## SECTION 2: THE WANDLE AND THE WATER FRAMEWORK DIRECTIVE

### 2.1: The Water Framework Directive (2000/60/EC)

The European Water Framework Directive (WFD) may be one of the most far-reaching pieces of legislation ever created for improving and protecting aquatic environments.

Based on the concept of river basin planning, it has the following major objectives (The Rivers Trust):

- To prevent further deterioration and protect and enhance the status of aquatic ecosystems and associated wetlands
- To promote the sustainable consumption of water; to reduce pollution of waters from priority substances
- To prevent the deterioration in the status and to progressively reduce pollution of ground waters
- To contribute to mitigating the effects of floods and droughts.

The WFD was passed by the European Union in 2000, covering all large freshwater bodies including rivers, canals, lakes (over 50 ha in area), ground water, estuaries and coastal water (but not marine environments). It requires all Member States of the European Union to ensure that their water bodies reach Good Ecological Status by 2015, with alternative target dates of 2021 and 2027 in certain circumstances, and a special alternative target of Good Ecological Potential (GEP) for waters which have been designated as Heavily Modified Water Bodies for flood defence, navigation and other purposes (if those purposes are still relevant).

The WFD was transposed into UK domestic law in 2003, and is now being implemented by the Environment Agency (EA) via a series of statutory River Basin Management Plans (RBMPs). Each river basin in the UK comprises a series of WFD management catchments, which may in turn cover one or more rivers and operational catchments (also known as sub-catchments). Under this system of classification, the Wandle falls within the remit of the Thames River Basin Management Plan, and is an operational catchment of the larger London WFD management catchment. At an even smaller scale, the river is split into two separate surface water bodies and two ground water bodies: its tidal limit at its confluence with the River Thames is included under the separate Middle Thames water body.

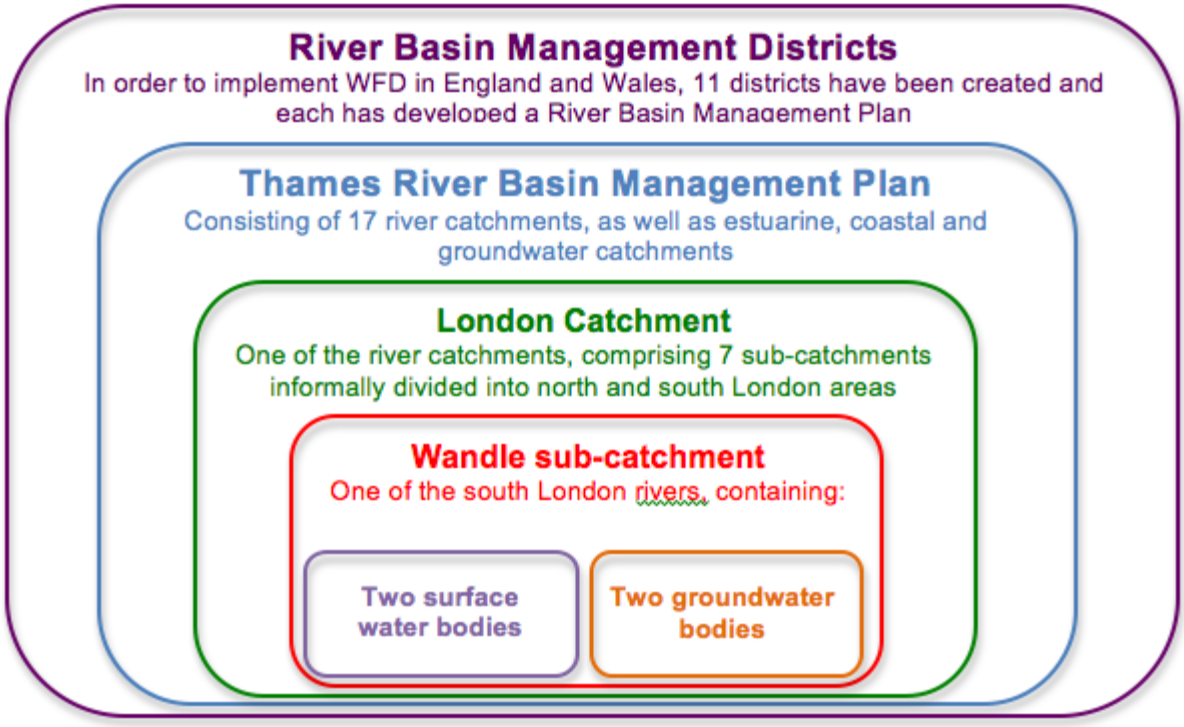

*Fig 2a: The River Wandle and its water bodies within the WFD implementation hierarchy*

Although Catchment Plans have not been made a statutory requirement, it is generally recognised that they form a very useful tool for translating local issues into regional and national policy and action. Significantly, they also provide a means of fulfilling WFD Article 14, which requires Member States "to encourage the active involvement of interested parties" in all aspects of the implementation of the WFD.

