

Water Footprint Assessment Environment Agency Hertfordshire North London Area

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Team Leader Groundwater, Hydrology and Contaminated land

Hertfordshire North London Area

Environment Agency

Environment Agency Hertfordshire North London Area



- ➔ 3,500 km sq
- ➔ Over 6 Million population
- ➔ Urban: London north of Thames river
- ➔ Rural: Hertfordshire and parts of Essex, Bedfordshire, and Buckinghamshire with larger towns
- ➔ over 500,000 MI/yr, mainly Public Water Supply
- ➔ Chalk Aquifer and Chalk Rivers

Chalk rivers we are protecting



March 2013 wet year



River Beane
Frogmore Hall,
looking downstream

March 2012 dry year

River Misbourne
Lower Bottom,
looking upstream



Why Water Footprint Assessment?

Cause

Effect

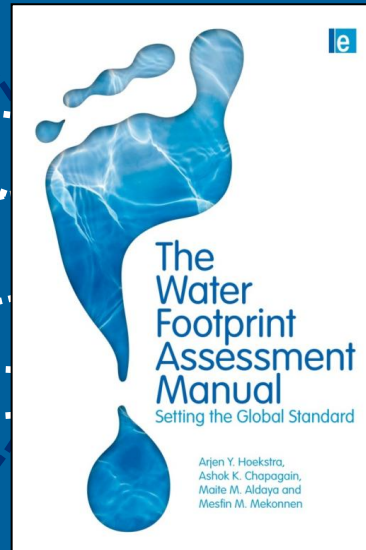
Water available

Abstraction

Effluent discharge

Regulations / Management

Water use and contamination



Water scarcity

Water pollution

Water Footprint Assessment – project plan

Phase 1

Setting goals and scope

1 Carry out Water Footprint Assessment of EA HNL with future outlook

2 Communication of water scarcity

3 Recommendation to improve water management

Phase 2

Water footprint accounting

For groundwater and surface water, domestic agriculture and industry

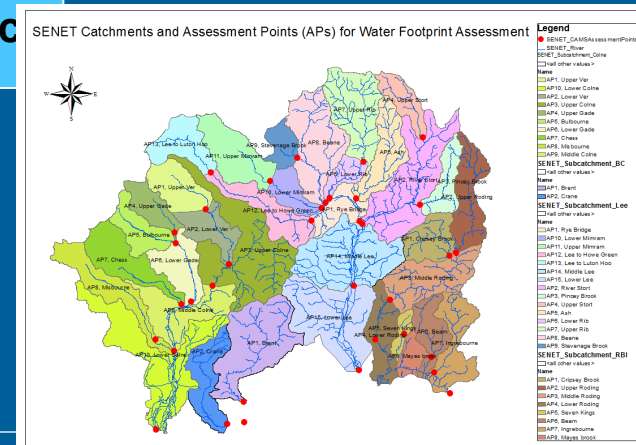
Phase 3

Water footprint sustainability assessment

water scarcity maps, climate change impact

Phase 4

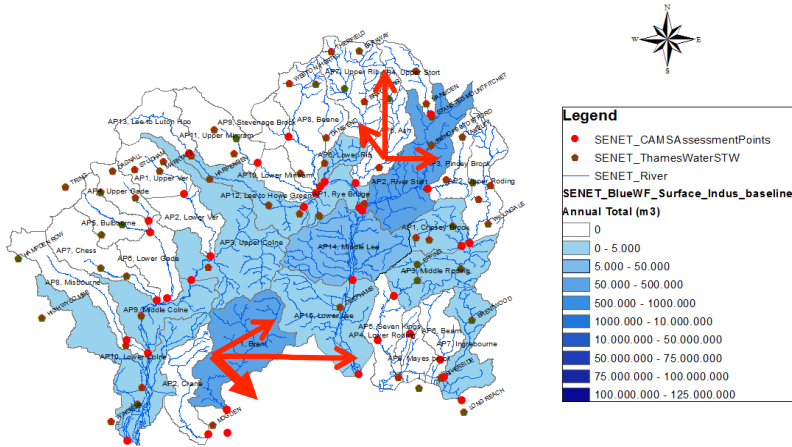
Water footprint response formulation



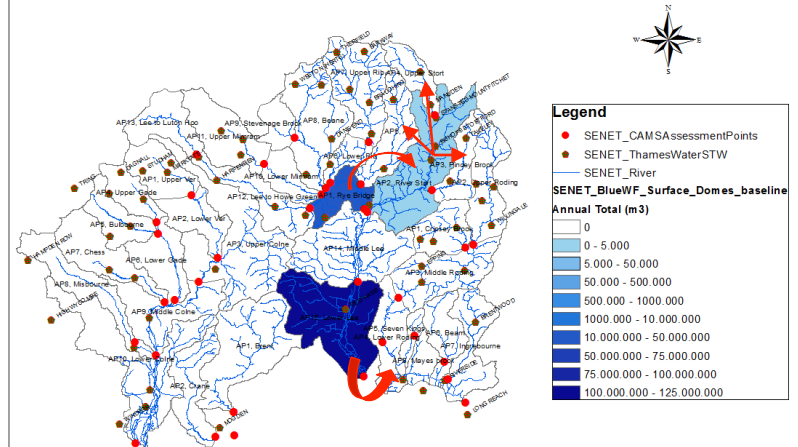
Water Footprint Accounting and Assessment

