

Ecosystem services and chalk streams

Jen Ball, Lisa Jones, Rob Holland, Kelvin Peh, Jake Snaddon, Gail Taylor and many more...

1) Background: ecosystem services

The benefits humans derive from nature are known as ecosystem services

Provisioning services



Regulating and supporting services



Cultural services



Ecosystem services framework

Natural ecosystems

Socio-economic system

Biotic components
i.e. living things

Abiotic components
e.g. sunlight, soil, humidity

Ecological processes
& functions

Ecosystem goods
& services

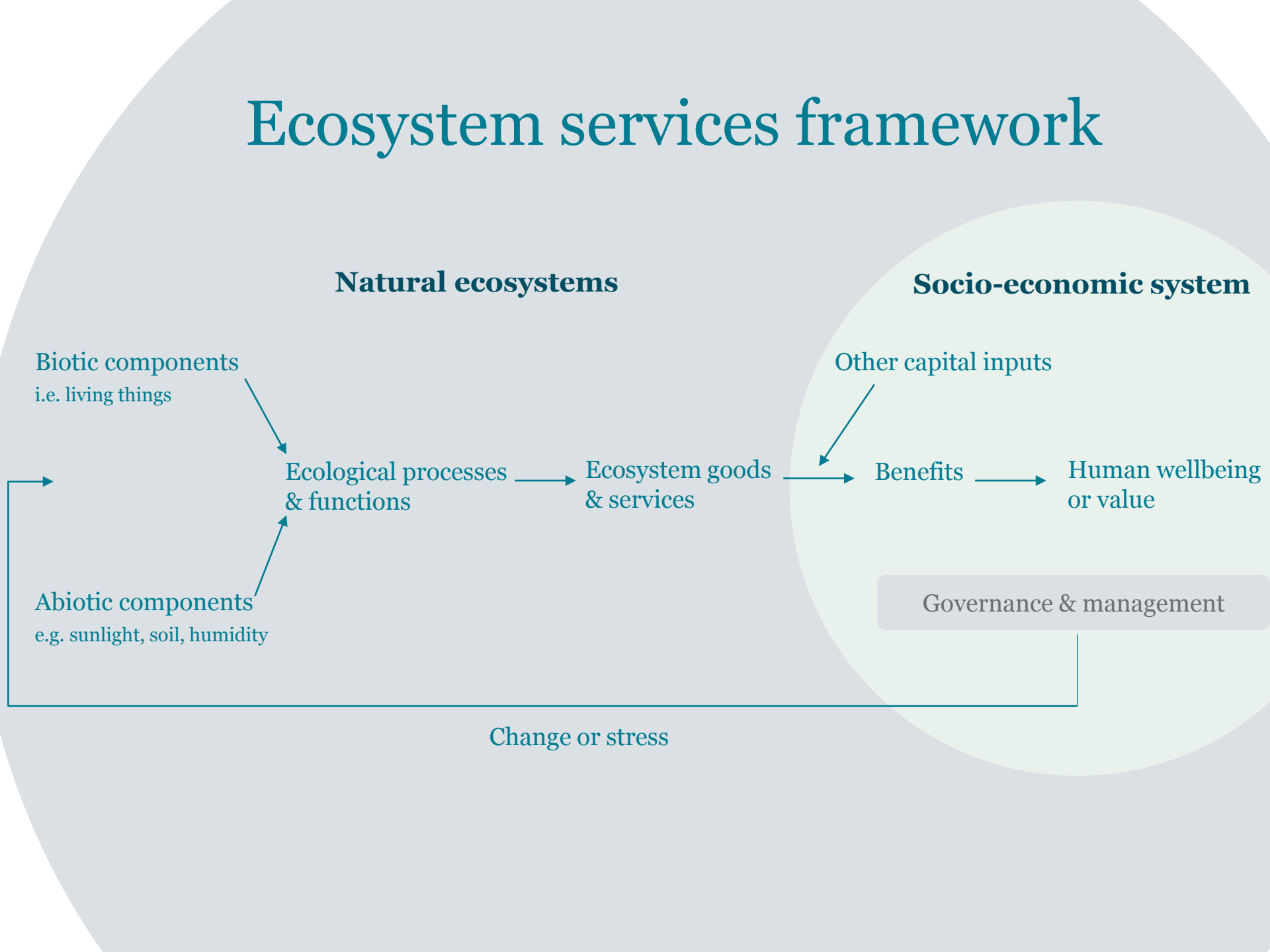
Other capital inputs

Benefits

Human wellbeing
or value

Governance & management

Change or stress



2) PhD aims & objectives

Aims and objectives

Overall aim: to examine how an ecosystem services framework can aid sustainable decision making and management of the River Test and River Itchen.

