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# IMPROVING EFFICIENCY FROM SOAF TO AMP8 ASSESSMENTS

**Flexible Modelling Approaches for River Quality Assessment**

8<sup>th</sup> December 2023

# SUMMARY

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## INTRODUCTION

- River water quality modelling has a wider set of guidance than is encountered on the coast
- UPM, SOAF and other drivers recognise that levels of complexity in assessment should reflect both the nature of the problem, and the needs of the receiving water
- There are therefore several levels of modelling approach

# INTRODUCTION

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SIMPLE  
↑  
↓  
COMPLEX



Broadly,  
we move from  
simplified statistical  
modelling through to  
**ROBUST, DETAILED  
AND DYNAMIC 1D**  
through to  
**3D APPROACHES**  
for **COMPLEX  
WATERCOURSES**

# MODELLING APPROACHES

## SCHEMATIC

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ENVIRONMENTAL CONDITIONS

RAINFALL

MONITORING (AND MODELS)

SEWER NETWORK



RIVER

DATABASES/ DATA

ASSET HYDROGRAPHS



RIVER POLLUTOGRAPHS

PREDICTIONS

ENVIRONMENTAL STANDARDS



WATER QUALITY ASSESSMENT

REPORTING

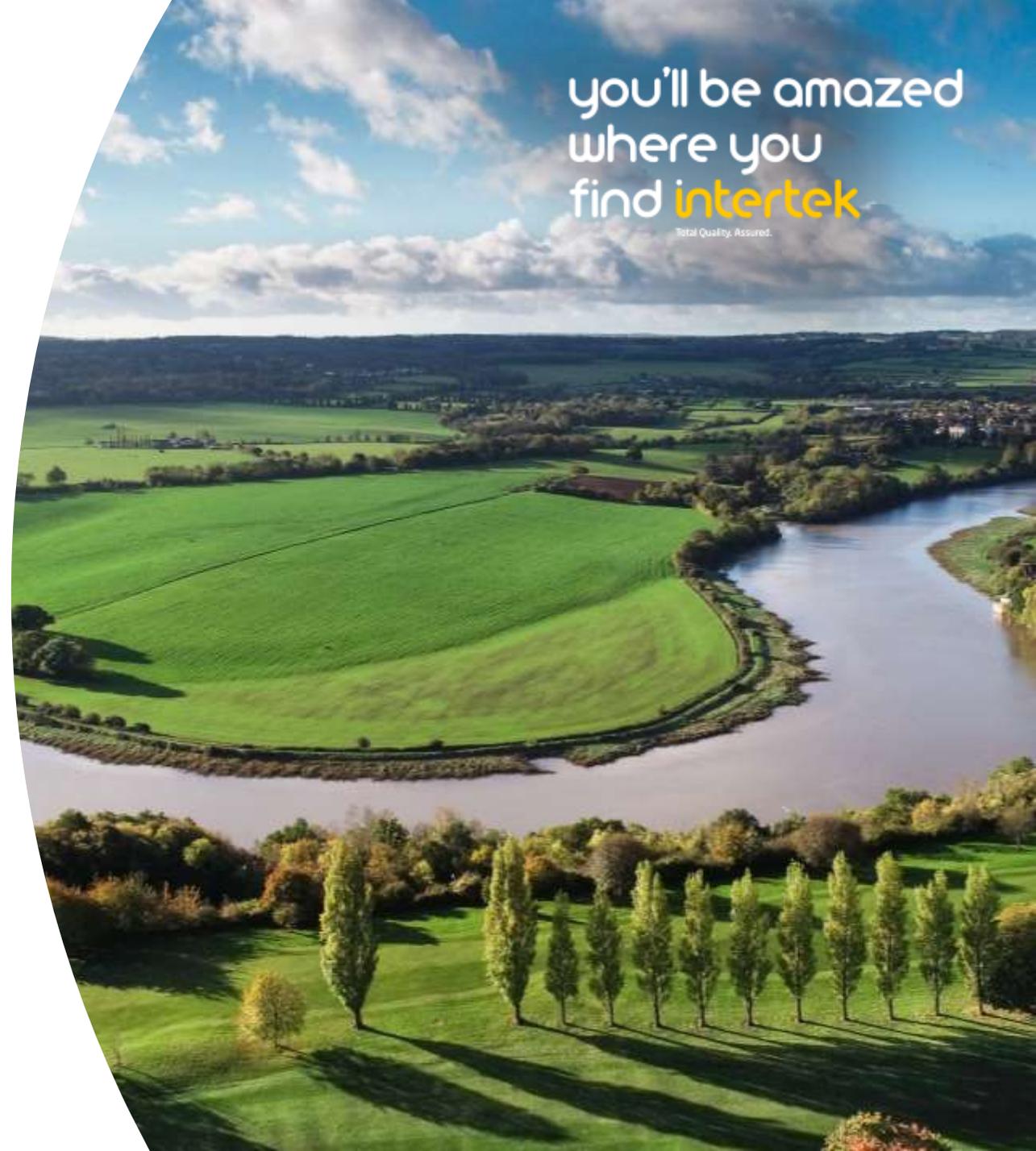
OUTPUTS



# MODEL SELECTION

- Since 2016, we have used a **SCORING SYSTEM**
- This approach has helped to determine approach
- Some constraint – for example, Severn Trent has decided to approach most models at a minimum of Level 2, to ensure that standards are analysed correctly
- Agreed with clients and EA as to approach to be used and how modelling tools to be employed

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## AMP8

- Current Requirement for water quality is less clear
- 10 spills is basic requirement
- But there is a need to demonstrate that 10 spills will deliver required standards (taken to be Good Ecological Status)
- Spill frequency fewer for Bathing Waters in rivers – but note the less than clear relationship between storm overflows and bathing waters quality
- Modelling is likely to be a significant requirement

# AMP8

- Unlikely that a Level 4 approach (*or even Level 3*) is sensible
- Recent experience has shown a total lack of lab capacity for the amount of work required at the moment
- This is a real issue for any work required in AMP8, or going forward for anything, if current capacity is anything to go by
- Flexible approach that can cope with a relatively data poor approach, and can deal with uncertainty, is the way forward (*whichever named tool that turns out to be*)

