Estate Wide Natural Capital Accounts NHS Scotland- Scotland Report

NHS Scotland

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Prepared for:

NatureScot on behalf of Public Services Delivery Scotland (PSD Scotland)

Prepared by:

Rhona Lochhead
Principal Environmental Economist

Helen Dunn
Technical Director, Natural Capital UK&I

Oli Martin
Consultant Environmental Economist

Sarah Houcke
Consultant Environmental Economist

AECOM Limited
1 Tanfield
Edinburgh EH3 5DA
United Kingdom

T: +44 (0)131 301 8600
aecom.com

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Executive Summary

“Natural capital includes the living and non-living aspects of nature that provide value to people. These include forests, fisheries, rivers, biodiversity, land, minerals, and the atmosphere, amongst other natural assets.” (HM Treasury Green Book, 2026)

The NHS Scotland Climate Emergency and Sustainability Strategy states that all Health Boards must assess the natural capital of their greenspace and value the contribution they make to delivering climate, sustainability and health outcomes. This research contributes to this aim by delivering a Natural Capital Account of the NHS Estate in Scotland.

The total annual flow of ecosystem services from the NHS Estate in Scotland is estimated at £80,417,600 per year. Most of this value is derived from recreation (health and wellbeing) which provides just under £80m of benefits each year. This draws on recent research on the health and wellbeing benefits of NHS Scotland’s Outdoor Estate which, based on a questionnaire survey of a sample of Scotland’s population, estimated that there are over 120 million annual visits to the NHS Scotland Estate’s outdoor spaces with over 215,000 regular adult visitors receiving health benefits from visiting these spaces.

This provides evidence that investments in initiatives that result in more people spending more time in NHS greenspaces are likely to represent good value for money in terms of derived health benefits and savings to the NHS. In addition to the substantial benefits in terms of health and wellbeing from the NHS Scotland Estate, the results also indicate that the greenspace delivers important regulating and other cultural services which benefit the Estate itself as well as society and local communities. The results also indicate the opportunities available to maximise other ecosystem services within the Estate.

Greenspaces located within the NHS Scotland Estate provide a wide variety of benefits to local communities, staff and the Estate through health and wellbeing, cost savings and increased resilience to address the climate crisis. These greenspaces provide amenity benefits, carbon sequestration, flood regulation and air quality regulating benefits, whilst also contributing to local health outcomes and delivering health cost savings. There is a large body of evidence which links health and wellbeing outcomes to access to greenspace.

This report provides the methodology and results for an Estate-wide Natural Capital Account for NHS Scotland. This is accompanied by reporting for each of the 14 NHS Boards. The baseline year for the Natural Capital Accounts is 2024-25.

In the context of the organisational needs for NHS Scotland, the purpose of the Accounts is to provide:

- An understanding of the economic and social value of their natural assets to inform prioritisation and the case for investment in NHS greenspace.
- An understanding of potential natural capital risks and impacts as well as opportunities for people to connect with nature on the NHS Estate.
- A framework for operational decision making to manage greenspaces for biodiversity and health benefits.
- A tool to demonstrate how the NHS contributes benefits to society through the ownership and management of greenspaces.

Just over 49 percent of the Estate assessed in the Accounts is greenspace - equating to approximately 600 hectares. This is mainly formed of modified grassland, other neutral grassland and broadleaved woodland. The rest of the Estate is made up of hardstanding and buildings.

The habitats present on NHS Scotland's Estate provide:

- Carbon sequestration benefits of 1,244 tonnes of carbon per year at a value of £373,900. The carbon sequestered is the equivalent of taking 900 cars off roads each year or the amount sequestered by around 1,000 hectares of mature woodland.
- Air pollution regulating benefits valued at £94,100 per year, resulting in reduced hospital admissions and healthcare costs.
- Nearly £10,000 of flood regulation benefits per year. This benefits local communities and the NHS Scotland Estate by reducing the damage from flooding through vegetation which absorbs surface water runoff.

The asset value estimates the present value of the flow of benefits over a 100-year period in line with core accounting guidance. Asset values are calculated for each NHS Board, and an aggregated asset value for Scotland is presented for reporting.

The overall asset value (projected over 100 years) is nearly £4.4 billion. Health and wellbeing benefits from visits to NHS sites and air pollution regulating health benefits are over £4.3 billion of this total. NHS Scotland's natural capital value is around 2% of Scotland's total natural capital value presented in the most recent Natural Capital Accounts.[i]

Non-monetised benefits such as volunteering and mental wellbeing were also recorded. Mental wellbeing is also represented in the recreation monetary value as a result of visits to NHS greenspace. These services form a large part of NHS Scotland's role as an Anchor institution as they benefit local communities, patients and staff. Access and views over greenspace have been linked to improved health outcomes for patients.

The baseline Natural Capital Accounts outlined in this report, provide a systemic and repeatable framework for NHS Scotland to monitor and assess the state of its natural assets through the use of physical and monetary estimates. The Natural Capital Accounts can be used and developed over time to identify trends, risks and to inform decision making and planning.

The results and findings can be used to inform site-based or Board level Biodiversity Action Plans and can help ensure business cases for new development or new management interventions on the NHS Estate properly accounts for the value of natural capital. Scenarios can be developed and by assessing future flows of services against costs of interventions, natural capital analysis can help inform the value for money of additional investments in greenspace on the Estate.

[i] The Scotland Natural Capital Accounts follow a different methodology which can be found here: Scottish Natural Capital Accounts: 2023 - gov.scot. The NHS Scotland Natural Capital Accounts also include additional ecosystem services.

Table 1: Summary Table of NHS Scotland Natural Capital Accounts (£2024, 100-year time period, rounded to nearest £100)

Ecosystem service	Physical flows Total	Physical flows Units	Confidence Rating (Physical)	Monetary flows Total	Asset value Total	Confidence Rating (Monetary)
Regulating services						
Air pollution regulating	2.87	PM2.5 tonnes removed	**Amber**	£94,100	£5,109,800	**Amber**
	5.86	PM10 tonnes removed				
	4.13	SO_2 tonnes removed				
	3.51	NO_2 tonnes removed				
	67.03	O_3 tonnes removed				
	3.87	NH_3 tonnes removed				
Greenhouse gas regulating[ii]	-1,244.7	tonnes CO_2e sequestered (-) / emitted (+)	**Amber**	£373,900 (low: £187,000, high: £560,900)	£17,755,700 (low: £8,961,800, high: £26,914,200)	**Amber**
Flood regulating	18,127.7	m^3 water storage capacity	**Amber**	£9,900	£294,600	**Amber**
Subtotal - Regulating services				**£477,900**	**£23,160,100**	
Cultural services						
Visual amenity (house prices)	69,805	households in close proximity	**Amber**	£161,700	£4,820,300	**Amber**
Recreation (health and wellbeing)	122,050,000	total visits	**Amber**	£79,778,000 (95% CI £165,177,200, £93,878,900)	£4,333,826,500 (95% CI £3,567,818,000, £5,099,025,100)	**Green**
	215,694 (177,570, 253,818)	population receiving attributable health benefits	**Green**			
	4,303 (3,543, 5,064)	Quality Adjusted Life Years (QALYs)				
Subtotal - Cultural services				**£79,939,700**	**£4,338,646,800**	
Non-monetised services						
Volunteering, Improved patient outcomes (mental health), Education, Noise						
Total				**£80,417,600**	**£4,361,806,900**	

[ii] The low and high recommended values are provided for sensitivity analysis based on +/- 50% of the central values to reflect genuine uncertainty for example around technology costs and economic growth.

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Glossary

Biodiversity Unit	A standardised measure used to quantify the ecological value of a habitat or site, reflecting its species, habitat quality, and ecological significance.
Ecosystem Service	The benefits that humans derive from ecosystem functions, which can be categorised as provisioning (e.g. food, timber, fiber), regulating (e.g. air quality, water quality, climate and flood regulation), cultural (e.g. recreation, wellbeing, tourism) and supporting (e.g. nutrient cycling, soil formation).
Monetary Flow Account	A record of the value of the expected flow of the goods and services set out in the physical flow account. Value is measured with respect to both the private benefits of the organisation as well as the wider societal benefits.
Natural Capital	Natural capital refers to “stocks of the elements of nature that have value to society, such as forests, fisheries, rivers, biodiversity, land and minerals.”
Natual Capital Accounts	A systematic and repeatable framework for recording natural capital and the market and non-market services provided.
Natural Capital Asset Register	An inventory of the stocks of the relevant natural capital assets and information regarding the condition of these assets.
Physical Flow Account	A record of the expected flow of the goods and services produced by the natural capital assets specified in the asset register, measured in physical units.
Quality Adjusted Life Years (QALYs)	A measure of the state of health of a person or group in which the benefits, in terms of length of life, are adjusted to reflect the quality of life. Thus, one QALY is equal to one year of life in perfect health.
Sustainable Urban Drainage Systems (SuDS)	Water management methods that mimic natural processes to handle rainwater in urban areas. SUDs aim to prevent flooding, manage pollution and make urban areas greener.
UK Habitat Classification (UKHab)	A standardised system for classifying and defining terrestrial and freshwater habitats across the UK.
Willingness To Pay (WTP)	The maximum price a consumer is prepared to pay for a product or service, reflecting the perceived value or benefit they derive from it.

1. Introduction

The NHS Scotland Climate Emergency and Sustainability Strategy[1] states that all Health Boards must assess the natural capital of their greenspace and value the contribution they make to delivering climate, sustainability and health outcomes.

NatureScot in partnership with Public Services Delivery (PSD) Scotland, commissioned AECOM to carry out UK Habitat (UKHab) Surveys and a Natural Capital Account (NCA) of the NHS Estate in Scotland (hereafter referred to as the 'Study'). This report provides the methodology and results for the Scotland-wide NCA and commentary on the results at Board level. The report is accompanied by 14 NHS Board NCA reports providing more detail at an individual Board level.

