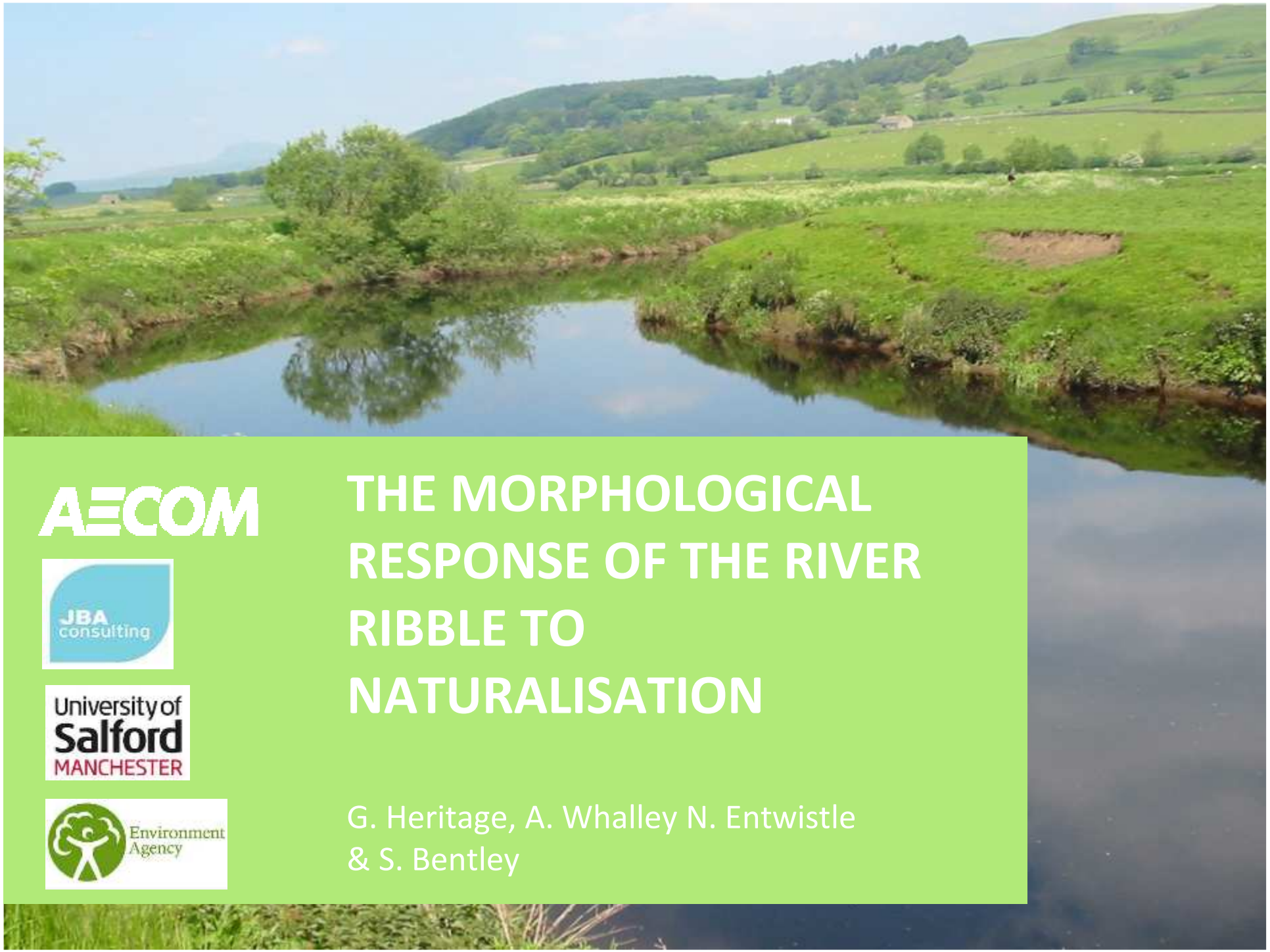

THE MORPHOLOGICAL RESPONSE OF THE RIVER RIBBLE TO NATURALISATION

G. Heritage, A. Whalley N. Entwistle & S. Bentley

Structure

Motivation for Naturalisation

Actions & Responses

Constraints

Summary of Barriers and a Way Forward

Present condition

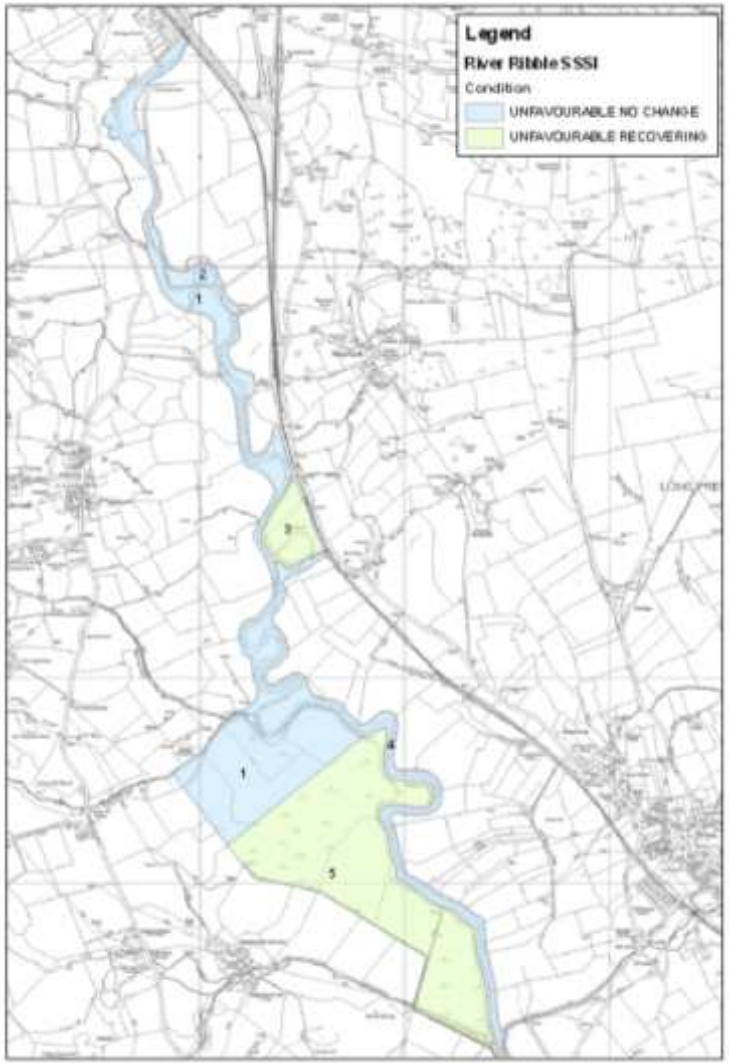

Table 2-1 Summary SSSI condition pressures

Pressure	Site indicators	Causes	Extent and Significance
Morphology destruction	Absence of in-channel features. Bank instability.	Historic dredging. River training.	Most significant in the north and south. Severe morphological alteration to southern reach.
Process modification	Lack of planform change. Bar deposition and local erosion.	River training.	Training most significant along southern reach.
Floodplain connectivity	Degraded floodplain habitats. Increased in-channel instability.	Embankments. Historic dredging. Land drainage	Extensive flood banks often adjacent to main channel affects floodplain inundation frequency and increases in-channel flood flow energy. Dredging lowers river bed level affecting bank stability and water table.
Land use	Bank habitat modification.	Livestock practices. Drainage regimes.	Variable influence throughout SSSI. Significantly affecting the species assemblages colonising slumped blocks. Drainage channels altering natural flow routes across floodplain.
Flow regime	Potential increase in peak flows.	Climate change.	No significant flow regime modifications from natural through abstraction.