Research question	Methodology
1) How does society benefit from the chalk streams and what value do they have?	Ecosystem services assessment
2) What role does biodiversity play in the provision of ecosystem services?	Systematic map
3) How could climate change impact the provision of ecosystem services from the rivers?	Scenario analysis

3) Systematic map

Aims and objectives

Overall aim: to examine how an ecosystem services framework can aid sustainable management and decision making in the River Test and River Itchen.

Research question

Methodology

1) How does society benefit from the chalk streams and what value do they have?

Ecosystem services assessment

2) What role does biodiversity play in the provision of ecosystem services?

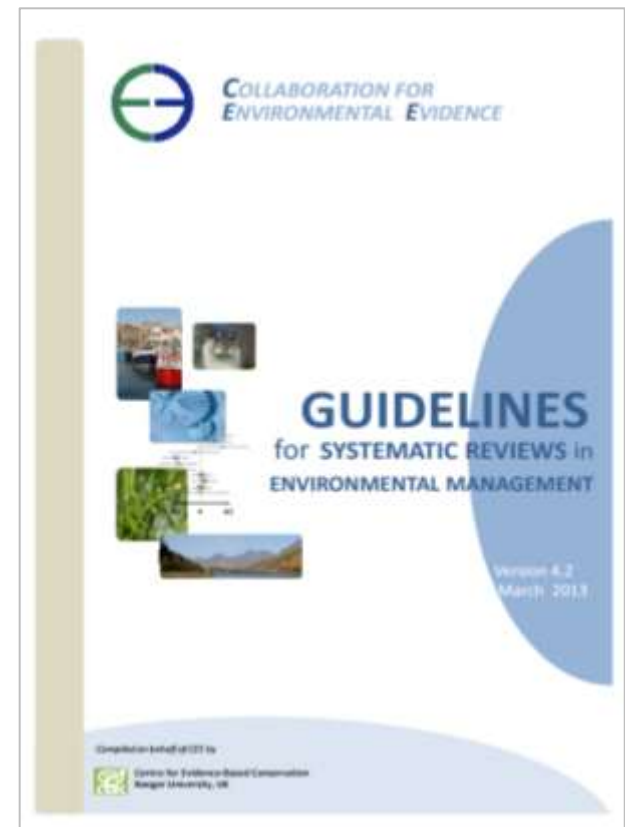
Systematic map

3) How could climate change impact the provision of ecosystem services from the rivers?

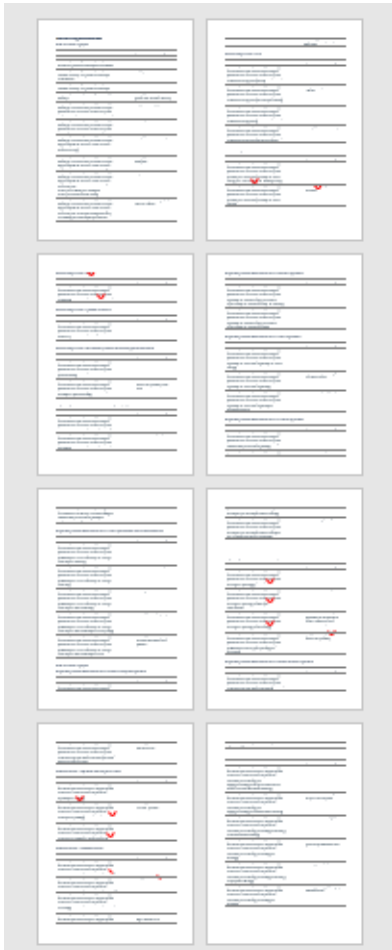
Scenario analysis

Systematic map: methodology

- Define a search string and protocol for the search
- Execute search
- Screen results against the inclusion criteria
- Extract data
- Collate and analyse the data



Systematic map: search string



The final search terms are as follows:

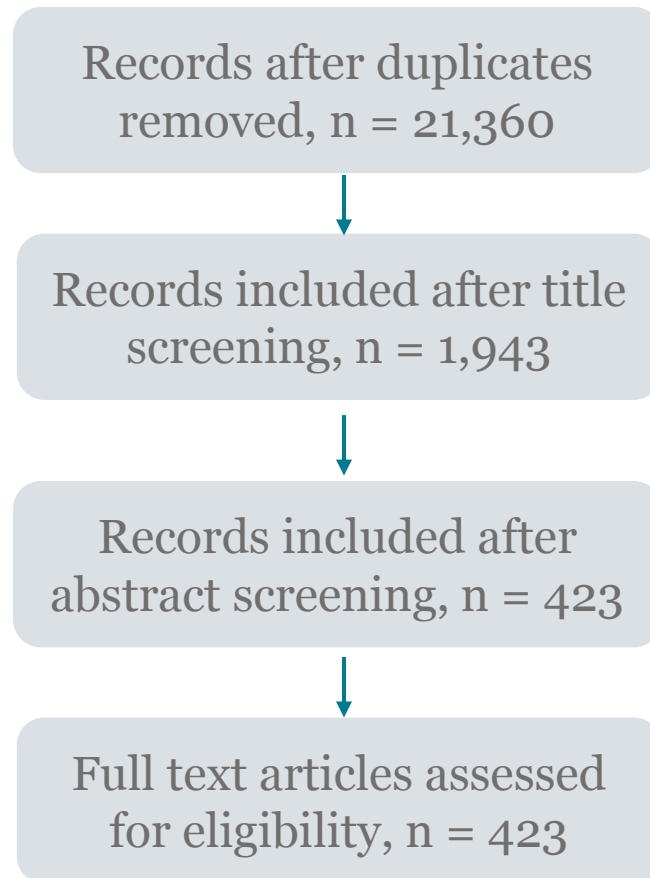
biodiversity OR diversity OR {biological diversity} OR species OR richness OR abundance OR landscape

AND

{freshwater} OR {fresh-water} OR {bay} OR riparian OR river* OR stream* OR lake* OR pond* OR wetland* OR catchment

		{freshwater process}
		{water storage}
	Water	{flow}
		{soil}
		{freshwater ecosystem}
		{medicine}
		{pharmaceuticals}
		{pharmaceutical}
Regulation and maintenance	Air quality regulation	{air pollution}
		{air quality}
	Climate regulation	{climate regulation}
		{carbon storage}
		{carbon sequestration}
		{carbon emission}
	Water regulation	{water regulation}
		{water flow regulation}
	Evapotranspiration regulation	{evapotranspiration}
		{soil moisture}
		{erosion regulation}
		{suspended sediment}
Water purification and waste treatment		{water purification}
		{waste treatment}
		{waste management}
		{water pollution}
Disease and pest regulation		{biological control}
		{pest control}
		{disease control}
		{pest regulation}
		{disease regulation}
Pollination		{pollination}
		{pollinator}
		{flower}
		{pollen}
		{insect}
Natural hazard regulation		{flood protection}
		{flood storage}
		{flood attenuation}
		{flood defence}
		{flood event}
Cultural	Spiritual and religious values	{spiritual}
		Religion
		{religion}
		{symbolic}

Systematic map: results



4) Ecosystem service assessment

Aims and objectives

Overall aim: to examine how an ecosystem services framework can aid sustainable management and decision making in the River Test and River Itchen.

Research question

Methodology

1) How does society benefit from the chalk streams and what value do they have?

Ecosystem services assessment

2) What role does biodiversity play in the provision of ecosystem services?

