Co |
| Navan (Stand by only), **Source** River Boyne | **Abstraction Point** Kilcarn Br.<br>**Quantity m³/day** 2275, Meath Co. Co |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| All stations on the Boyne main channel breached the MRP quality criteria of <=0.03 mg/lP.<br>Scarriff Br was unpolluted in 2001 but deteriorated to moderate d/s of Trim. The Stonyford and Athboy join along this stretch, however the loads are not excessive. The stretch between Trim and Navan improves at Ballinter Br which is slightly polluted<br>The Tromann Median MRP shows that this site is unpolluted <0.03, Ammonia shows that this is a satisfactory this site is unpolluted. . | Agriculture and sewage are both suspected in the quality of water throughout the catchment.<br>Trim (New plant) (6500 p.e) does not appear to be having a deleterious effect on the Q rating which is Q4 d/s of the plant.<br>There is a problem d/s of Trim Town, which may be due to an unlicenced discharge. There are no licenced discharges (Section 4 or IPC) in the area. |
| **GOAL:** ***RETURN BOYNE MAIN CHANNEL (MIDDLE REACHES) TO GOOD ECOLOGICAL STATUS*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Large nutrient inputs from polluted tributaries | Appropriate measures should be taken for individual sub-catchments. Accurate calculation of nutrient loads is essential. | Improvement in water quality for tributaries contributing to the main channel. |
| 4 no. MWWTP's on the Boyne | Wastewater Discharges<br>Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQC`s. | Improvement in MRP loads in river. |
| Large areas of intense agriculture. | Introduction of Best Farm Management Practices | Ensures economic and environmental benefits |
| Farm Yard Point Sources | Farm surveys at a general level are currently being carried out as part of the Three Rivers Project conduct a series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents. | Enables significant point sources to be eliminated, dissemination of information to farmers, improved awareness. |
| Point Sources | Section 4 and IPC licence check discharge licences in hotspots areas | |

**TABLE 1. WATER QUALITY RESULTS**

| | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target |
|---|---|---|---|---|---|---|---|---|---|
| B04 | ***Boyne Main Channel*** | | | | | | | | |
| 0800 | Inchamore Br | 3-4 | 3-4 | 3-4 | 3-4 | 4 | 0.04 | 0.04 | 0.03 |
| 0900 | Scarriff Br | 4 | 3-4 | 4 | 4 | 4 | 0.04 | 0.04 | 0.03 |
| 1400 | u/s Knightsbrook R confl | 3 | 3 | 3 | 3 | 3-4 | 0.03 | 0.04 | 0.05 |
| 1450 | d/s confl of Boycetown | | 3-4 | | 4 | - | 0.05 | 0.05 | - |
| 1600 | Ballinter Br | 3-4 | 3-4 | 3-4 | 3-4 | 4 | 0.04 | 0.04 | 0.03 |
| 1900 | 2km d/s Navan (LHS) | 2-3 | 4 | 3-4 | 4 | 3 | 0.04 | 0.04 | 0.07 |
| ***B03*** | ***Boycetown*** | | | | | | | | |
| | Scurlockstown Br | 3 | | 3 | 3-4 | 3-4 | | 0.03 | 0.05 |

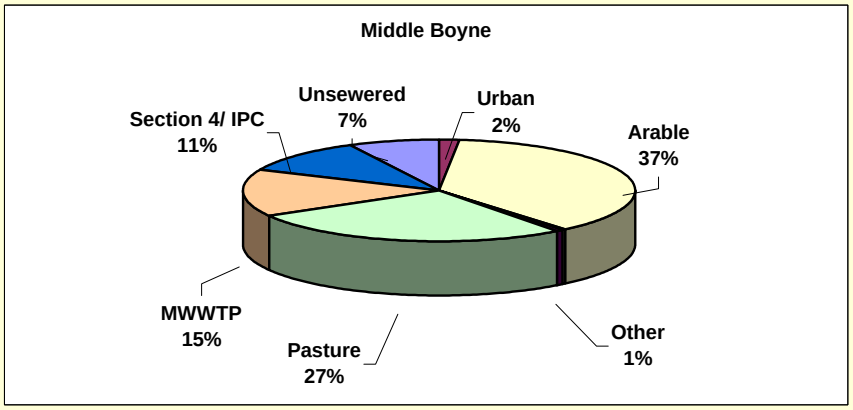
- Three Rivers Project sites



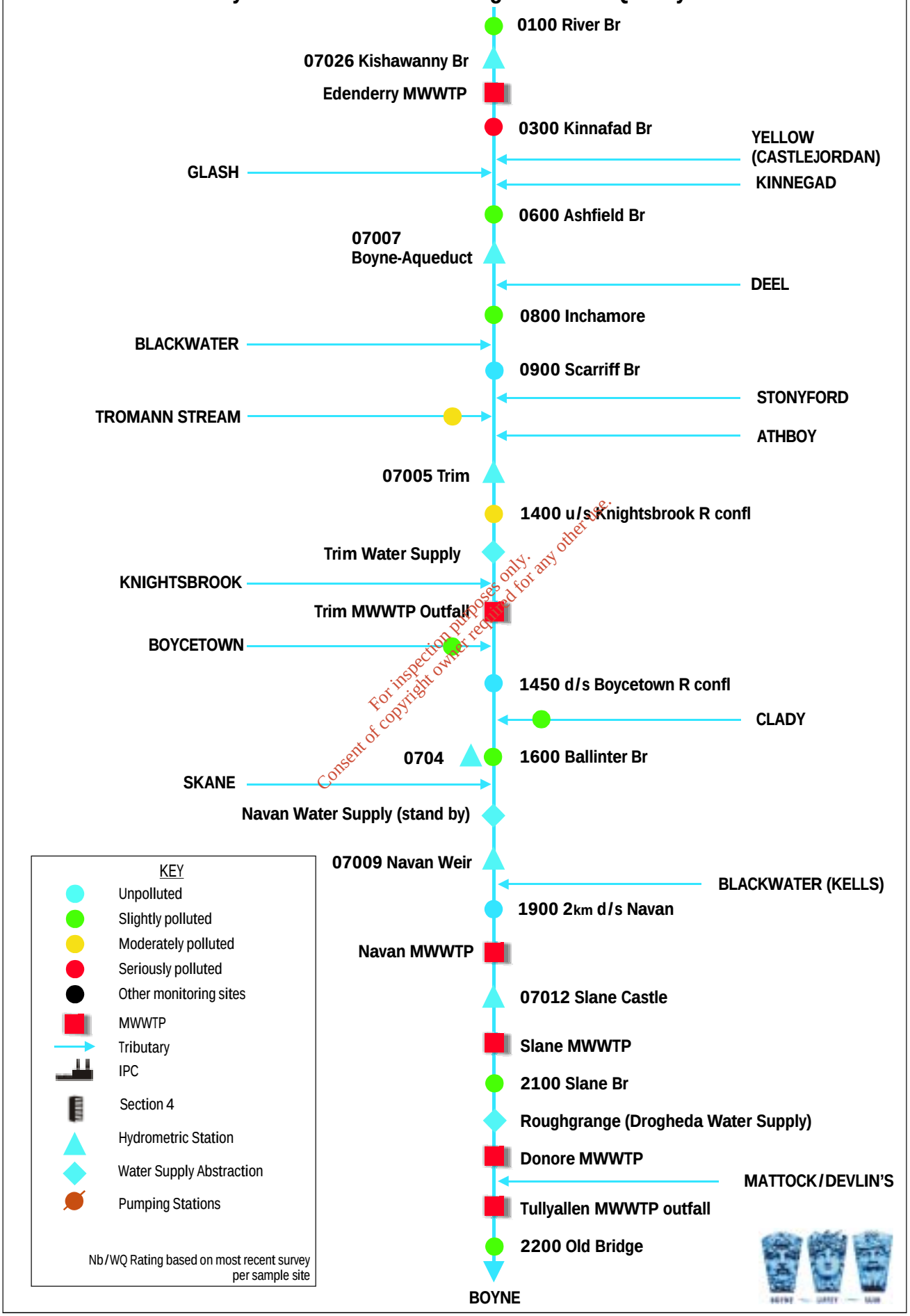
**HYDROMETRIC NETWORK**

| River | Code | Station Name | Guage Type | Owner |
|---|---|---|---|---|
| B04 | 07005 | TRIM | SG | OPW |
| B04 | 07009 | NAVAN WEIR | AR & SG | OPW |

**TP SECTORAL LOADS – MIDDLE BOYNE**



# Boyne Main Channel - Biological Water Quality



## Stonyford

**BOYNE**

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 144 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** S02 Stonyford<br>**HABITAT:**<br>Dominant bankside vegetation is Willow and Bramble.<br>Good nursery and adult<br>Salmonid habitats<br>Main substrate is gravel/ pebbles, mud and cobble | **POLLUTION LOADING**<br>**Est. Load TP** (kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): 0.12<br>**Point Source P** 10%<br>**Diffuse Source P** 90%<br>**Catchment P Load Rank =** 12<br>**MWWTP Loads**<br>Delvin TP Loads kgs/yr 308<br>Ballivor (Kgs/yr) 380<br>**LANDUSE:** Land principally occupied by agriculture with large areas of high productivity pasture and a small amount of low productivity pasture (CORINE)<br>**AMENITY VALUE:** The Stonyford is an important salmon spawning tributary |
| **RUN OFF RISK** | | |



| Point Sources | Details |
|---|---|
| **IPC Authorisations** | None |
| **Section 4** | NEC Ballivor (Industrial effluent) Receiving Waters: Stonyford tributary |
| **MWWTP** | Ballivor MWWTP (450p.e)<br>Delvin MWWTP (600 p.e.) |

| Abstractions | Details |
|---|---|
| Ballivor Source River Stonyford | **Abstraction Point:** Earls Bridge<br>**Quantity $m^3$/day** 250, Meath Co. Co. |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| The upstream stations on the Stonyford (North of Delvin) shows signs of poor water quality and are all slightly polluted. Low minimum DO levels are a problem although median MRP levels are low.<br>The quality improves d/s and Stonyford Br is unpolluted. | Agriculture and other diffuse sources are considered to be the problem in the upper catchment. |
| **GOAL:** ***RETURN THE STONYFORD TO GOOD ECOLOGICAL STATUS IN PARTICULAR UPSTREAM.*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Unknown cause of poor water quality in upstream end of catchment | Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents. | Enables potential point sources to be eliminated with significant water quality improvements. |
| MRP levels from slurry spreading | **Agricultural** - Introduction of Best Farm Management Practices | Ensures economic and environmental benefits. |

**TABLE 1. WATER QUALITY CRITERIA AND RESULTS**

| Site Code | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| **S02** | **Stonyford** | | | | | | | | |
| 0030 | Snipe's Br | 3 | 3 | 3-4 | 3-4 | 3-4 | 0.01 | 0.02 | 0.05 |
| 0055 | Curlingford Br | 3-4 | 3-4 | 3-4 | 3-4 | 4 | 0.01 | 0.01 | 0.03 |
| 0070 | Br SW of Clonmaskill | 3-4 | 3-4 | | 3-4 | 4 | 0.01 | 0.01 | 0.03 |
| 0400 | Stonyford Br | 4 | 4 | 4 | 4 | 4 | 0.03 | 0.03 | 0.03 |