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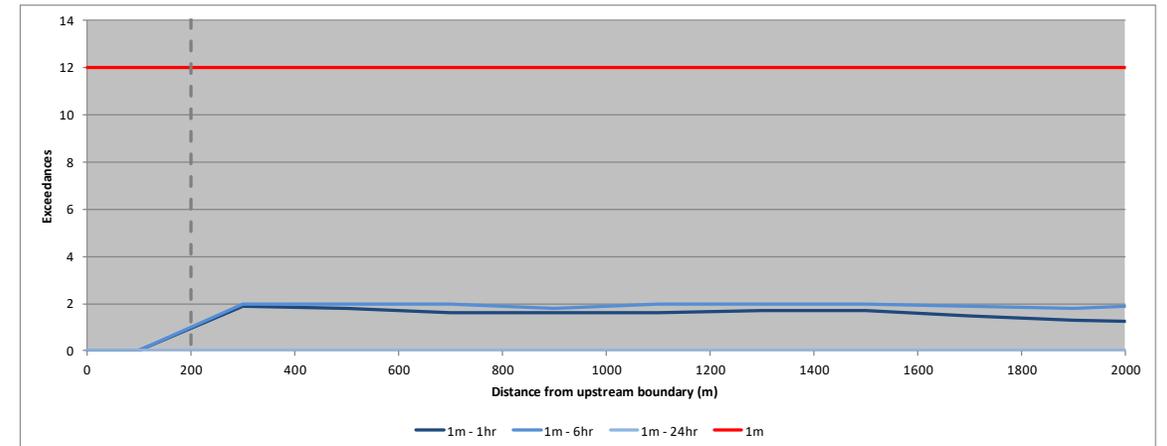
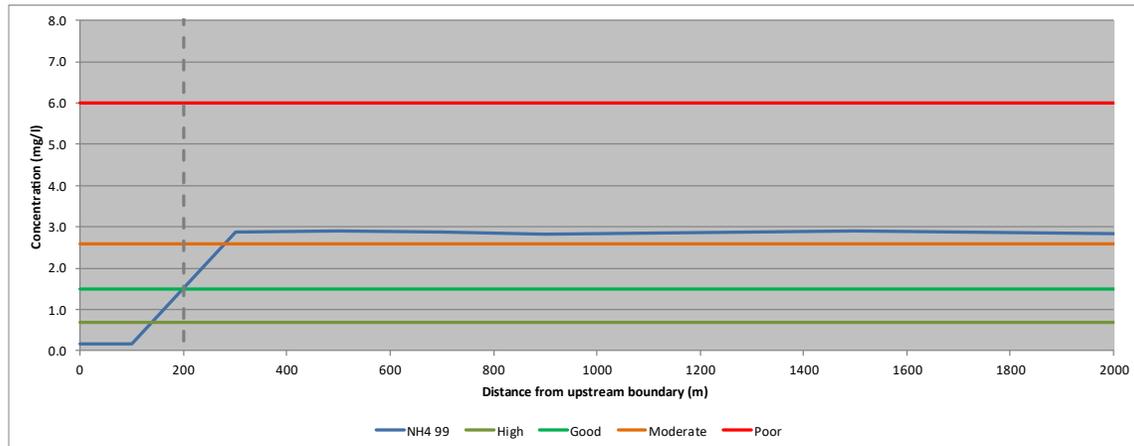
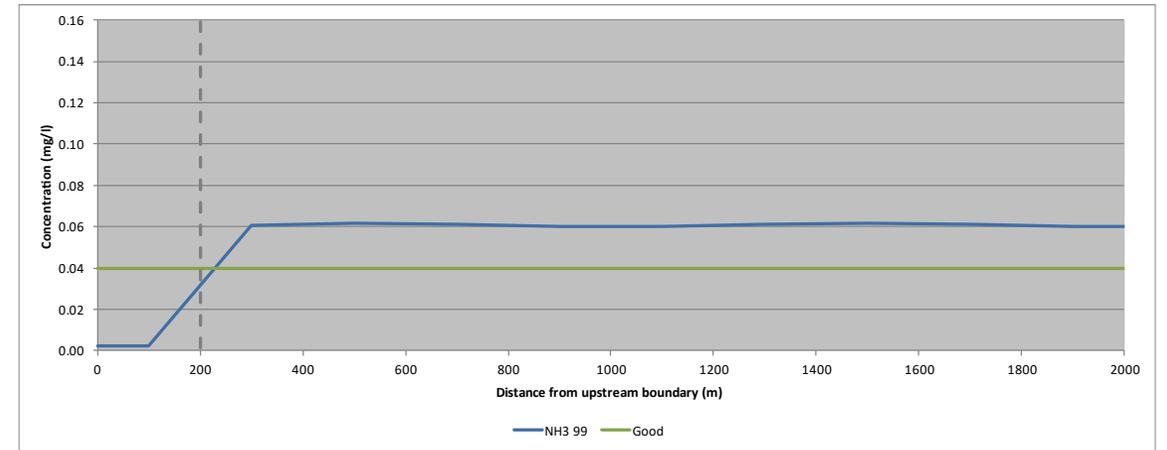
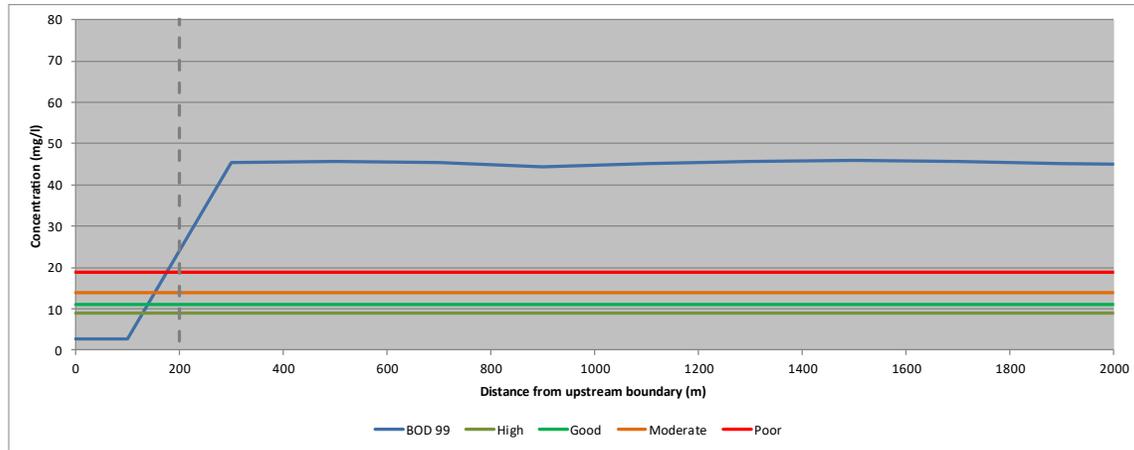
## **CATCHMENT-IMPACT SOAF to UPM to WFD**