The results of the NCA can be used to demonstrate how the NHS and its Estate contribute to society's well-being by managing its natural assets. For example, the NHS Scotland Estate provides greenspace which contributes to (among other services) health and wellbeing, air quality regulation and carbon sequestration benefits.

1.1 Background

The NHS Scotland Estate comprises of 14 NHS territorial board areas. NatureScot and PSD Scotland have requested that Natural Capital Accounts are prepared for all 14 territorial boards as well as an overarching Natural Capital Account for the Scotland Estate. Each Board is made up of Primary and Secondary Care Sites. Primary Care Sites include GP Surgeries and Health Centres and Secondary Care Sites include hospitals.

NHS Scotland is an **Anchor Institution**. This means that NHS Scotland and its Boards are required to commit to the areas they serve by addressing social, economic and health-related challenges within their communities.[2] Greenspaces within the NHS Scotland Estate deliver local community benefits such as providing amenity benefits and regulating local air quality, whilst also improving local health outcomes and delivering health cost savings.

This piece of work follows the Public Health Scotland (PHS) *An Interim Assessment of NHS Scotland Greenspace* report produced in 2024[3]. This is a report in development which provides preliminary information on the extent of greenspace within the NHS Scotland Estate. The report highlights that the **size of the NHS Estate in Scotland is 1,572 hectares - almost the size of the city of Stirling.**

There is a well-established body of evidence linking wellbeing and health benefits with access and visibility of greenspace. A recent report on the health and wellbeing benefits of NHS Scotland's Outdoor Estate[4] found that the NHS Scotland Estate's outdoor spaces **provided direct wellbeing and health benefits to approximately 205,000 adults annually**. The report estimated that **it would cost the NHS just under £82 million to deliver the same level of benefit in healthcare services**.

Delivery of these benefits from greenspace relieves pressure on the health service and reduces national budget spend on health issues that may be preventable. This is the cornerstone of the Prevention Approach set out in Scotland's Public Health Framework[5]. In this framework, primary prevention is strongly promoted (being 3-4 times more cost-effective than treating) with the aim of avoiding health issues occurring in the first place.

Health and wellbeing is just one of a multitude of ecosystem services provided by the natural capital of outdoor spaces. Other ecosystem services such as air quality regulation and flood regulation also provide valuable service flows, especially to urban communities.

1.2 Purpose of accounts

NHS Scotland wished to develop Natural Capital Accounts for the purpose of:

- Strategic understanding and prioritisation – to understand the economic and social value of natural assets for making the business case for and prioritising investment in NHS greenspace.
- Managing risks and opportunities – understanding potential natural capital risk and impacts as well as opportunities for people to connect with nature as part of therapeutic health interventions on the NHS Estate.
- Operational decision making – managing NHS greenspace for biodiversity and health benefits.
- Financial management – guiding resource allocation; and
- Engagement management – demonstration of how the NHS contributes benefits to society through the ownership and maintenance of greenspaces.

Natural capital accounts are an appropriate methodology for achieving these objectives as the results capture the wider benefits to society that are typically externalised in neoclassical economic accounting. The evaluation of ecosystem service provision, and the translation to monetary terms where possible, gives greater insight into costs and benefits for decision-making, prioritisation, and resource allocation. The accounts also identify risks and opportunities related to nature that may be overlooked using other methodologies.

[1] NHS Scotland climate emergency and sustainability strategy: 2022-2026 - gov.scot
[2] The NHS as an anchor institution | The Health Foundation
[3] An interim assessment of NHSScotland Greenspace
[4] Valuing the health and wellbeing value of the NHS Scotland's outdoor estate: How are NHS open spaces used and what is their value to the Scottish population - The University of Aberdeen Research Portal
[5] Scotland's Population Health Framework - gov.scot

2. Scope and Materiality

2.1 What is natural capital accounting?

Defining natural capital

“Natural capital includes the living and non-living aspects of nature that provide value to people. These include forests, fisheries, rivers, biodiversity, land, minerals, and the atmosphere, amongst other natural assets. Natural assets provide services, called ecosystem services, according to their quantity, quality and location.” (HM Treasury Green Book, 2026)[8]

Stocks of natural capital provide flows of environmental services over time which provide a wide range of benefits including use values which can have a market value (minerals, timber, freshwater), non-market value (such as outdoor recreation, landscape amenity) as well as non-use values, such as the value people place on the existence of particular habitats or species. (HM Treasury Green Book, 2026)

Natural capital guidance

Natural capital accounting is the attempt to bring a systematic, standardised and repeatable framework to recording information on natural capital and the services it provides, whether or not those services have a market value” [Defra, Enabling a Natural Capital Approach (ENCA) guidance].

Various guidance and approaches to natural capital accounting have been published. National Natural Capital Accounts have been in development by the ONS since 2011[9] following a specific methodology and key principles[10]. At an organisational level, Corporate Natural Capital Accounting (CNCA) is recommended. Corporate approaches to developing Natural Capital Accounts involve systematically collecting and analysing data enabling organisations to better understand their impacts and dependencies on nature and make more informed decisions on management of natural capital.

2.2 Standards and Guidance

The Natural Capital Accounts follows best practice guidance:

- HM Treasury's Green Book[11] and Enabling a Natural Capital Approach (ENCA)[12] guidance
- The Natural Capital Committee’s Corporate Natural Capital Accounting Framework[13]
- ISO Standard for Natural Capital Accounting for Organizations – Principles, requirements and guidance (ISO 14054:2025)[14]

This ensures that a robust, standardised and repeatable approach is applied.

The accounts also adhered to the ONS Natural Capital Accounting principles[15] and methods where applicable to allow for maximum strategic alignment at a national level.

All the recommended frameworks and guidance include the following:

- **Natural Capital Asset Register**: An inventory of the stocks of the relevant natural capital assets and information regarding the condition of these assets.
- **Physical Flow Account**: A record of the expected flow of the goods and services produced by the natural capital assets specified in the asset register, measured in physical units.
- **Monetary Flow Account**: A record of the value of the expected flow of the goods and services set out in the physical flow account. Value is measured with respect to both the private benefits of the organisation as well as the wider societal benefits

Appendix A provides short summaries of the structure and guidance of each of these approaches and frameworks.

2.2.1 Recommended Framework

Based on the assessment of frameworks and standards (Appendix A) the following was recommended for NHS Scotland:

- A CNCA approach was recommended as it applies well to the organisation level and for the range of uses of the accounts that NHS Scotland have identified.
- Given that the focus for this project is on the baseline natural capital accounts, it was recommended to start with the development of the core accounts – the asset register, physical and monetary flows. This fits with Defra's ENCA guidance of taking a staged approach to the development of the accounts.
- The ISO standard for NCA is important for providing guidance for quality assurance of the results.

2.2.2 Organisational Focus

The accounts will be bound by areas for which NHS Scotland has a management responsibility within each of the territorial Boards.

2.2.3 Spatial Scope

The accounts considered the 249 sites across the 14 territorial NHS Boards that constitute the NHS Scotland Estate. Reporting was conducted at the national and board level.

The NCA was based upon UKHab surveys of NHS sites that have greater than 0.2 hectares (ha) of greenspace. There were pre-existing UKHab data for 4 NHS Boards and surveys for the remaining 10 boards and PSD Scotland sites that met the qualifying criteria were conducted in the early stages of the Study.

Site and Board boundaries defined by NHS Scotland constitute the spatial boundary of the Study. The location of each of NHS Scotland's Territorial Boards can be found in Figure 1.

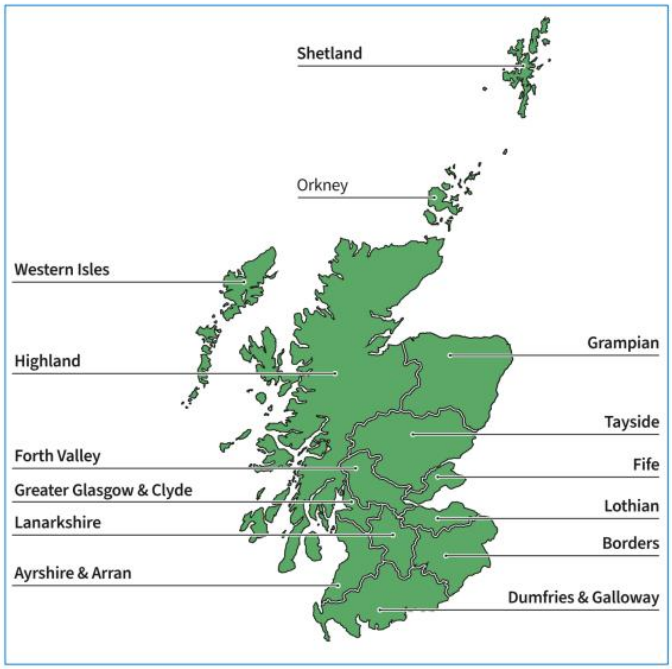

Figure 1: Map of NHS Scotland Territorial Boards

The spatial scope of Health Benefits data was, in effect, all NHS sites, because the data was based on a questionnaire survey of a sample of Scotland's population. The participants were asked about visits to their 'nearest NHS Greenspace', many of which will have been greenspaces less than 0.2 hectares.

2.2.4 Temporal scope

The baseline year of the Natural Capital Accounts is 2024-25. This aligns with the latest available data for quantification of the ecosystem service flows, in particular, the recreational data available for the Estate.

The habitat baselines and asset register are based on Scotland Land Cover Map 2022 – EUNIS Level 2[16] and aerial imagery such as through StreetView. When necessary, this was supplemented with ground truthing which took place in 2025.

The asset value estimates the present value of the flow of benefits over a 100-year period in line with core accounting guidance. Asset values were calculated for each NHS Board, and an aggregated asset value for Scotland is presented for reporting.