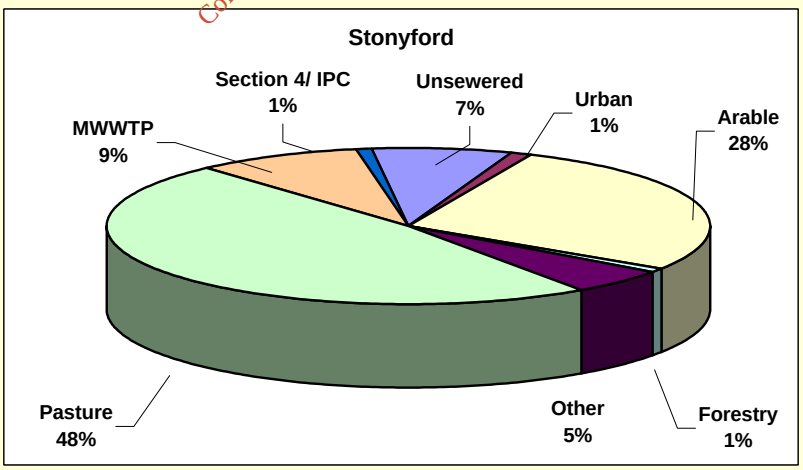
- Three Rivers Project site

**HYDROMETRIC NETWORK**

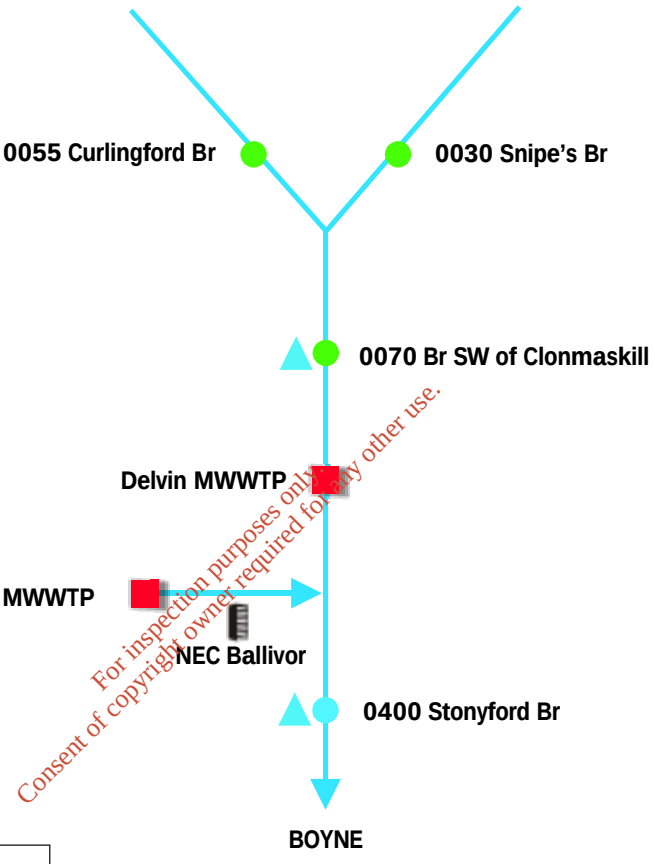
| River | Code | Station Name | Guage Type | Owner |
|---|---|---|---|---|
| S02 | 15 | CLONMASKILL | SG | Westmeath Co. Co. |
| S02 | 55 | STONYFORD BR | SG | Meath Co. Co. |



**TP SECTORAL LOADS**



# Stonyford River - Biological Water Quality






KEY

- Unpolluted
- Slightly polluted
- Moderately polluted
- Seriously polluted
- Other monitoring sites
- MWWTP
- Tributary
- IPC
- Section 4
- Hydrometric Station
- Water Supply Abstraction
- Pumping Stations

Nb/WQ Rating based on most recent survey per sample site

## Athboy

**BOYNE**

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 149.7 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** A01 Athboy<br>**HABITAT:**<br>Dominant bankside vegetation is bramble and sycamore.<br>Good salmonid adult habitat, fair nursery habitat. Good spawning u/s.<br>15% riffle, 85% glide<br>Substrate gravel/pebbles and cobble. | **POLLUTION LOADING**<br>**Est. Load TP** (kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): 0.22<br>**Point Source P** 14%<br>**Diffuse Source P** 86%<br>**Catchment P Load Rank =** 9<br>**MWWTP Loads**<br>Athboy: TP Load 1186 kgs/yr<br>Clonmellon TP Load 166 kg/yr<br>Crossakeel TP Load 190 kg/yr<br>**LANDUSE:** Mainly pasture of high productivity with some areas of non- irrigated arable land with a small area of inland marshes.<br>**AMENITY VALUE:** Important salmonid spawning tributary. |
| **RUN OFF RISK** - | | |



| Point Sources | Details |
|---|---|
| **IPC Authorisations** | None |
| **Section 4** | None |
| **MWWTP** | Athboy MWWTP (1000 p.e) discharges to Athboy River<br>Clonmellon MWWTP (350 p.e.) discharges to a tributary of the Athboy R.<br>Crossakeel MWWTP (400 p.e.) to a tributary of the Athboy R. |

| Abstractions | Details |
|---|---|
| Athboy Town Supply, Source Athboy River | **Abstraction Point**<br>**Quantity m³/day** **Local Authority** Meath Co. Co. |
| Clonmellon, Source Newtown Lough | **Abstraction Point** Clonmellon trib of Athboy<br>**Quantity m³/day** 136 **Local Authority** Westmeath Co. Co. |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| The downstream station on the Athboy had elevated MRP levels and the catchment contributes above average MRP loads.<br>The Q rating and nutrient levels disimprove from Athboy Br (0200) to Trimblestown Br (0400) and Athboy MWWTP is the suspected cause. | Suspected to be Athboy MWWTP, however the site at Athboy Br is 7km approx. d/s of the MWWTP.<br>Agriculture may also be a factor in poor water quality. |
| **GOAL:** ***RETURN ATHBOY TO GOOD ECOLOGICAL STATUS*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Athboy MWWTP | Wastewater Discharges<br>Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQO`s. | Improvement in MRP load in river |
| Farm Yard Point Sources and Septic Tanks | Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public awareness on the benefits of septic maintenance and use of low P detergents. | Enable potential point sources to be eliminated with significant water quality improvements |
| Increased MRP/NH3 from spreading slurries. | Farm Campaign encouraging all farmers to have NMP`s and to adhere to them. Farmers should be audited to ensure adherence to NMP and Code of Good Practice. | Reduce inputs from poorly spread slurries. Reduce input from chem. Fertilisers due to more efficient use of slurry, cost savings to farmers. |

**TABLE 1. WATER QUALITY CRITERIA AND RESULTS**

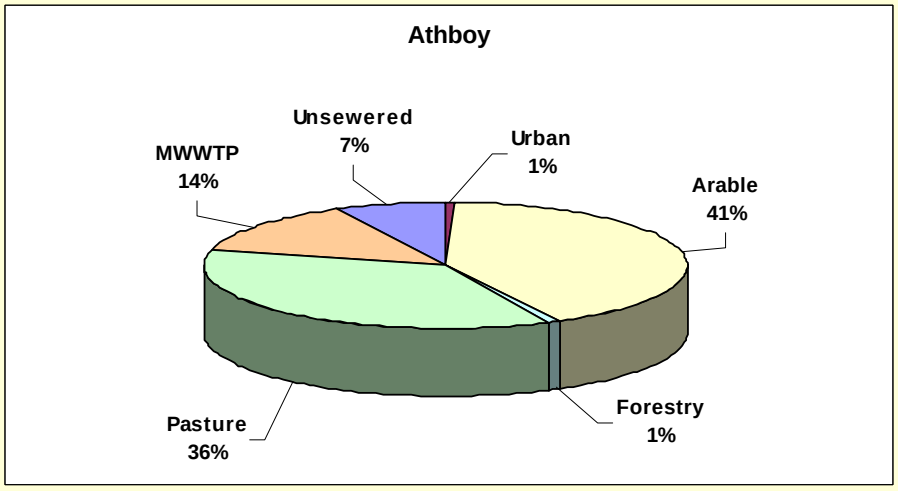
| | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| | ***Athboy Main Channel*** | | | | | | | | |
| 0200 | Just u/s Athboy Br | 3 | 3-4 | 3-4 | 4 | 3-4 | 0.03 | 0.03 | 0.05 |
| 0400 | Tremblestown Br | 3-4 | 3-4 | - | 3-4 | 4 | 0.06 | 0.05 | 0.03 |

**HYDROMETRIC NETWORK**

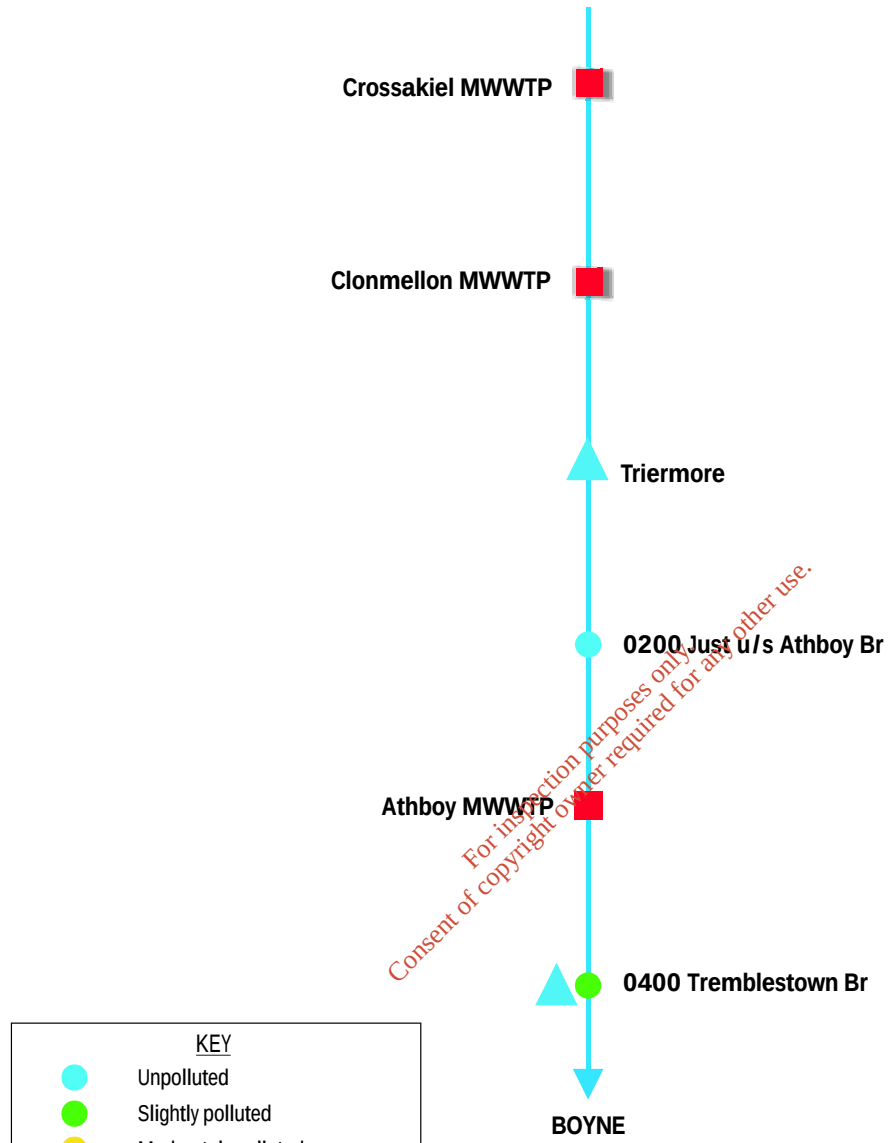
| River | Code | Station Name | Guage Type | Owner |
|---|---|---|---|---|
| A01 | 07001 | Tremblestown | Automatic Recorder | OPW |
| B01 | 07029 | TIERMORE | Staff Gauge | Westmeath Co.Co |



**TP SECTORAL LOADS**



# Athboy River - Biological Water Quality






KEY

- Unpolluted
- Slightly polluted
- Moderately polluted
- Seriously polluted
- Other monitoring sites
- MWWTP
- Tributary
- IPC
- Section 4
- Hydrometric Station
- Water Supply Abstraction
- Pumping Stations