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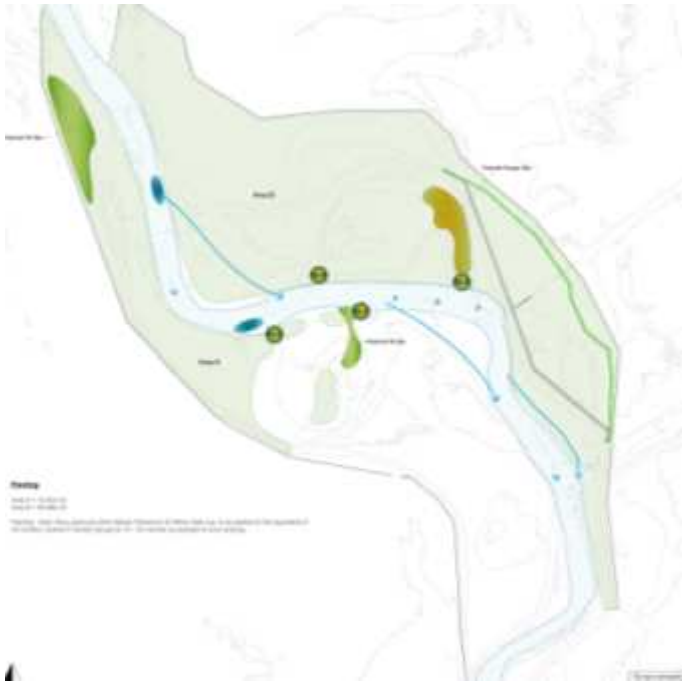
Actions

Phase I Summer 2011
Flood bank realignment, Fencing, Palaeo-feature reconnection, Chute channel creation



Phase II Summer 2012
Flood bank realignment, Fencing, Lateral feature creation, Tributary enhancement

Stock fencing

Deculverting

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Backwater creation / enhancement

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Chute creation

Chute creation

Inner berm areas

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Pool-riffle reinstatement

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Pool-riffle reinstatement

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Palaeo-channel reconnection

Palaeo-channel reconnection

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System response: Drone survey

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System response: Drone survey

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System response: Drone survey

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System response: Floodplain reconnection & fencing

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System response: chute creation

