

Catchment Benefit Assessment Case Study Kate Snow

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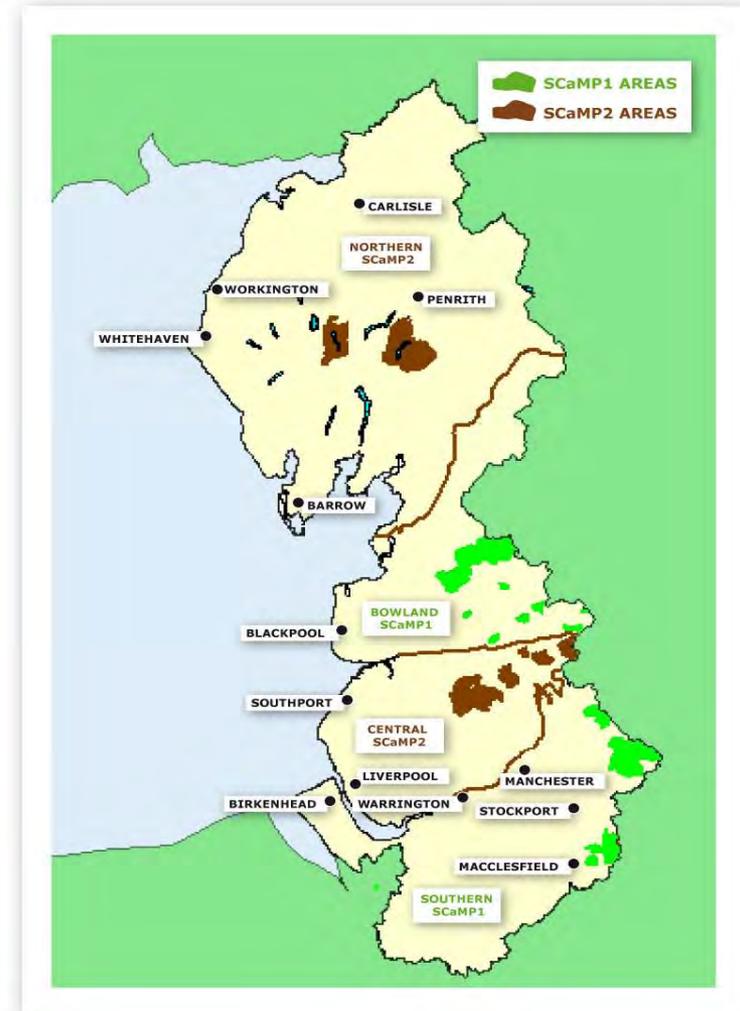


Introduction

- Land ownership of 57,500 ha
- Primary purpose – to protect raw water quality

SCAMP - an integrated approach to catchment management incorporating sustainable upland farming which delivers a range of water quality, environmental and public goods

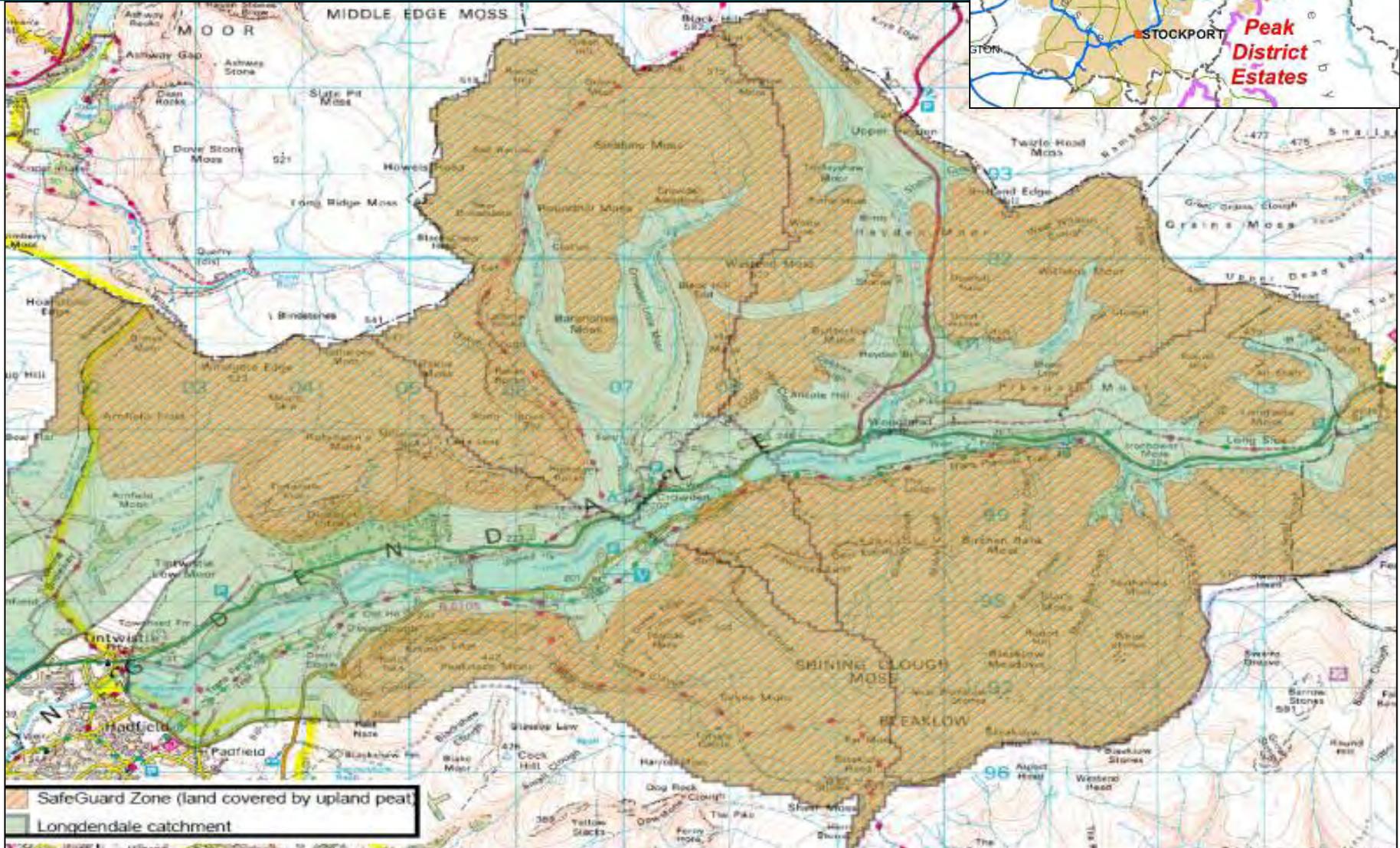
- Improved raw water quality and reduce risk
- Securing and improving the carbon flux
- Biodiversity - priority habitats and species
- Viable living for our tenant farmers



Economics?



