Natural Capital:

Specifying the Value of Nature

SWLEP Board

25th January 2024

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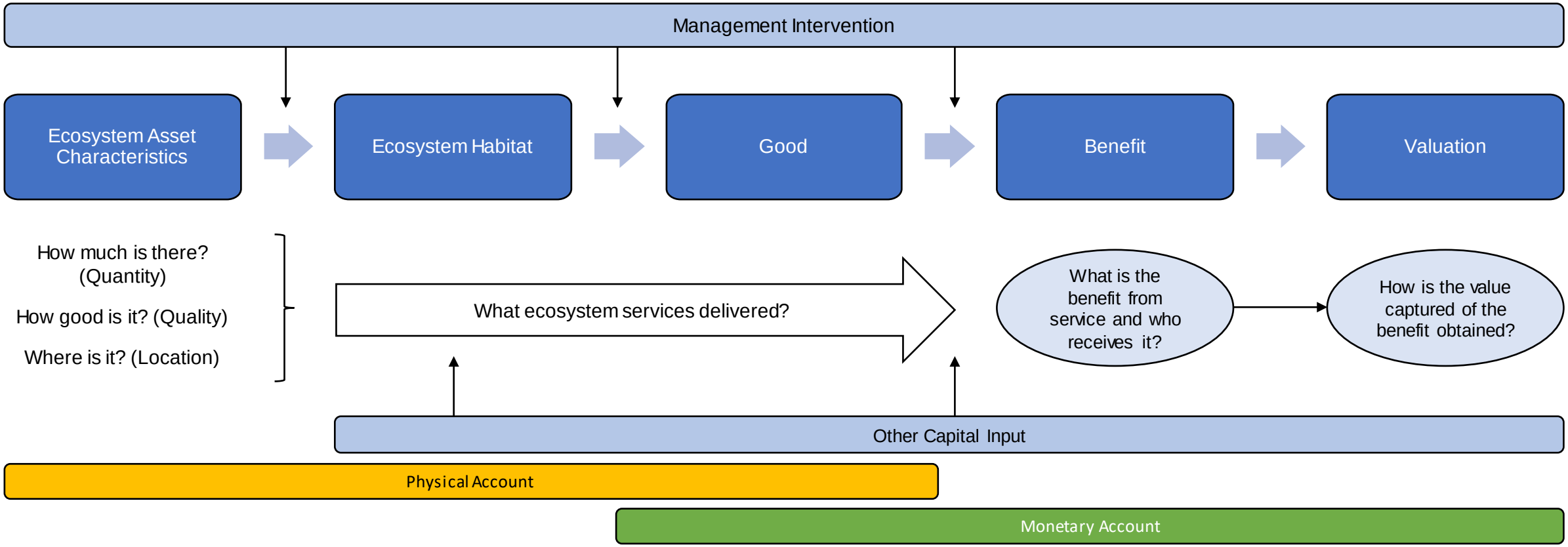
Overview and recap

The term natural capital refers to the elements of the natural environment that provide valuable goods and services to society. It applies an economic lens to the world's stocks of natural assets — like forests, rivers, and soil — and how society and businesses rely on them to function. Think clean air and water, medicine and food, temperature and weather regulation.



Picking and developing case studies

The technical framework in the PhD has flexibility to be used for different purposes, these can be equally general or specific. We'd expect any potential case study, examples, or use of the work to typically fall into ones these buckets:

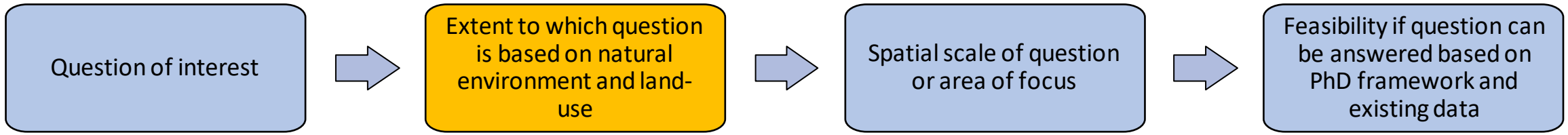
Interest in exploring general change in the natural environment or land use and understanding its impact (monetary value and physical changes);	Interest in understanding the extent of land use change needed to meet a certain natural environment target or goal and its impact (monetary value and physical changes);
Interest in land use and ecosystem services changes will affect different groups of people; and	Interested in finding an optimal balance of land use and the natural environment in their ability to meet different objectives and understanding of their impacts (monetary value and physical changes).