Systematic map

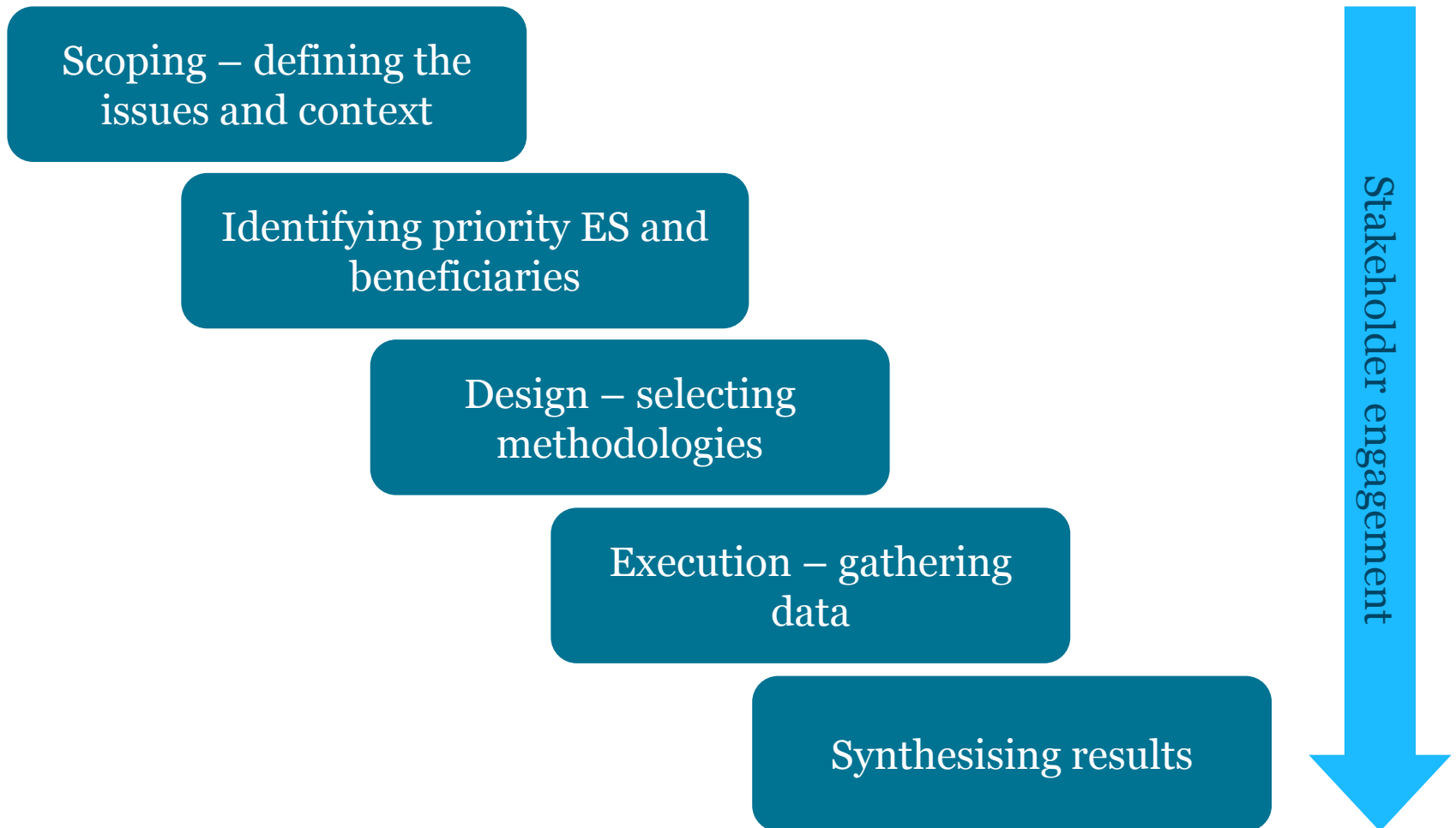
3) How could climate change impact the provision of ecosystem services from the rivers?

Scenario analysis

What is an ecosystem service assessment?

- Primarily a decision making tool
- Requires consideration of how ecosystem services are generated and how these benefits are distributed to society.
- How management decisions can enhance, diminish or maintain the flow of ecosystem services.

ES assessment: process



5) Pilot study – Riverside park

ES assessment: identifying priority services

- Freelisting exercise with stakeholder groups

Aims to:

- Identify all ecosystem services
- Understand stakeholder priorities
- Recognise stakeholder vocabulary and terms

How do you appreciate Riverside Park, Southampton?

Section 1. About you

Gender:	Primary use:
Age:	Occupation:
How often do you visit the site per month (average)?	
How far do you travel to the park (time taken)?	

What do you gain from Riverside Park?

We are looking to investigate the benefits that people gain from Riverside Park **directly or indirectly**. Some examples/ideas include:

• Local culture	• Spiritual	• Therapeutic
• Local heritage	• Psychological	• Inspirational
• Traditions	• Reflective	• Health
• Religious	• Aesthetic	• Recreation

Section 2. Free-Listing Exercise

On the next page, please list every idea, word or concept that comes to mind when you think of Riverside Park. Refer to the attached map.