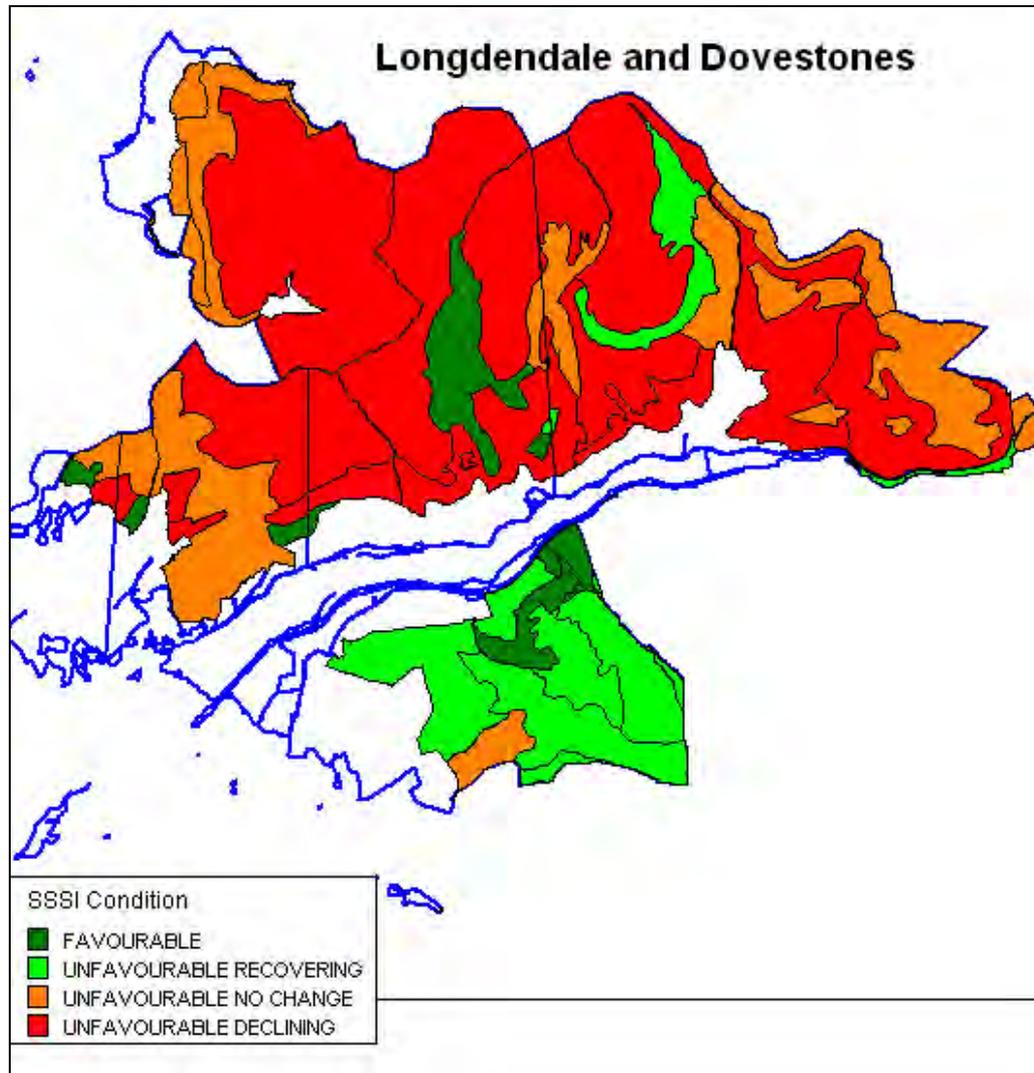
The Longdendale catchment



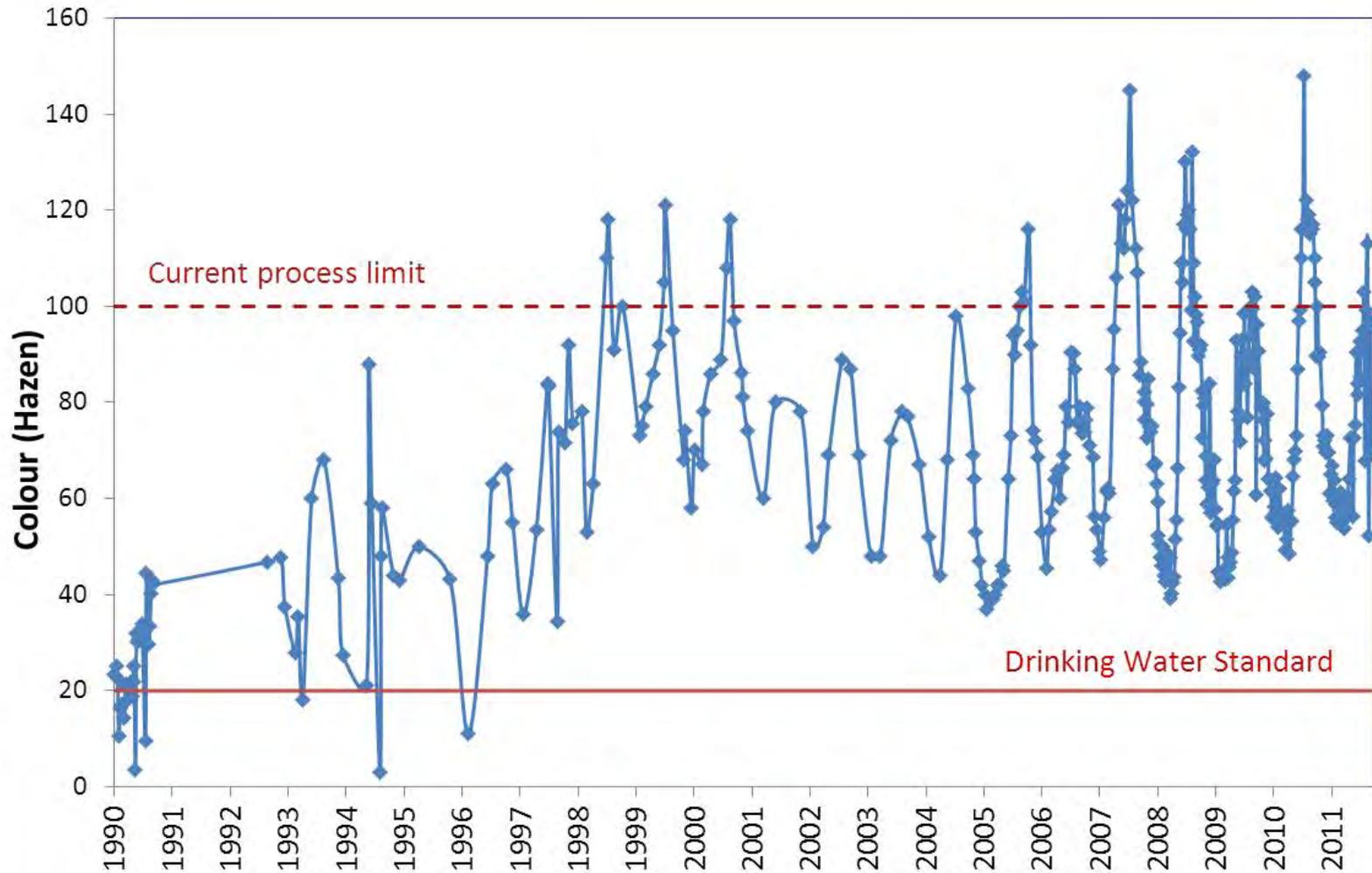
Catchment pressures



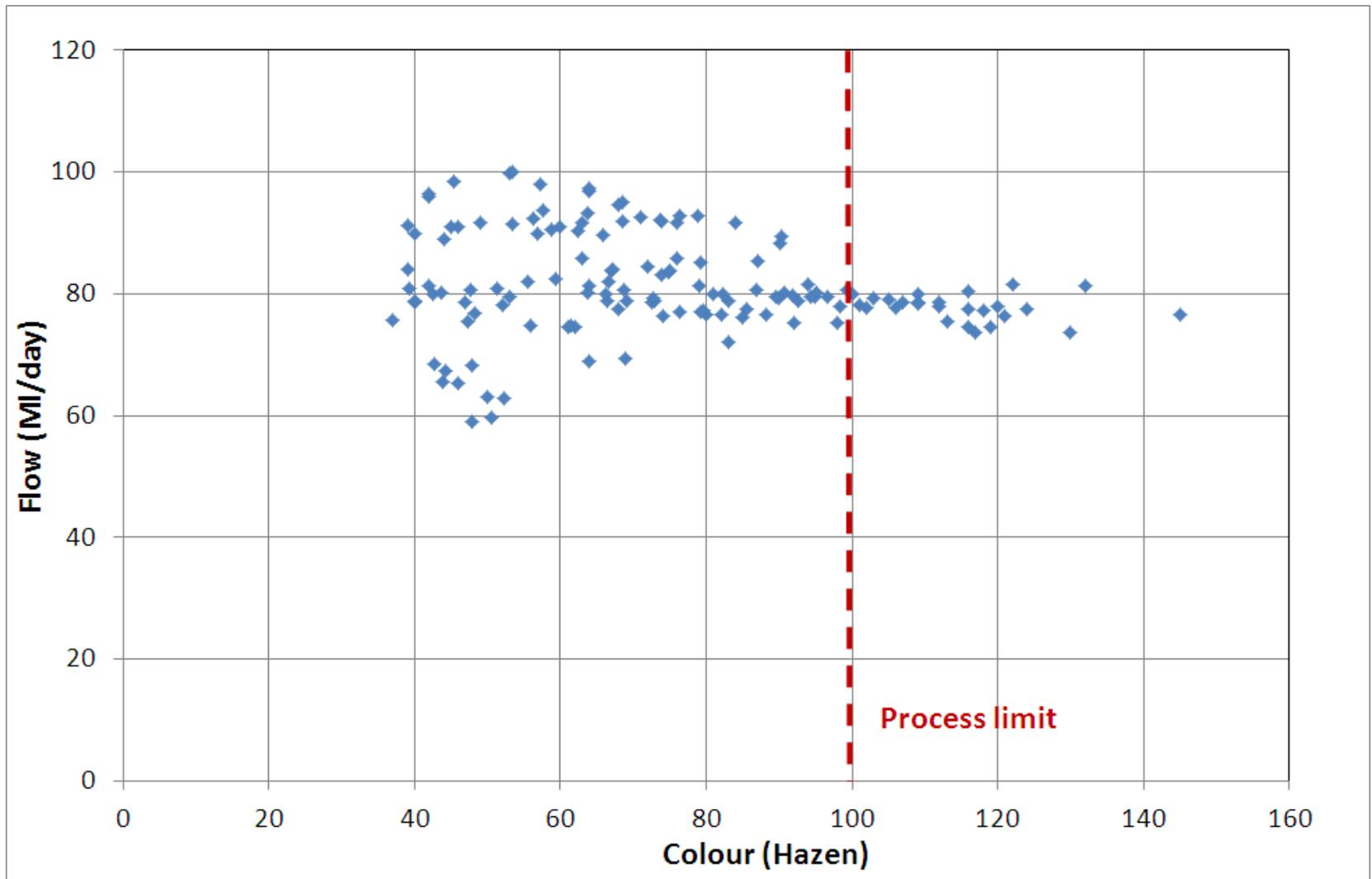
SSSI Condition