System response: chute creation

System response: Inner berm areas

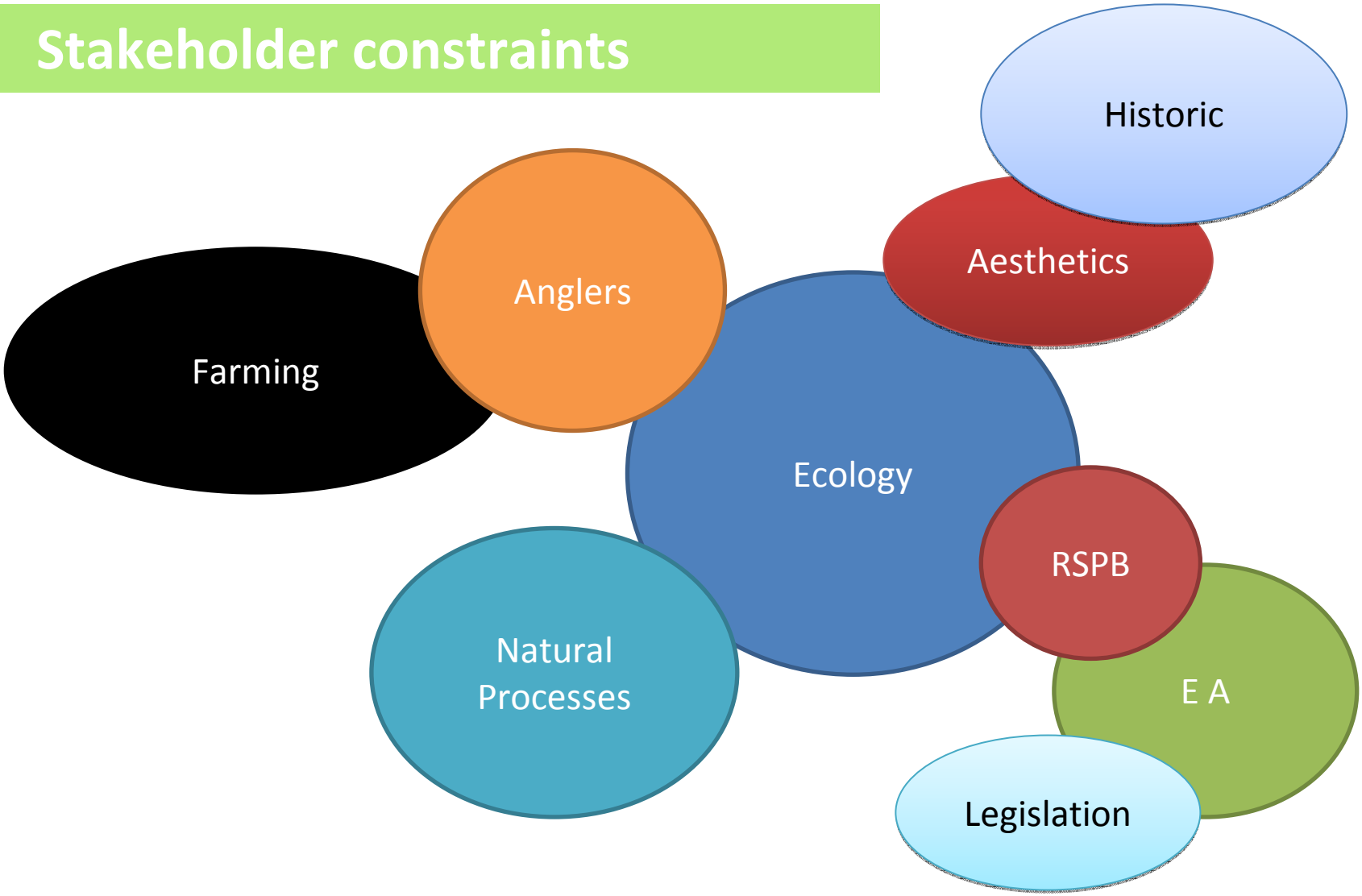
System response: Palaeo-reconnection

System response: tributary daylighting

System response: riffle creation

System response: riffle creation

Stakeholder constraints



Stakeholder constraints

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Conclusions

