

APPENDIX D: HIGH LEVEL WATER FRAMEWORK DIRECTIVE ASSESSMENT

Water Framework Directive: Links to Local Flood Risk Management in Nottinghamshire

1 The Water Framework Directive

1.1 Introduction

Planning for the future of flood risk management must take into account impacts on the wider environment. The Strategic Environment Assessment and consequent Environmental Report have reviewed a wide range of potential impacts from the Nottinghamshire Local Flood Risk Management Strategy (LFRMS).

In relation to the Water Environment in particular, where physical measures are planned to alter or control water bodies, there is particular risk of impact to the status of the water bodies as defined by the Water Framework Directive (WFD)¹. In addition, measures to manage flood risk can also contribute towards improvements of water body status (such as water quality improvements in surface water discharge). The following chapter reviews how actions within the Nottinghamshire LFRMS can link to the water environment and aspects of the Water Framework Directive

1.2 What is the WFD?

The Water Framework Directive (WFD) establishes a legal framework to “*protect and restore clean water across Europe and ensure its long-term, sustainable use*”². It aims to establish an integrated approach to the management of all freshwater surface water bodies, groundwaters, transitional (estuarine) and coastal waters (TraC).

The overall requirement of the Directive is that all waterbodies must achieve “Good Status”³ by 2027 unless there are grounds for derogation. It also requires that environmental objectives be set for all waterbodies to either maintain Good Status, or to move towards Good Status if a waterbody is currently failing its target. River Basin Management Plans (RBMPs) developed for each River Basin District (RBD) set out the current status classification of all waterbodies within that District, as well as the objectives and measures required to maintain or improve the current Status of each waterbody.

The Environmental Objectives taken from Article 4 of the Water Framework Directive (WFD) are listed below;

- All surface water bodies to achieve good ecological and chemical status by 2015. This covers inland waters, transitional waters (estuaries) and coastal waters.
- All groundwater bodies to achieve good groundwater quantitative and chemical status by 2015.
- Heavily-modified water bodies and artificial water bodies to achieve good ecological potential and good surface water chemical status by 2015.
- No water bodies to experience deterioration in status from one class to another.
- Protected Areas to achieve the requirements made under their designation in relation to the water environment.

There is also a duty to enhance and restore waterbodies where possible and by implication there is a need to ensure that actions do not prevent currently failing waterbodies from reaching a Good Status or Potential.

1.3 Surface water body objectives

The WFD contains surface water Environmental Objectives, which aim to prevent a negative change to the status of the waterbody. There are two status classifications which are commonly reported; ecological and chemical.

¹ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

² WISE, Water Note 1: Joining Forces for Europe's Shared Waters: Coordination in international river basin districts. http://ec.europa.eu/environment/water/participation/pdf/waternotes/water_note1_joining_forces.pdf [accessed 01.07.15]

³ Or Good Potential for heavily modified or artificial water bodies

Chemical Status is assessed for compliance with environmental standards for 33 priority substances originally listed in Annex X of the WFD, now superseded by the Environmental Quality Standards Directive (2008/105/EC)⁴. Chemical status is recorded as 'good' or 'fail' and is determined by the worst scoring chemical.

Ecological status classification assesses a range of biological, physico-chemical or hydromorphological Quality Elements as listed in Annex V of the WFD. The categories are summarised in Table 1-1. Ecological status is recorded as high, good, moderate, poor or bad

Table 1-1: Biological, physico-chemical or hydromorphological Quality Elements

<i>Quality Elements</i>	<i>Description</i>
Biological assessment	Uses numeric measures of communities of plants and animals (for example fish and rooted plants)
Physico-chemical assessment	Looks at elements such as temperature and the level of nutrients, which support the biology as well as specific pollutants.
Hydromorphological	Looks at water flow, sediment compositions and movement, continuity (in rivers) and the structure of physical habitat

Overall Status looks at both ecological status and chemical status taking into account all the assessments. A water body must have good or better ecological status and good chemical status to achieve good overall status.

1.4 Groundwater quality objectives

The WFD contains a number of environmental objectives for groundwater quality;

- to implement measures to prevent or limit the input of pollutants into groundwater;
- to prevent deterioration of groundwater;
- achieve 'good groundwater status' within 15 years of the Directive coming into force, except under certain special circumstances;
- to implement measures to reverse any significant and sustained upward trend in the concentration of any pollutant resulting from the impact of human activity in order to progressively reduce the pollution of groundwater; and,
- to ensure compliance with the relevant standards and objectives for Protected areas (Drinking Water Protected Areas and Nitrate Vulnerable Zones) within 15 years of Directive implementation.

Groundwater bodies are classified according to both their quantitative and chemical status, but have only two status classes (good or poor). Good status for groundwater involves meeting a series of conditions defined in Annex V of the WFD. These are described in more detail in the UKTAG Environmental Standards and Programme of Measures⁵

The "parameters" to be used in classification are:

- groundwater level regime for quantitative status; and,
- conductivity and the concentrations of pollutants for chemical status.