The water quality challenge



The water quality challenge



The catchment interventions



Bare Peat



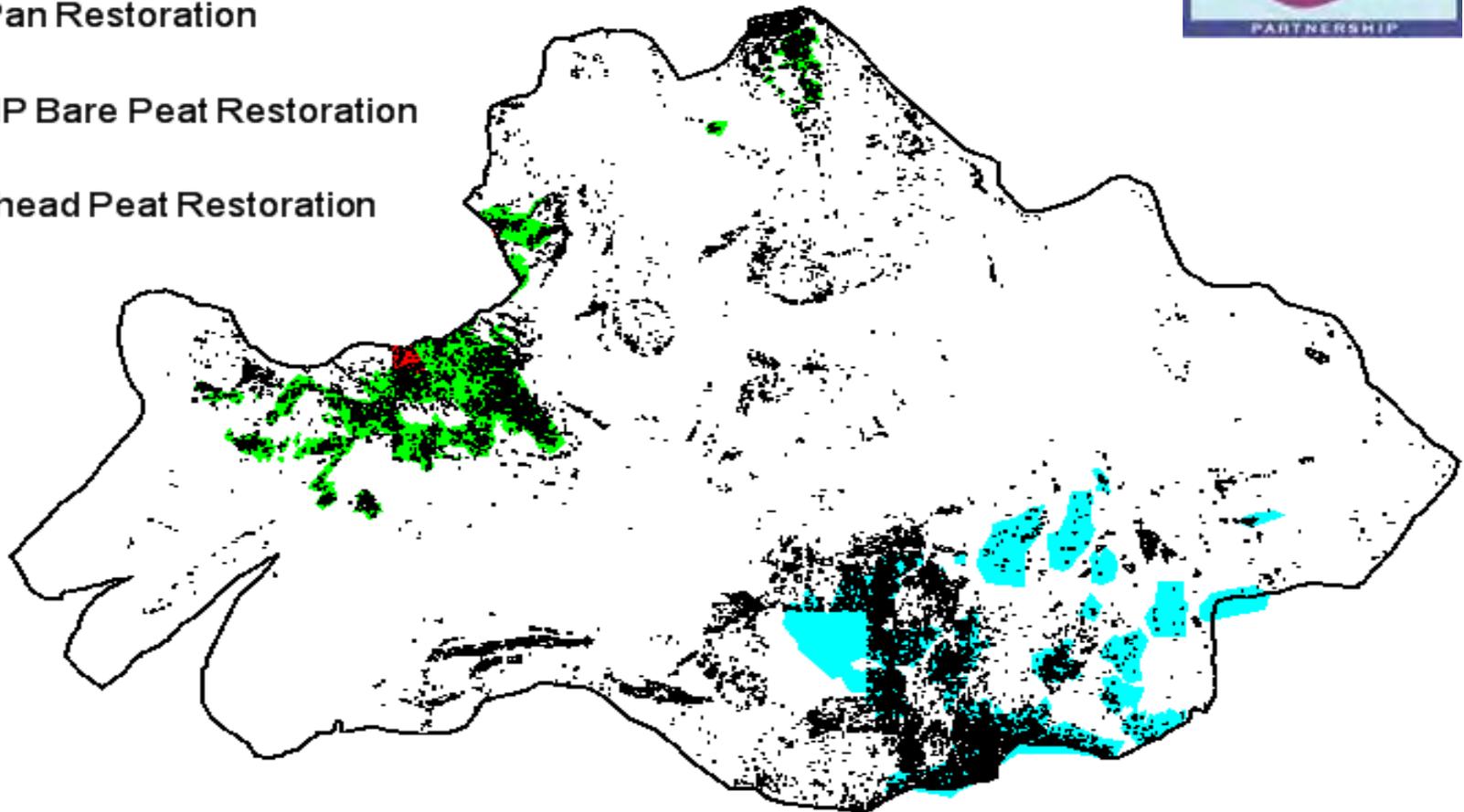
Peat Pan Restoration



SCAMP Bare Peat Restoration



Woodhead Peat Restoration