2.3 Scoping Assessment for Ecosystem Services

Appendix A.2. outlines the results of the scoping stage for what ecosystem services were material for inclusion in the Natural Capital Accounts. The results are split into provisioning, regulating, cultural and bundled ecosystem services applying the standard list of services set out in the ONS Natural Capital Accounting guidance.

At present, no provisioning ecosystem services have been scoped into the Accounts. There is likely to be some small-scale renewable energy generation or timber harvesting on NHS Scotland greenspace, but this was not raised in the scoping assessment or in discussions with the Client.[17]

As a result of the scoping assessment, the ecosystem services included in the Natural Capital Account which are quantified and monetised are:

- Air pollution regulating
- Greenhouse gas regulating
- Flood regulating
- Recreation (health and wellbeing)
- Visual amenity (house prices)

In addition, a qualitative assessment is provided of the following services:

- Volunteering – no comprehensive data is available but there is qualitative evidence.
- Mental health – beyond the benefits for mental health captured as part of recreation, this focuses on additional evidence of interventions to improve mental health, e.g. role of pain gardens.

Finally, Biodiversity is quantified using the Defra Statutory Metric, which uses habitat area, distinctiveness, condition and strategic significance to calculate Biodiversity Units. The results are presented in the Asset Register. For this study, a conservative habitat condition of 'Moderate' was assumed for all habitats and a strategic significance score was assigned based on whether the habitat is formally listed in the relevant local biodiversity action plan or is ecologically desirable. It should be noted that the Defra Statutory Metric has been developed for England and is not optimised for the Scottish context. A Scotland-specific tool is under development, which will be able to provide more specific estimations for the NHS Scotland Estate in the future.

[8] The Green Book: appraisal and evaluation in central government (www.gov.uk)
[9] Natural Capital - Office for National Statistics (ons.gov.uk)
[10] Principles of Natural Capital Accounting - Office for National Statistics (ons.gov.uk)
[11] The Green Book: appraisal and evaluation in central government - GOV.UK
[12] Enabling a Natural Capital Approach (ENCA) - GOV.UK
[13] Natural Capital Committee research: corporate natural capital accounting - GOV.UK
[14] https://www.iso.org/standard/14054
[15] Principles of Natural Capital Accounting - Office for National Statistics
[16] https://opendata.nature.scot/maps/snh::scotland-land-cover-map-2022-eunis-level-2/about
[17] A 26 ha area of cropland was identified at Stratheden Hospital in Fife. Discussions with the Client found it was unclear if any agricultural activity took place within this space so this has been scoped out of the assessment.

3. Beneficiary assessment

The benefits from the ecosystem services provided by greenspace in the NHS Scotland Estate are experienced across various scales that incorporate a wide range of receptor groups or beneficiaries. For the services scoped into this account, the key beneficiaries are indicated in Table 2 covering:

- Societal (global) – these are wide ranging benefits that provide benefits at the global level that can be experienced by all.
- Local community – these are societal benefit that can be experienced at the local level.
- Benefits to the organisation – these are private benefits that the NHS experiences and have been broken down into:
  - Health cost savings – benefits from the avoided cost of medical treatment such as from air pollution regulation; and
  - Estate Benefits – benefits in the form of cost savings in Estate management and benefits to staff and patients.

The identified beneficiaries are based upon the accounting methodologies used to establish these accounts.

Note that many of these services can have benefits to both societal and the organisation.

For many of the cultural services, the benefits result from the interaction between a beneficiary and the natural assets. For example, wellbeing benefits from recreation or volunteering are not experienced unless these activities are undertaken.

Table 2: Materiality Assessment

Ecosystem Services	Description	Societal (global)	Local Community	NHS (Benefits to the organisation)	
				Health Cost Savings	Estate/Site-based Benefits*
Regulating services					
Air pollution regulating	NHS Scotland's sites include habitats that remove harmful air pollutants from the atmosphere.		✓	✓	✓
Greenhouse gas regulating	NHS Scotland's sites contain habitats that sequester and store greenhouse gases, mainly carbon dioxide (CO_2).	✓			

Ecosystem Services	Description	Societal (global)	Local Community	NHS (Benefits to the organisation)	
				Health Cost Savings	Estate/Site-based Benefits*
Flood regulating	Water absorption and attenuation by vegetation within NHS Scotland sites reduces flood risk and avoids flood damage costs to property and individuals.		✓		✓
Cultural services					
Recreation (health and wellbeing) [interactive]	Recreation refers to the physical and mental health and wellbeing benefits to individuals from recreational visits within NHS Scotland sites.		✓	✓	✓
Visual Amenity (house prices)	Sites with greenspace can provide amenity benefits to those who live in close proximity.		✓		
Volunteering [interactive]	NHS Scotland greenspace provides environmental volunteering opportunities.		✓	✓	✓*
Education [interactive]	NHS Scotland greenspace provides educational and skill development opportunities.		✓		
Aggregated / bundled services					
Biodiversity	BNG metrics are presented within the asset register. To avoid double counting with other ecosystem services, this is not valued directly in the monetary accounts.	✓	✓		✓

**Estate benefits include cost savings for the management of the Estate as well as benefits to staff and patients*

4. Natural capital accounts

This section provides the results of the Natural Capital Accounts for NHS Scotland.

4.1 Asset Register

Table 3 contains the Asset Register of habitats and total area in hectares within the Estate. The total Estate area within the Account is approximately 1,180 ha, just over 49% of which is greenspace.[18] The habitat with the largest area across the Estate is Modified grassland with approximately 256 ha, equating to around 22%. This is followed by other neutral grassland at approximately 92 ha (8%) and Other woodland; broadleaved at 88 ha (7%).

The habitats across the Estate equate to approximately 5,273 Biodiversity Units calculated using the Defra Statutory Biodiversity Metric. This tool was designed for use in England and is not optimised for the Scottish context, therefore the result should be considered indicative.

The Asset Register with area of habitat type and a more detailed habitat breakdown by NHS Board is available in Appendix C.

Table 3: Asset Register of existing habitats within the NHS Scotland Estate

Broad Habitat	Area (ha)
Cropland	26.46
Woodland	166.16
Grassland	349.92
Heath, Shrubs and Scrubs	21.48
Rivers and Streams	1.37
Urban Developed	612.07
Wetlands	1.22
Total Area (ha)	**1,178.68**
No. of sites	**249**
Area Biodiversity Units	**5,237.61**

4.2 Physical and Monetary Flows

Table 4 provides the physical flows of ecosystem services for the NHS Scotland Estate.

Table 5 outlines the 2024/25 baseline natural capital value for the NHS Scotland Estate (14 Territorial Boards) by ecosystem service.

Table 6 provides the asset value of natural capital for the NHS Scotland Estate.

The methodology for this assessment is included in Appendix B. Confidence ratings are provided for each ecosystem service reflecting the uncertainties associated with both the evidence base and methodology applied, derived mainly from Defra's ENCA. Where feasible, low and high ranges are provided based on recommended ranges for unit values or for physical flow estimates. Please see the relevant sections of the methodology in Appendix B.

An overview of the annual ecosystem services from NHS Scotland 2024/25:

- The **total annual flow of services is estimated at £80,417,600 per year.**
- The largest service in terms of monetary value is recreation (health and wellbeing) which includes the physical and mental health and wellbeing benefits of visits to NHS Scotland greenspaces. This service is valued at **nearly £80 million per year** as a result of over 120 million visits to NHS greenspaces and **over 215,000 people receiving health benefits** from visiting these spaces and reaching the exposure threshold.
- The second largest service is greenhouse gas regulation. NHS Scotland greenspaces **sequestered 1,244 tonnes of carbon in 2024/25** helping to reduce the carbon footprint of the Estate. This benefit is **valued at over £370,000 per year.**
- Visual amenity is a reflection of the value for households living in close proximity to NHS Scotland greenspaces. This is reflected as a premium on house prices for households which receive this visual amenity benefit. Visual amenity benefits are valued at **£161,700 per year.**
- Air pollution regulation estimates the value deriving from air pollutant removals by vegetation. The service is valued by using damage costs per unit of pollutant. These costs reflect impacts to health in terms of mortality and morbidity and ecosystem damages. **Air pollution regulating benefits from the NHS Scotland Estate are valued at £94,100 per year.** Some of this benefit will relate to healthcare cost savings which benefits the NHS directly.
- Flood regulation measures the ability of habitats within the NHS Scotland Estate to regulate flooding events. Habitats such as woodland and grasslands can regulate water flow by retaining water and slowly releasing it over time. This can reduce damage to property during flooding events. **Flood regulation benefits within the Estate are valued at £9,900 per year.**

The overall asset value (projected over 100 years) is nearly **£4.4 billion**. Health benefits from visits to NHS sites and air pollution regulating health benefits are over **£4.3 billion** of this total.

[18] This value differs from the PHS Interim Assessment of NHS Scotland Greenspace value as the previous study included more sites than covered in this assessment.