⁴ Priority substances under the Water Framework Directive http://ec.europa.eu/environment/water/water-dangersub/pri_substances.htm

⁵ UK Technical Advisory Group (UKTAG) on the Water Framework Directive (2005) Environmental Standards for use in classification of Measures for the Water Framework Directive (Public Working Draft)

2 Water bodies in Nottinghamshire

2.1 Humber River Basin Management Plan

Nottinghamshire falls within the Humber River Basin District. The first Humber RBMP was published in 2009⁶. It classifies the Current Ecological Quality of all water bodies within the catchment which have been designated under the WFD⁷. The Environment Agency have consulted on a review of all RBMPs to be published later in 2015⁸ in line with the required 6 year review cycle. It should be noted that improvements have been made to the way water bodies are defined and classified since 2009 and the most up to date data should be used when carrying out individual WFD assessments.

2.1.1 Management catchments

The Humber RBD is made up of management catchments as mapped in **Figure 2-1**. A number of catchments fall in part within the boundary of Nottinghamshire although the *Idle and Torne* and *Lower Trent and Erewash* are the main catchments within the county.

Figure 2-1: Map of the Humber river basin district and the management catchments within it (Extract from Environment Agency (2014)⁹)



⁶ Environment Agency (2009) River Basin Management Plan: Humber River Basin District <https://www.gov.uk/government/publications/river-basin-management-plan-humber-district>

⁷ EC (2003) Common Implementation Strategy for the Water Framework Directive (2000/60/EC): Guidance Document No 2: Identification of Water Bodies <https://circabc.europa.eu/sd/a/655e3e31-3b5d-4053-be19-15bd22b15ba9/Guidance%20No%202%20-%20Identification%20of%20water%20bodies.pdf>

⁸ Update to the Draft River Basin Management Plans consultation <https://www.gov.uk/government/consultations/update-to-the-draft-river-basin-management-plans>

⁹ Environment Agency (2014) The Idle and Torne Management Catchment: A summary of information about the water environment in the Idle and Torne management catchment

2.2 Surface water bodies: Rivers

82 rivers which pass through Nottinghamshire were assessed under the WFD for the Humber RBMP (2009). Table 2-1 summarises the number of classified rivers within Nottinghamshire by catchment and their overall status. The status of these water bodies has been reviewed to feed into the 2015 round of RBMPs, although the reports were not published at the time of producing this chapter. Up to date data for individual water bodies is available through the [Catchment data explorer](#)¹⁰ prior to the publication of the 2015 RBMPs and should be consulted for individual WFD assessments.

Table 2-1: numbers of classified rivers within Nottinghamshire by catchment and their 2009 status.

Catchment	Current overall status				Grand Total
	Good	Moderate	Poor	Bad	
Lower Trent and Erewash	1	29	19		49
Idle and Torne		15	8	1	24
Soar		3	3		6
Don and Rother			1		1
Derwent Derbyshire			1		1
Witham		1			1
Grand Total	1	48	32	1	82

2.3 Surface water bodies: Lakes

There are six classified lakes within the Idle and Torne catchment and five within the Lower Trent and Erewash catchment. The current overall potential of the waterbodies from the 2009 RBMP are detailed in Table 2-2. Many are not considered likely to reach good status by 2015, either because it would be disproportionately expensive or technically infeasible to do so. In these cases, the lakes have a target of good status by 2027.

Table 2-2 Current overall potential and status objectives of lakes in Nottinghamshire classified under the WFD

Waterbody ID	Lake name	Catchment	Current overall potential	Status objective
GB30432240	Misson Line Bank	Idle and Torne	Good	Good by 2015
GB30433056	Clumber Lake	Idle and Torne	Moderate	Good by 2027
GB30433100	Welbeck Great Lake	Idle and Torne	Bad	Good by 2027
GB30433316	Thoresby Lake	Idle and Torne	Moderate	Good by 2027
GB30433908	L Lake	Idle and Torne	Moderate	Good by 2027
GB30447020	Clumber Park Lake West	Idle and Torne	Good	Good by 2015
GB30434381	Sledder Wood Pond	Lower Trent and Erewash	Moderate	Good by 2027
GB30434401	Bulwell Wood Ponds	Lower Trent and Erewash	Good	Good by 2015
GB30434977	Attenborough Nature Reserve - Beeston Pond	Lower Trent and Erewash	Good	Good by 2015
GB30435060	Attenborough Nature Reserve - Coneries Pond	Lower Trent and Erewash	Poor	Good by 2027
GB30434995	Attenborough Nature Reserve - Main Pond	Lower Trent and Erewash	Poor	Good by 2027

¹⁰Environment Agency Catchment Data Explorer <http://environment.data.gov.uk/catchment-planning/>

2.4 Surface water bodies: Coastal and transitional

The WFD classifies coastal and transitional (estuarine) waterbodies which do not occur within Nottinghamshire due to its distance from the coast. However, flood management activities within the county have the potential to impact downstream waterbodies, which would need to be considered on a case by case basis at scheme level.