Nb/WQ Rating based on most recent survey per sample site

## Knightsbrook

**BOYNE**

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 65.76 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** K02<br>**HABITAT:**<br>Dominant bankside vegetation is Alder.<br>Good salmonid nursery habitat, fair adult habitat.<br>90% riffle, 10% glide<br>Main river substrates are mud, sand and gravel | **POLLUTION LOADING**<br>**TP Baseline** (kg/ha/yr.):<br>**Est. Load MRP** 0.30 kg/ha/yr<br>**Point Source P** (7%)<br>**Diffuse Source P** (93%)<br>**Catchment P Load Rank =** 6<br>**LANDUSE:** Large areas of arable land, areas are mainly high productivity pastures. There is no forestry/bog.<br>**AMENITY VALUE:** High, the Knightsbrook is an important spawning for salmonids |
| **RUN OFF RISK** | | |



| Point Sources | Details |
|---|---|
| **IPC Authorisations** | None |
| **Section 4** | None |
| **MWWTP** | Summerhill MWWTP (600 p.e) discharges to the Knightsbrook |
| **Other Point Sources** | Basketstown Landfill is located u/s of Dangan Br. (EPA Waste Licence) |

| Abstractions | Details |
|---|---|
| No known abstractions | |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| Water Quality is poor throughout the catchment but in particular at Dangan Br d/s of the conlfluence with the Dangan tributary. High maximum ammonia and median MRP levels.<br>Median MRP values for 2000/2001 consistently exceed the target criteria. Q ratings have also shown poor water quality (moderate pollution).<br>The Q rating and nutrient levels improve where the Knightsbrook joins the Boyne. | Landfill at Basketstown, drains to Knightsbrook from Dangan R.<br>There is also a discharge from Summerhill MWWTP.<br>Agriculture could also be a contributing factor. |
| **GOAL:** ***RETURN THE KNIGHTSBROOK TO GOOD ECOLOGICAL STATUS*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Summerhill MWWTP | **Wastewater Discharges** –<br>Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQC`s. Additional monitoring required. | Improvement in MRP load in river |
| Basketstown Landfill | **Waste Licence**<br>Take measures to ensure leachate does not reach Dangan R. | Enables a potential point source to be eliminated with significant water quality improvements. |
| | **Agriculture** | |
| Increased levels of MRP from diffuse sources. | Introduction of Best Farm Management Practices. Farm Campaign encouraging all farmers to have NMP`s and to adhere to them. Farmers should be audited to ensure adherence to NMP and Code of Good Practice | Ensures economic and environmental benefits. |
| Farm Yard Point Sources and Septic Tanks | Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents. | Enables potential point sources to be eliminated with significant water quality improvements. |

**TABLE 1 – WATER QUALITY RESULTS**

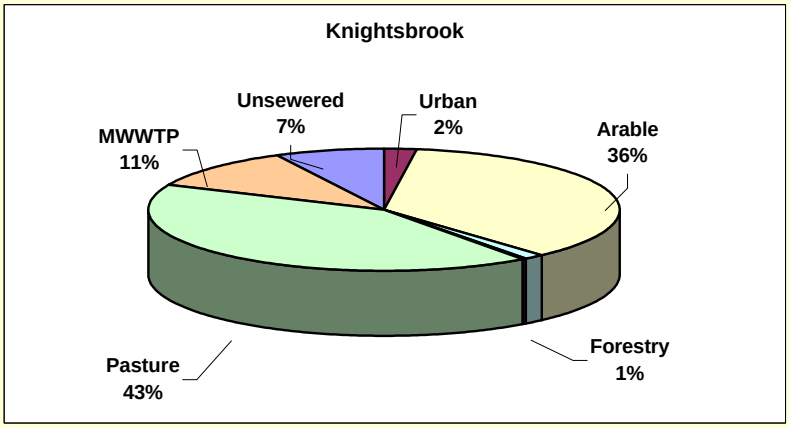
| Site Code | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| | **Knightsbrook** | | | | | | | | |
| 0300 | *Dangan Br | 3 | 3 | 2-3 | 3 | 3-4 | 0.14 | 0.15 | 0.05 |
| 0360 | Br nr Summerstown Ho | 3-4 | | 3 | | 4 | | | |
| 0500 | *Br u/s Boyne R confl | 4 | 4 | 3 | 4 | 4 | 0.08 | 0.09 | 0.03 |

- Three Rivers Project sites

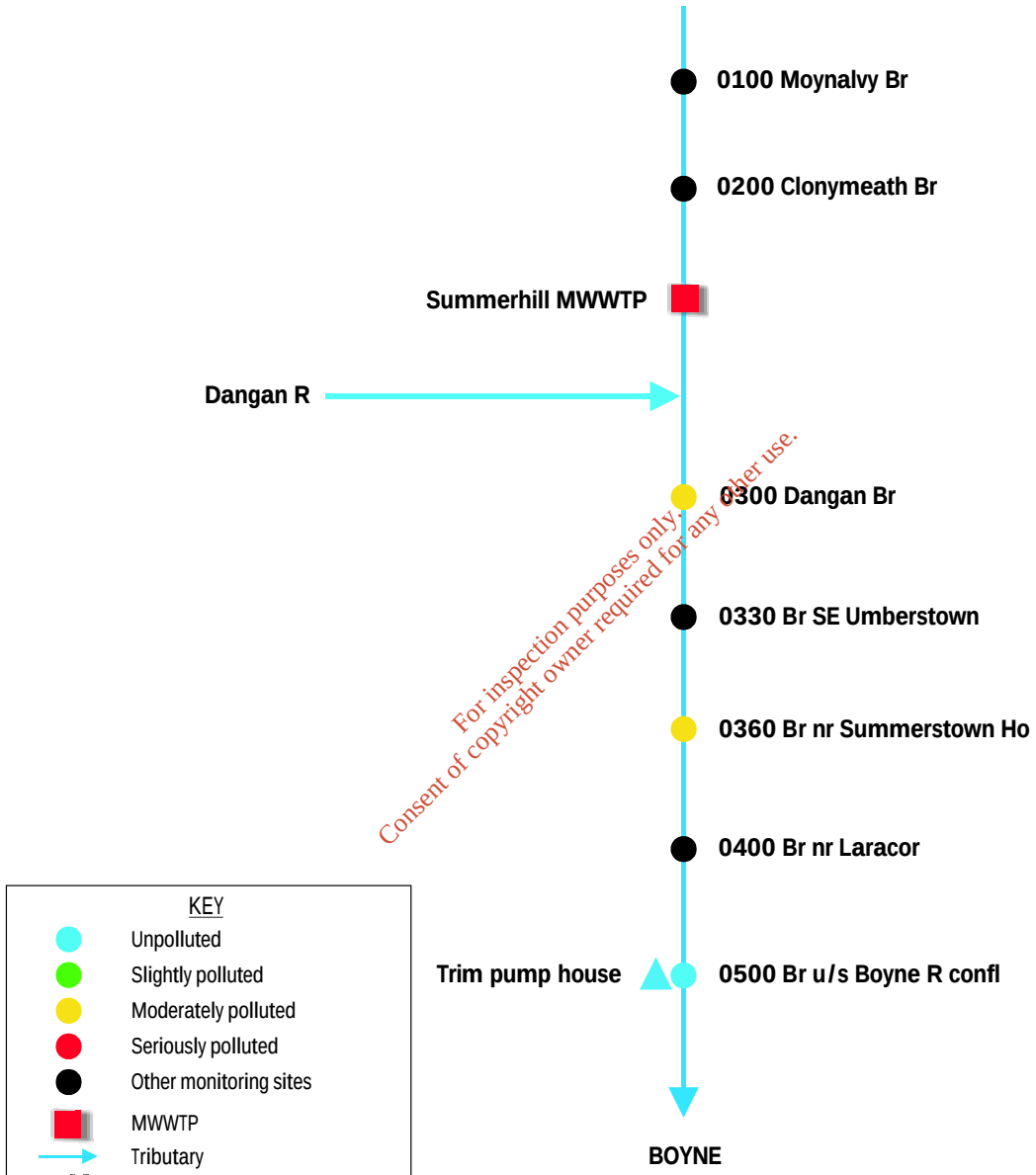


| HYDROMETRIC NETWORK | | | | |
|---|---|---|---|---|
| **River** | **Code** | **Station Name** | **Guage Type** | **Owner** |
| K02 | 07038 | Trim Pump House | Manual upgrade to logger | Meath Co. Co. |

**TP SECTORAL LOADS**



# Knightsbrook - Biological Water Quality






KEY

- Unpolluted
- Slightly polluted
- Moderately polluted
- Seriously polluted
- Other monitoring sites
- MWWTP
- Tributary
- IPC
- Section 4
- Hydrometric Station
- Water Supply Abstraction
- Pumping Stations

Nb/WQ Rating based on most recent survey per sample site

## Clady

**BOYNE**

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 59 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** C01 Clady<br>**HABITAT:**<br>Dominant bankside vegetation is Alder and Hawthorn<br>Good salmonid nursery habitat, fair adult and spawning habitats.<br>75% riffle, 25% glide<br>Main substrate is sand, large rocks and gravel | **POLLUTION LOADING**<br>**Est. Load TP** (kg/ha/yr.):<br>**Est. Load MRP (**kg/ha/yr.): 0.41<br>No flows available, load is for Clady and Boyne to 1600, Navan Weir<br>**Point Source P** 5%<br>**Diffuse Source P** 95%<br>**Catchment P Load Rank n/a**<br>**LANDUSE:** Some areas of tillage but mainly high productivity pasture. There are no significant areas of bog or forestry.<br>**AMENITY VALUE:** Fair, the Clady is also a tributary for salmonid spawning. |
| **RUN OFF RISK**: High, Medium, Low | | |

| Point Sources | Details |
|---|---|
| **IPC Authorisations** | None |
| **Section 4** | None |
| **MWWTP** | Dunderry MWWTP (200 p.e) discharges to the Clady |



| Abstractions | Details |
|---|---|
| No known abstractions | |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| The one site at the Boyne confl, was moderately polluted (Q3) in 2000 and the median MRP was high at 0.09 mg/lP. Q ratings are available up to 1990 from the EPA and pollution ranged from moderate to serious d/ s of Dunderry Br (0100).<br>Physico-chemical data (95-97) showed poor water quality along the river length from Br ESE of Tullaghanstown to the confl. | • Agriculture and sewage are both suspected as causes of poor water quality throughout the catchment.<br>• The MWWTP at Dunderry (discharging at Dunderry Br) appears to be only a minor contributor with a load of 78 kg/yr MRP, <5% of the actual load, however it could be causing a significant impact at low flows |
| **GOAL:** ***RETURN THE CLADY TO GOOD ECOLOGICAL STATUS*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Dunderry MWWTP | **Wastewater Discharges** –<br>Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQC`s. | Improvement in MRP load in river |
| Large areas of Tillage in mid/upper sections | **Agricultural** - Introduction of Best Farm Management Practices<br>Farm Campaign encouraging all farmers to have NMP`s and to adhere to them. Farmers should be audited to ensure adherence to NMP and Code of Good Practice. | Ensures economic and environmental benefits. |
| Farm Yard Point Sources and Septic Tanks | Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents. | Enables potential point sources to be eliminated with significant water quality improvements. |

**TABLE 1- WATER QUALITY RESULTS**

| Site Code | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| | **Clady** | | | | | | | | |
| 0300 | Br. U/S Spollens works | - | 3 | 3 | 3-4 | 3-4 | 0.09 | 0.10 | 0.05 |