Table 4: Physical Flows of Ecosystem Services from the NHS Scotland Estate

Ecosystem service	Physical flows Total	Units	Confidence Rating
Regulating services			
Air pollution regulating	2.87	PM2.5 tonnes removed	**Amber**
	5.86	PM10 tonnes removed	
	4.13	SO_2 tonnes removed	
	3.51	NO_2 tonnes removed	
	67.03	O_3 tonnes removed	
	3.87	NH_3 tonnes removed	
Greenhouse gas regulating	-1,244.7	tonnes CO_2e sequestered (-) / emitted (+)	**Amber**
Flood regulating	18,127.7	m^3 water storage capacity	**Amber**
Cultural services			
Visual amenity (house prices)	69,805	households in close proximity	**Amber**
Recreation (health and wellbeing)	122,050,000	total visits	**Green**
	215,694 (177,570 - 253,818)	population receiving attributable health benefits	
	4,303 (3,543 - 5,064)	QALYs	

Table 5: NHS Scotland Monetary Flows (£2024 prices, rounded to nearest £100)

Ecosystem service	Monetary flows		Beneficiaries				Low / High range of estimates	
	Total	Confidence Rating	Societal (Global)	Local*	Health Cost Savings	Estate/ Site-based Benefits	Low	High
Regulating services								
Air pollution regulating	£94,100	Amber		✓	✓	✓	N/A	N/A
Greenhouse gas regulating	£373,900	Amber	✓				£187,000	£560,900
Flood regulating	£9,900	Amber		✓		✓	N/A	N/A
Cultural services								
Visual amenity (house prices)	£161,700	Amber		✓			N/A	N/A
Recreation (health and wellbeing)	£79,778,000	Green		✓	✓	✓	£65,677,200	£93,878,900
Total	**£80,417,600**							

Sensitivity Range (Low)	£66,129,900
Sensitivity Range (High)	£94,705,500

**Local Community*

Table 6: NHS Scotland Asset Value (£2024 prices, rounded to nearest £100)

Ecosystem service	Asset value		Beneficiaries				Low / High range of estimates	
	Total	Confidence Rating	Societal (Global)	Local*	HCS**	Estate Benefits	Low	High
Regulating services								
Air pollution regulating	£5,109,800	**Amber**		✓	✓	✓	N/A	N/A
Greenhouse gas regulating	£17,755,700	**Amber**	✓				£8,961,800	£26,914,200
Flood regulating	£294,600	**Amber**		✓		✓	N/A	N/A
Cultural services								
Visual amenity (house prices)	£4,820,300	**Amber**		✓			N/A	N/A
Recreation (health and wellbeing)	£4,333,826,500	**Green**		✓	✓	✓	£3,567,818,000	£5,099,835,100
Total	**£4,361,806,900**							

Sensitivity Range (Low)	£3,587,004,500
Sensitivity Range (High)	£5,136,974,000

**Local Community*

*** Health cost savings*

4.3 Key Findings

The following section provides some graphics to highlight key findings of the report.

Figure 2 provides the proportion of the physical flow delivered by each NHS Board as a percentage of the total organisational flows. It shows that Ayrshire and Arran provide the largest share of greenhouse gas regulating and flood regulating benefits.

Figure 3 shows the proportion of total recreational visits delivered by each NHS Board. NHS Greater Glasgow and Clyde and Lothian provide the most visitors as these are in large urban areas with high populations.

Figure 4 highlights the total organisational monetary flows by service. Recreation (health and wellbeing) makes up 99% of the total monetary flows for 2024 while £374,000 of natural value is derived from greenhouse gas regulating services such as woodlands sequestering carbon. The lowest value is from flood regulation benefits. There is an opportunity for nature-based solutions to boost this value.

Figure 5 shows the asset value delivered by each NHS Board as a percentage of the NHS Scotland asset value. The results show that NHS Lothian delivers nearly 60% of the total air quality regulation benefits. Lothian has large areas of woodland and grassland which contribute to this ecosystem service.

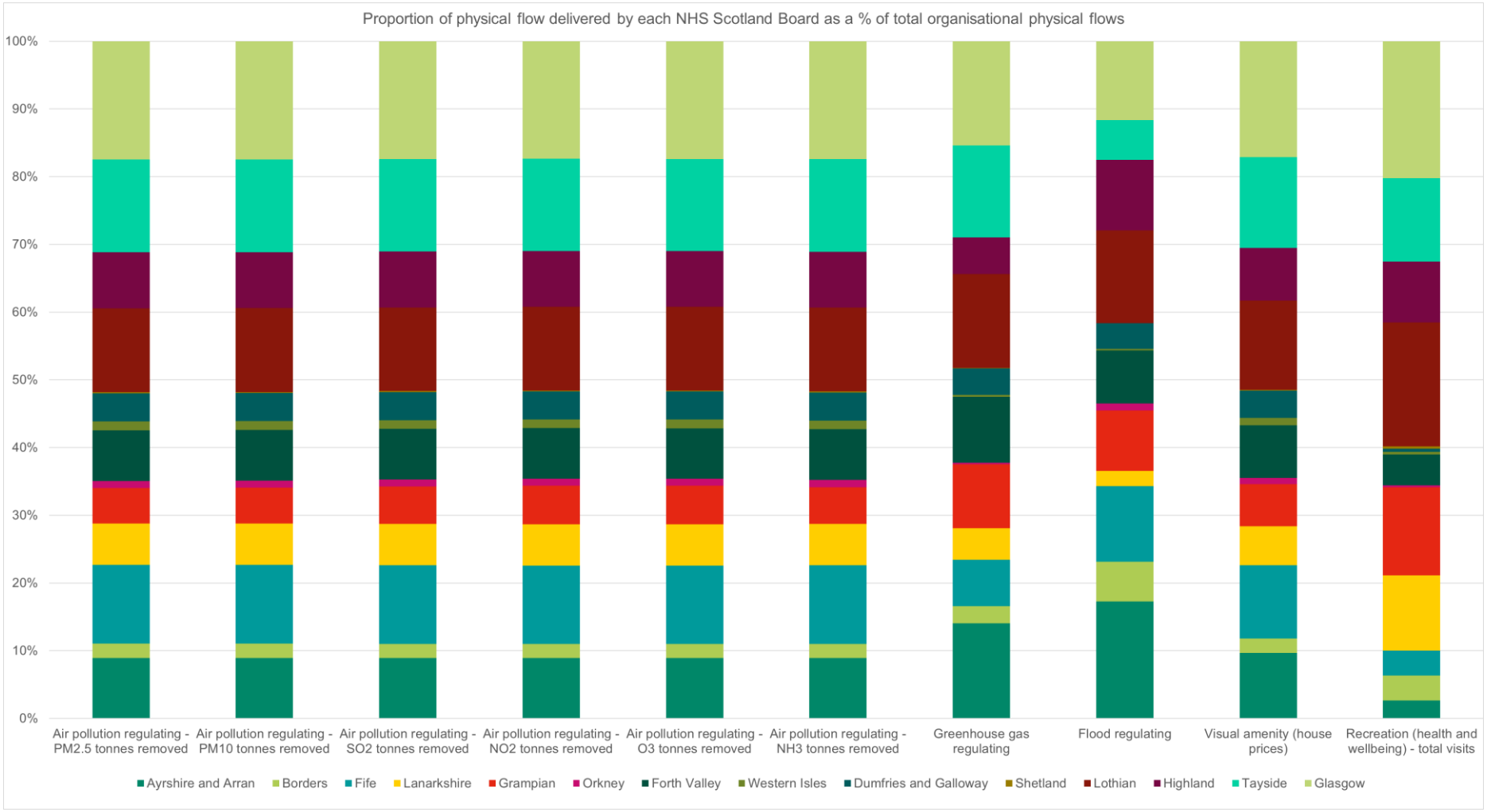

Figure 2: Proportion of physical flows of ecosystem services delivered by each NHS Scotland Board as a % of total organisational physical flows

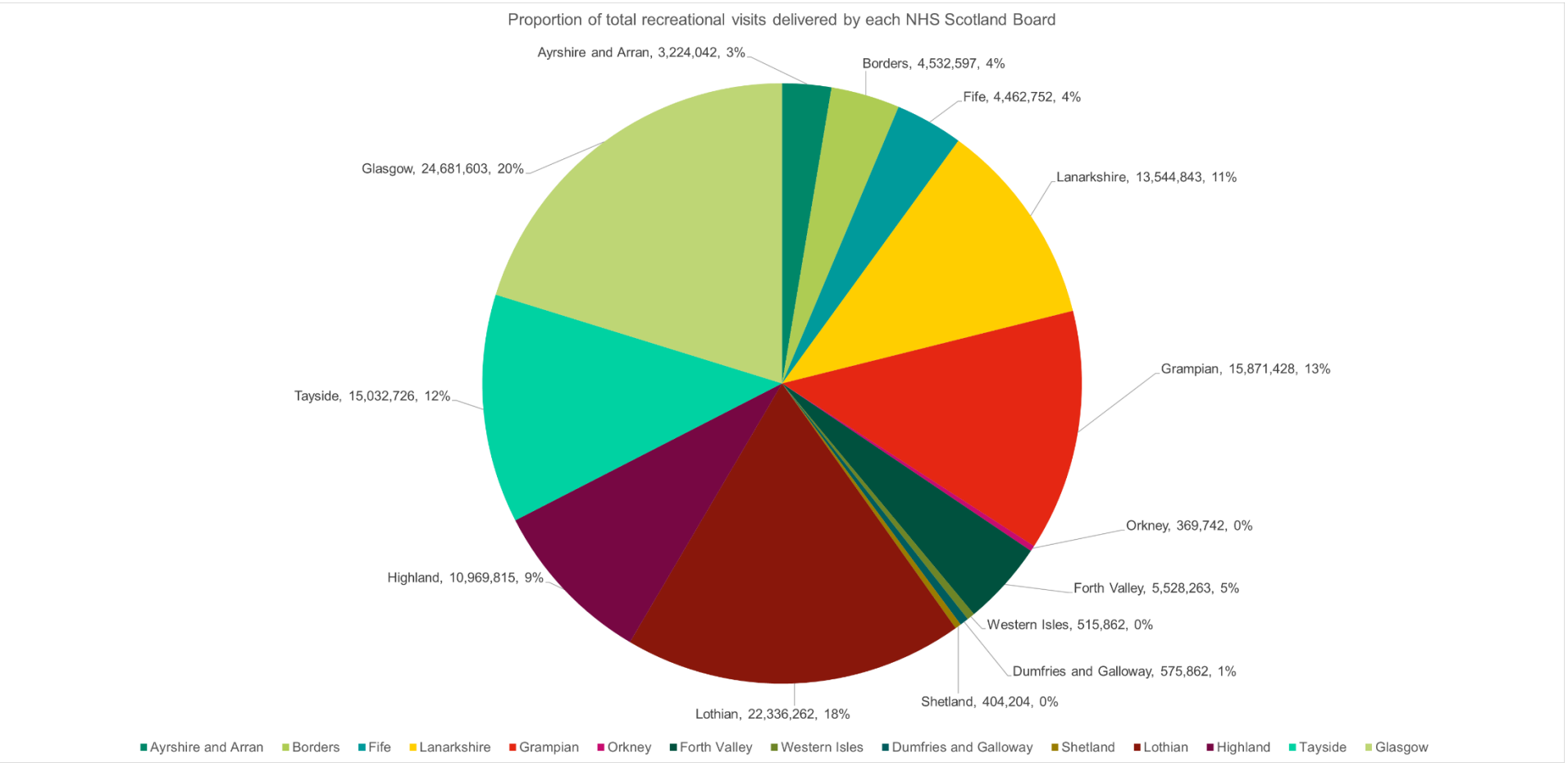

Figure 3: Proportion of total recreational visits delivered by each NHS Scotland Board