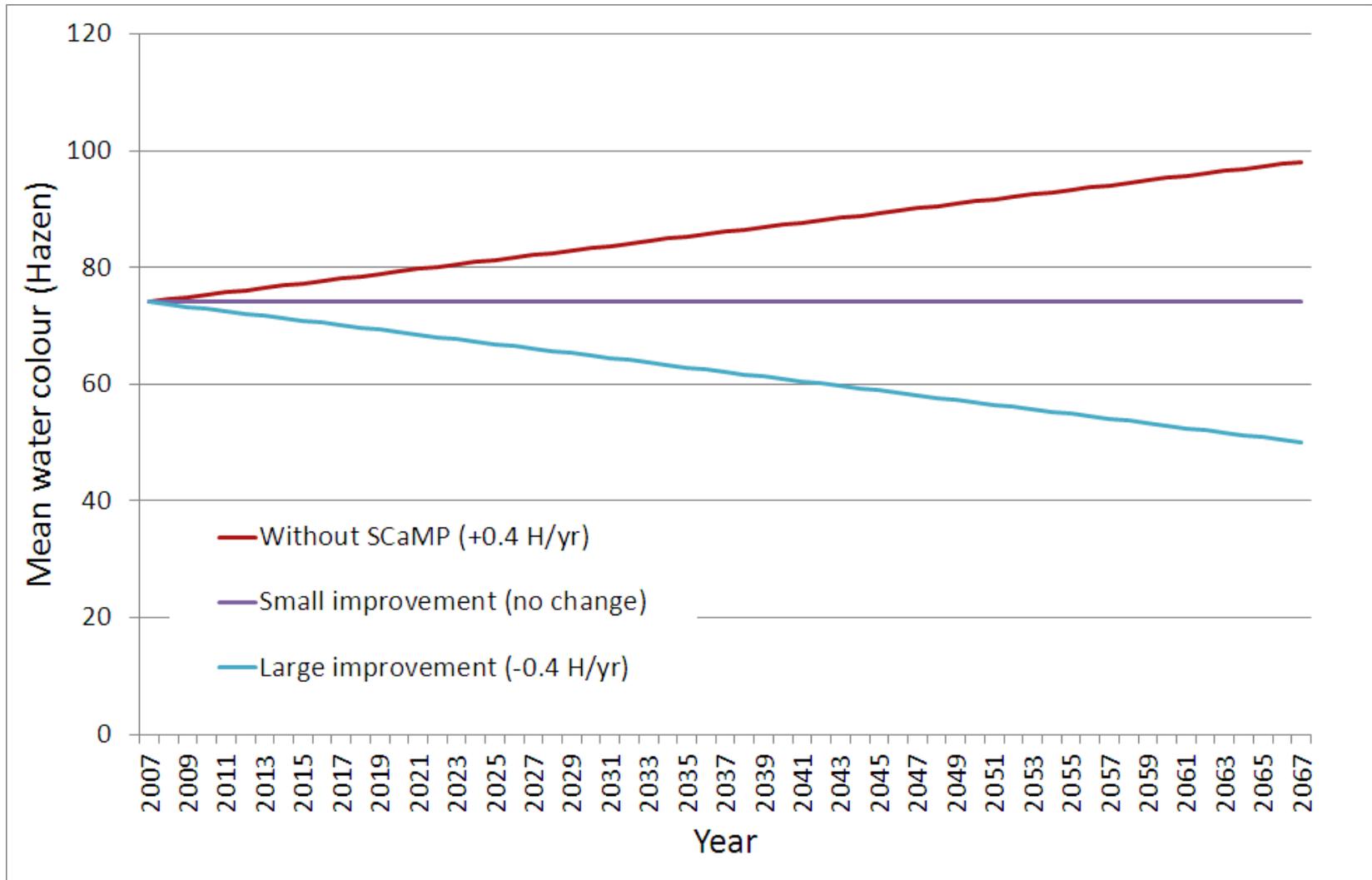
Multiple benefits

- Improved water quality, leading to reduced operational expenditure and more reliable supply
- Improved habitat condition and biodiversity