- CATCHMENT-IMPACT – Complex Water Quality, Simple Hydrodynamics
- Used to undertake WFD and UPM assessments, and 200+ SOAF assessments
- No calibration data available -> Level 2 (or Level 1)
- Calibration data available -> Level 3

# SOAF ASSESSMENT

## UPM STANDARDS

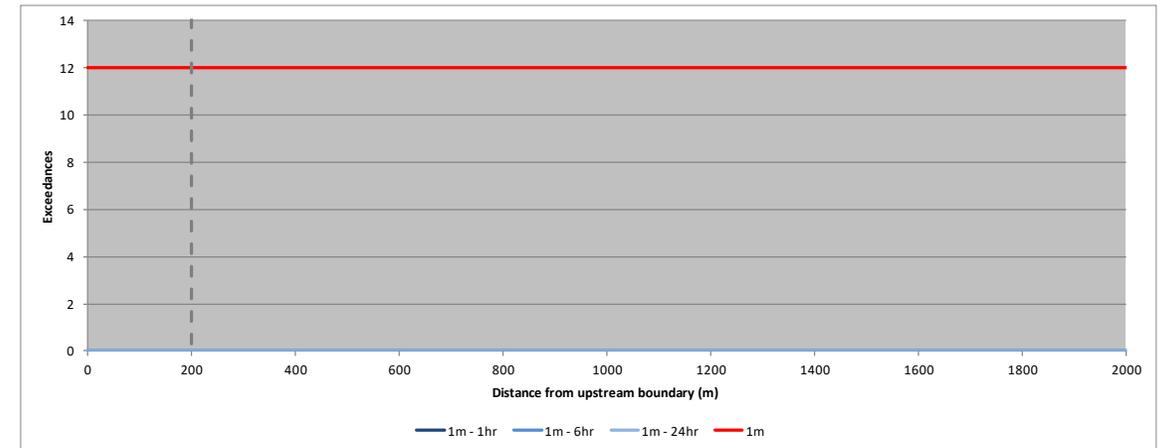
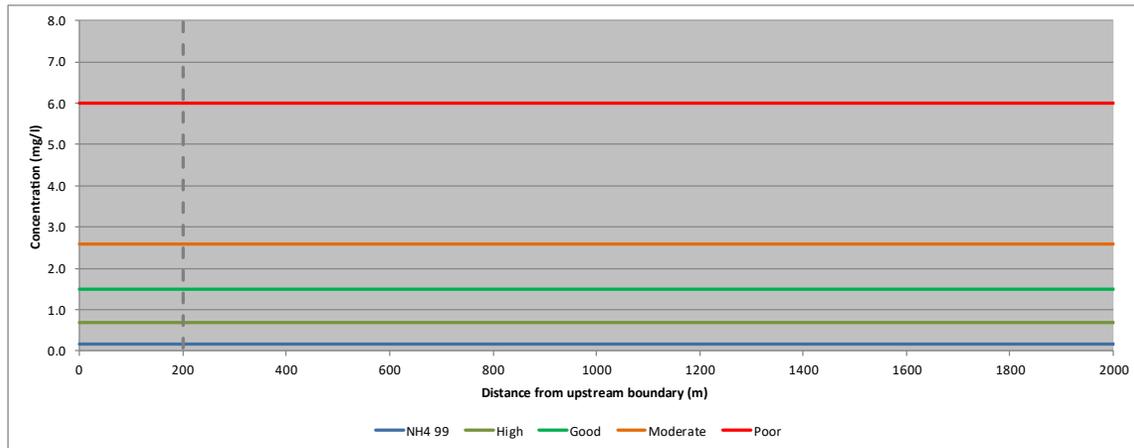
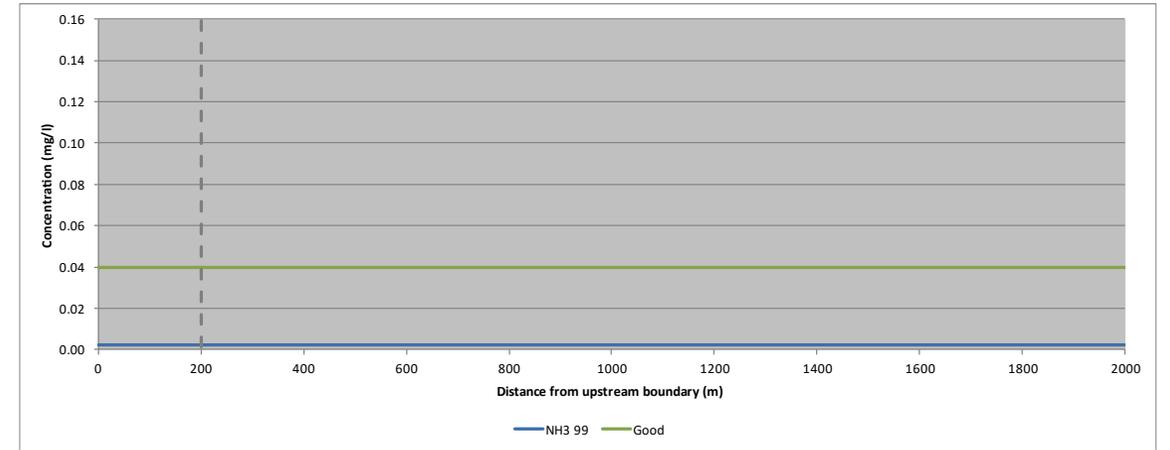
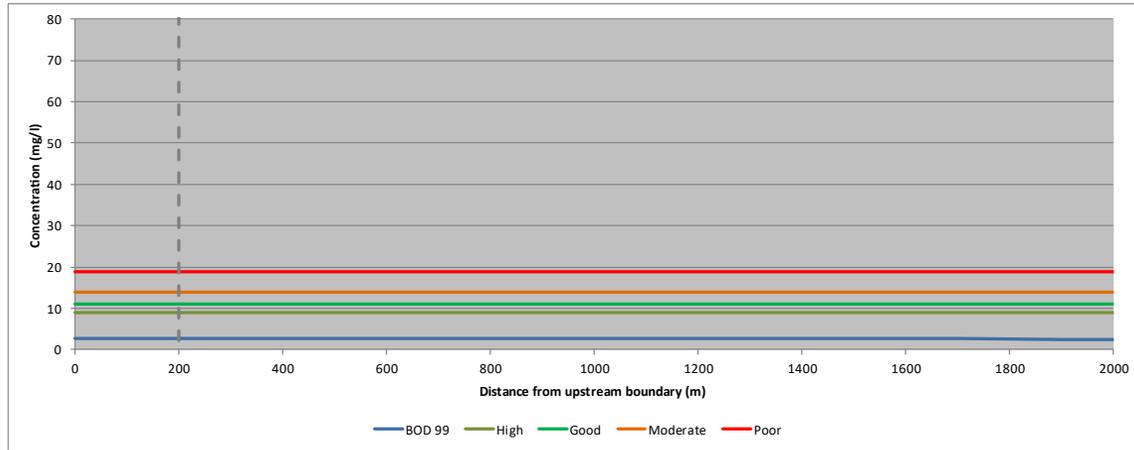
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# SOAF SOLUTION