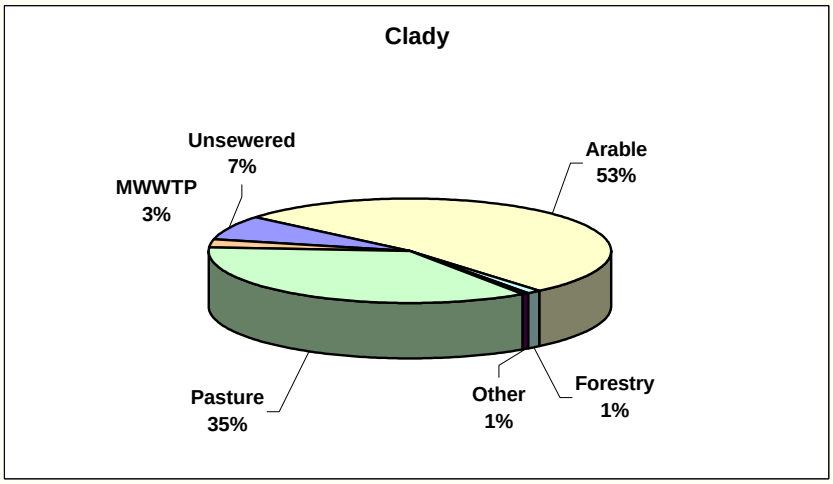
- Three Rivers Project sites



**HYDROMETRIC NETWORK**

| River | Code | Station Name | Guage Type | Owner |
|---|---|---|---|---|
| C01 | 07222 | BALBRIGH BRIDGE | Proposed S.G.<br>Not installed | Meath Co. Co |

**TP SECTORAL LOADS**



## Skane

**BOYNE**

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 80 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** S01 Skane<br>**HABITAT:**<br>Dominant bankside vegetation is sycamore.<br>Good salmonid spawning, nursery and adult habitat.<br>0% riffle, 100% glide<br>Main substrates are mud, cobble and gravel | **POLLUTION LOADING**<br>**TP Baseline** (kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): 0.37<br>**Point Source P** -35%<br>**Diffuse Source P** –65%<br>**Catchment P Load Rank =** 5<br>**LANDUSE:** Land principally occupied by agriculture with large areas of arable land and large areas of high productivity pasture and a small amount of low productivity pasture. (CORINE)<br>**AMENITY VALUE:** Important for trout angling (for fish < 2ib) Also an important salmon spawning tributary. |
| **RUN OFF RISK** | | |

| Point Sources | Details |
|---|---|
| **IPC Authorisations** | None |
| **Section 4** | Warrenstown Agric. College (Domestic effluent)<br>Tara Trust (Domestic effluent) |
| **MWWTP** | Dunshauglin MWWTP (2500 p.e.)<br>Kilmessan MWWTP (400 p.e.) |

| Abstractions | Details |
|---|---|
| No known abstractions | |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| There is one WQ site at the Skane Boyne confluence. It has been moderately polluted from 1997 – 2000. The EPA results from 4 sites upstream are moderately polluted in 2000 from 0105 2km d/s of Drumree Br to the confl. suggesting the problem is u/s in the catchment.<br>The Median MRP for 2000 was 0.11 mg/l P. | In the Skane catchment both sewage and agriculture are suspected.<br>There are two WWTP discharges at Dunshaughlin and Kilmessan, but Dunshauglin MWWTP is thought to be the main cause. |
| **GOAL:** ***RETURN THE SKANE TO GOOD ECOLOGICAL STATUS.*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Dunshaughlin MWWTP is suspected as causing the continuing very poor quality with moderate pollution below Kilmessan. | **Wastewater Discharges** –Dunshaughlin MWWTP is currently being upgraded | Improvement in MRP load in river |
| Problem Farmyards | **Agricultural** - Introduction of Best Farm Management Practices<br>Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. | Ensures economic and environmental benefits. |
| Farm Yard Point Sources and Septic Tanks | Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents | Enables potential point sources to be eliminated with significant water quality improvements. |

**TABLE 1 – WATER QUALITY RESULTS**

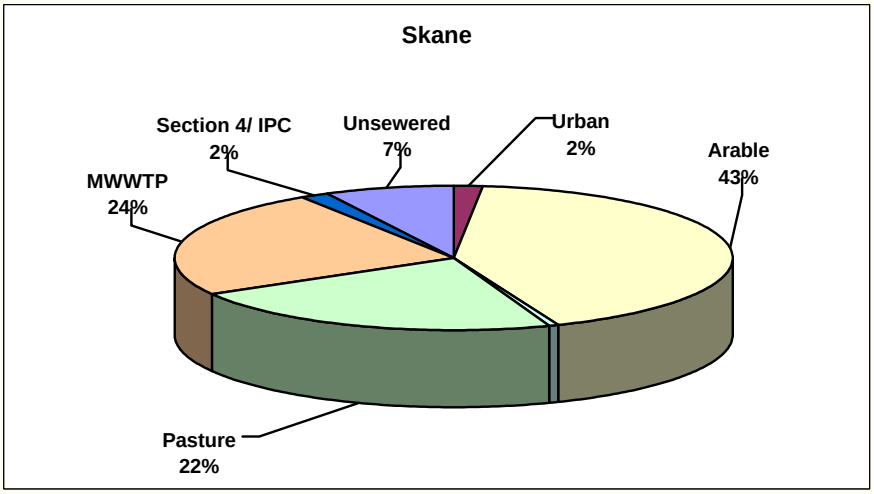
| Site Code | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| | **Skane** | | | | | | | | |
| 0600* | Dowdstown Br | 3 | 2-3 | 3 | 3-4 | 3-4 | 0.11 | 0.10 | 0.05 |

- Three Rivers Project site

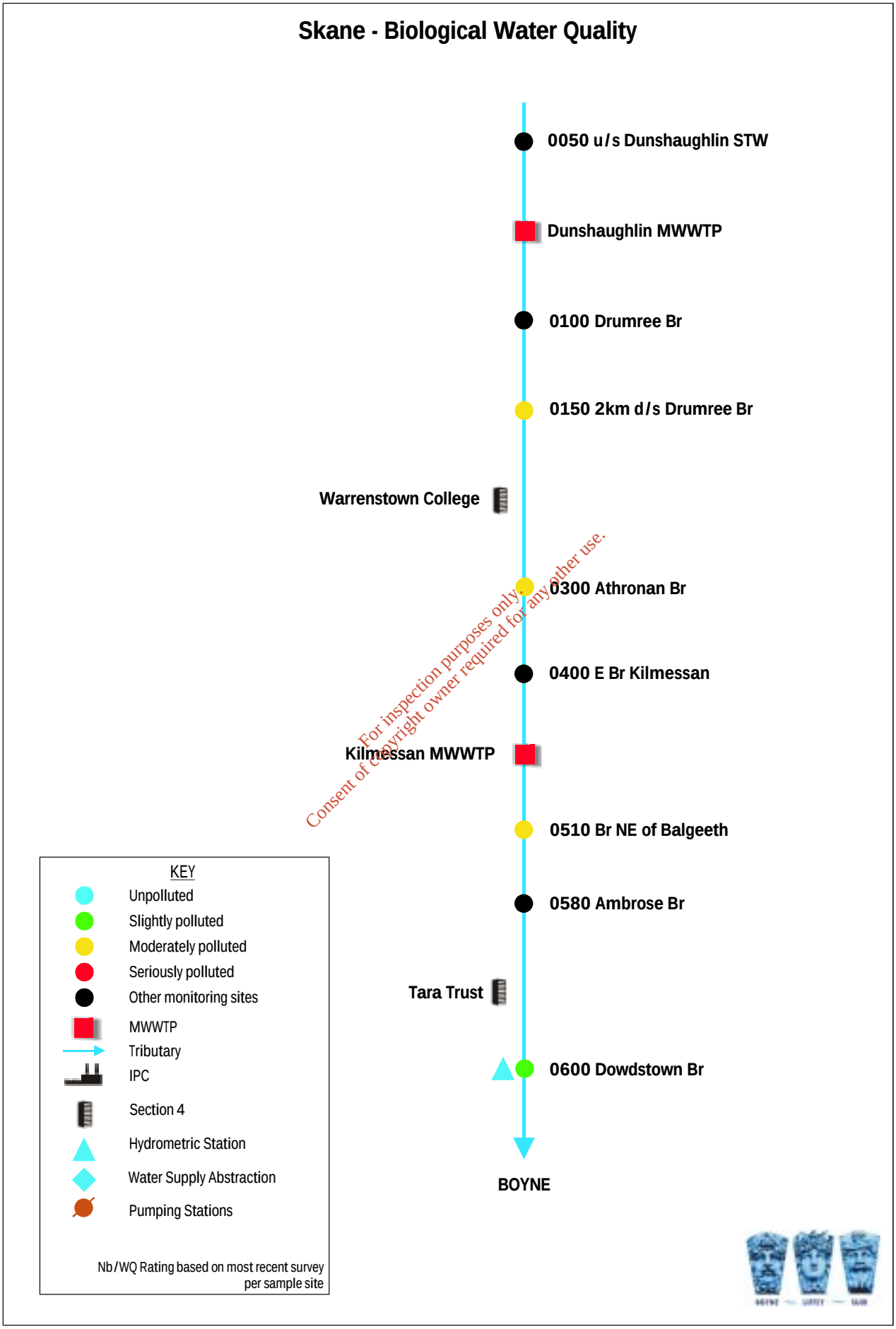


| HYDROMETRIC NETWORK | | | | |
|---|---|---|---|---|
| **River** | **Code** | **Station Name** | **Guage Type** | **Owner** |
| S01 | 07053 | DOWDSTOWN | Manmade weir, Logger Upgrade Recommended | Meath Co. Co. |

**TP SECTORAL LOADS**



# Skane - Biological Water Quality



## Upper Blackwater (Kells) BOYNE

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 114.7 Km2<br>(Catchment d/s to Kells)<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** B01 Blackwater<br>N01 Nadreegeel<br>L01 Lislea<br>**HABITAT:**<br>Main bankside vegetation is Alder and Lime<br>Good adult and nursery salmonid habitat<br>25% riffle, 75% glide<br>Main substrates are sand, mud and gravel. | **POLLUTION LOADING**<br>**Est. Load TP** (kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): 0.40<br>**Point Source P** 9%<br>**Diffuse Source P** 91%<br>**Catchment P Load Rank =** 4<br>**MWWTP's TP Loads, kgs/yr**<br>Bailieboro<br>Kells: 2373<br>IDA Plant Kells: 47<br>**LANDUSE:** Mainly pasture of high productivity with some small pockets of pasture with low productivity.<br>**AMENITY VALUE:** High. The Cavan Lakes are important for coarse fishing. |
| **RUN OFF RISK** - | | |

| Point Sources | Details |
|---|---|
| **IPC Authorisations** | Bailieboro Foods Ltd., Discharge to R. Leer & Waste landspread<br>FSW Coatings (Chemicals)<br>Anthony Fay Piggery, Crocknahattin, Bailieboro<br>John Kiernan Piggery, Bailieboro.<br>Waterford Food Ingredients.discharges to Lough Ramor (B01 800) |
| **Section 4** | Lakeside Manor, receiving water Lough Ramor |
| **MWWTP** | Bailieboro MWWTP (2000 p.e) discharges to Blackwater (Kells) |



| Abstractions | Details |
|---|---|
| Ballyjamesduff W.S. | **Abstraction point** Nadreegeel Lough **Quantity in m3/day** 1400 **Local Authority** Cavan Co. Co. |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| Water quality u/s was satisfactory .in 2001. D/s of Bailieboro has improved from moderately polluted (Q3) to unpolluted (Q4).<br>The Nadreegeel In 2001 both sites were unpolluted (Q4), however in recent years both were slightly polluted. The Lislea has maintained a Q4 (unpolluted) rating, however the median MRP for 2001 was 0.04mg/l P. | The MWWTP at Bailieboro and IPC Licenced food processing are a possible cause of this situation. |
| ***GOAL: RETURN UPPER BLACKWATER (KELLS) GOOD ECOLOGICAL STATUS***<br>***MAINTAIN CURRENT GOOD WATER QUALITY IN NADREEGEEL L. STREAM AND LISLEA R.*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Increased MRP/NH3 probably due to slurry spreading out of season on poorly drained soils | Farm Campaign encouraging all farmers to have NMP`s and to adhere to them. Farmers should be audited to ensure adherence to NMP and Code of Good Practice. | Reduce inputs from poorly spread slurries. Reduce input from chem. Fertilisers due to more efficient use of slurry, cost savings to farmers. |
| Major Deterioration in Water Quality | More detailed on the ground investigations including farm surveys and Section 12 notices in targeted problem area and check all point source | |
| Increased MRP from sewage. | Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQC`s. | Ensure MWWTP is performing well within consent conditions. |
| Farm Yard Point Sources | Farm surveys at a general level are currently being carried out as part of the Three Rivers Project | Enables significant point sources to be eliminated, dissemination of information to farmers, improved awareness. |
| In Nadreegeel and Lislea maintain current good water quality. | Introduction of Best Farm Management Practices. Public Awareness on the benefits of septic maintenance and use of low P detergents. | |