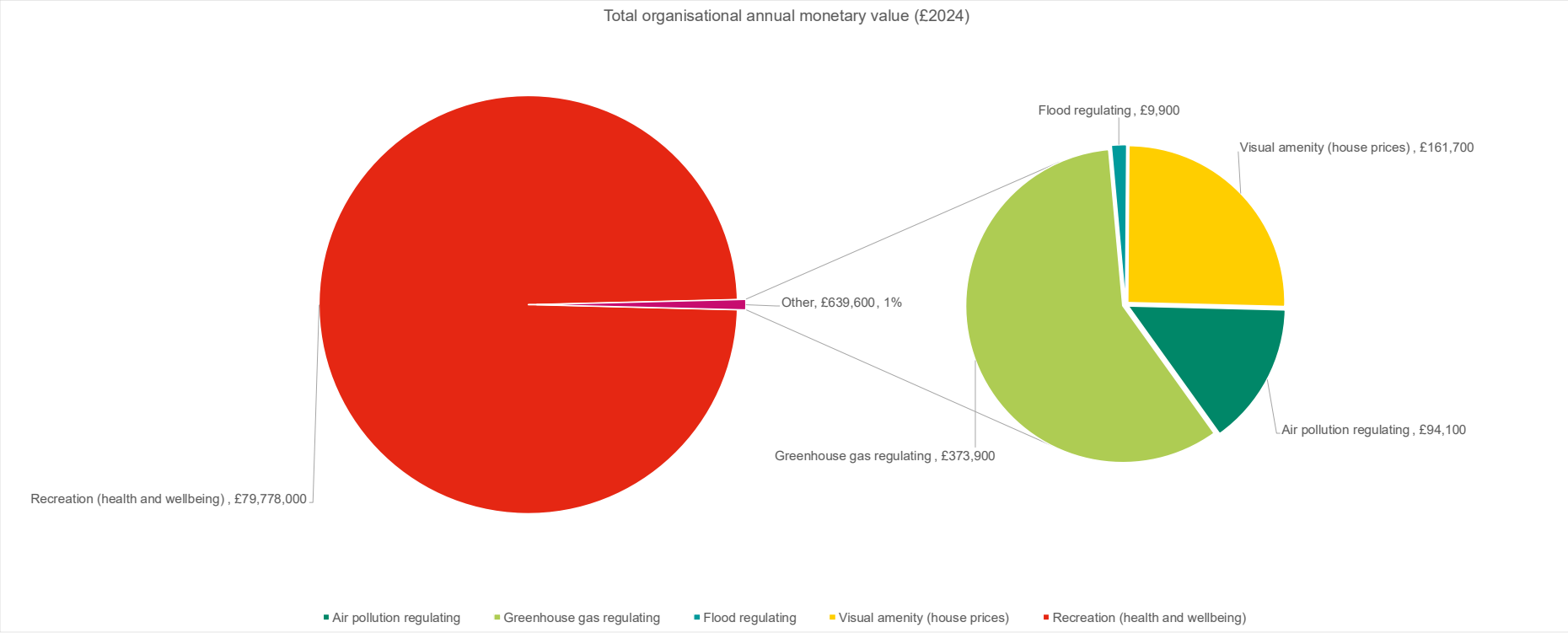

Figure 4: Total organisational annual monetary value (£2024) of ecosystem services

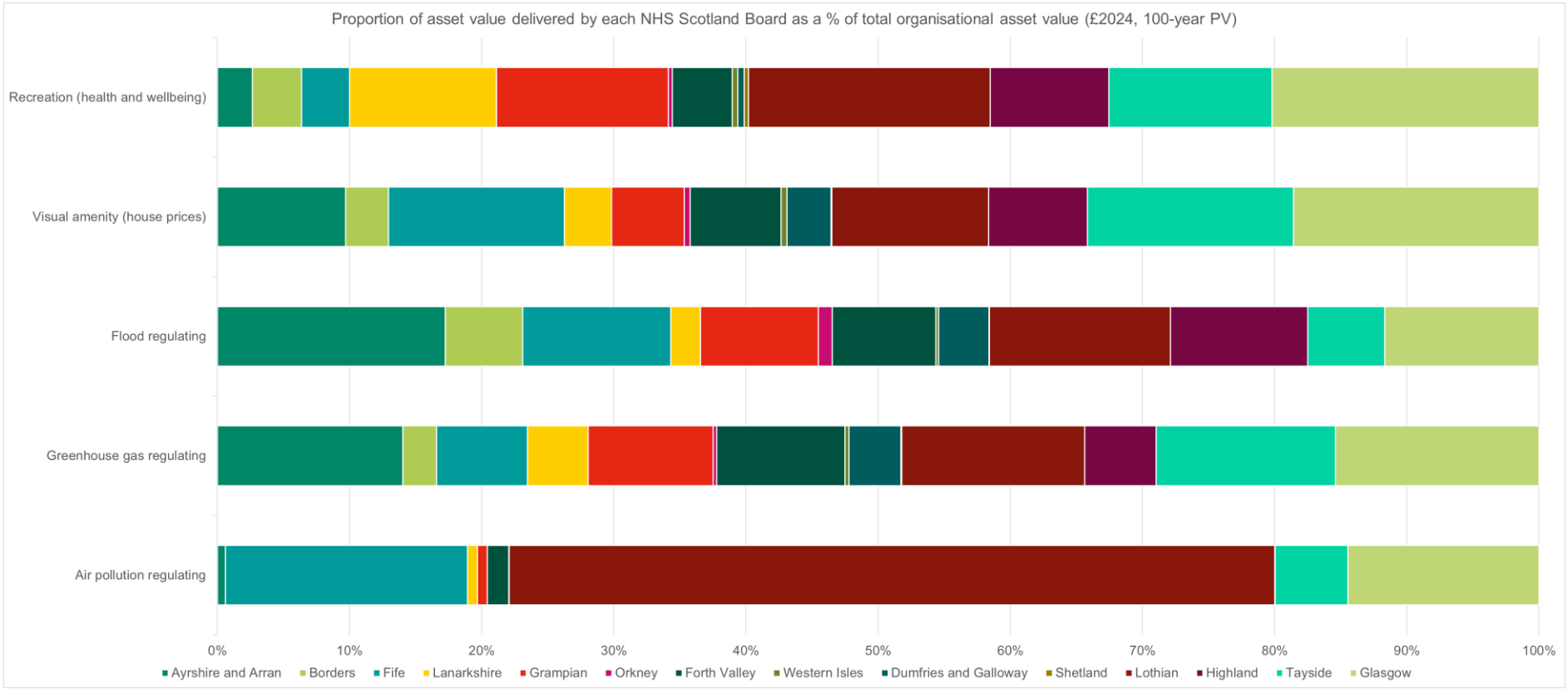

Figure 5: Proportion of asset value delivered by each NHS Scotland Board as a % of total organisational asset value (£2024, 100-year PV)

4.4 Qualitative Benefits

The NHS Scotland Estate provides volunteering and mental well-being benefits from green prescribing and therapy gardens that are not directly measured and valued as part of the core Natural Capital Account. This section provides more information on these benefits.

4.4.1 Volunteering Opportunities

The greenspace in the NHS Scotland Estate provides environmental volunteering opportunities. Benefits derived from interacting with greenspace through volunteering include mental well-being, physical health, social connection and social capital such as community cohesion, skill development and preparation for employment.

A range of volunteering opportunities exist across the NHS Scotland Estate depending on local conditions and programmes including:

- Conservation activities such as tree planting, and habitat restoration
- Community gardening
- Therapeutic volunteering for patients recovering from mental health conditions

Many of the environmental volunteering opportunities within the NHS Scotland Estate are directly tied to the stewardship and improvement of greenspaces. These activities help to maintain and, in some cases, enhance natural capital. By improving the quality and functionality of greenspaces, volunteers contribute to the Estate's ability to maintain and increase the provision of other ecosystem services. This provides benefits such as amenity or air quality to a much wider section of the community than the volunteering group alone.

Research from Volunteer Scotland (2025)[19] suggests that weekly volunteering delivers benefits equivalent to approximately £20 per week or £1,000 per year for an adult individual in Scotland. This value reflects the enhanced well-being and reduced healthcare costs associated with regular volunteering in general, not specifically for environmental volunteering. For individuals with disabilities or long-term health conditions, the benefits of volunteering are even more pronounced, with Volunteer Scotland[19] reporting the wellbeing uplift to be up to seven times greater compared to the general population.

The cost-of-living crisis has exacerbated social and economic challenges for many individuals, particularly those from disadvantaged backgrounds. In 2023, Scottish volunteer numbers were the lowest they have been since recording started in 2007[19]. In this context, the supply of accessible environmental volunteering opportunities across the NHS Scotland Estate is increasingly valuable. NHS Scotland is uniquely placed to ensure volunteering opportunities remain available to those who would benefit the most but are currently missing out.