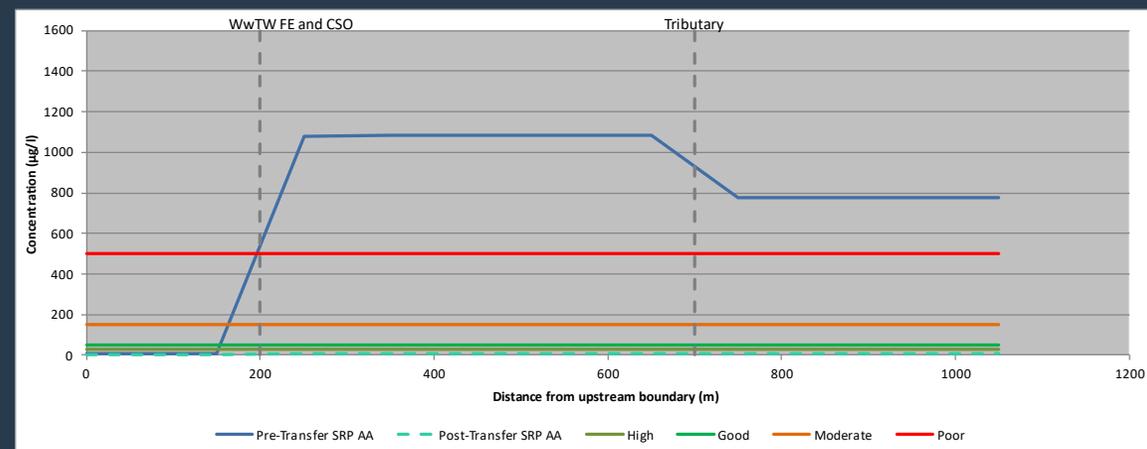
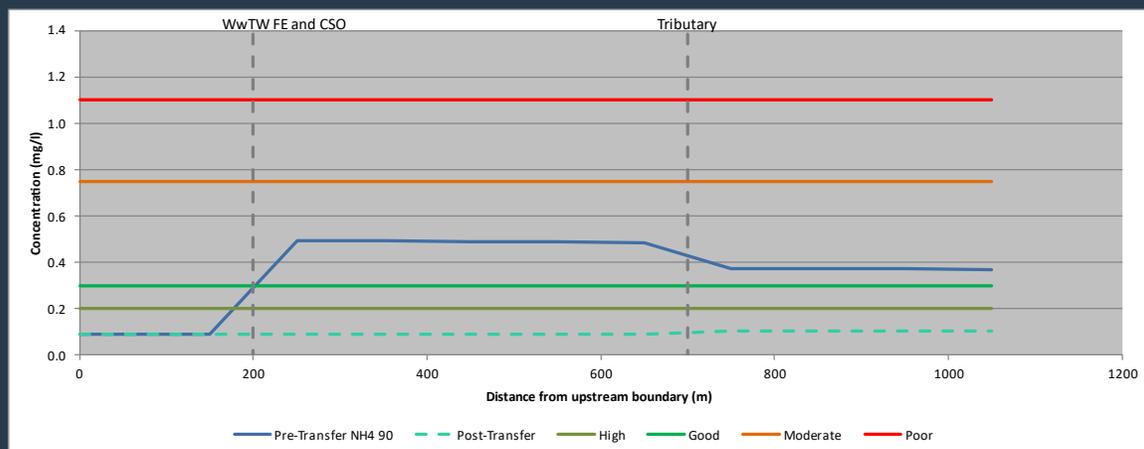