SIMPLE APPROACHES LINKED TO SEDIMENT DYNAMICS
COMPLEX & DELICATE PROCESS (Social Science….)
EASILY DERAILED

RAPID MORPHOLOGIC REWARDS

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Palaeo-channel reconnection

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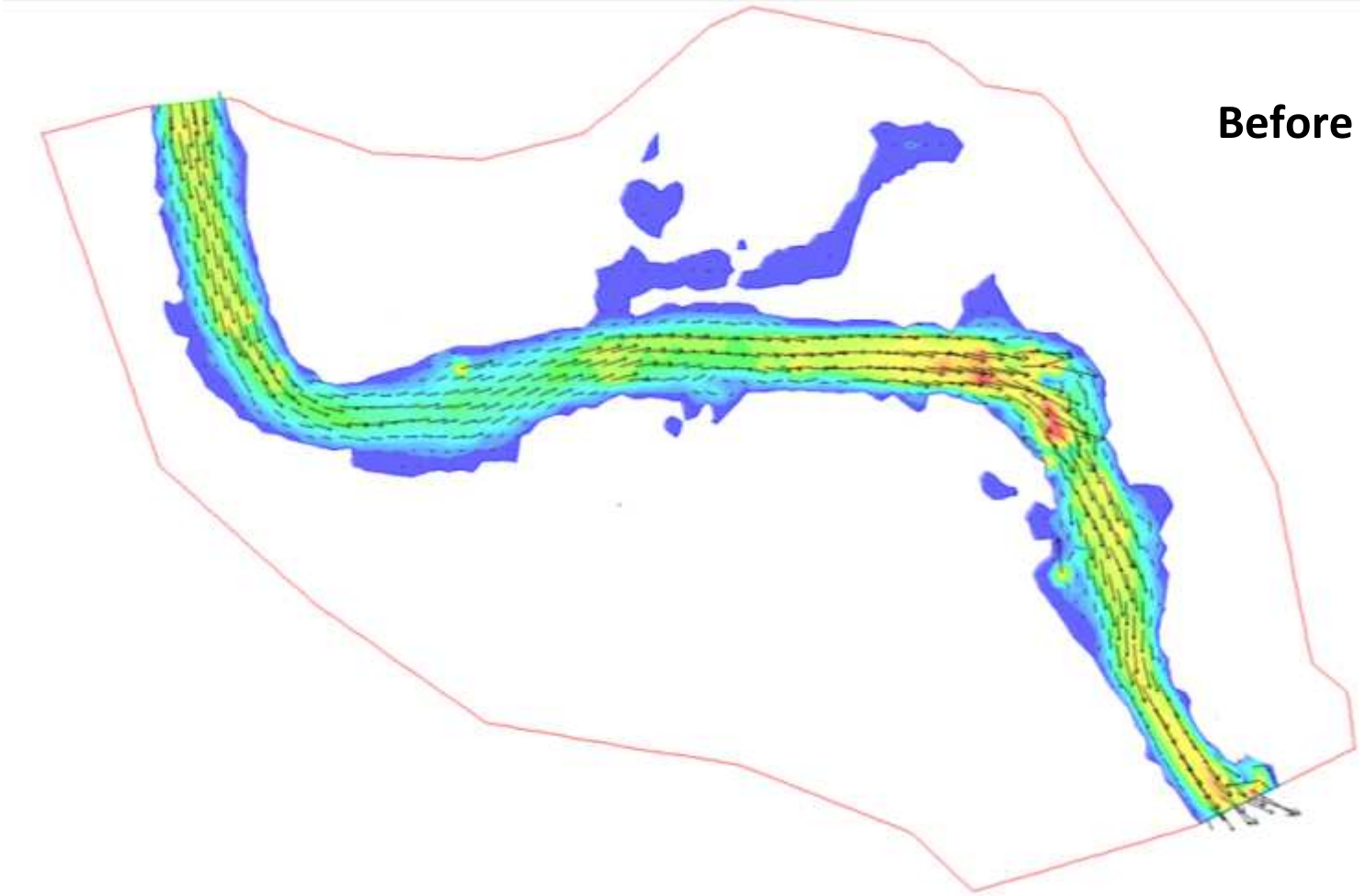
Palaeo-channel reconnection