Mention **anything** you appreciate about the park and any benefits you feel you gain and where you gain them, as well as any negative aspects you might wish to change.

See the box above for ideas but write anything that comes to mind.

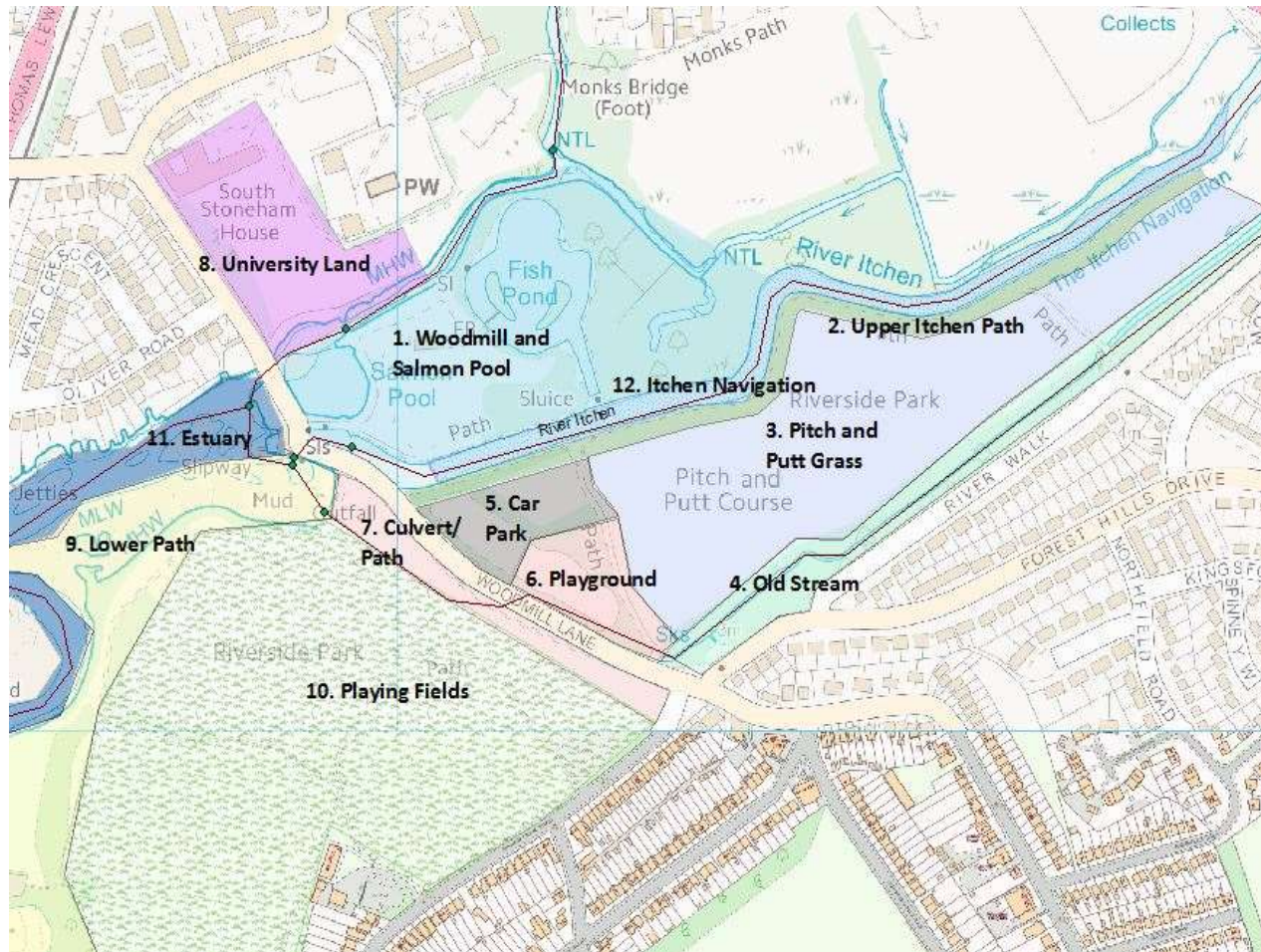
ES assessment: pilot study

“The environment is **beautiful, peaceful and calm** in the mornings yet busy with happy people enjoying the park at weekends”