2.5 Groundwater bodies

The status of groundwater bodies which underlay Nottinghamshire in part are summarised in Table 2-3.

Table 2-3 Current overall Status and quantitative status of groundwater bodies in Nottinghamshire

Waterbody ID	Groundwater body name	Current overall status	Current quantitative status
GB40401G300600	Idle Torne - Magnesian Limestone	Poor	Good
GB40401G301400	Lower Trent Erewash - PT Sandstone Wollaton	Poor	Poor
GB40401G301500	Idle Torne - PT Sandstone Nottinghamshire&Doncaster	Poor	Poor
GB40401G301800	Lower Trent Erewash - Magnesian Limestone	Poor	Poor
GB40402G303200	Lower Trent Erewash - Coal Measures	Good	Good
GB40402G990300	Lower Trent Erewash - Secondary Combined	Poor	Good
GB40402G992200	Idle Torne - Secondary Mudrocks	Poor	Poor
GB40401G300600	Idle Torne - Magnesian Limestone	Poor	Good

3 Conducting WFD assessments of flood management schemes

3.1 What does a WFD assessment aim to achieve?

A WFD Assessment reviews proposed activities against their potential impacts on nearby waterbodies. Where relevant, all activities must be assessed for potential impacts from priority substances as well biological, physico-chemical or hydromorphological impacts on surface water bodies, and their potential to influence pollution of, or levels within groundwater bodies. As a minimum, activities must not lead to a deterioration of current status. Where the assessment identifies a potential negative impact, suitable mitigation must be proposed.

3.2 Assessing the Nottinghamshire Local Flood Risk Management Strategy

The Nottinghamshire LFRMS is a strategic document and therefore does not contain the project-level detail required to assess potential effects on the quality elements of water bodies through specific actions. Therefore **a full WFD assessment cannot be carried out at this stage of the Strategy**. In addition, the LFRMS Action Plan covers a broad spectrum of approaches to flood risk management, not solely physical works directly to water bodies. A move away from focussing on physical works can support WFD Environmental Objectives through encouraging better education and more 'natural' solutions of sustainable drainage.

There are also multiple ways that flood risk management actions can support the achievement of WFD objectives when the water environment is viewed holistically. The Lower Trent and Erewash catchment has a significant number of rivers at moderate status. Implementing schemes which address improvements in water quality as well as flood risk should be prioritised where they can contribute to achieving the target Good status.

3.2.1 How can Local Flood Risk Management help to achieve WFD objectives in Nottinghamshire?

Engineered schemes

Engineered flood alleviation schemes have the potential to alter the shape or depth of a surface waterbody often with the aim of increasing capacity, holding back or altering flow routes. It is important to understand how this can impact on the hydromorphology of a water body and potentially alter interaction with groundwater. When the catchment is considered holistically, engineered schemes can improve hydro-morphology or provide suitable mitigation as well as improving biodiversity by returning catchments to a more 'natural' state.

Sustainable Drainage Systems

The recent emphasis on implementing Sustainable Drainage Systems (SuDS) through changes in the planning system has focussed on managing and mitigating the risk of surface water flooding, particularly in urban environments where natural drainage into the ground is minimal. SuDS also provide excellent opportunity to improve water quality through providing layers of filtration to remove pollutants from urban or agricultural run-off before reaching a watercourse. Consequently this can contribute to improved physico-chemical status of nearby water bodies. Where a groundwater body has poor qualitative status, encouraging infiltration SuDS can also help work towards improved status. Additionally, green planting for SuDS can enhance biodiversity through encouraging fauna and more varied plant species.

Community engagement

Educating and improving awareness with communities about their local water bodies and how the drainage network links to the water environment can help prevent contaminants and potential blockages from entering the system in the first place. Household waste and pollutants from vehicles can often end up in the surface water drains as they are perceived as part of the foul drainage system or an outlet for waste.

4 Next Steps

It is recognised that future actions that may arise from the LFRMS could have specific implications for WFD compliance (for example, the delivery of a specific flood management scheme). These would therefore need to be assessed at a project level as appropriate.

4.1 Assessment methodology for specific schemes

The methodology which should be followed for a full WFD assessment of specific flood risk management schemes has been established by the Environment Agency in 'Assessing new modifications for compliance with WFD: detailed supplementary guidance, Environment Agency, 2010'. This follows an eight step process which is illustrated below in Figure 4-1.

Figure 4-1 : Overview of eight step assessment process