As such, the intention of the Wandle Catchment Plan is to inform the Thames RBMP, to represent the ambitions of local people for their river, and to secure a healthy future for the Wandle under European law.

## 2.2: WFD designation of the Wandle

For the purposes of the WFD, the Wandle has been subdivided into 2 fluvial surface water bodies:

- GB106039023460: Wandle (Croydon to Wandsworth) and the River Graveney: the mainstem of the river, rising in Croydon and flowing north to join the Thames at Wandsworth: the River Graveney tributary joins the Wandle at Haydon's Road in south Wimbledon

- GB106039017640: Wandle (Carshalton branch at Carshalton): a shorter chalk stream headwater which rises in Carshalton and joins the mainstem of the river at Wilderness Island in Hackbridge

Both Wandle fluvial water bodies have been designated as Heavily Modified Water Bodies: the Croydon-Wandsworth branch on morphological grounds of urbanisation and flood defence, and the Carshalton branch on morphological grounds of urbanisation. This designation recognises that they are unlikely to meet the reference conditions and Good Ecological Status expected of less modified water bodies, and sets the alternative target of Good Ecological Potential by 2015.

The Wandle catchment also includes 2 separate ground water bodies:

- The first (GB40601G602200: Epsom North Downs Chalk) is assessed as Poor for quantitative quality, and Good for chemical quality: the same classifications are predicted for 2015

- The second (GB40602G602300: Bromley Tertiaries) is similarly assessed as Poor for quantitative quality, and Good for chemical quality: the same classifications are predicted for 2015

These ground water bodies supply fluvial flow for the Wandle's surface water bodies, but are believed to be seriously depleted by abstraction from several boreholes (see Section 3.6)

The latest EA catchment information sheets, containing summaries of all material relating to the Wandle's WFD designations, can be found in Appendices A and B, and the EA's full method statement for the classification of surface water bodies is in Appendix C.

## 2.3: Defining and measuring Good Ecological Potential (GEP)

In the case of Heavily Modified Water Bodies like the Wandle, which are not considered capable of reaching Good Ecological Status (GES) on grounds of socio-economic modifications, the following process applies for measuring the alternative target of Good Ecological Potential (GEP) (Royal Haskoning: River Wandle NEP Investigation 2013):

- Identifying the impacts affecting the water body

- Identifying the Mitigation Measures necessary to ensure the hydromorphological characteristics of a water body are consistent with Good or Maximum Ecological Potential (see Appendix D)

- Assessing whether those measures have been taken. Where all applicable Mitigation Measures have already been taken or screened out, the water body can be classified as GEP or better. Where one or more Mitigation Measure(s) remains to be taken, the water body will be classified as Moderate Ecological Potential (MEP) or worse.

  This classification will then be combined with the outcomes from biological, physio-chemical and hydromorphological (not explicitly required, but taken into account in assessments to give an overall classification). The water body's overall ecological status is defined by its lowest score against all these assessments.

At the time of writing this Catchment Plan, both of the Wandle's surface water bodies are classified as Poor because not all the Mitigation Measures necessary to raise them to GEP are in place, and those that remain are judged to be disproportionately expensive to achieve GEP by 2015 (see Appendices A and B). As a result, an alternative target date of 2027 has been set for both water bodies.

A series of Mitigation Measures (such as removal of obsolete structures) for both surface water bodies were identified by the EA in 2012 (see Appendix D). Where possible, these will be implemented in order to move the Wandle's water bodies towards GEP: it is hoped that the Carshalton water body will reach Good Ecological Potential by 2015, on the basis of ongoing morphological and fish-related projects currently being undertaken by the Wandle Trust and its partners.

Investigations into both the Carshalton water body and the upper Croydon – Wandsworth water body are currently being carried out under the EA's National Environment Programme (NEP):

- Carshalton water body: Royal Haskoning for Sutton & East Surrey Water
- Upper Croydon – Wandsworth water body: AMEC for Thames Water

The formal end point for these investigations is 31st March 2015: however conclusions may be available before this date.