Before

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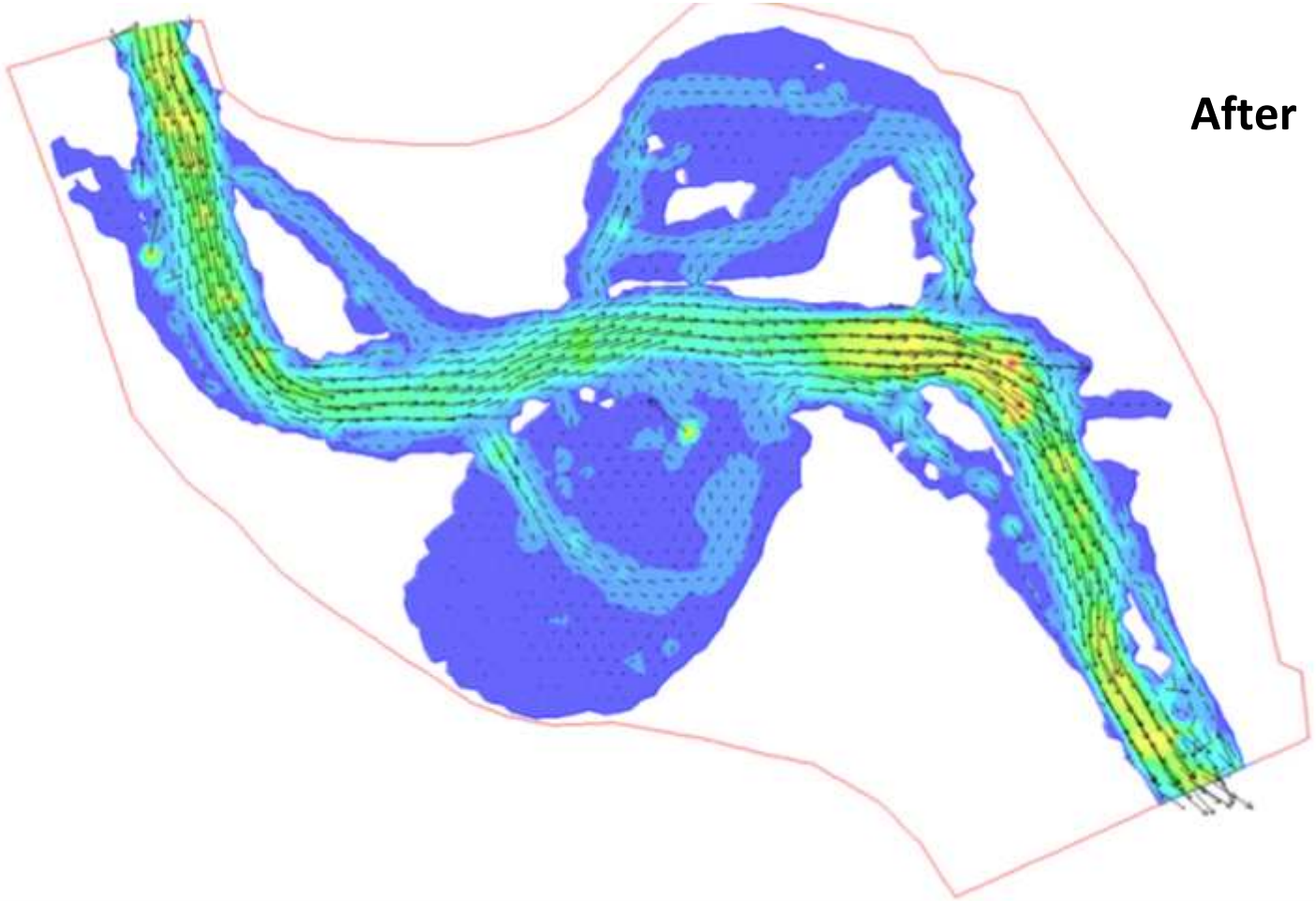
Palaeo-channel reconnection