Surface Water and Groundwater Blue Water Footprint

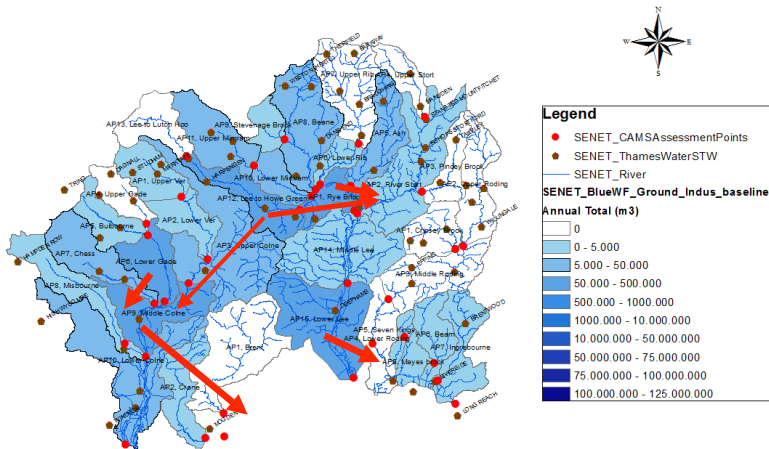
SENET - Blue WF of Industrial Sector on Surface Water



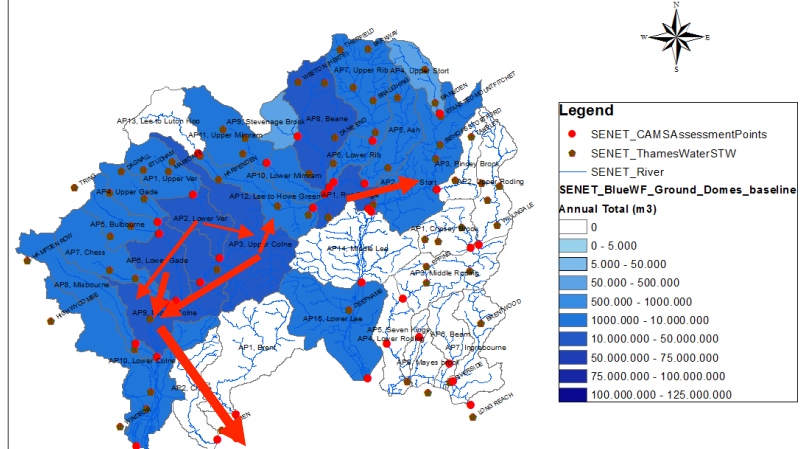
SENET - Blue WF of Domestic Sector on Surface Water