- Enhanced landscape value and recreational experience
- Increased carbon sequestration and reduced greenhouse gas emissions

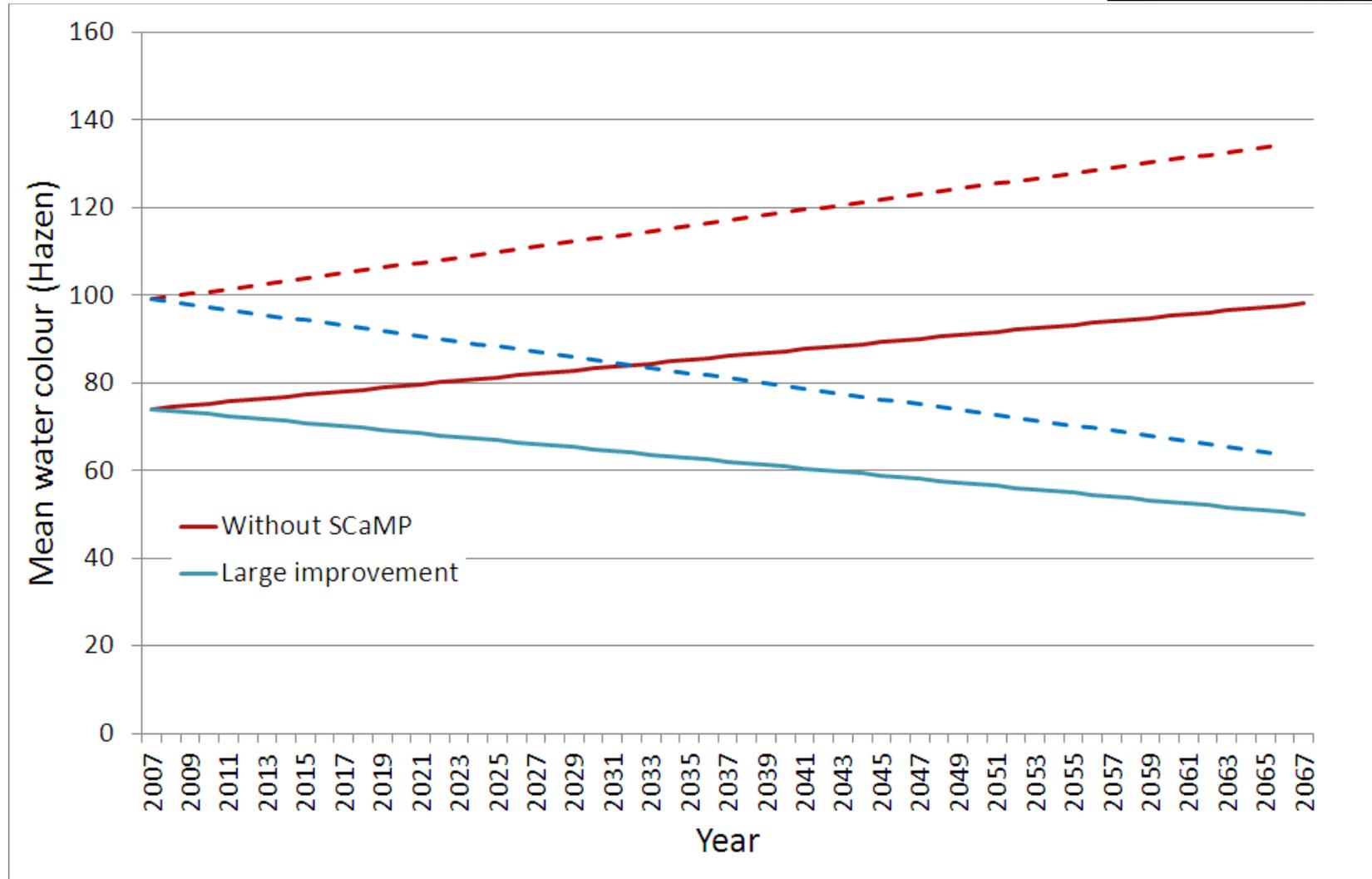
60 year time period (2007-2067)