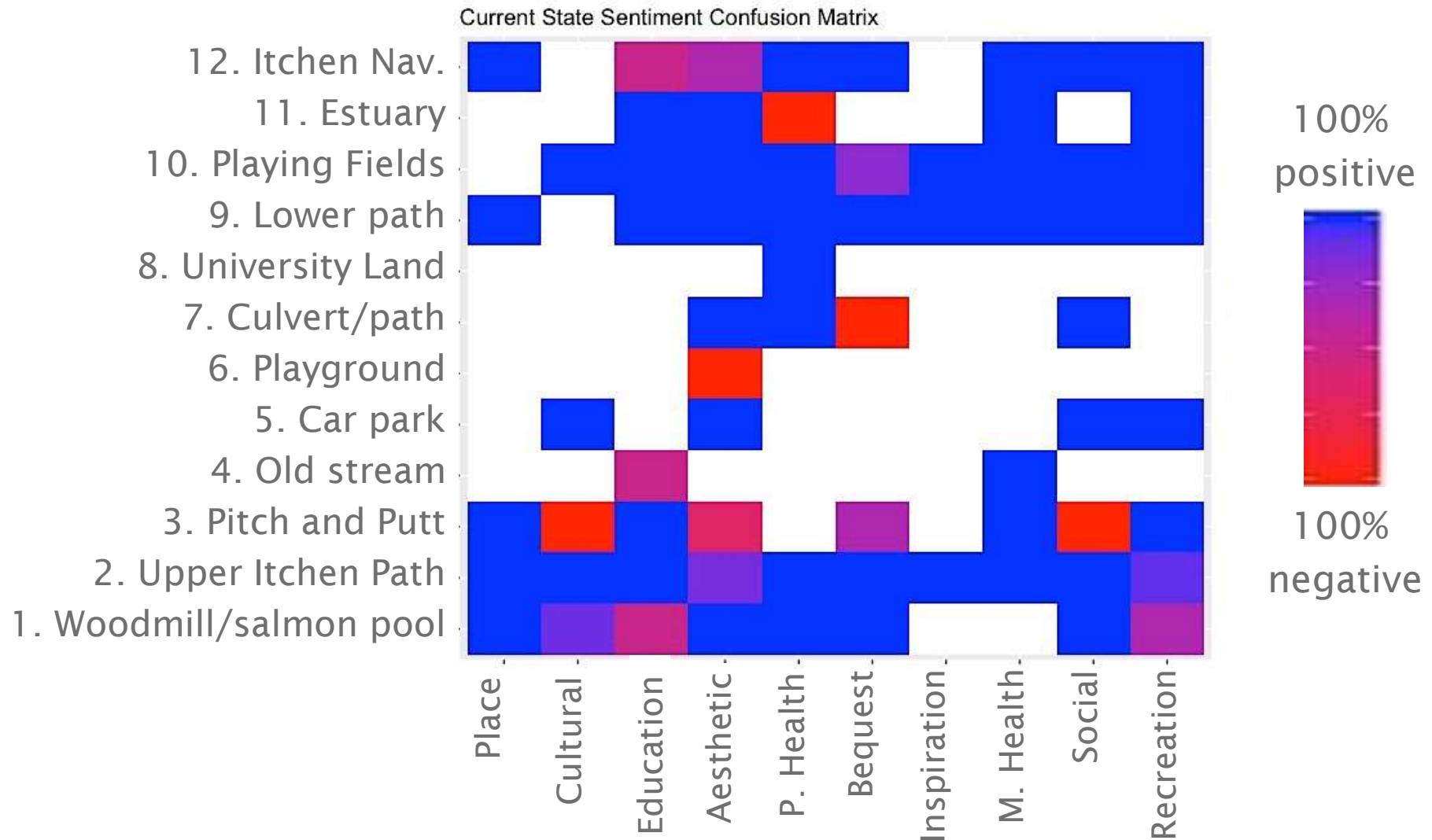
“The area I am **really interested** in is the fish pond, salmon pool and Woodmill grounds. After the war I was involved in clearing the fish lake and removing trees etc. refilling and restocking. Lord Swaythling then gave us permission to enter and fish the lake for free!”

““We love taking our grandchildren out to the skate park and play areas. We used the park facilities ourselves when we were children so it is a real **highlight of our family history**”

ES assessment: pilot study



ES assessment: pilot study



What next?

Thank you to...

Centre for
Biological Sciences



Contact Rob Holland – R.A.Holland@soton.ac.uk