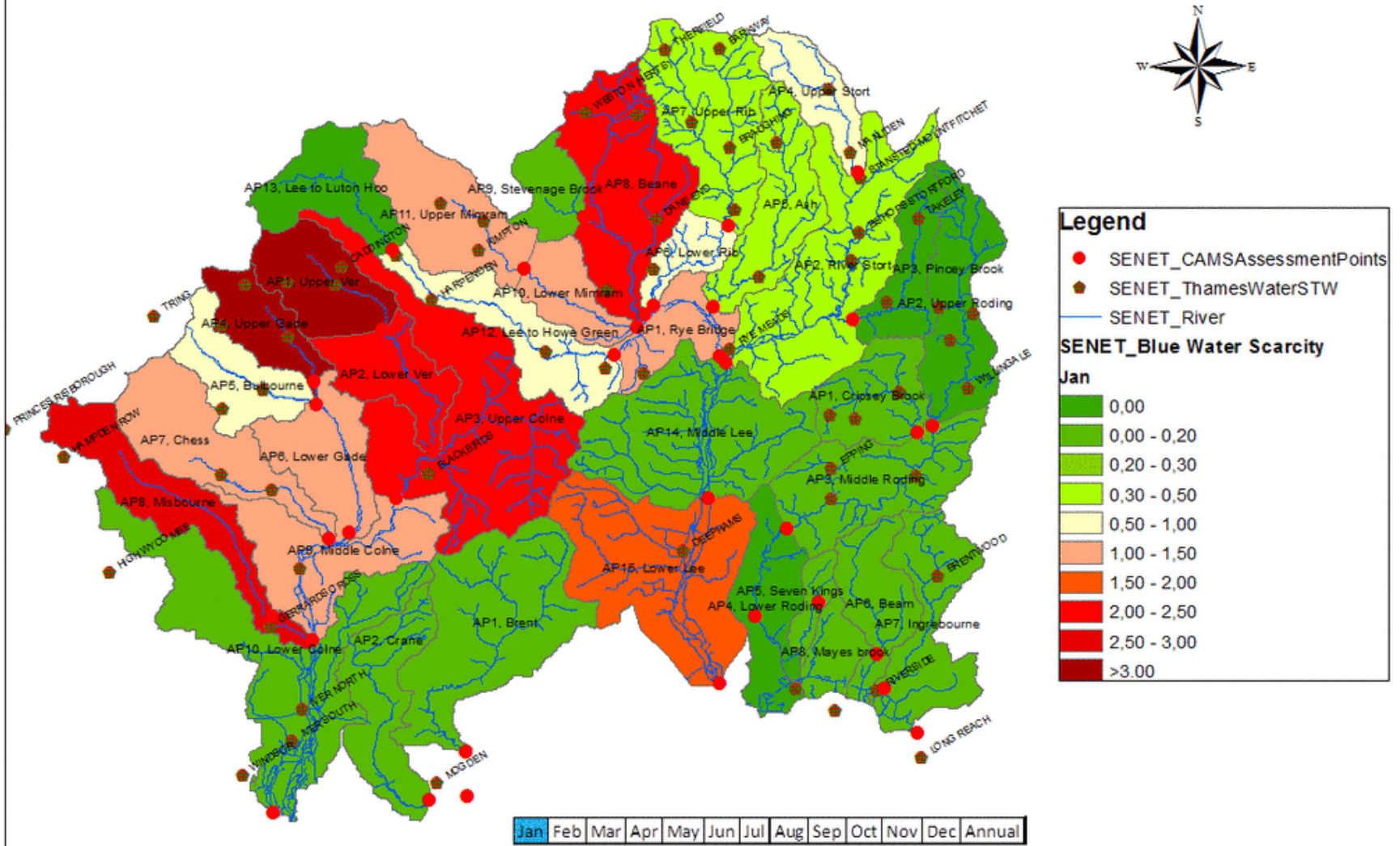
SENET - Blue WF of Industrial Sector on Groundwater



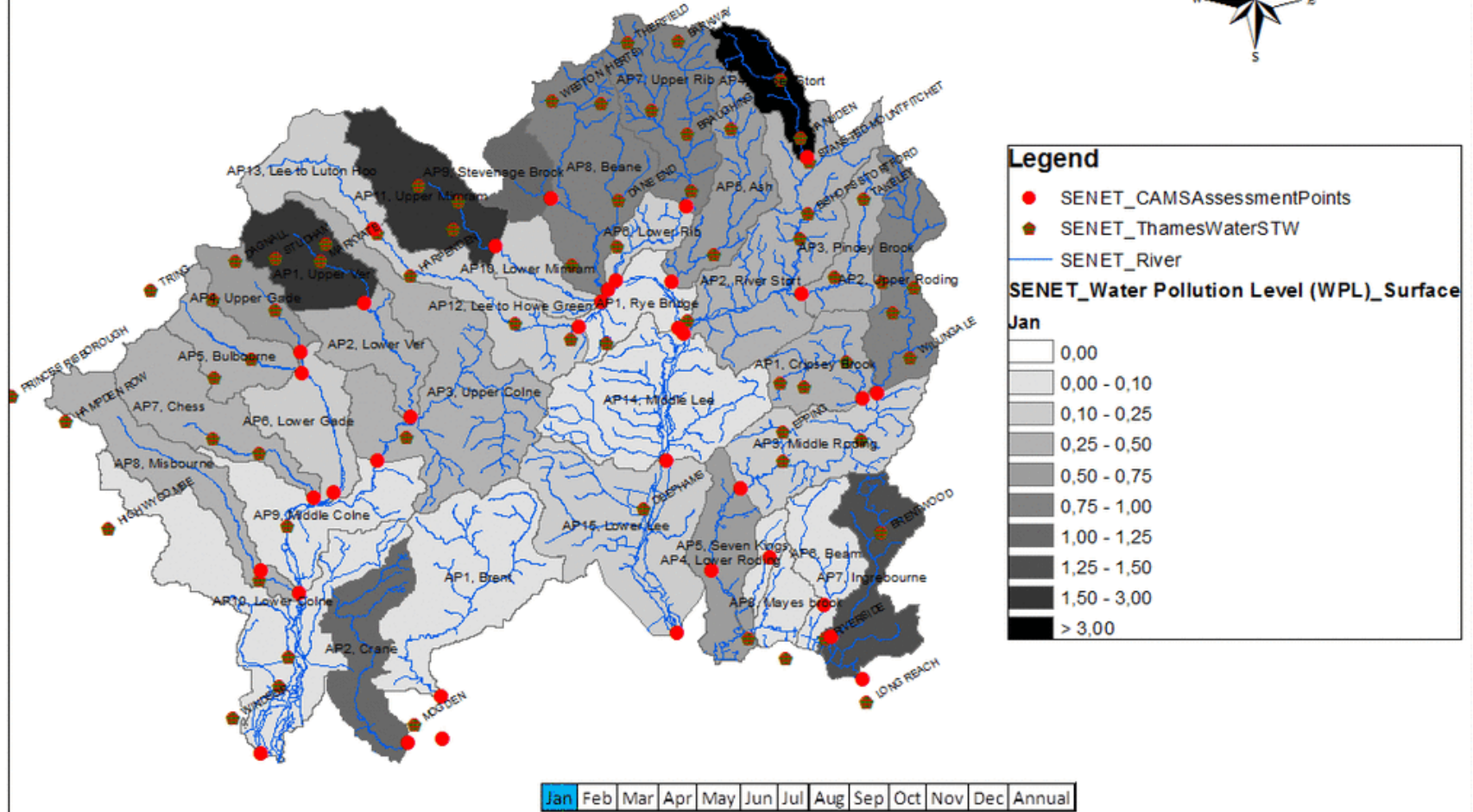
SENET - Blue WF of Domestic Sector on Groundwater