**TABLE 1. WATER QUALITY CRITERIA AND RESULTS**

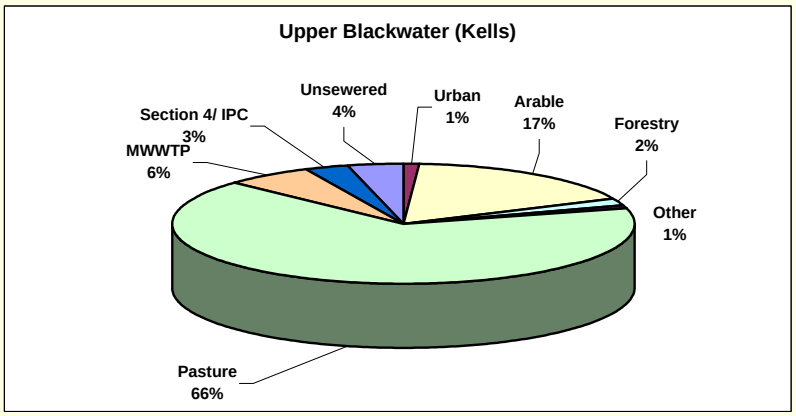
| | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target |
|---|---|---|---|---|---|---|---|---|---|
| **B01** | ***Upper Blackwater Main Channel*** | | | | | | | | |
| 280 | 3rd Br d/s Castle L | 3 | 3 | 3 | 3-4 | 3-4 | 0.03 | 0.03 | 0.05 |
| 800 | Just u/s L Ramor | 4 | 3-4 | 4 | 4 | 4 | 0.03 | 0.03 | 0.03 |
| 900 | Nine Eyes Bridge | 3 | 3 | 3 | 3 | 3-4 | 0.02 | 0.01 | 0.05 |
| | **Lislea** | | | | | | | | |
| 0100 | Br u/s L. Ramor | 4 | 4 | 4 | 4 | 4 | 0.05 | 0.04 | 0.03 |
| **N01** | ***Nadreegeel Lough Stream*** | | | | | | | | |
| 0200 | Billis Br | 3 | 3-4 | 4 | 4 | 3-4 | 0.02 | 0.02 | 0.05 |
| 0500 | Br nr Cranadillon | 3-4 | 4 | 3-4 | 4 | 4 | 0.02 | 0.02 | 0.03 |



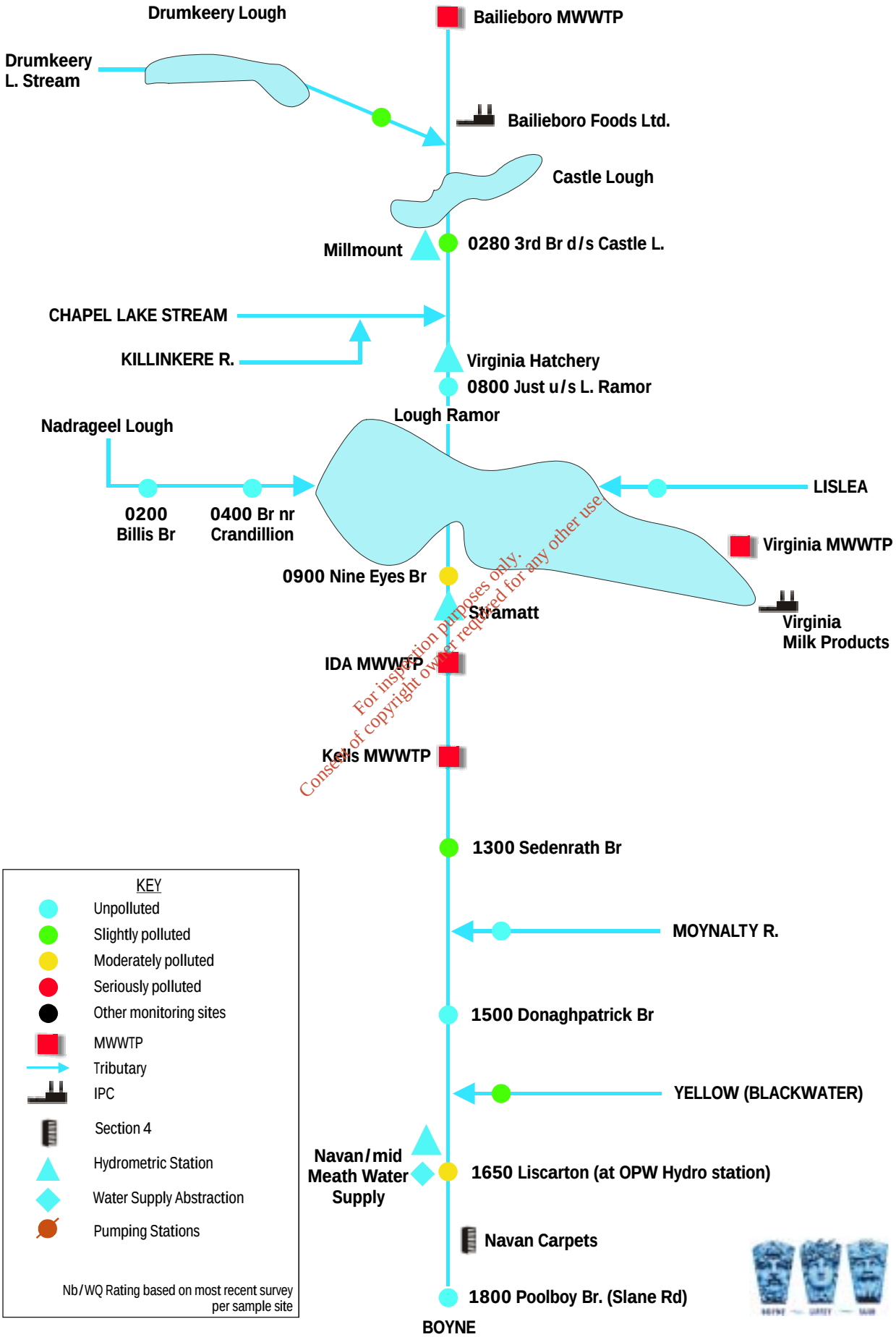
- Three Rivers Project sites

| HYDROMETRIC NETWORK | | | | |
|---|---|---|---|---|
| **River** | **Code** | **Station Name** | **Guage Type** | **Owner** |
| B01 | 07033 | Virginia Hatchery | AR | OPW |
| B01 | | Leiter | SG | Cavan Co Co. |
| N01 | 07019 | Deerpark | | Cavan Co.Co. |
| L01 | 07229 | Ballaghanea | | Cavan Co. Co. |

**TP SECTORAL LOADS**



# Blackwater (Kells) and Tributaries - Biological Water Quality



## Moynalty

**BOYNE**

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 90 Km2<br>**GRADIENT:**<br>**FLOW REGIME:** Slow moving and channelised upstream<br>**Hydrometric Area:** 07<br>**EPA Ref:**<br>M03 Moynalty<br>S03 Seeharan Stream<br>L02 Leitrim Stream<br>D04 Druminiskin (Annesbrook)<br>**HABITAT:**<br>Main bankside vegetation is Willow.<br>Good salmonid spawning, nursery and adult habitat.<br>10% riffle, 90% glide<br>Main substrates are sand, mud and gravel/ pebbles | **POLLUTION LOADING**<br>**Est. Load MRP** (kg/ha/yr.): 0.50<br>**Point Source P** (%) 10<br>**Diffuse Source P** (%) 90<br>**Catchment P Load Rank: 2**<br>**LANDUSE:** Some forestry/bog, but mainly a mixture of low and high productivity pasture.<br>**AMENITY VALUE:** Angling, coarse fishing in Co. Cavan Lakes<br>The Moynalty/ Barora is also an important system for salmon spawning. |
| **RUN OFF RISK** - | | |



| Point Sources | Details |
|---|---|
| **IPC Authorisations** | Wellmans International Ltd., discharges at Rosehill Br (0200)<br>Ballynamona Pig Unit at Ballynamona, Bailieboro. Spreadlands for this unit and other IPC pig units are located in the catchment. |
| **Section 4** | None |
| **MWWTP** | Mullagh MWWTP (400 p.e) discharges to Moynalty – Mullagh Branch<br>Moynalty MWWTP (100 p.e.) discharges to Moynalty main channel |

| Abstractions | Details |
|---|---|
| Wellmans International Ltd., at Rosehill Br (0200) | |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| Water Quality is poor throughout the catchment with median MRP values for 2000 range from 0.04 to 0.09 mg/l P. There are also problems with high max. ammonia and low DO levels.<br>Q ratings have shown all sites were slightly or moderately polluted in 2000, i.e. all sites were unsatisfactory. The worst sites are Br nr Lurganbane (050) and Wilton Br (060). These sites are u/s of any influence from MWWTP's therefore agriculture is suspected as the main cause. | Number of possible causes.<br>• In the Upper catchment no known point sources. Poor farmyards could be a problem but are treated here as a diffuse cause<br>• There are several Intensive agriculture (pig units) in the catchment with one IPC activity. A possible cause is slurry spreading and P loss following rainfall.<br>• Mullagh MWWTP (450 p.e.) is a significant contributor to the Mullagh Branch according to EPA Water Quality (1995-1997) |
| **GOAL: *RETURN MOYNALTY TO GOOD ECOLOGICAL STATUS*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Elevated MRP Loads | **Agriculture Measures:**<br>Introduction of Best Farm Management Practices. Farm Campaign encouraging all farmers to have NMP`s and to adhere to them. Farmers should be audited to ensure adherence to NMP and Code of Good Practice | Reduce inputs from landspread slurries more efficient use of slurry, cost savings to farmers. |
| Farm Yard Point Sources and Septic Tanks | Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents | Enables potential point sources to be eliminated with significant water quality improvements. |
| Major Deterioration in Water Quality between Wilton Br (060) and Cloggagh Br. | More detailed on the ground investigations including farm surveys and Section 12 notices in targeted problem areas | |
| Increased MRP from sewage. | **Waste Water Discharge Measures:** Ensure MWWTP is performing well within consent conditions. | |