Providing environmental volunteering opportunities creates a virtuous cycle of mutual reinforcement. The volunteers receive wellbeing and physical health benefits, amongst other benefits. At the same time the natural capital of the NHS Scotland Estate is maintained and enhanced, reducing management costs for the NHS and providing wider local community benefits.

4.5 Mental Wellbeing programmes

Mental wellbeing benefits from greenspace are often aggregated with physical health and social capital benefits. In this study, mental wellbeing benefits were included within the ‘Recreation (health and wellbeing) valuation. This included the mental wellbeing benefits as a result of exposure to NHS Scotland greenspaces. However, this does not include the benefits resulting from NHS Scotland schemes designed to enhance mental wellbeing. Examples of spaces and programmes facilitating mental wellbeing benefits from the NHS Scotland greenspace include on-site gardens, therapeutic gardens and green prescribing.

General gardens provide accessible greenspaces for patients, staff, and visitors. They offer opportunities for relaxation and stress relief. Therapeutic Gardens are designed specifically for mental health recovery. These gardens incorporate sensory elements and quiet areas.

Green prescribing connects individuals to nature-based activities, such as gardening, outdoor therapy, and physical activities in natural settings. This approach is supported by social prescribing systems, linking healthcare providers with nature-based organisations. The National Evaluation of the Preventing and Tackling Mental Ill Health through Green Social Prescribing Project (2021–2023) demonstrated the efficacy of these initiatives. With a cost of £507 per person, the scheme delivered £1.88 of wellbeing for every £1 invested.

Compared to other mental health interventions, nature-based activities are cost-efficient and impactful across diverse mental health needs. These initiatives align with Scotland’s Population Health Framework, emphasising primary prevention to reduce healthcare demand. In addition, the Framework for Advancing Green Health in Scotland states that medicines are responsible for around 25% of NHS carbon emissions, therefore green social prescribing is essential to reduce emissions and support a sustainable healthcare system.

By ensuring access to greenspaces that promote mental wellbeing, the NHS can enhance preventative mental health care. This approach alleviates pressure on healthcare services and allows resources to be prioritised elsewhere.

Case Study: Pain EcoTherapy Garden, Queen Margaret Hospital

An upcoming project at Queen Margaret Hospital in Dunfermline is an EcoTherapy Garden which will be a biodiverse space for staff and patients to support recovery, and mental and physical rehabilitation.

The space has been specifically designed to support nature-led recovery and will initially be used by the Pain Management Service. The space will support activities such as:

- Light gardening services such as pruning and watering
- Planting seeds and plants
- Art activities
- Patient consultations.

The space provides a research-led space for both staff and patients to engage with nature and aides the development of a more sustainable NHS.

4.6 Education

Education benefits emerge when individuals engage with natural spaces, fostering curiosity, creativity, and environmental awareness. Learning in natural environments, such as gardens and greenspaces, supports experiential education. It encourages hands-on activities, critical thinking, and a deeper understanding of ecological systems.

The NHS Scotland Estate could provide valuable opportunities for education through primary school visits to its greenspaces. These visits allow children to explore nature, engage in outdoor learning, and develop environmental stewardship. Natural England (2022)[20] estimates that 'learning outside of the classroom in natural environments' (LINE) results in an estimated Social Return on Investment (SROI) ratio of between £2.87 and £4.70 per £1 invested. This is a result of reduced truancy rates, increased wellbeing, increased creativity and better health outcomes, amongst others.

Studies have found that around 90% of health determinants are derived from people's social and physical environment[21]. Providing educational opportunities promotes preventative health behaviours in children and potential future savings for the healthcare system.

4.7 Noise

Noise can affect health, wellbeing, productivity and the natural environment. The greenspace of the NHS Scotland Estate has the potential to protect against noise pollution. Vegetation can act as a physical barrier between noise sources and those staying or working in NHS buildings or living nearby. However, the degree of noise reduction is highly spatially specific and vegetation dependent.

Noise has not been quantified as a regulation service within this report due to the potential double counting with visual amenity. There are overlaps in the impact pathways for noise and visual amenity. The same landscape elements provide noise attenuation and visual screening. The receptors are also the same group of people using and living close to the NHS Scotland Estate.

In appraisal guidance, noise is measured based on adverse health outcomes from lack of or disturbed sleep. For instance, noise levels for someone sleeping in a house next to a busy road. The value of vegetation buffer is calculated though the reduction in decibels for the person sleeping. This would require spatial modelling or surveying to determine. The service would likely only be able to be applied to in-patients. In the hospital environment, external noise may not be the key determinant for lack of sleep.

[19] Volunteer Scotland (2025). The State of Volunteering in Scotland. https://www.volunteerscotland.net/wp-content/uploads/2025/04/The-state-of-Scottish-volunteering-report.pdf.
[20] Natural England (2022). Social and economic benefits of learning in natural environments (NECR442). https://publications.naturalengland.org.uk/publication/6632322404450304
[21] Fixsen and Barrett (2022). Challenges and Approaches to Green Social Prescribing During and in the Aftermath of COVID-19: A Qualitative Study. Frontiers in Psychology.

5. Key Insights

This study highlights both the societal importance of greenspaces within the NHS Scotland Estate and the benefits to the organisation in terms of estate management benefits and health cost savings. The NHS Scotland Estate provides valuable assets that can be used for recreation, exercise and volunteering but also provide vital regulating services such as regulating air quality and flood water.

The overall asset value (projected over 100 years) is nearly £4.4 billion. Health and wellbeing benefits from visits to NHS sites and air pollution regulating health benefits are over £4.3 billion of this total. NHS Scotland's natural capital value is around 2% of Scotland's total natural capital value presented in the most recent Natural Capital Accounts.

This report provides evidence that investments in initiatives that result in more people spending more time in NHS greenspaces are likely to represent good value for money in terms of derived health benefits and savings to the NHS but that there are also large opportunities

Drawing on primary research, *Valuing the health and wellbeing benefits of the NHS Scotland's outdoor estate,* the Accounts report an estimated annual flow of over 120 million visits to NHS greenspace each year. In comparison, Greenspace Scotland estimate that people in Scotland make over 160 million visits per year to parks and greenspaces.[22] However, the population receiving attributable health benefits from visits is estimated at just over 215,000 people. In terms of recreational value, the 2022 Scotland Natural Capital Accounts reported an annual value of £870 million compared to around £79 million reported in the NHS Scotland Accounts. Whilst the overall results highlight that recreation (health and wellbeing) make up a large percentage of NHS Scotland's natural capital value, this is not to diminish the value delivered by its other services. The accounts show how greenspaces contribute to society through greenhouse gas regulation and providing amenity value to communities. These services are vital within urban areas. The main habitats present throughout the Estate are modified grassland and neutral grassland - whilst these habitats provide greenspaces for recreation they provide few regulating and provisioning ecosystem services.

Services not quantified in the accounts such as volunteering, education and patient mental health form a large part of NHS Scotland's role as an Anchor Institution. NHS Scotland initiatives such as EcoTherapy gardens, allotments, school visits can improve engagement with local communities and maximise health and wellbeing. These services contribute to local communities, patients and healthcare staff. Green spaces are linked to positive health outcomes through green prescribing initiatives, providing exposure to nature for patients and providing spaces for staff to unwind and maintain their wellbeing. The value of greenspace in preventative mental health was not quantified in this study but was included in the narrative on social green prescribing.

Furthermore, *Valuing the health and wellbeing benefits of the NHS Scotland's outdoor estate* highlights the current and potential social and economic value generated by investments in NHS Scotland open spaces, both at the Health Board and national levels. Respondents to the WTP survey highlighted their willingness to pay was related particularly to wanting to preserve the natural environment, maintain the quality of NHS open spaces for other people to use and enjoy and so that future

generations have access to these types of spaces. For potential improvements to natural capital, the following could be considered:

- The Accounts can be used to understand which habitat types provide the most benefit to the Estate, the environment and the public. They highlight sites that have large amounts of low biodiversity habitats such as modified grassland and hardstanding. These sites could potentially be targeted for enhancement, especially if these sites are located within a flood zone or deprived area.
- The UKHab surveys provide an overview of the habitats present in the Estate. They also highlight areas of significant biodiversity value (such as included in the Scottish Biodiversity List Priority Habitats). Maintaining and enhancing these habitats should be a priority in decision making. Well maintained and good quality habitats can increase the wellbeing benefits obtained.
- The results by habitat show a large amount of mowed and amenity grassland. These habitats require ongoing maintenance, are species poor and provide low biodiversity value. If some of these spaces are replaced with trees through local tree planting initiatives and wildflower meadows / more species rich grassland, it can result in higher air pollution regulating benefits, which are especially important in urban areas. These habitats can also provide greenhouse gas regulating benefits and improve biodiversity.
- The potential use of Sustainable Urban Drainage Systems (SuDS) in flood risk areas to increase biodiversity and provide valuable surface water drainage benefits and reduce flooding could be considered. These schemes can reduce the need for grey infrastructure solutions and provide valuable habitats for wildlife and increase amenity value. Seating areas and paths along these spaces can provide areas for recreation and exercise.
- The results indicate the significance of the recreation (health and wellbeing) benefits from visits to greenspace on the NHS Scotland Estate. However, further work is required to establish a relationship between the nature and scale of the outdoor spaces and the level of health benefit they generate. Building on the Accounts, the Area Boards could look to better understand which places and spaces were contributing most to health benefits and why, this could provide insights for future investments in NHS greenspace.
- Some of the biggest opportunities lay in using the existing outdoor Estate for therapeutic and recovery purposes. The potential value of this relates more to how spaces are ‘activated’ and how many people are involved, rather than the nature and size of the spaces themselves. Linkages could be made to green social prescribing initiatives to ensure interventions benefit those who need it most, such as the elderly community, low-income areas and those with mental health requirements. The Framework for Advancing Green Health in Scotland has an action to ‘Improve the availability, quality and accessibility of nature-rich greenspaces within and close to communities, health facilities and learning settings which have the poorest provision and greatest needs.’ NHS Scotland should contribute towards this action.