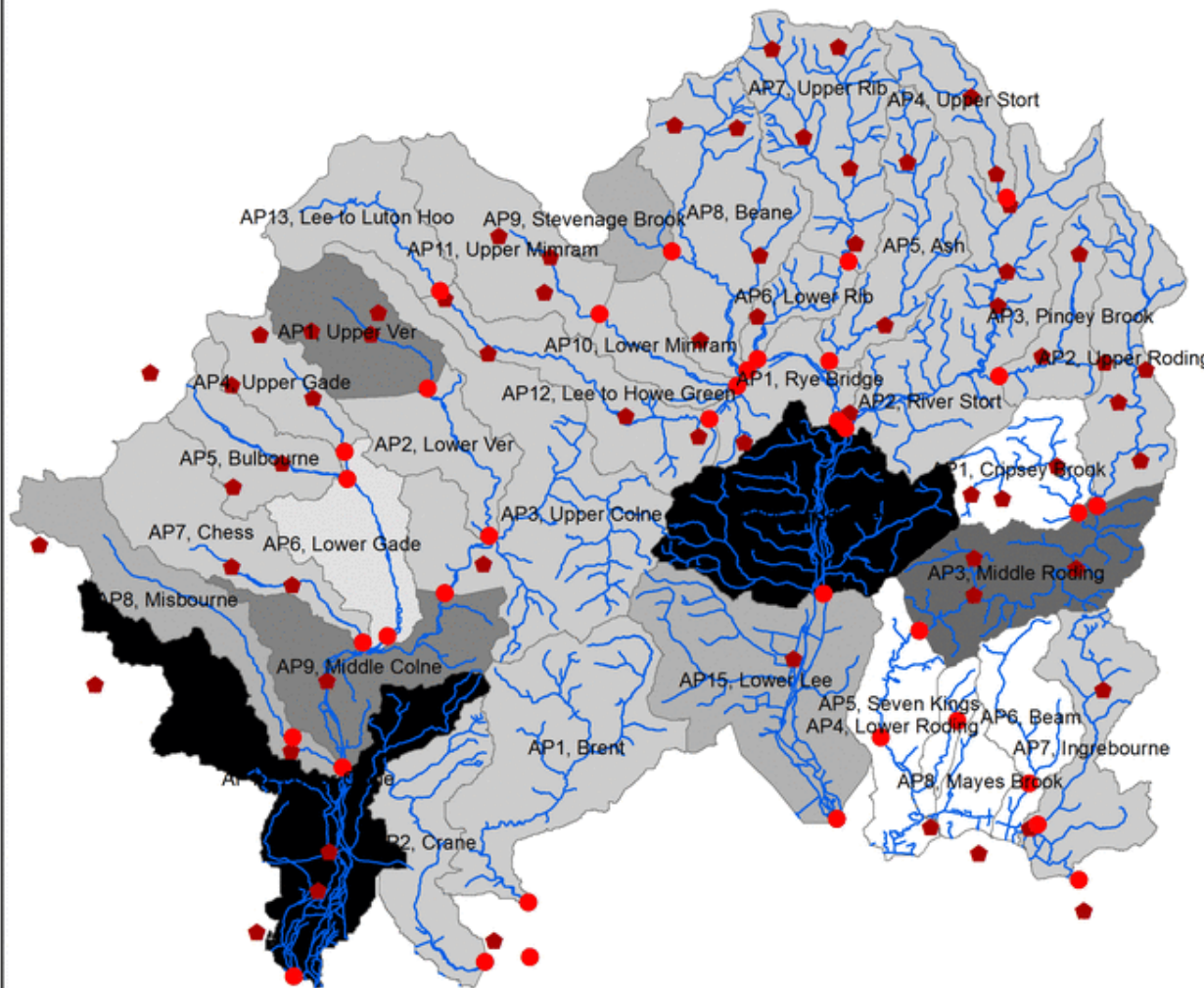
SENET - Blue Water Scarcity



SENET - Water Pollution Level (Surface Water)