After

A model for River Restoration

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Set back embankments

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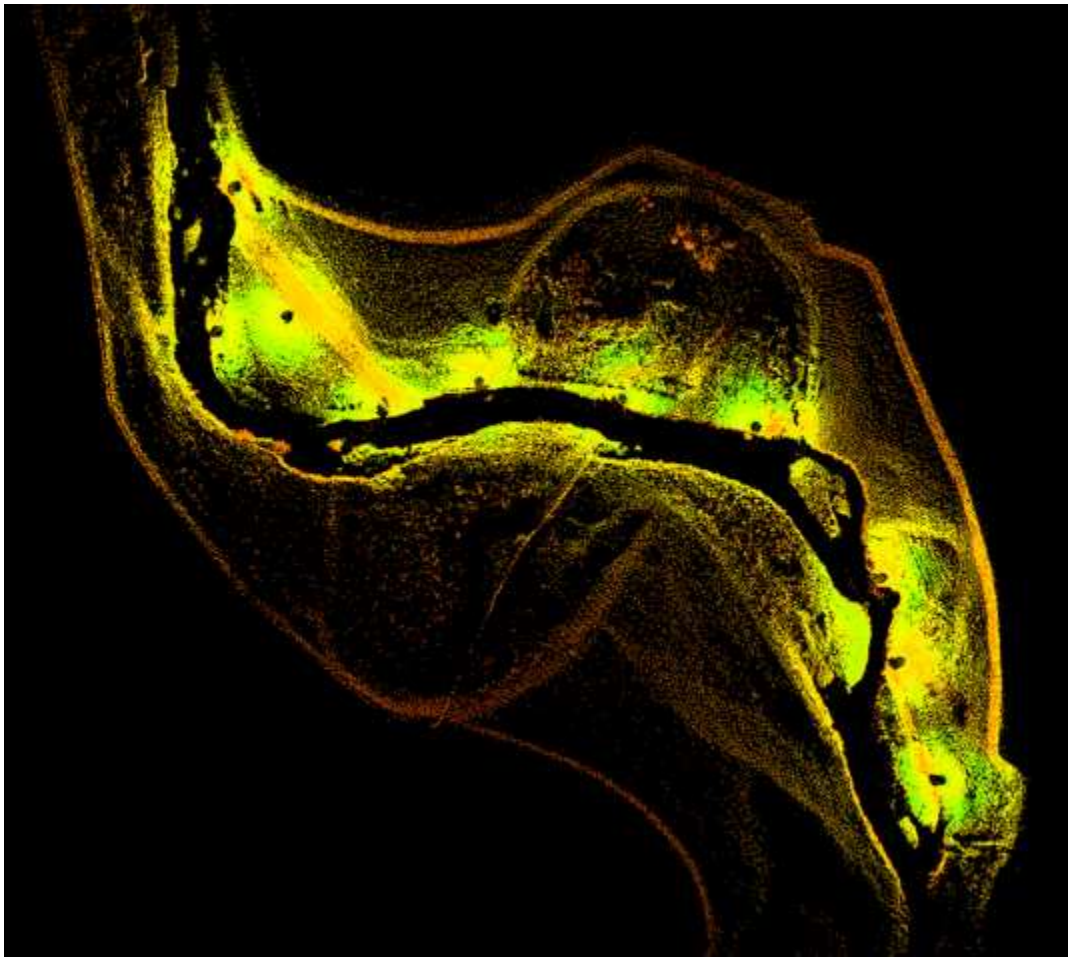
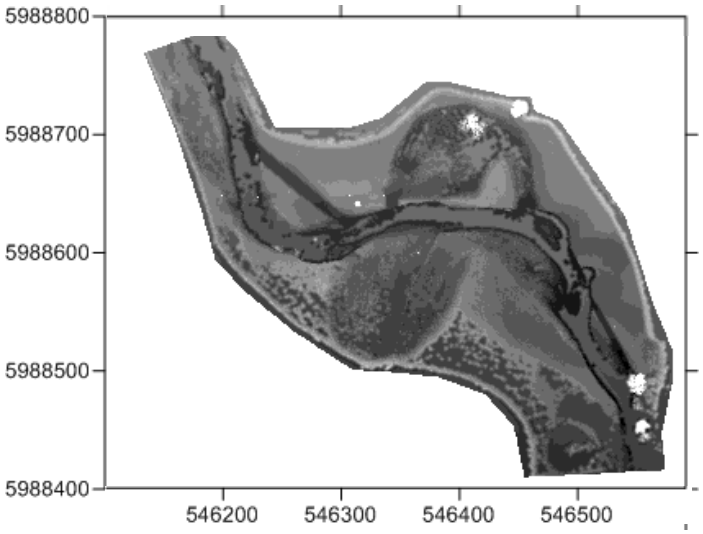
Planting

LIDAR survey





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Erosion & deposition