[22] Statistics on Scottish Greenspace

6. Next steps

The baseline Natural Capital Account provided in this report provides a systematic and repeatable framework for NHS Scotland to monitor and communicate the state of its natural assets using both physical and monetary estimates.

These Accounts can be developed and improved over time by adding habitat condition indicators which can improve the asset register and physical flow calculations for services such as greenhouse gas regulation. They can also be used to facilitate the accountability and transparency with stakeholders in relation to the maintenance of natural assets on the Estate. They can inform at Board and site level, including with Estate Managers.

In future Accounts, it may be helpful for NHS Scotland to consider the development of a risk register which forms part of the ISO standard and the development of a maintenance cost account which can support the development of a Natural Capital Account Balance Sheet. This ensures natural assets are framed not as a liability but as assets which provide value to both people and the economy.

The Accounts as they are repeated over time can provide information on key trends which can be utilised in planning decisions. They should not be viewed as standalone but as a piece of a wider puzzle. The results and findings can be used within Biodiversity Action Plans for Estates and can provide a base for scenario planning to inform business cases. Scenarios can be developed and by assessing future flows of services against costs of interventions, natural capital analysis can help inform the value for money of investments.

In addition, the Accounts can be used as a baseline when evaluating the effectiveness of nature-based interventions designed to maximise therapy and recovery outcomes. This was out of scope for this study but would be a useful next step in future. The Framework for Advancing Green Health in Scotland supports this.

Appendix A : Scoping

A.1.1 HM Treasury Green Book and Enabling a Natural Capital Approach (ENCA)

The HM Treasury Green Book is the UK Government's guidance on options appraisal and evaluation. Defra's Enabling a Natural Capital Approach is supplementary guidance to the Green Book, which includes natural capital accounting principles and methods. Figure A1 outlines the scope of natural capital accounts outlined in the ENCA guidance.

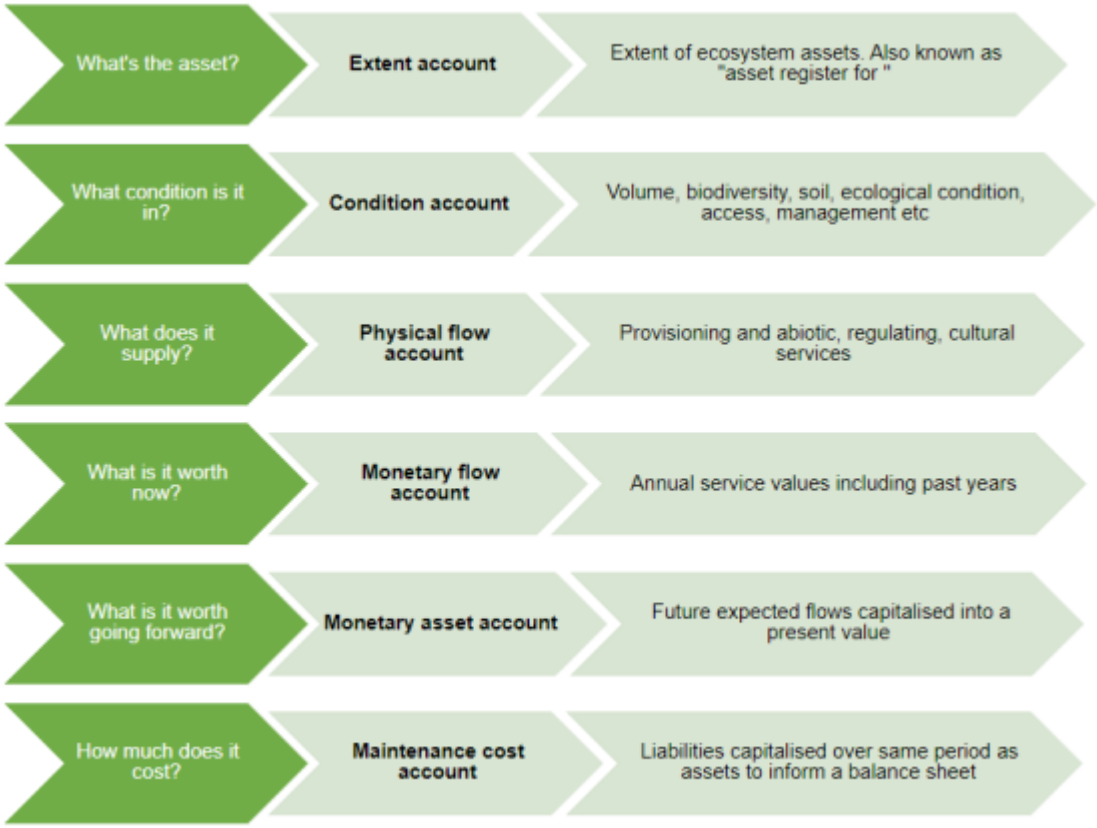

Figure A1: ENCA natural capital account scope

The guidance outlines the stages in developing a natural capital approach, as shown in Figure A2. The diagram highlights that this is an iterative process where an initial account is developed and improved over time- - such as more habitat condition indicators being available or additional elements of the accounts are added.

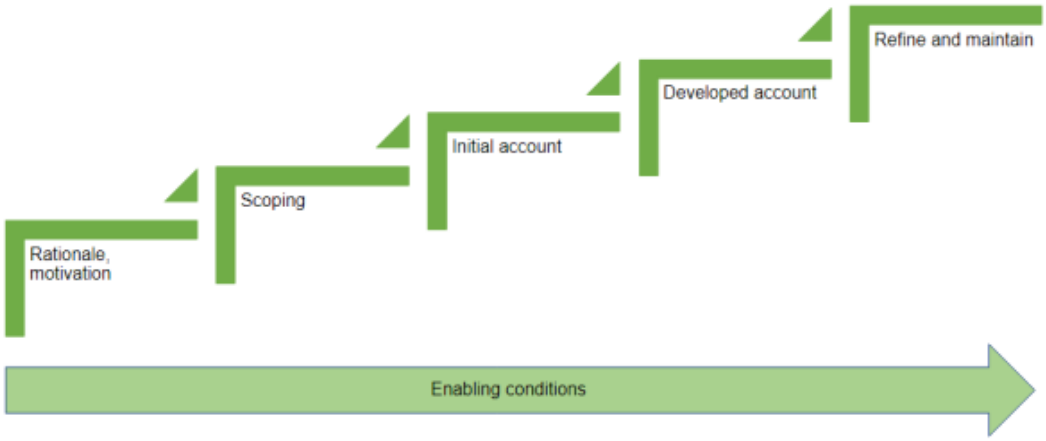

Figure A2: ENCA stages to developing a Natural Capital Account

A.1.2 Corporate Natural Capital Accounting (CNCA) Guidance

The Natural Capital Committee's Corporate Natural Capital Accounting framework consists of:

- Natural capital asset register
- Physical flow account
- Monetary account
- Maintenance cost account
- Natural capital balance sheet
- Changes in natural assets

This includes guidance to help organisations understand their rationale for completing a natural capital account.

The CNCA framework can be applied at different scales:

- Across the entire organisation
- To a given asset across the entire organisation
- To all the assets in a given site of the organisation

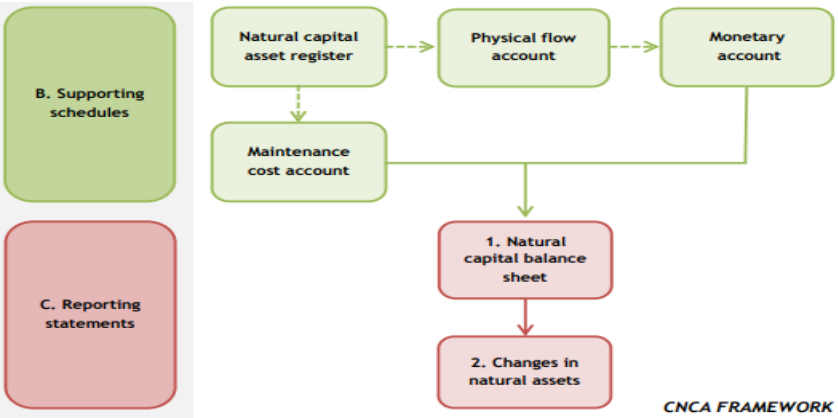

Figure A3: CNCA components

A.1.3 ISO standard for Natural Capital Accounting for Organisations[23]

The ISO standard for Natural Capital Accounting for Organisations (ISO 14054:2025) outlines the steps, principles, terminology and outputs of natural capital accounting to ensure the process is transparent, repeatable and generates useful information for decision making. This enables an organisation to:

- Identify its impacts and dependencies and that of its value chain and natural capital assets.
- Communicate information and implications within the organisation and with external stakeholders.
- Make more informed business strategies and operational decisions by integrating natural capital accounts with assessment of other capitals by testing different scenarios about the future conditions and management of investment options.

[23] ISO 14054:2025 - Natural capital accounting for organizations — Principles, requirements and guidance A new ISO Standard has been published for natural capital accounting within organisations.

A.2 Scoping assessment

Table A.1: Scoping Assessment

ONS Ecosystem Services	How does each service fit into the accounts?	In scope for the Natural Capital Accounts?	Reasoning
Provisioning services			
Agricultural biomass provisioning	Provisioning services refer to tangible goods that people can harvest, extract or derive from the environment, such as food, water, energy and materials. These capture the values of nature's contribution and exclude any form of industry processing.	×	Limited areas of agricultural land are present within the Estate.
Coal provisioning		×	No coal is produced on the Estate.
Fish provisioning		×	No fish are caught on the Estate.
Minerals and metals provisioning		×	No minerals or metals are mined on the Estate.
Oil and gas provisioning		×	No oil and gas are produced on the Estate.
Renewable electricity provisioning		×	Negligible levels of renewable energy is produced on the Estate.
Timber provisioning		×	Negligible levels of timber is harvested on the Estate.
Wood fuel provisioning		×	No wood is harvested for fuel on the Estate.
Water provisioning		×	No water is used for water supply on site.