SENET - Water Pollution Level (Groundwater)



Legend

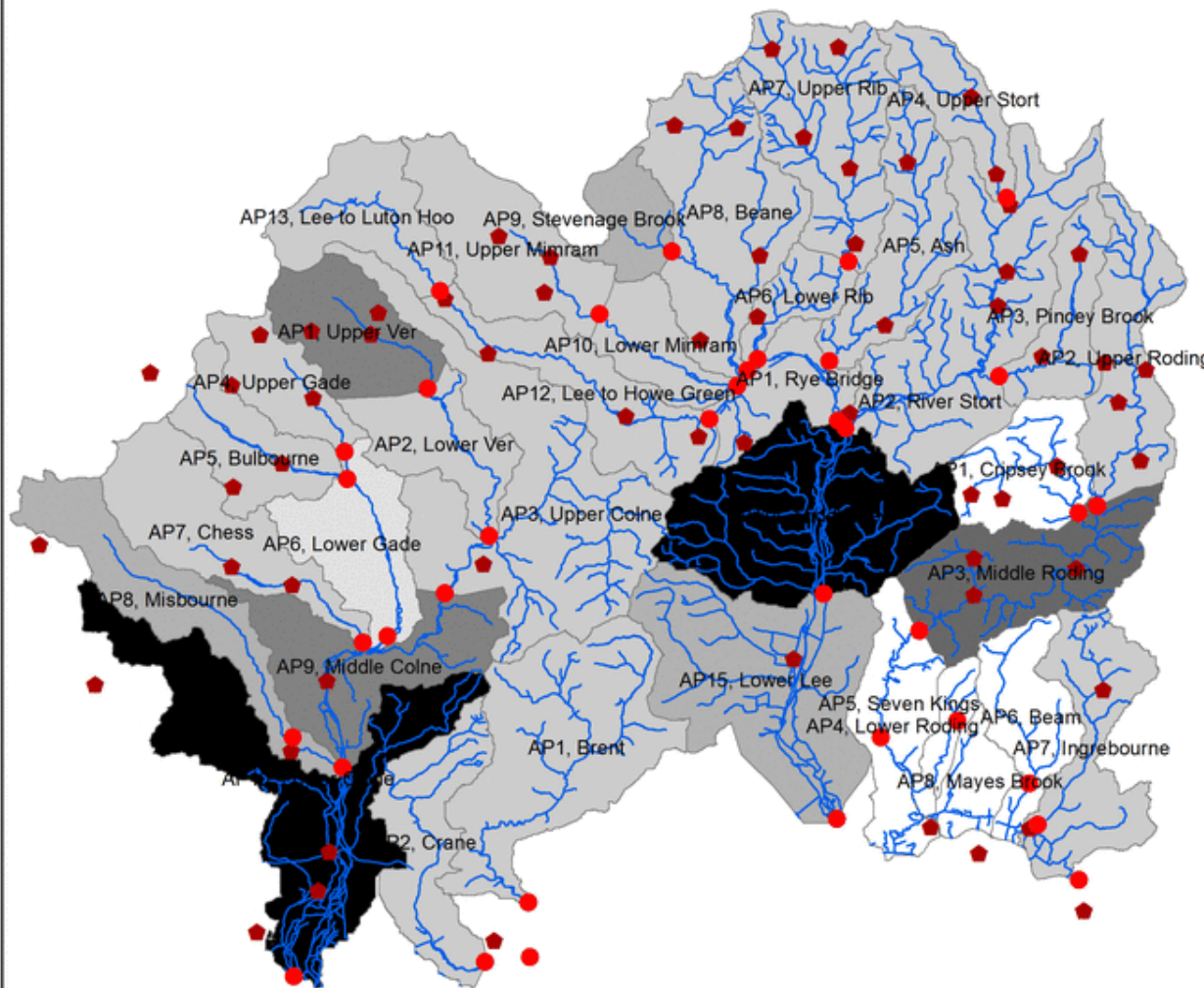
- SENET_CAMSAssessmentPoints
- ◆ SENET_ThamesWaterSTW
- SENET_River

SENET_Water Pollution Level (WPL)_Ground Jan

| | |
|--|-------------|
| | 0,00 |
| | 0,00 - 0,10 |
| | 0,10 - 0,25 |
| | 0,25 - 0,50 |
| | 0,50 - 0,75 |
| | 0,75 - 1,00 |
| | 1,00 - 1,25 |
| | 1,25 - 1,50 |
| | 1,50 - 3,00 |
| | >3,00 |