Question of interest → Extent to which question is based on natural environment and land-use → Spatial scale of question or area of focus → Feasibility if question can be answered based on PhD framework and existing data

Picking and developing case studies

Below can provide an indication of the scope and specifics which the technical framework can explore. This is not a comprehensive list, but there is common themes on what's in and out of scope of the framework.

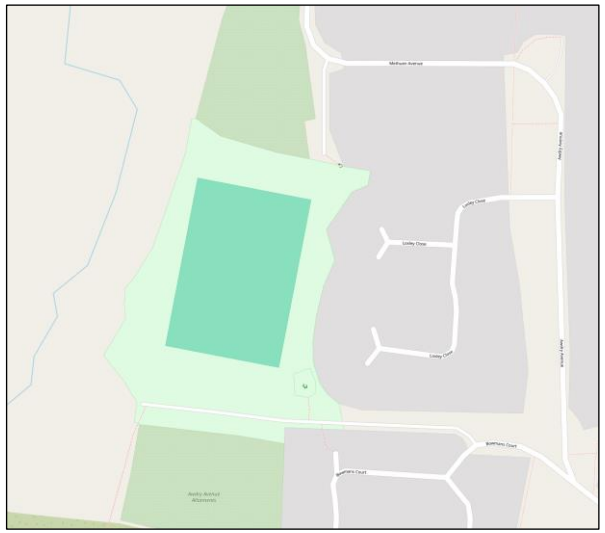
Focus Area	In PhD Scope (example questions)	Out of PhD Scope (example questions)
Woodlands and forestry	What is the natural carbon storage capability of the area by planting 10 Ha more trees?	Does carbon capture technology remove our need for tree planting?
Urban development	What are the potential cost of environmental damage caused of building on this area of land?	What are local economic benefits of a new housing development?
Air pollution	What areas face the highest level of pollution? and how effective could nature-based solutions be?	How effective will proving mitigating actions be in x street?
Noise pollution		
Climate regulation / Urban cooling	What is the extent of climate regulation needed to offset higher temperatures of climate change locally?	How effective is our man-made urban cooling infrastructure? (i.e. use of air conditioning in public spaces)
Recreational activity	Which areas in the region would benefit most from better access to green space?	How does the type of recreational activity change from space x compared to space y?
Crop and food harvesting	Can we understand the tipping point when incentives or payments needed to changing farmland to be nature positive is not VfM?	How does moving away from farming land-use affect regional employment?
Renewable energy	Where in the region could we maximise renewable energy generation?	What are the carbon emissions impact of expanding EV use and charging infrastructure?