**TABLE 1 - WATER QUALITY RESULTS**

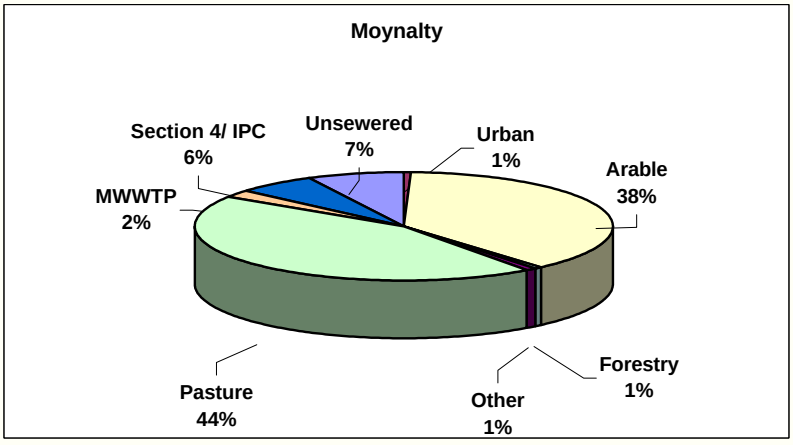
| | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| 50 | Br nr Lurganbane | 3 | 3-4 | 3-4 | 4 | 3-4 | 0.09 | 0.11 | 0.05 |
| 60 | Br E of Wilton Ho | | | | | | 0.06 | 0.06 | |
| 70 | Cloggagh Br | 3-4 | | 3 | - | 4 | 0.05 | 0.06 | 0.03 |
| 90 | Skearke Br | 4 | | 3-4 | | 4 | 0.05 | 0.05 | 0.03 |
| 300 | Br d/s Rosehill Br | 3 | 3 | 3 | 3-4 | 3-4 | 0.05 | 0.03 | 0.05 |
| 1000 | *u/s Main Ch confl | | | | 4 | | 0.04 | 0.04 | |
| | ***Mullagh Branch*** | | | | | | | | |
| 400 | Br u/s Main Ch confl | 3 | 3 | 3 | 3 | 3-4 | 0.11 | 0.20 | 0.05 |
| 600 | Moynalty Br | 3-4 | | 3-4 | 4 | 4 | | | 0.03 |
| 800 | Carlanstown Br | 3-4 | | 3 | 3-4 | 4 | | | 0.03 |
| 900 | Fyanstown Br. | 4 | 3-4 | 3 | 3-4 | 4 | 0.05 | 0.05 | 0.03 |



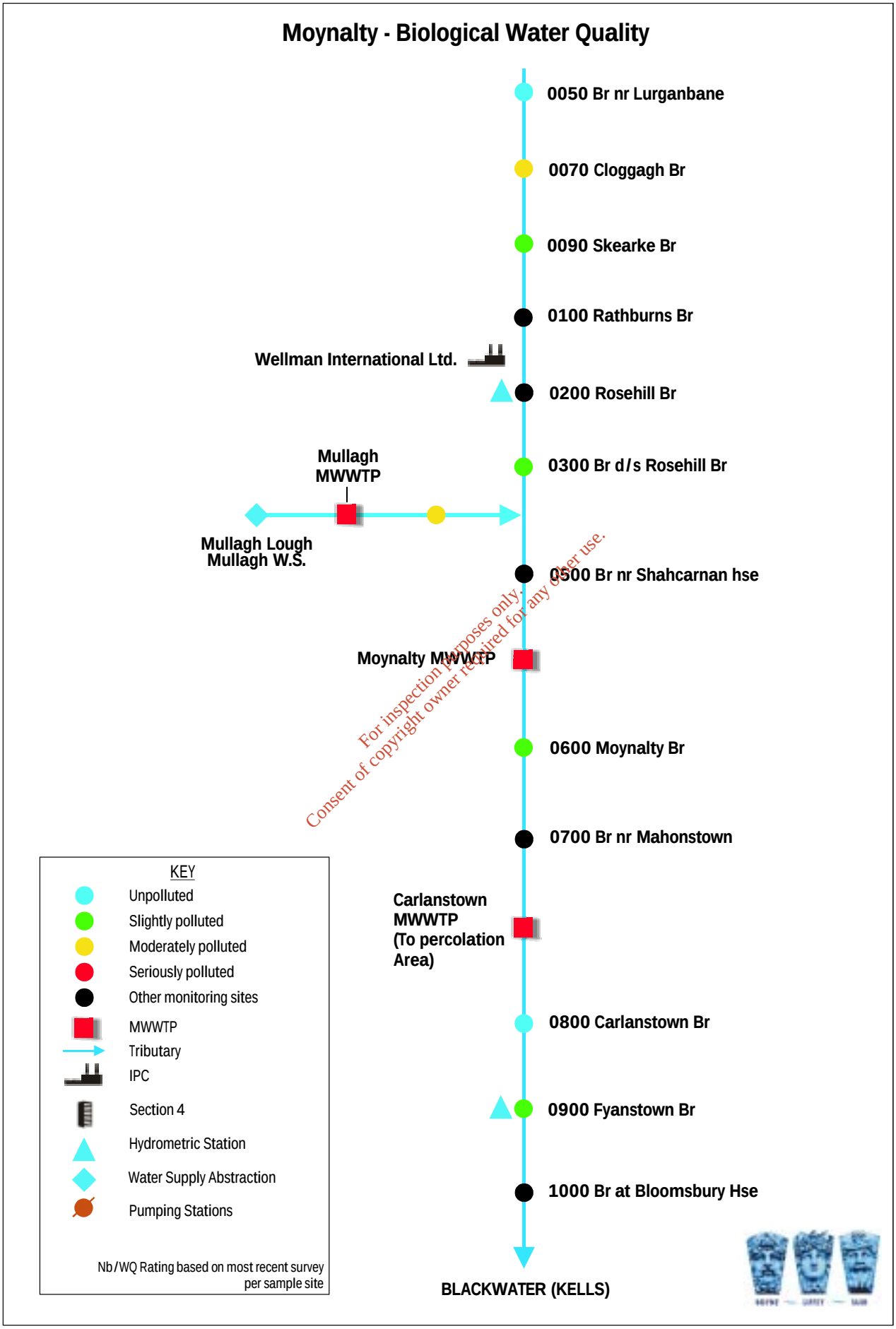
- Three Rivers Project sites

| HYDROMETRIC NETWORK | | | | |
|---|---|---|---|---|
| **River** | **Code** | **Station Name** | **Guage Type** | **Owner** |
| M03 | 07017 | ROSEHILL | AR | Cavan Co. Co. |
| M03 | 07233 | MULLAGH | Weir not installed | Cavan Co. Co. |
| M03 | 07006 | FYANSTOWN | AR | OPW |

**TP SECTORAL LOADS**



# Moynalty - Biological Water Quality



## Yellow (Blackwater) BOYNE

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 41.64 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** Y01<br>**HABITAT:**<br>Main bankside vegetation is Ash and Hawthorn<br>Fair salmonid adult and nursery habitat in lower reaches<br>Riffle in places but mainly glide<br>Main substrates are mud and sand | **POLLUTION LOADING**<br>**Est. Load MRP** (kg/ha/yr.):0.20<br>**Point Source P** 0%<br>**Diffuse Source P** 100%<br>**Catchment P Load Rank =** 11<br>**LANDUSE:**<br>Land principally occupied by agriculture. Main Pasture of high productivity and a large area of arable land (CORINE)<br>**AMENITY VALUE:** Fair |
| **RUN OFF RISK** - | | |

| Point Sources | Details |
|---|---|
| **IPC Authorisations** | none |
| **Section 4** | None (1 application in progress) |
| **MWWTP** | none |

| Abstractions | Details |
|---|---|
| No known abstractions | |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| Water Quality is poor in particular u/s in the upper catchment and farmyards are suspected as the main cause.<br>High. median MRP, TON and maximum ammonia levels were recorded over the duration of the project in the pilot study area. Conditions improving from u/s to d/s indicating a point source.<br>Q ratings have shown there has been poor water quality and in the last number of years the confluence has been slightly and moderately polluted. | Agriculture is the main suspect in the poor quality of the water throughout this catchment due to there being no other known point sources. |
| **GOAL:** ***RETURN YELLOW TO GOOD ECOLOGICAL STATUS*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Farm Yard Point Sources and Septic Tanks | Continue visits to inspect and review BFMP'S implemented during the Three Rivers Project. | Enables potential point sources to be eliminated with significant water quality improvements. |
| | Continue Public Awareness on the benefits of septic maintenance and use of low P detergents. | Ensures economic and environmental benefits. |

**TABLE 1. WATER QUALITY CRITERIA AND RESULTS**

| | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| **Y01** | ***Yellow (Blackwater)*** | | | | | | | | |
| 0020 | *W of Scottstown | - | 2 | 3 | 3 | - | 0.13 | 0.11 | - |
| 0030 | Clynch Br | - | - | - | 3 | - | 0.06 | 0.07 | - |
| 0048 | *100m u/s Wilkinstown | - | 4 | | - | - | 0.03 | 0.03 | - |
| 0040 | * 2nd Br d/s of Clynch Br | - | 3 | 3 | 3 | - | 0.05 | 0.05 | - |
| 0045 | * S of Glackenstown | - | 4 | 3-4 | 3-4 | - | 0.01 | 0.01 | - |
| 0085 | Balsaw trib. U/s cofl | - | - | - | 3 | - | 0.05 | 0.05 | - |
| 0090 | 200m d/s Balsaw confl. | - | - | 3-4 | 3-4 | - | 0.04 | 0.04 | - |
| 1100 | Br u/s Blackwater confl | 3 | 3-4 | 3-4 | 3-4 | 3-4 | 0.03 | 0.03 | 0.05 |