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Annual

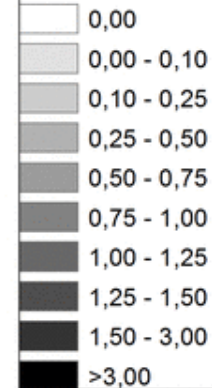
SENET - Water Pollution Level (Groundwater)



Legend

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SENET_Water Pollution Level (WPL)_Ground Jan

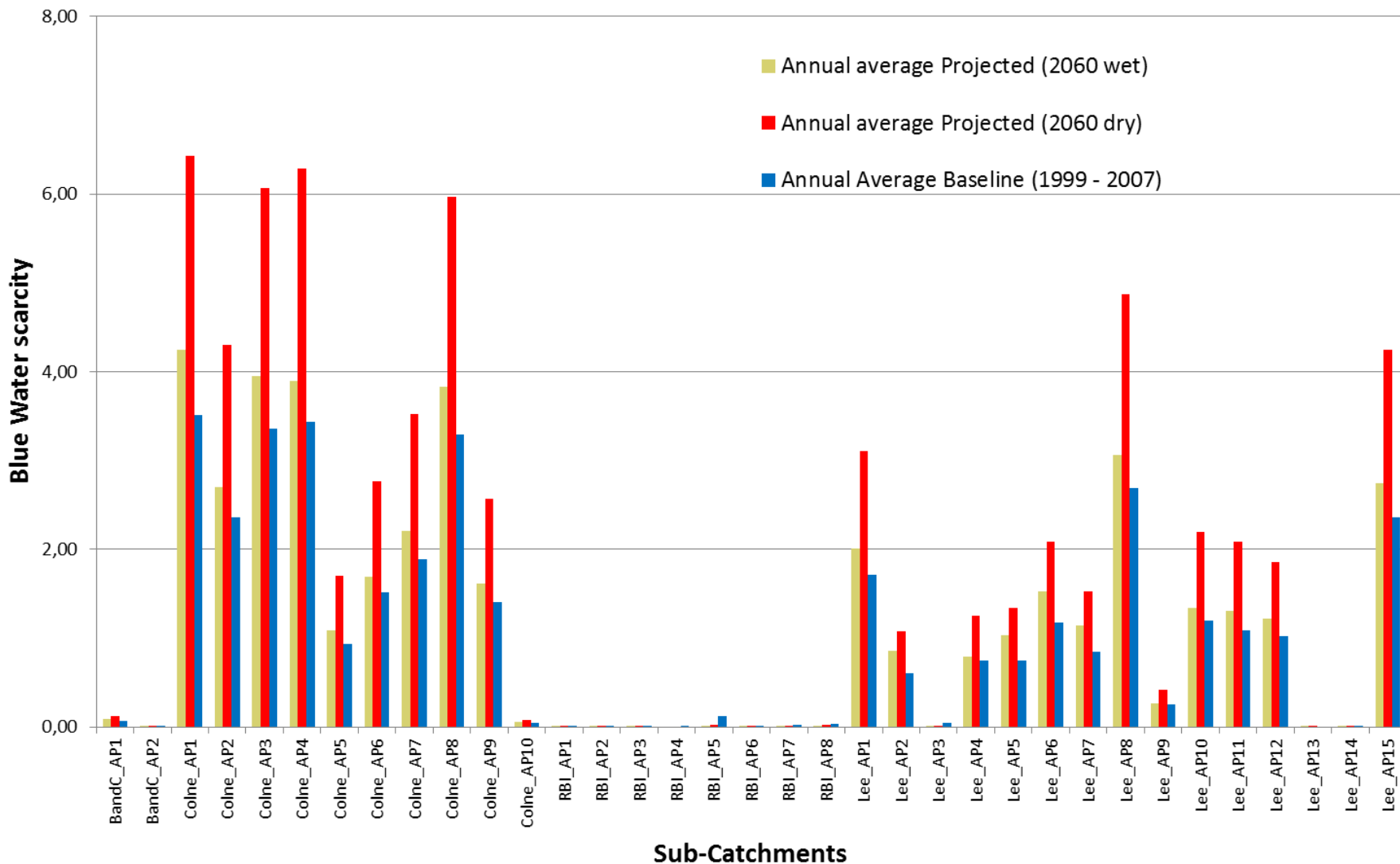


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Water Footprint Assessment

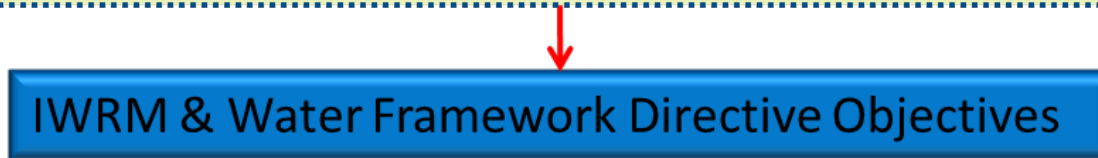
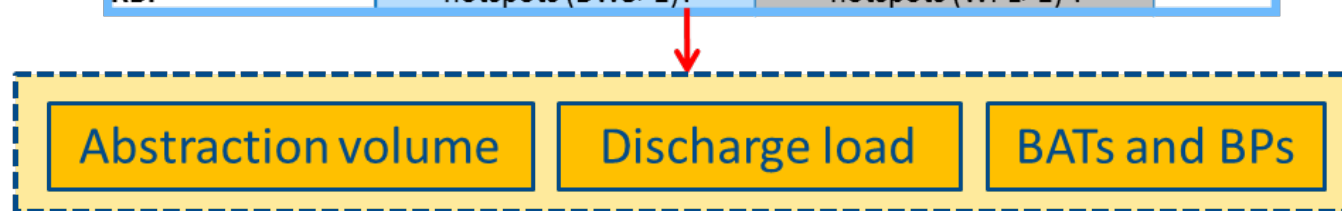
Climate Change scenarios Blue Water Footprint