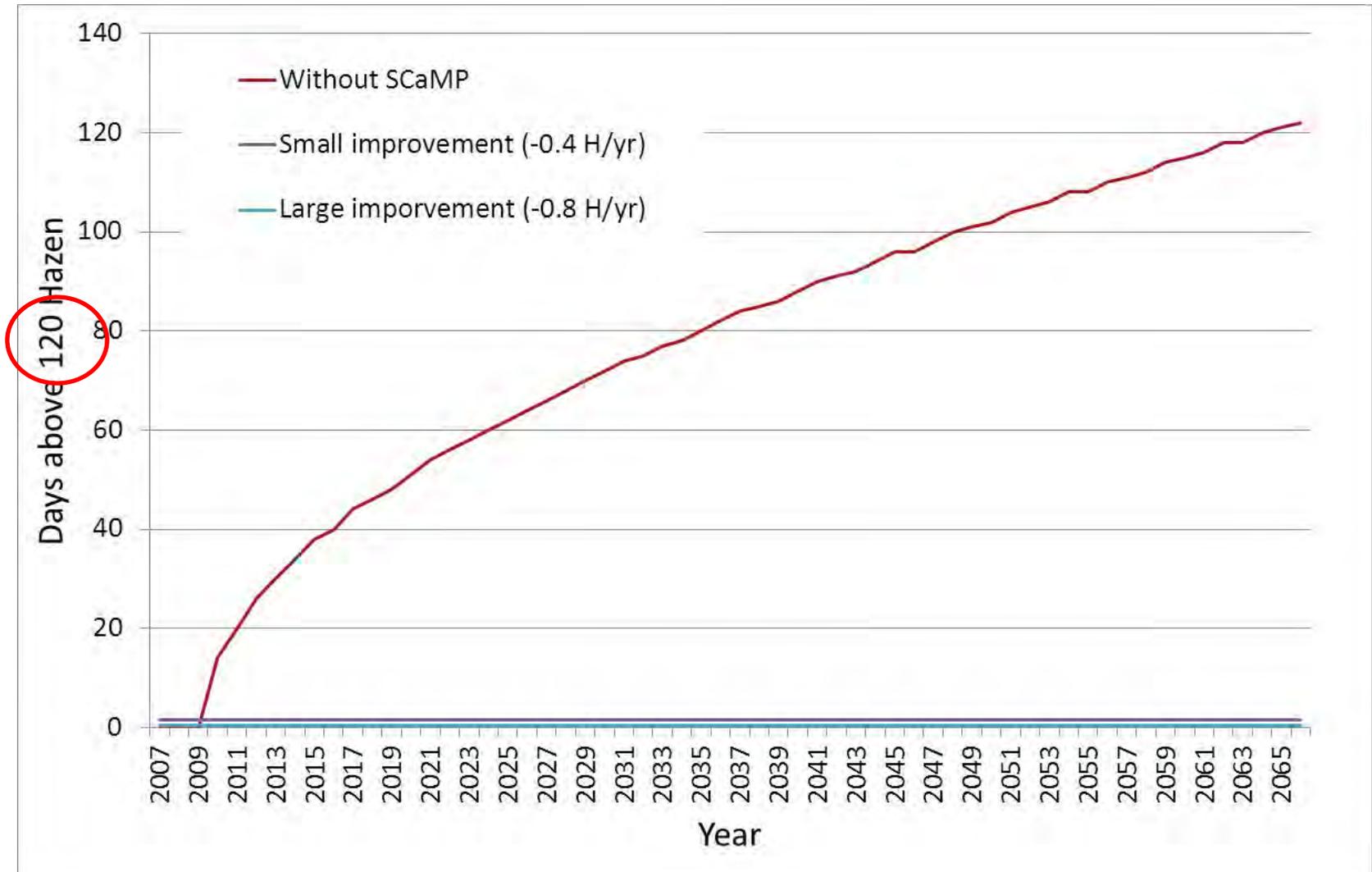
Water quality: Operational savings



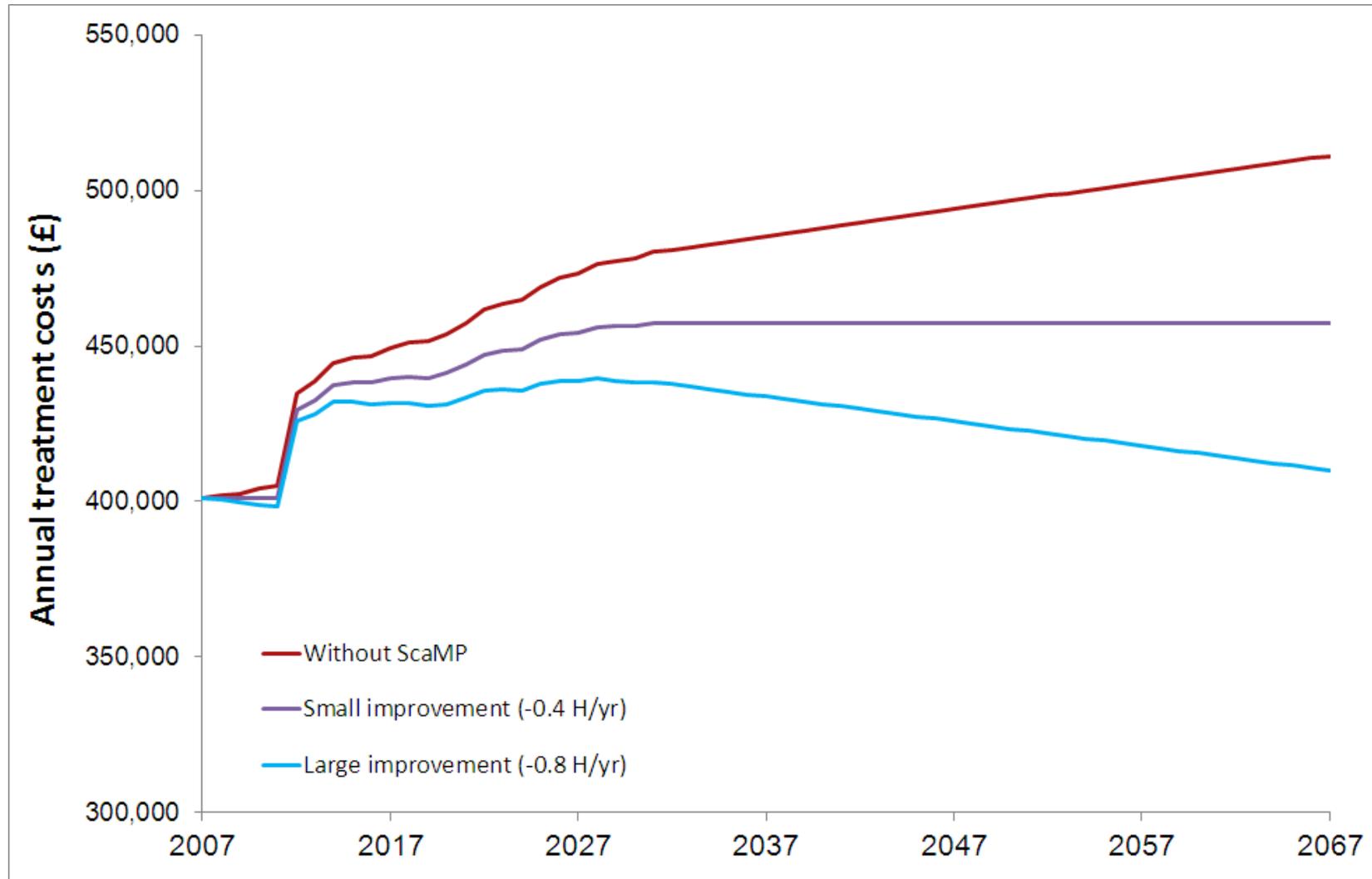
Water quality: Operational savings



Water quality: Operational savings



Water quality: Operational savings



Non-use biodiversity benefits

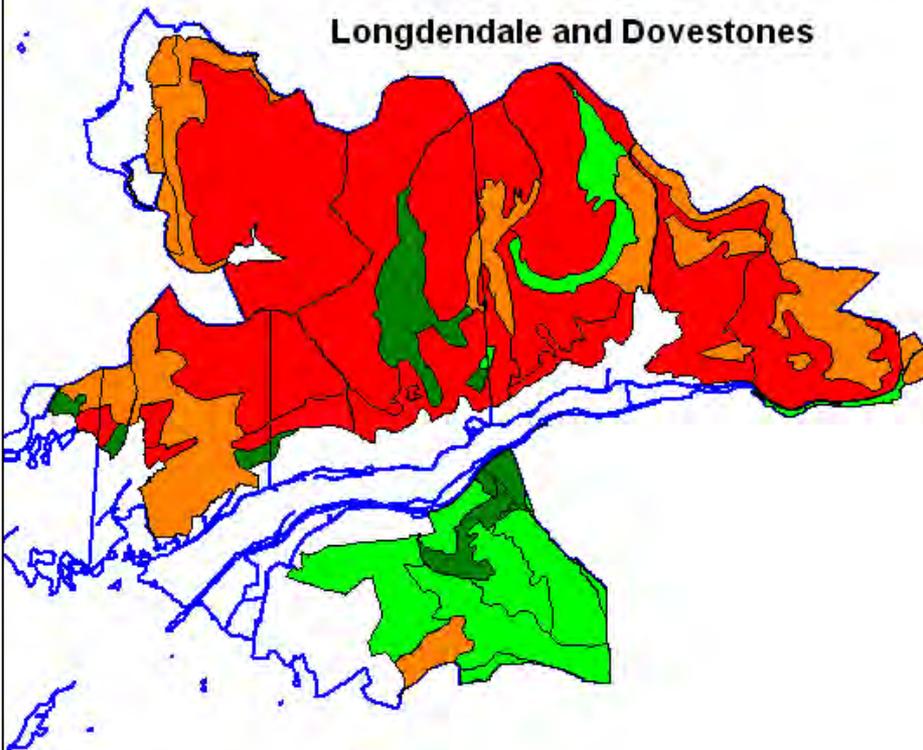


- “Non-use” value of just knowing that it exists now and in the future (even if have no plans to visit or use it)
- 729 ha of moorland subject to intensive restoration
- Undamaged moorland habitat estimated to be worth £304/ha/yr (UK National Ecosystem Assessment).
- Assume existing work will restore habitat 50% of way towards original undamaged condition over 40 years, so improvements estimated to deliver benefits worth £152/ha/yr by 2047
- Stock exclosure on additional 1773 ha of moorland assumed to deliver 10% restoration over 40 years.