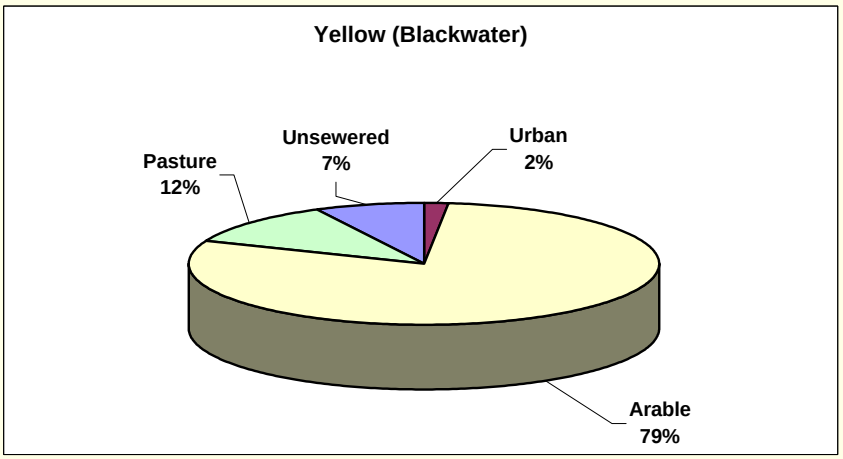
*Three Rivers Project sites



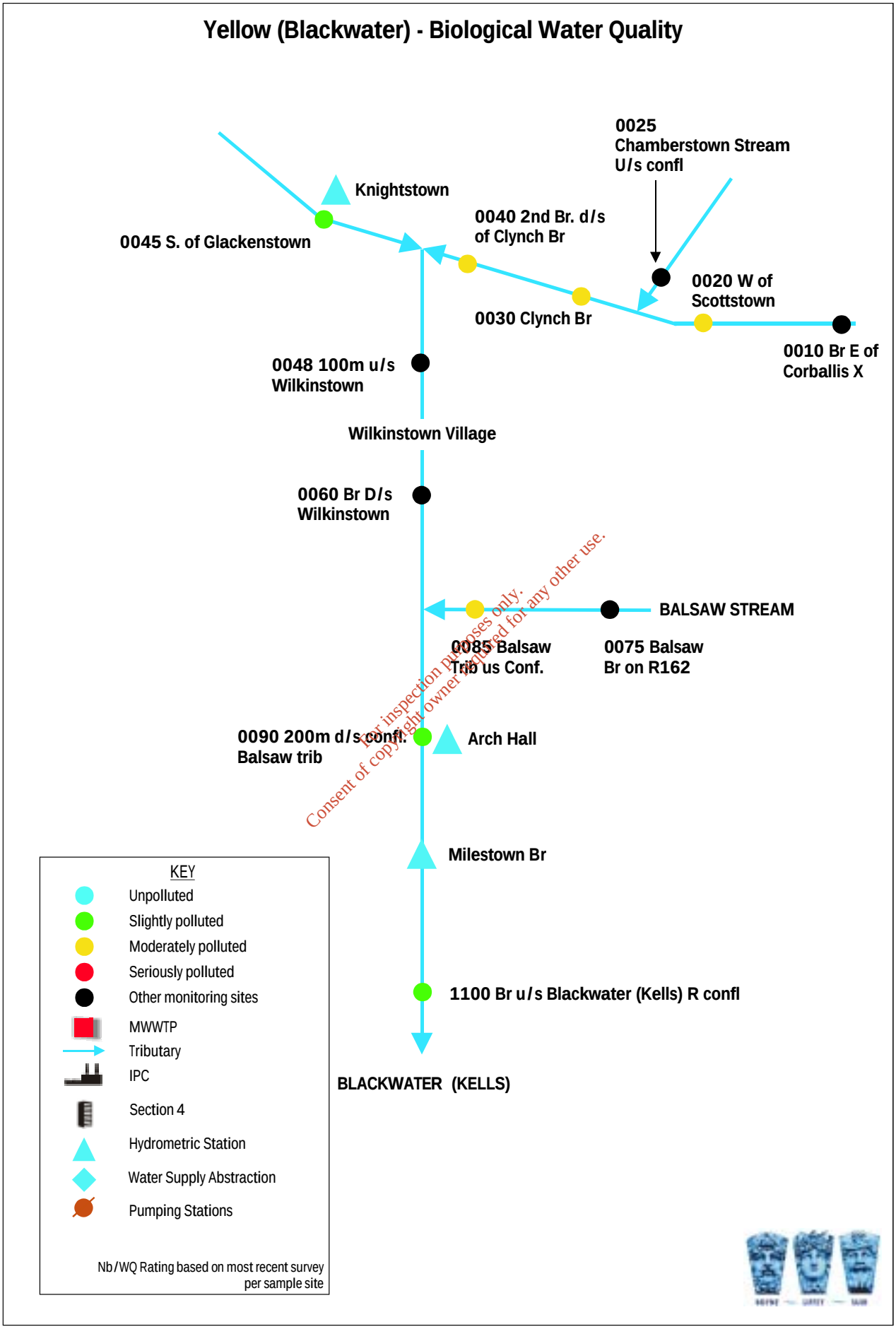
**HYDROMETRIC NETWORK**

| River | Code | Station Name | Gauge Type | Owner |
|---|---|---|---|---|
| Y01 | 235 | MILESTOWN BR | manmade weir | Tara Mines |
| Y01 | 251 | Arch Hall | manmade weir | Meath Co. Co. |
| Y01 | 252 | Knightstown | manmade weir | Meath Co. Co. |
| Y01 | 253 | CLYNCH | manmade weir | Meath Co. Co. |
| Y01 | 255 | Balsaw trib. u/s confl. | Staff Gauge | Meath Co. Co. |

**TP SECTORAL LOADS**



# Yellow (Blackwater) - Biological Water Quality



## Blackwater (Kells) Lower

**BOYNE**

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 712.13 Km2<br>(From Kells to Navan)<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** B01 Blackwater (Kells)<br>**HABITAT:**<br>Little or no bankside vegetation<br>Good adult habitat and fair nursery habitat.<br>0% riffle, 100% glide | **POLLUTION LOADING**<br>**Est. Load TP (**kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): 0.21<br>**Point Source P**: 24%<br>**Diffuse Source P**: 76%<br>**Catchment P Load Rank =** 10<br>**MMWWTP Loads**<br>Kells TP Loads 2373 kgs/yr<br>IDA Plant Kells 47 Kgs/yr<br>**LANDUSE:** Mainly pasture of high productivity with some small pockets of pasture with low productivity with small areas of peat bogs exploited.<br>**AMENITY VALUE:** High |
| **RUN OFF RISK** - | | |



| Point Sources | Details |
|---|---|
| **IPC Authorisations** | Navan Carpets Ltd discharging to the Blackwater (Kells)<br>Kells Stainless Ltd<br>John O' Rourke & Sons Ltd<br>Honeyclover Ltd. Waste landspread.<br>P. Carney Ltd (Metal)<br>Southborough International Ltd. (Surface Coatings) |
| **Section 4** | None |
| **MMWWTP** | Kells MWWTP (5000 p.e) discharges to Blackwater (Kells)<br>IDA Plant Kells |

| Abstractions | Details |
|---|---|
| Navan / Mid-Meath<br>Blackwater (Kells) | **Abstraction Point** Liscartan<br>**Quantity m³/day** 9000, **Local Authority** Meath Co. Co. |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| Sedenrath Br d/s of Kells was slightly polluted in 2001.with median MRP of 0.05 mg/l P. The Q rating improved to unpolluted at Donaghpatrick Br but MRP levels remained high. Poolboy Br was unpolluted with median MRP of 0.04 mg/l P. | This may be due to Kells MWWTP discharge. Agriculture is suspect in the quality of the water throughout the catchment |
| **GOAL:** ***RETURN BLACKWATER ( KELLS) LOWER TO GOOD ECOLOGICAL STATUS*** | |

| MANAGEMENT STRATEGIES | | |
|---|---|---|
| **PROBLEM** | **RECOMMENDATION** | **BENEFIT** |
| Farm Yard Point Sources and septic tanks | Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents. | Enables significant point sources to be eliminated, dissemination of information to farmers, improved awareness. |
| Increased MRP/NH3 from spreading slurries. | **Agricultural** -Farm Campaign encouraging all farmers to have NMP`s and to adhere to them. Farmers should be audited to ensure adherence to NMP and Code of Good Practice. | Reduce inputs from poorly spread slurries. Reduce input from chem. Fertilisers due to more efficient use of slurry, cost savings to farmers. |
| Increased MRP from sewage. | **Wastewater Discharges** -Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQC`s. | Ensure MWWTP is performing well within consent conditions. |

**TABLE 1. WATER QUALITY CRITERIA AND RESULTS**

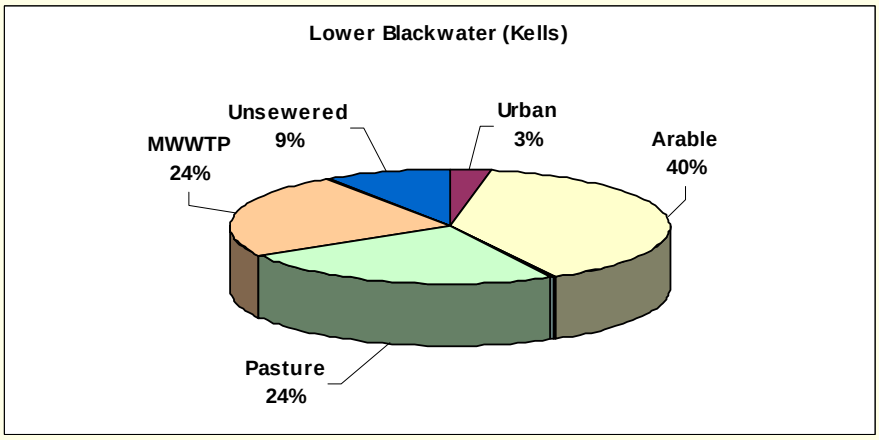
| | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| | **Blackwater (Kells)** | | | | | | | | |
| 1300 | Sedenrath Br (Headford Br) | 3-4 | 4 | 3-4 | 3-4 | 4 | 0.04 | 3-4 | 0.03 |
| 1500 | Donaghpatrick Br | 4 | 4 | 3-4 | 4 | 4 | 0.04 | 4 | 0.03 |
| 1650 | Liscarton (at OPW Hydro Station) | - | - | - | - | - | 0.04 | - | - |
| 1800 | Pollboy Br (Slane Rd) Navan | 3 | 4 | | 4 | 3-4 | 0.04 | | 0.05 |

- Three Rivers Project sites



| HYDROMETRIC NETWORK | | | | |
|---|---|---|---|---|
| **River** | **Code** | **Station Name** | **Guage Type** | **Owner** |
| B01 | 07010 | Liscarton | AR | OPW |
| B01 | 07004 | Stramatt | AR | OPW |

**TP SECTORAL LOADS**



## Boyne Main Channel (Lower)

**BOYNE**

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 201 Km2<br>(Navan to Drogheda)<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** B04 Boyne<br>**HABATIAT:**<br>Main bankside vegetation is Ash<br>Very good salmonid adult habitat.<br>Ranges from 100% riffle to 40% riffle, 60% glide | **POLLUTION LOADING**<br>**Est. Load TP (**kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): 1.58<br>**Point Source P** 70%<br>**Diffuse Source P** 30%<br>**Catchment P Load Rank = 3**<br>**MWWTP load Kg/yr**<br>Navan 11863<br>Slane 1044<br>Donore 285<br>Tullyallen 299<br>Drogheda 217,616<br>**LANDUSE:** Mainly pasture of high intensity and arable<br>**AMENITY VALUE:** Very good, for water based activities, canoeing, fishing. It is a Designated Salmonid River |
| **RUN OFF RISK** - | | |

| Point Sources | Details |
|---|---|
| **IPC Authorisations** | Marry Sow unit and pig prod. (Intensive agriculture) receiving waters Boyne. Applied<br>C &N Oil (Food and drink) receiving water Boyne Licensed<br>Thermal Heat Exchangers (Girl Ltd (Surface Coating) Boyne Estuary Licensed.<br>Sherlock Brothers Ltd (Surface Coating) Receiving Water Boyne Licensed<br>Xtratherm Limited (Chemicals) receiving water Boyne applied |
| **Section 4 Licences** | Killeen Steel Wool Receiving water Boyne Drogheda Corps. (Make Steel wool)<br>Silica Sand Ltd receiving water Boyne Estuary, Louth Co. Co (Quarry)<br>Marsh Oil Products Limited receiving water Boyne Estuary Louth Co.Co (Oil)<br>Mr. Karl Davis, Grangebellew receiving water Boyne Estuary Louth Co.Co<br>Peter & Ann Waters receiving waters Boyne, Meath Co.Co. Restaurant<br>Stackallen House receiving waters stream to the Boyne, Meath Co. Co. (Pool Water) |
| **MWWTP** | Navan (new plant) (20000 p.e) discharges to the Boyne<br>Slane (900p.e) discharging to the Boyne<br>Donore (450 p.e) Discharging to the Boyne |

| Abstractions | Details |
|---|---|
| Drogheda / Mid Meath **Source** River Boyne | **Abstraction Point** Roughgrange<br>**Quantity m³/day** 19,400, Drogheda Corporation |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| • Phosphorus Regulations.<br>• Salmonid Regulations<br>• UWWT sensitive Waters | • Applies to all Surface Waters<br>• The Boyne is Designated a Salmonid River<br>• A 6.5km stretch d/s of Navan is designated. | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| All stations on the Boyne main channel breached the MRP quality criteria. D/s of Navan was unpolluted, however from Slane Br to Drogheda the Boyne is slightly polluted with median MRP at 0.04 mg/l P. Maximum daytime DO levels were also elevated at the downstream stations.<br>The stretch has elevated MRP levels downstream at Slane and Drogheda. | There has been a significant improvement d/s of Navan with the removal of decommissioned MWWTP discharge. It is not possible to determine the effects of the New Plant as the next WQ site is at Slane Br. |
| **GOAL:** ***RETURN BOYNE MAIN CHANNEL (LOWER REACHES) TO GOOD ECOLOGICAL STATUS*** | |

## MANAGEMENT STRATEGIES

| PROBLEM | RECOMMENDATION | BENEFIT |
|---|---|---|
| Large nutrient inputs from polluted tributaries | Appropriate measures should be taken for individual sub-catchments. Accurate calculation of nutrient loads is essential. | Improvement in water quality for tributaries contributing to the main channel. |
| 4 no. MWWTP's on the Boyne | Wastewater Discharges- Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQC`s. | Improvement in MRP loads in river. |
| Large areas of intense agriculture. | Introduction of Best Farm Management Practices | Ensures economic and environmental benefits |
| Farm Yard Point Sources | Farm surveys at a general level are currently being carried out as part of the Three Rivers Project Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. Public Awareness on the benefits of septic maintenance and use of low P detergents. | Enables significant point sources to be eliminated, dissemination of information to farmers, improved awareness. |
| Point Sources | Section 4 and IPC licence check discharge licences in hotspots areas | |