Blue Water Scarcity - Projected Scenarios vs. Baseline

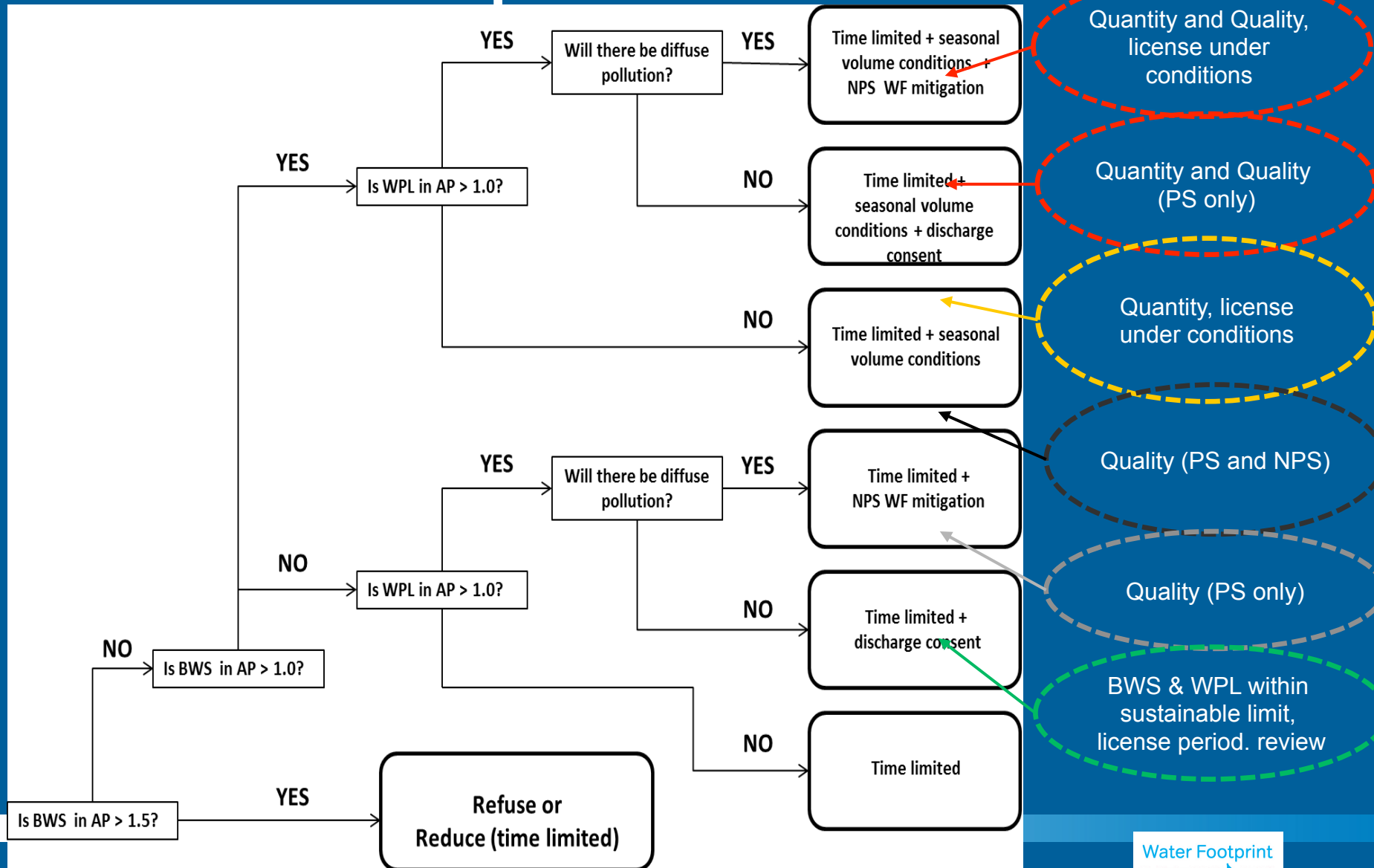


Ways to implement WF into EA remit

| Catchment | environmental sustainability indicators | | |
|-------------|---|-----------------------|-----|
| | Blue Water Scarcity | Water Pollution Level | ... |
| Colne | hotspots (BWS>1)? | hotspots (WPL>1) ? | |
| Lee | hotspots (BWS>1)? | hotspots (WPL>1) ? | |
| Brent&Crane | hotspots (BWS>1)? | hotspots (WPL>1) ? | |
| RBI | hotspots (BWS>1)? | hotspots (WPL>1) ? | |