### 2.4: Defining GEP on the Wandle

The Water Framework Directive (WFD) has set targets, based on a series of biological, physico-chemical and hydromorphological elements, for Heavily Modified Water Bodies (HMWBs) like the Wandle to achieve GEP. However, whereas GES for relatively unmodified rivers is tightly defined with well-understood reference conditions, GEP lacks specific definition under WFD.

No reference conditions exist for HMWBs because each has been subjected to a unique set of socio-economic modifications, sometimes over the course of many centuries. As a result, GEP is loosely understood to be the best condition that a given HMWB can be expected to achieve in view of those historic modifications (see also Section 2.3 above).

The Wandle is subject to many pressures, including those formally assigned in a WFD context (flood protection and urbanisation), which are linked to the ecosystem services expected by the catchment's human population of approximately 800,000 Londoners. If GEP on the Wandle is understood to be the highest achievable ecological state, it is reasonable to suggest that developing a more detailed definition will draw on both the natural and social sciences, to create a framework for restoring natural processes and the benefits these processes can provide for people across south London.

As described above, workable definition and delivery of GEP for the Wandle hinges on implementing a range of Mitigating Measures (see Appendix D), and measuring their effectiveness, qualitatively or quantitatively.

This implies the following five additional components to achieving and maintaining GEP:

- A robust measuring methodology
- An iterative management approach
- Stakeholder engagement from the outset
- Tangible delivery on the ground
- An ongoing monitoring regime which informs management and delivery

To measure the Wandle's achievement of GEP, it has been agreed that quantitative criteria should be applied wherever possible. Where this is not possible, the definition of specific GEP elements may be essentially descriptive and qualitative, accompanied by a rationale.

In time, these definitions should be subject to re-evaluation and refinement as more information becomes available and this Catchment Plan is reviewed (for instance, in the context of the next cycle of River Basin Management Planning to 2021). The latest results of these measurements – for fish, macrophytes, invertebrates and phytobenthos - are presented in Section 7.

### 2.4.1: Defining GEP on the Carshalton water body

Targeted implementation of a suite of Mitigation Measures are intended to result in the Carshalton water body achieving GEP in 2015.

Because GEP has not previously been defined for HMWBs, this provides an opportunity to pioneer a process for determining GEP – which can then be rolled out to the Croydon-Wandsworth water body, and possibly other HMWBs across the UK.

The following methodology has been agreed for determining GEP for the Carshalton water body:

- Provide definition of GEP via the following tasks:
    - Desk study: review definitions of GEP from relevant sources including WFD, Thames RBMP and UK TAG
- Define GEP for the Carshalton water body via the following tasks:
    - Provide descriptive summary of the water body
    - Describe GES and justification for lower objective
    - Describe measures identified within TRBMP to reach GEP
    - Describe measures identified within Wandle Catchment Plan
    - Describe wider ecosystem services objectives

  - Describe outputs from the Cost Benefit Analysis

- Describe actions undertaken to achieve GEP via the following tasks:

  - Describe outputs from relevant investigations
  - Describe reasons for failure
  - Describe Measures implemented

- Describe changes in ecological / hydromorphological elements and ecosystem services via the following tasks:

  - Describe changes in status / condition since 2009
  - Describe current status / condition
  - Describe predicted short term / long term changes
  - Describe improvements in ecosystem services

- Identify “no deterioration” measures via the following tasks:

  - Review Thames RBMP and Wandle Catchment Plan

- Verification process via the following tasks:

  - Review conclusions of assessment with EA National Team
  - Review findings with Wandle Catchment Plan Steering Group

### 2.5: Assessing progress towards GEP on the Wandle

On the basis that GEP for the Wandle will be defined as this HMWB’s highest achievable ecological state, it is foreseen that a multi-strand approach may be taken to measuring GEP, comprising physical, chemical, biological and social assessments:

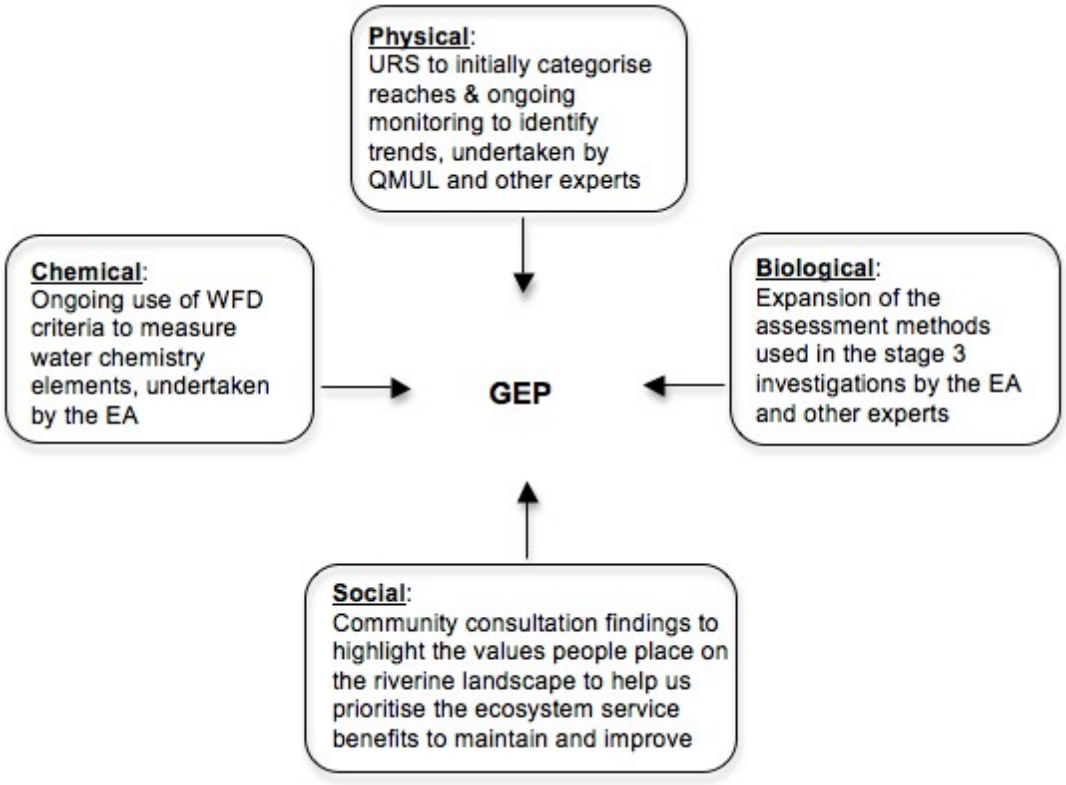


*Fig 2b: The four themes to be assessed in measuring progress towards Good Ecological Potential on the River Wandle*

**Physical assessment**

In order to achieve a robust scientific assessment of the Wandle's physical habitats, the Urban River Survey (URS) has been suggested as a useful tool. URS is based on the EA's River Habitat Survey, which was adapted to assess urban water bodies which are often designated as Heavily Modified.

To help identify and deliver future projects linked to the Wandle Catchment Plan, a pilot is proposed to test the ability of URS to identify:

- Ecologically functioning reaches of the river, and connecting reaches between them
- Important habitat and recruitment areas for all life stages of different fish species
- How effectively URS can link to other Ecosystem Services definitions, such as access and aesthetics

Appendix F includes details of the URS indices for habitat supporting GEP. The potential of the URS to inform the Wandle Catchment Plan and GEP assessment is outlined below.

**Chemical and biological assessment**

To augment the assessment of the physical characteristics of the river provided by URS, ongoing chemical and biological monitoring should be carried out, using the standard methods already employed by the EA for WFD, and in particular the Stage 3 investigations undertaken in 2012.

Particular scores to attain GEP are described in the objectives for each element where appropriate, and monitoring should be expanded to the eight distinct functional reaches as outlined in Section 1.8.

Other habitat assessments, such as the habitat suitability survey devised for water voles, may help indicate wider ecosystem quality for other important groups such as birds and bats, and will provide further valuable information to guide project work and management decisions.

**Social assessment**

As outlined above, significant numbers of local stakeholders were actively engaged from the outset of the Catchment Plan's development. The four overall aims in the shared Vision reflect issues identified by local people, and they are also an integral part of this Action Plan.

It is anticipated that consultation and engagement will continue in the long term, to enable evaluation of any changes in the values placed by people upon the river and its landscape, and their accommodation within the definition of GEP as part of the Ecosystem Services approach (see Section 9). Inclusion of social value assessment will also continue the benefit of gaining experience from local knowledge, to demonstrate how targets are being achieved and to help build a sustainable management legacy for the Wandle.

**Further discussion of GEP definitions, relating to specific WFD components can be found in relevant chapters throughout this Catchment Plan.**