## TABLE 1. WATER QUALITY CRITERIA AND RESULTS

| | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target |
|---|---|---|---|---|---|---|---|---|---|
| **B04** | ***Boyne Main Channel*** | | | | | | | | |
| 1600 | Ballinter Br | 3-4 | 3-4 | 3-4 | 3-4 | 4 | 0.04 | 0.04 | 0.03 |
| 1900 | 2km d/s Navan (LHS) | 2-3 | 4 | 3-4 | 4 | 3 | 0.04 | 0.04 | 0.07 |
| 2100 | Slane Br | 3 | 3-4 | 3-4 | 3-4 | 3-4 | 0.05 | 0.05 | 0.05 |
| 2200 | Obelisk Br. (Oldbridge) | 3-4 | 4 | 3-4 | 3-4 | 4 | 0.05 | 0.04 | 0.03 |
| 2300 | St. Mary's Bridge Drogheda (EPA estuary station) | | | | | - | 0.06 | 0.05 | - |

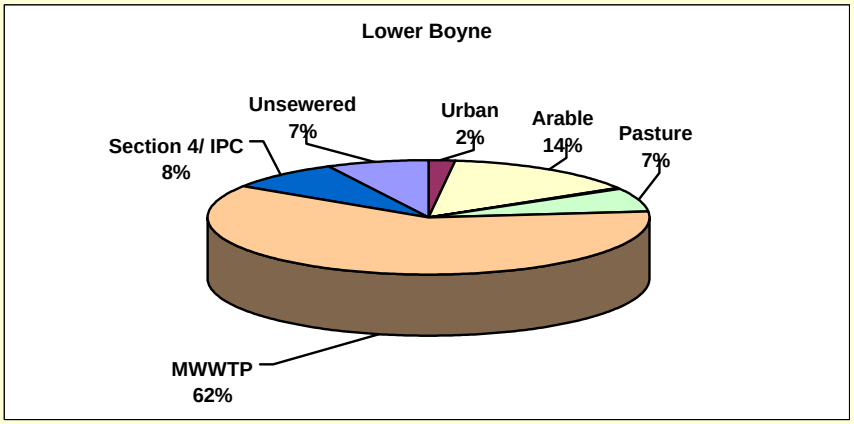
- Three Rivers Project sites



## HYDROMETRIC NETWORK

| River | Code | Station Name | Guage Type | Owner |
|---|---|---|---|---|
| B04 | 07009 | NAVAN WEIR | AR & SG | OPW |
| B04 | 07012 | SLANE CASTLE | OPW AR & SG | OPW |

## TP SECTORAL LOADS



## Mattock & Devlin's

**BOYNE**

| CATCHMENT CHARACTERISTICS | | |
|---|---|---|
|  | **AREA:** 82.7 Km2<br>**GRADIENT:**<br>**FLOW REGIME:**<br>**Hydrometric Area:** 07<br>**EPA Ref:** M01 Mattock<br>D02 Devlin's<br>**HABITAT:**<br>Main bankside vegetation is Ash and Blackthorn.<br>Good adult salmonid habit, very good nursery habitat.<br>Overall 80% riffle, 20% glide<br>Substrate mainly sand, large rocks and gravel | **POLLUTION LOADING**<br>**TP Baseline** (kg/ha/yr.):<br>**Est. Load MRP** (kg/ha/yr.): No flows therefore no loads available<br>**Point Source P** (%)<br>**Diffuse Source P** (%)<br>**Catchment P Load Rank n/a**<br>**LANDUSE:** Significant areas of arable land and high productivity pasture. There are small areas of low productivity pasture.<br>**AMENITY VALUE:** High value, the spawning areas for sea trout are confined to the catchments of the Devlin's and Mattock, almost exclusively. |
| **RUN OFF RISK** | | |



| Point Sources | Details |
|---|---|
| **IPC Authorisations** | None |
| **Section 4** | None |
| **MWWTP** | Collon MWWTP (350 p.e.) discharges to Mattock. u/s of Boyds Br. |

| Abstractions | Details |
|---|---|
| No known abstractions | |

| STATUTORY DESIGNATIONS | DESCRIPTION | LIMITS |
|---|---|---|
| Phosphorus Regulations. | **Applies to all Surface Waters** | See Table 1 |

| WATER QUALITY | EXPLANATION |
|---|---|
| Water Quality is poor throughout the catchment. Median MRP values for 2000 range from 0.07 to 0.13 mg/l P.<br>Q ratings have shown there has been poor water quality u/s of the Devlin's confl.<br>The Mattock was unpolluted, however d/s of the Devlin's confl. it was moderately polluted and improved to slightly polluted. | In the Devlin's catchment agriculture is the most probable cause as there are no known point sources.<br>In the Mattock catchment both sewage and agriculture are suspected with a point sources sewage discharge at Collon (350 p.e.).<br>According to the EPA at the upper sites (0050 and 0100) Slane Rd Br and Boyd's Br due to the suspected sewage discharge at Collon, and agriculture is suspected at site 0300 which is classed as mostly unsatisfactory in 2000 |
| **GOAL:** ***RETURN THE DEVLIN'S AND THE MATTOCK SYSTEM TO GOOD ECOLOGICAL STATUS*** | |

## MANAGEMENT STRATEGIES

| PROBLEM | RECOMMENDATION | BENEFIT |
|---|---|---|
| Elevated MRP and Ammonia Levels | **Agricultural** - Introduction of Best Farm Management Practices.<br>Conduct series of visits targeted in hotspot areas to inspect particularly storage facilities for silage and slurry, yard drainage and farm infrastructure. | Ensures economic and environmental benefits. |
| Septic Tanks | Public Awareness on the benefits of septic maintenance and use of low P detergents. | Enables potential point sources to be eliminated with significant water quality improvements. |
| Collon WWTP | **Wastewater Discharges** –<br>Check samples/inspection visits to MWWTP`s. Review Consent as necessary to ensure compliance with WQC`s. | Improvement in MRP load in river |

## TABLE 1 - WATER QUALITY RESULTS

| Site Code | WQ Station | Q 1997 | Q 1999 | Q 2000 | Q 2001 | Q Target | MRP 2000 mg P/l | MRP 2001 mg P/l | MRP Target mg P/l |
|---|---|---|---|---|---|---|---|---|---|
| | **Devlin's D02** | | | | | | | | |
| 0140 | Br S of Grange X-Rds | 2 | 3 | 3 | 3-4 | 3 | 0.10 | 0.14 | 0.07 |
| 0300 | Ford u/s Mattock R confl | 3 | 3-4 | 3-4 | 3-4 | 3-4 | 0.10 | 0.12 | 0.05 |
| | **Mattock M01** | | | | | | | | |
| 0100 | Boyd's Br | 3 | 3 | 3-4 | 4 | 3-4 | 0.14 | 0.09 | 0.05 |
| 0200 | Br u/s Devlins confl (Kellystown Hse) | 3-4 | 3 | 4 | 4-5 | 4 | 0.08 | 0.07 | 0.03 |
| 0300 | New Br u/s Boyne R confl | 4 | 2-3 | 3 | 4 | 4 | 0.08 | 0.06 | 0.03 |

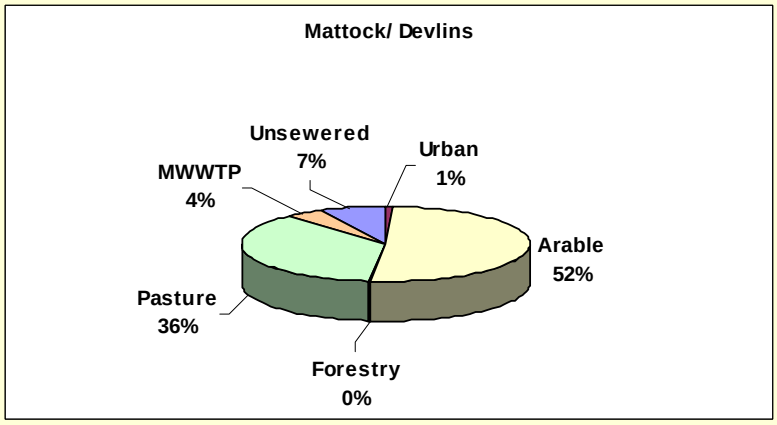
- Three Rivers Project sites



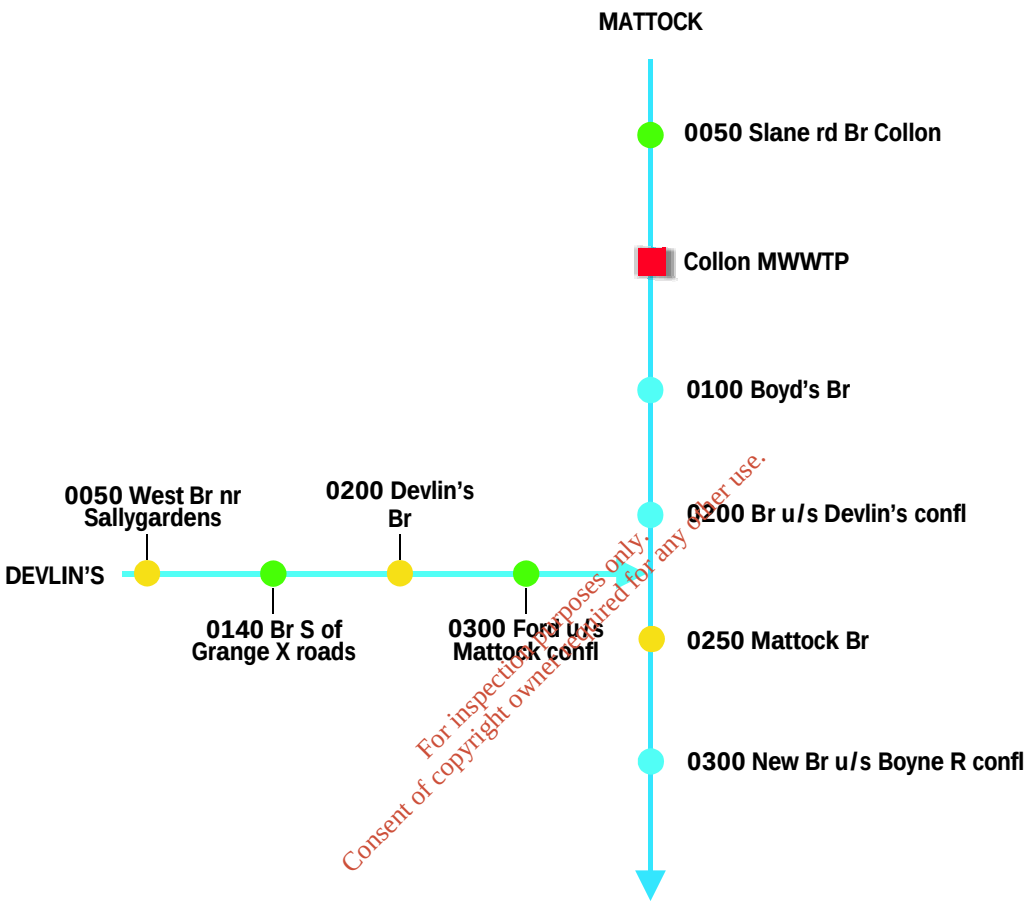
## HYDROMETRIC NETWORK

| River | Code | Station Name | Guage Type | Owner |
|---|---|---|---|---|
| M01 | | Unknown | Not installed | Louth Co. Co. |
| M01 | | New Bridge | Not installed | Louth Co. Co |

## TP SECTORAL LOADS



# Devlin's and Mattock - Biological Water Quality






KEY

- Unpolluted
- Slightly polluted
- Moderately polluted
- Seriously polluted
- Other monitoring sites
- MWWTP
- Tributary
- IPC
- Section 4
- Hydrometric Station
- Water Supply Abstraction
- Pumping Stations

Nb/WQ Rating based on most recent survey per sample site