- Similarly, 56 ha of new woodland valued at £180/ha/yr after 60 years

SSSI Condition

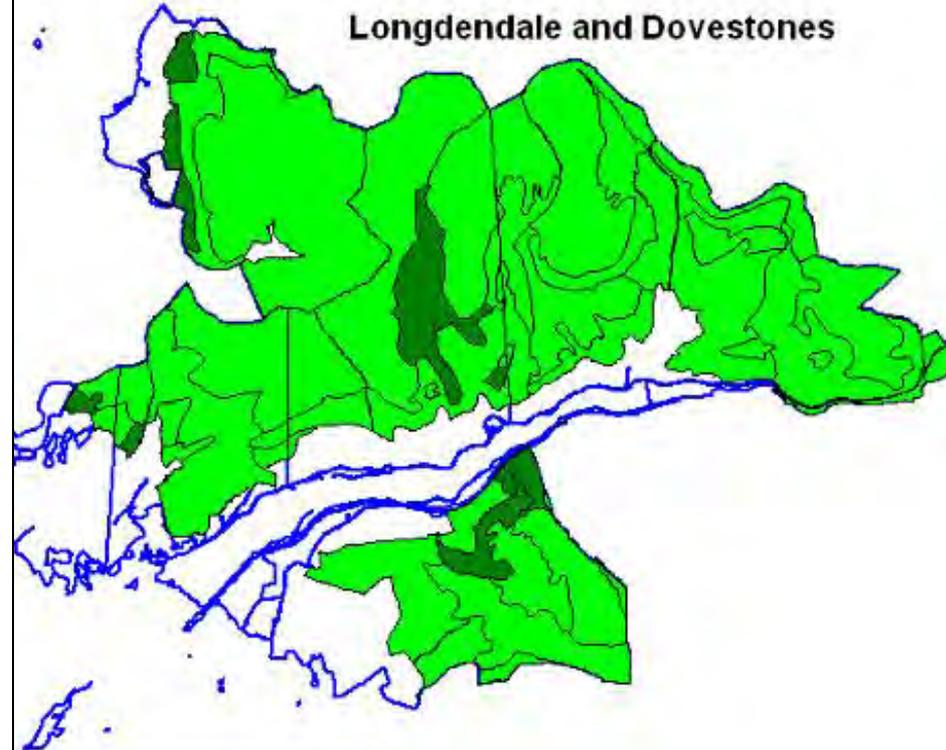


Longdendale and Dovestones



- SSSI Condition
- FAVOURABLE
 - UNFAVOURABLE RECOVERING
 - UNFAVOURABLE NO CHANGE
 - UNFAVOURABLE DECLINING

Longdendale and Dovestones



- SSSI_Condition by Condition
- FAVOURABLE
 - UNFAVOURABLE RECOVERING
 - UNFAVOURABLE NO CHANGE
 - UNFAVOURABLE DECLINING

Recreational benefits



- Undamaged moorland habitat estimated to be worth £227/ha/yr (UK National Ecosystem Assessment)
- Degraded catchment still used for recreation, but no figures for recreational value of baseline scenario
- Conservatively estimate that existing restoration work will deliver recreational benefits worth £113/ha/yr by 2047
- Similarly, 56 ha of new woodland valued at £108/ha/yr after 60 years.