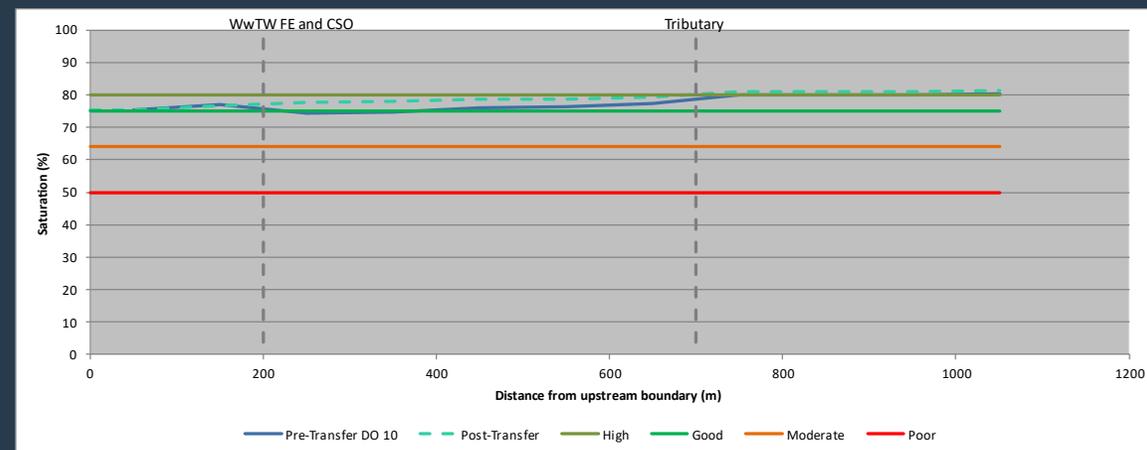
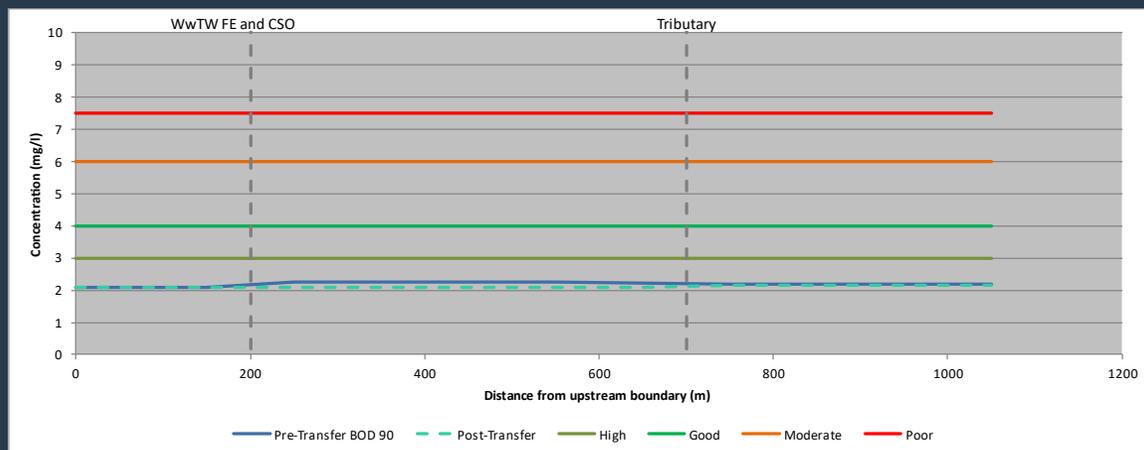
## UPM STANDARDS