WF response formulation



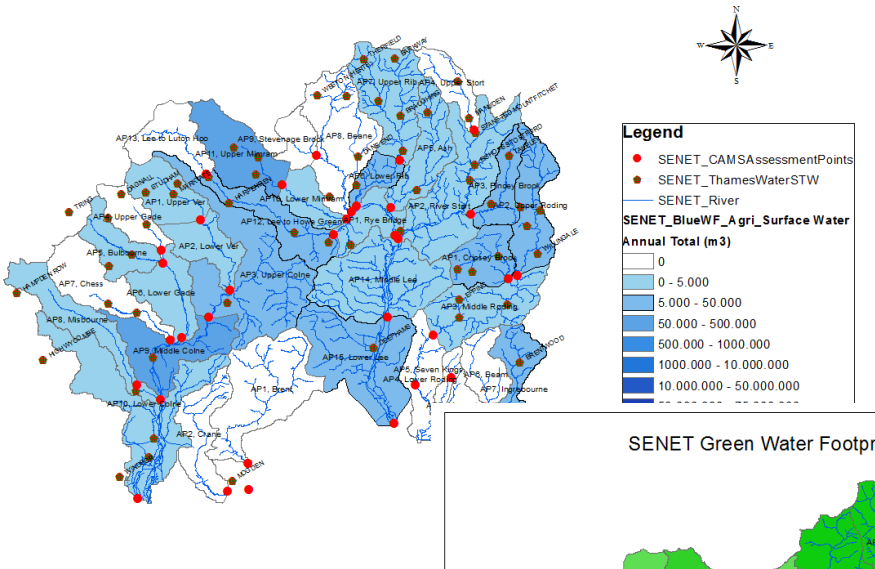
Key learnings

- WFA unifies both quantity and quality aspects in water resources assessment, planning and management.
- water use, its management, scarcity and pollution levels at site level are aggregated in WFA helping better identify causes, solutions and priorities
 - WFA looks at the water quality issue from the pollution load perspective rather than only the pollutant concentration using the waste assimilation approach. This highlights where the assimilation capacity has been exceeded even when the pollutant concentrations meet quality standards.
- WFA is an innovative approach able to support in reforming the current regulatory system for water abstraction license and discharge permit, and therefore useful for formulating effective response strategies to mitigate blue water scarcity and water pollution levels.

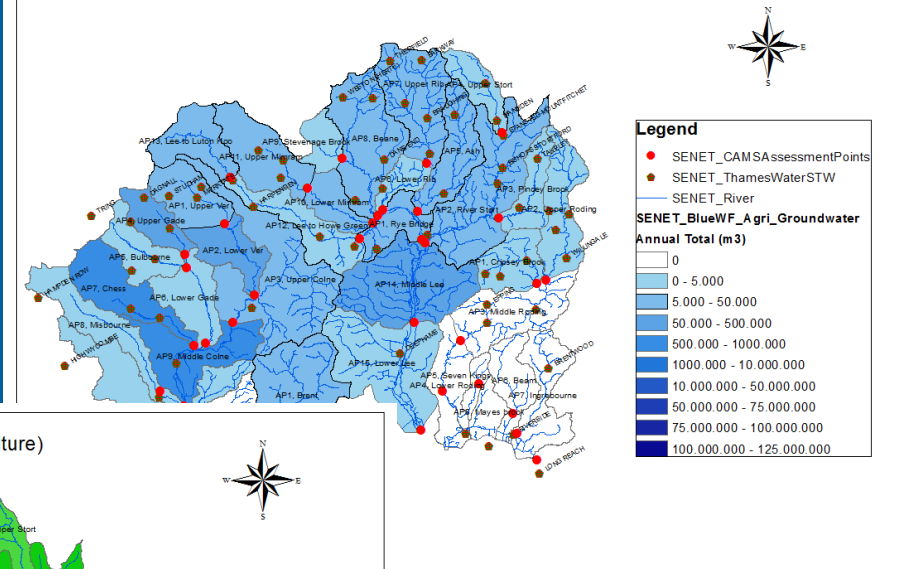
Zhang et al., 2014

Water Footprint Accountancy Agriculture Green and Blue Water Footprint

SENET - Blue WF of Agricultural Sector on Surface Water



SENET - Blue WF of Agricultural Sector on Groundwater



SENET Green Water Footprint (Agriculture)