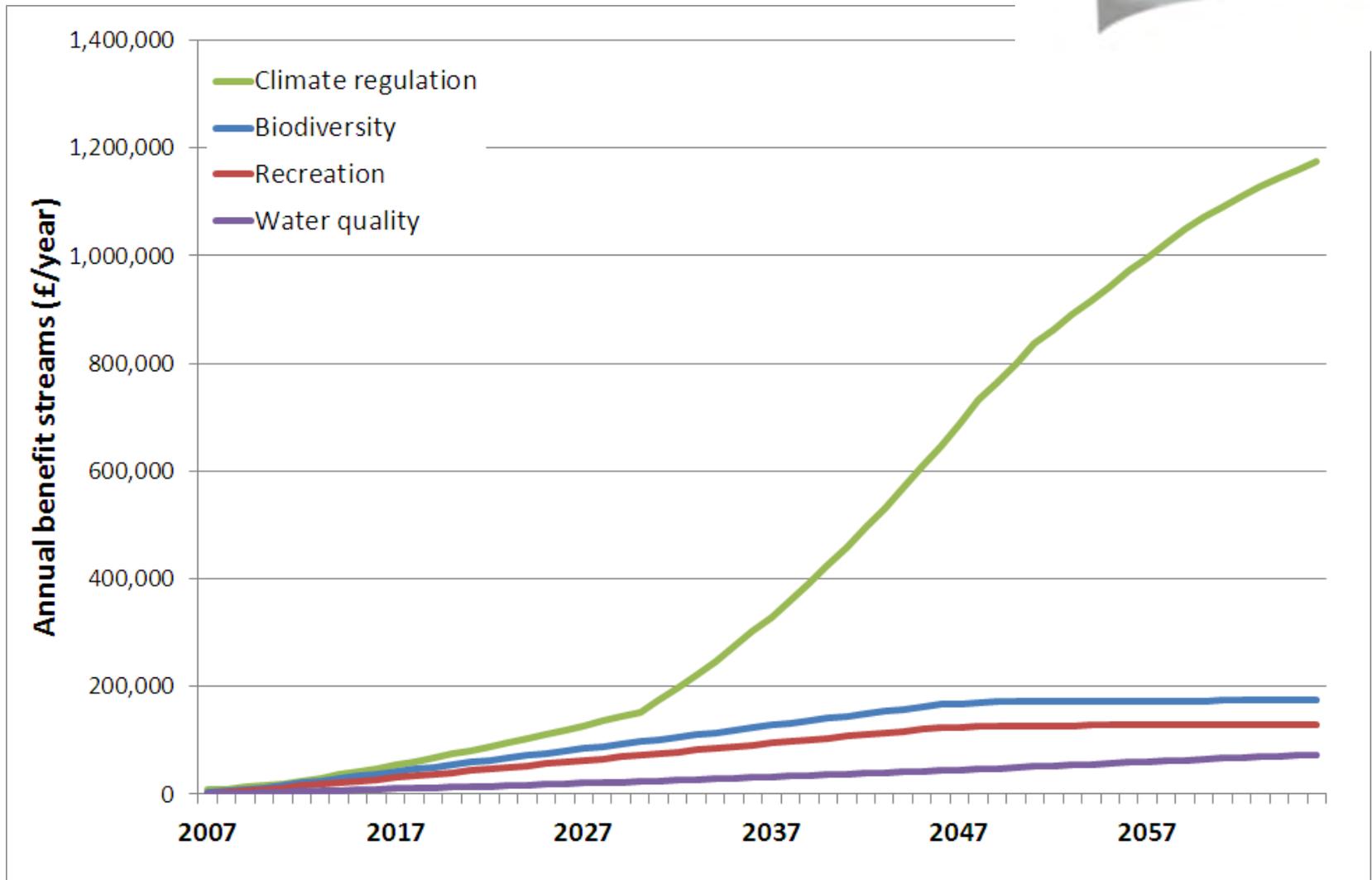
Climate regulation



- Natural England (2010) review of scientific literature estimated intact blanket bog to sequester 4.11 tCO₂e/ha/yr, and degraded bog to emit 2.56 tCO₂e/ha/yr
- Full restoration therefore expected to change C flux by in 6.67 tCO₂e/ha/yr
- Assume existing work will achieve 50% restoration over 40 years, (stock exclosure 10%) and that benefits start to accrue 2 years after start of works
- New woodland assumed to sequester 3.4 tCO₂e/ha/yr (Eftec 2010)
- DECC value of GHG rises from £53/tCO₂e in 2007 to £309/tCO₂e in 2067

Aggregated benefits

Work in Progress



Discounted benefits

Work in Progress

Benefits	Present Value
Water quality	£tbc k
Non-use Biodiversity	£tbc k
Recreation	£tbc k
Climate regulation	£tbc k
TOTAL	£tbc k

Discounted benefits and costs

Work in Progress

Benefits	Present Value
Water quality	£tbc k
Non-use Biodiversity	£tbc k
Recreation	£tbc k
Climate regulation	£tbc k
TOTAL	£tbc k

Costs	Present Value
UU funding	£tbc k
Partner funding	£3,232 k
TOTAL	££tbc k

NPV	££tbc k
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Net present value (NPV) of, but only £tbc k if the 'wider' benefits are taken into account

Uncertainty and sensitivity

Work in Progress

Benefits/Costs	Pessimistic	Central	Optimistic
Water quality			
Biodiversity			
Recreation			
Climate regulation			
Total benefits			
Costs			
NPV			
B/C Ratio			

£ to be confirmed

Customer Perspective

B/C Ratio

Conclusions

- Applied CBA to case study to quantify and monetise the benefits of peat restoration
- Site specific
- Not including capital expenditure deferral
- Cautious approach

- Cost Benefit ratio of tbc for customer

Next Steps

- QA figures
- Identify SCAMP 3 – WFD Article 7/ WTW issues/
Twin track
- Engage with customers
- Utilise and refine CBA methodology
 - SCAMP monitoring
 - NEA phase 2
- Investigate potential for wastewater catchment management

Questions?
Thank you



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