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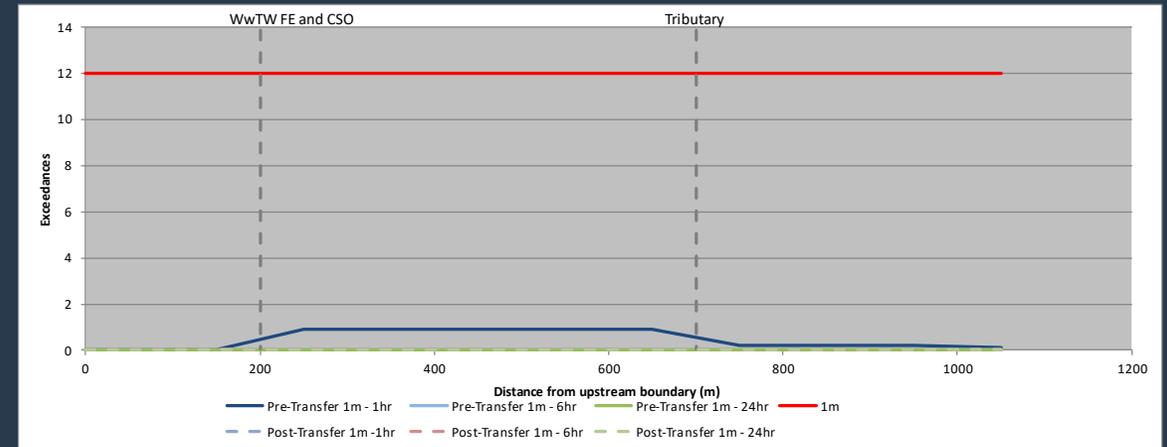
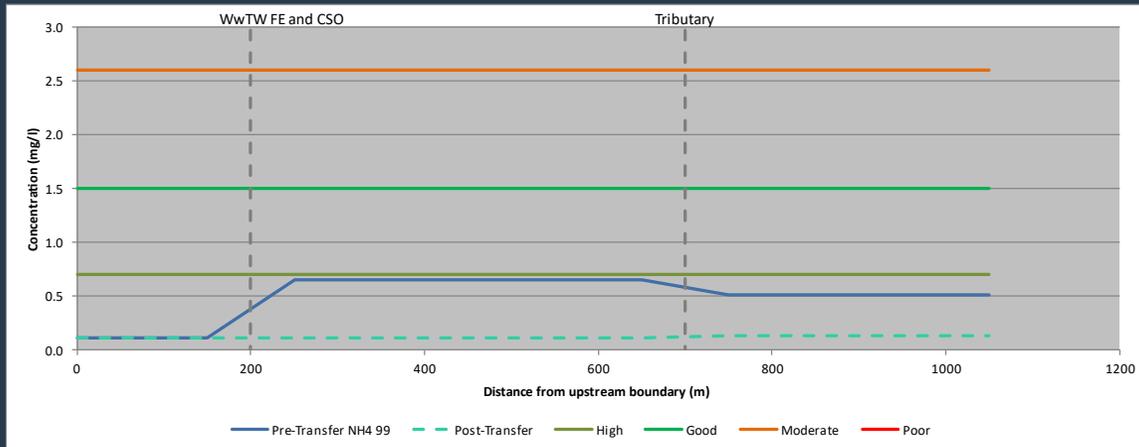
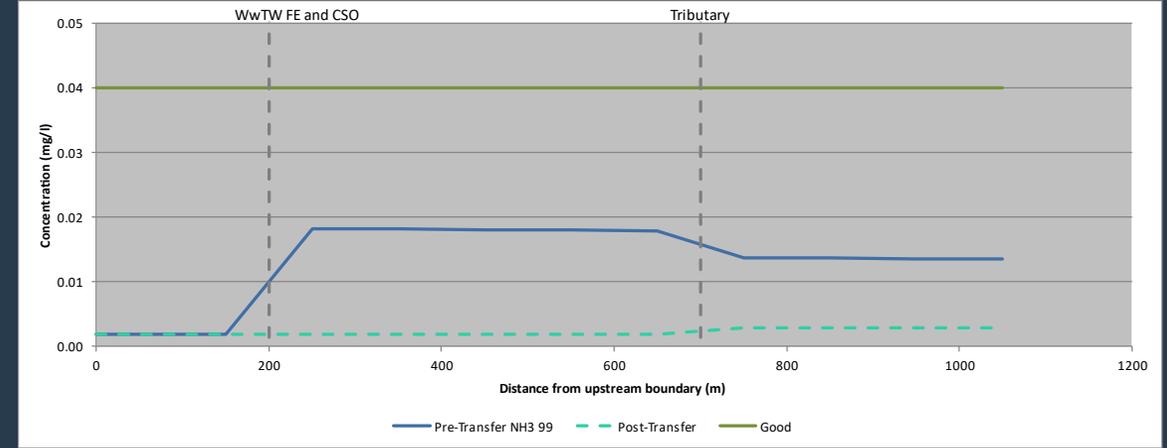
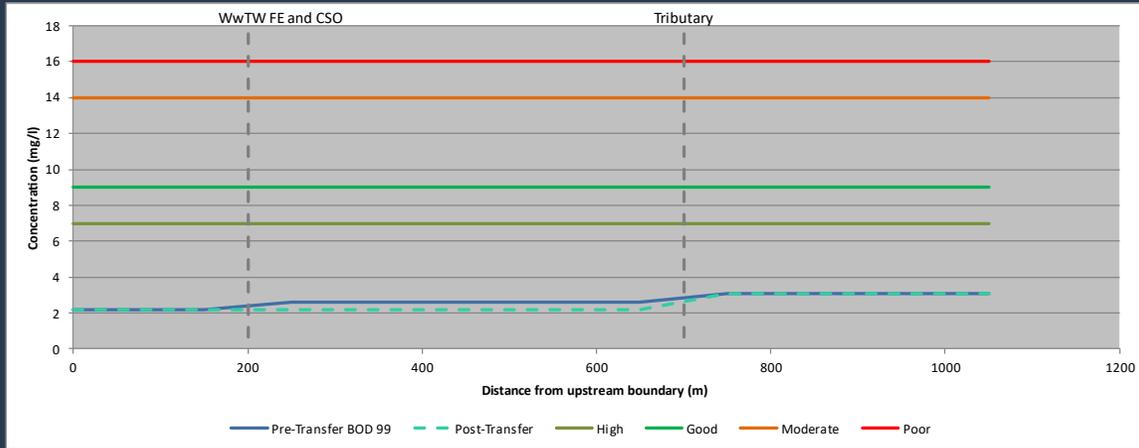
# LEVEL 2 WFD ASSESSMENT

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# LEVEL 2 UPM ASSESSMENT

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# CONCLUSIONS

- Modelling all catchments in AMP8 at Level 4 is impractical – *a flexible approach is required*
- Available data can be applied to develop models, develop solutions, and identify additional survey needs
- Models are not static tools and can be updated and re-purposed

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thank you

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