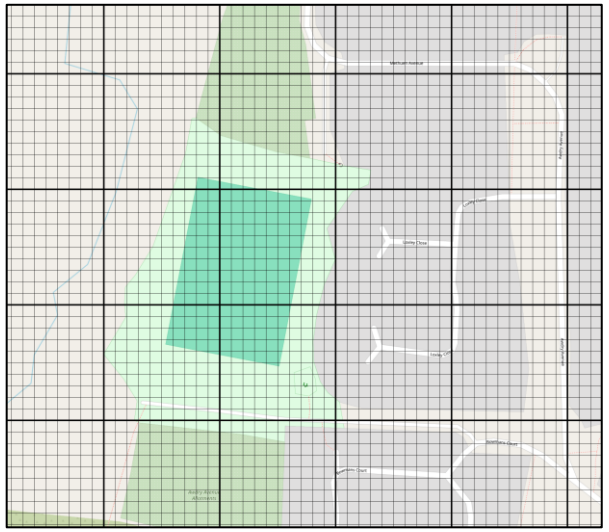


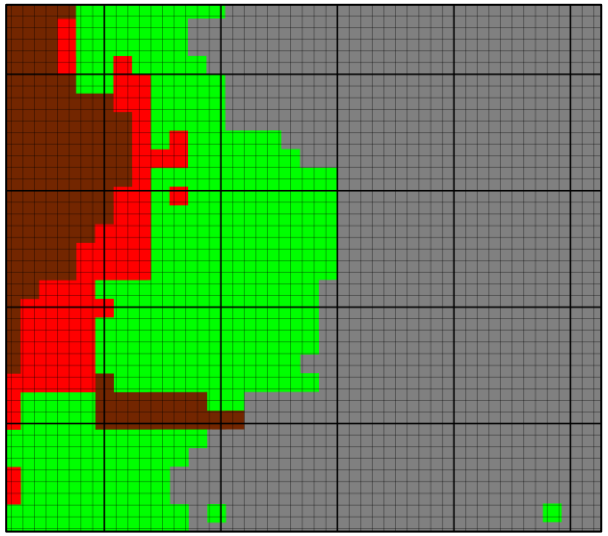
Picking and developing case studies

A lot of our data is quite granular, the spatial scale of any question is important to understand.

While you can change singular areas of land-use (i.e. 10m x 10m areas), there should be a minimum level of change needed for the framework to provide meaningful insights. Based on some initial testing this is likely to be areas of around 100m2 (or selecting 100 of the small squares below.



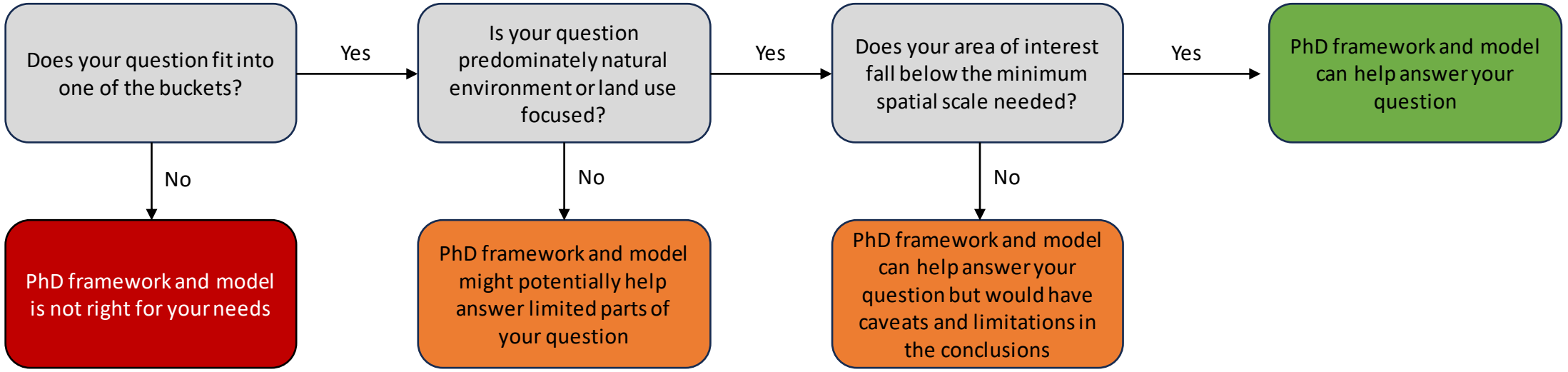


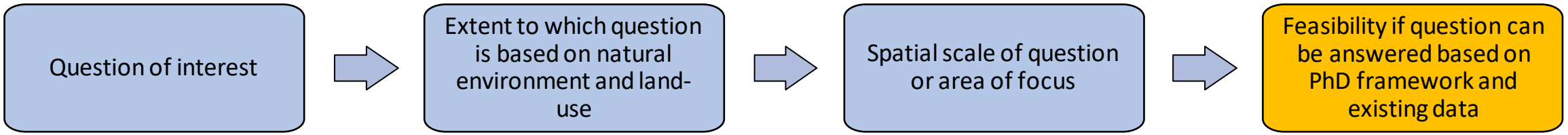


Question of interest → Extent to which question is based on natural environment and land-use → **Spatial scale of question or area of focus** → Feasibility if question can be answered based on PhD framework and existing data

Picking and developing case studies

Depending on these previous three factors, will determine if the PhD outputs are suitable to be used. The flow chart can help illustrate this, on where and to what extent the work might be able to be used:





Next steps and PhD Plan for 2023/24

There are a number of different options when scoping potential case studies – so we would like to discuss with the board to deiced on the best way forward. The key factor for the final thesis of the PhD will be selecting the case studies which best demonstrates the range of capabilities and functionalities of the framework.