ONS Ecosystem Services	How does each service fit into the accounts?	In scope for the Natural Capital Accounts?	Reasoning
Regulating services			
Air pollution regulating	Regulating services help to maintain the quality of the environment we rely upon. They include natural processes such as air quality, urban heat, greenhouse gas regulating, flood regulating and noise regulating services.	✓	Habitats such as woodlands within the Estate provide air pollution regulating benefits.
Greenhouse gas regulating		✓	Habitats such as woodlands within the Estate sequester carbon and regulate greenhouse gases.
Noise regulating		×	Likely an overlap of values and double counting with visual amenity if it were included here. Valuation for noise regulation is also highly context and location specific.
Flood regulating		✓	Habitats within the Estate provide flood regulation benefits.
Urban heat regulating		×	Some habitats marginally reduce hot summer air temperature which would otherwise impact urban economic activity. This effect is likely minimal for NHS Scotland sites
Cultural services			
Recreation (health and wellbeing benefits)	Cultural services are the non-material benefits we obtain from ecosystems through interactions with nature.	✓	NHS Scotland greenspace provides health and wellbeing benefits for visitors
Visual amenity (house prices)		✓	NHS sites with greenspace can provide amenity benefits to those who live in close proximity
Tourism and recreation (expenditure)		×	No material impact.
Volunteering[24]		✓	Volunteering activities take place within the NHS Estate.
Education[24]		✓	Education activities take place within the NHS Estate.
Heritage[24]		×	No material impact.

ONS Ecosystem Services	How does each service fit into the accounts?	In scope for the Natural Capital Accounts?	Reasoning
Aggregated / bundled services			
Biodiversity	Biodiversity is the variability among living organisms and the ecological complexes of which they are part. It generates both use and non-use values, including insurance and resilience values.	✓	Biodiversity metrics are presented within the asset register. To avoid double counting with other ecosystem services, biodiversity is not valued directly in the monetary accounts

Appendix B : Methodology

This section provides an overview of the methodology used for the Natural Capital Accounts.

B.1 Habitat data

Figure B1: Habitat data methodology

Step 1 – GIS analysis to assign habitats
GIS Analysis was undertaken to assign a UKHab code to the existing Ordnance Survey Master Map (OSMM) Topography Polygons including the Habitat Map of Scotland[25] (HabMos) and the habitats derived from the best Scotland-wide habitat data available from NatureScot (Scotland Land Cover Map 2022 – EUNIS Level 2[26]). A methodology was applied for Buildings and Water using OSMM land use Themes. For all other land use types, a percentage majority of the open-source data was applied. This provided an initial UKHab Code which then went through a manual Quality Assurance (QA) check. This desktop QA included a review of satellite imagery as well as StreetView and codes were updated where required. UKHab classification of habitats was carried out to UKHab Level 4 where possible. Linear habitat features were also identified within this desktop review. Table B1 outlines the habitat conversion used.

Table B.1: EUNIS to UKHab conversion

EUNIS habitat name	UKHab	Distinctiveness
C - Surface standing and running waters	r1 Standing open waters and canals	High
C - Surface standing and running waters	r2 rivers and streams	High
D1 - Raised and blanket bogs	f1a blanket bog	High
D1.2 - H7130 - Blanket bogs	f1a5 Blanket bog (H7130)	High
D2 - Valley mires, poor fens and transition mires	f2c upland flushes, fens and swamps	High
D2.33 - H7140 - Transition mires	f2c8 transition mires and quaking bogs; upland (H7140)	High
D4 - Base-rich fens and calcaerous spring mires	f2c upland flushes, fens and swamps	High
D4.24 - H7240 - Alpine pioneer formations	f2c5 alpine pioneer formations (H7240)	High
E1 - Dry grasslands	g1b upland acid grassland	High

EUNIS habitat name	UKHab	Distinctiveness
E3 - Seasonally wet and wet grasslands	f2b5 Purple moor-grass meadows	High
E5 - Woodland fringes and clearings and tall forb stands	g1b upland acid grassland	High
E5.31 - Sub-Atlantic [Pteridium aquilinum] fields	g1c bracken	Medium
F2 - Arctic, alpine and subalpine scrub	h1c Mountain heaths and willow scrub	High
F2.25 - H4060 - Alpine and Boreal heaths	h1c5 Alpine and subalpine heaths (H4060)	High
F4 - Temperate shrub heathland	h1b upland heathland	High
F4.13 - [Molinia caerulea] wet heaths	h1b6 wet heathland with cross-leaved heath; upland (H4010)	High
F4.2 - H4030 - Dry heaths	h1b5 dry heaths; upland (H4030)	High
G1 - Broadleaved deciduous woodland	w1g other broadleaved woodland	Medium
G3 - Coniferous woodland	w2c other coniferous woodland	Low
G3.4 - Scots pine woodland	w2b other scot's pine woodland	Medium
G3.F - Highly artificial coniferous plantations	w2c other coniferous woodland	Low
G4.F - Mixed deciduous and coniferous woodland	w1h other woodland; mixed	Medium
G5 - Line of trees, small anthropogenic woodlands, early-stage woodland and coppice	w2c 206 other coniferous woodland (felled)	Low
G5.8 - Recently felled areas	w2c 206 other coniferous woodland (felled)	Low
H91C0 - Caledonian forest	w2a5 Caledonian forest (H91C0)	Medium

EUNIS habitat name	UKHab	Distinctiveness
HF4.11 - 4010 - Wet heaths	h1b6 wet heathland with cross-leaved heath; upland (H4010)	High
J3.2 - Built-up	u1 Built-up areas and gardens	Very Low

Step 2 – Ecologist review of GIS assigned habitats
Detailed QA was then carried out of all greenspace polygons and linear habitats, by ecologists experienced with mapping a wide range of habitats in Scotland to UKHab. UKHab secondary codes were assigned where it was possible to do so. Polygons assigned to an urban 'u' category were accepted without QA given the high degree of accuracy afforded by OSMM / GIS spatial analysis, as agreed between the GIS, Ecology, and Natural Capital teams working on this project. Other data sources referred to during QA comprised: freely available aerial and street-level imagery (including, where deemed useful, historic imagery), Native Woodland Survey of Scotland[27] (NWSS), Ancient Woodland Inventory[28] (AWI) and the Carbon and Peatland 2016 Map[29]. Habitat categories assigned by the GIS process were amended by ecologists during this QA stage wherever the data sources indicated a need, including occasionally splitting original polygons into different habitats.

Where this QA process considered that further review was appropriate, a second stage of QA was carried out by a second habitat specialist. If necessary, habitat categories were amended during this second QA stage, with justification.

Step 3 – Identification of locations for ground truthing (where applicable)
Where a habitat could not be assigned to UKHab Level 4 with sufficient certainty during the QA process[30], it was marked for ground-truthing and prioritised for ecologist visits to the site.

Note that for NHS Lothian, Greater Glasgow and Clyde, Highland and Tayside, UKHab reports were provided by NHS Scotland completed by EnviroCentre. These reports provided the UKHab data for these Boards which was fed into the Accounts.

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[24] These ecosystem services are not part of the ONS Natural Capital Accounts but are included in ENCA, and following discussions with NHS the services have been scoped into the accounts.
[25] https://opendata.nature.scot/datasets/habitat-map-of-scotland/explore
[26] https://opendata.nature.scot/maps/snh::scotland-land-cover-map-2022-eunis-level-2/about
[27] https://open-data-scottishforestry.hub.arcgis.com/datasets/6d27b064fcba471da50c8772ad0162d7_0/explore
[28] https://opendata.nature.scot/maps/ancient-woodland-inventory
[29] https://opendata.nature.scot/datasets/snh::carbon-and-peatland-2016-map/explore
[30] With the exception of u1 – Built-up areas and gardens, which is discussed in Section A2.

B.2 Use of EcoUplift in developing the accounts

- AECOM's EcoUplift is a bespoke cloud-hosted biodiversity and natural capital accounting and planning tool that supports sustainable, restorative project planning and land-use decisions.
- For this project, the tool was used in combination with the UKHab survey results to produce the Natural Capital Accounts. The current EcoUplift methodology was updated to incorporate key results from *Valuing the health and wellbeing value of NHS Scotland's outdoor estate*[31].

B.3 Methods for Ecosystem Service Quantification and Valuation

This section presents the methods of quantification and valuation applied in the Physical and Monetary flow accounts of the natural capital account baseline for each material ecosystem service.

Where feasible, ranges referred to as sensitivity tests, are provided for ecosystem services – these show the lowest and highest values for the ecosystem service flow based on recommended ranges for unit values or for physical flow estimates. Sensitivity tests are provided for greenhouse gas regulation and for recreation. Please see the relevant sections for more details.

Confidence ratings are provided for each ecosystem service when presented in the summary tables. This reflects the uncertainties associated with both the evidence base used and methodology applied. Ratings are derived mainly from the 'ENCA_Jan_2025_Services_Databook_3.2'[32].

B.3.1 Air Pollution Regulating

Physical flows: Tonnes air pollutant emissions removed per hectare by habitat type

Valuation method: Avoided health damage cost, £ per tonne by pollutant

Evidence source: Liverpool John Moores University (LJMU) and NatureScot (2025), ONS Natural Capital Accounts (2024), Jones et al. (2017, republished 2019)

Discount rate: Social time preference rate (STPR) for risk to health and life (1.5%, declining after 30 years)

Asset value assumptions: Constant real value of pollutant removed per hectare over time

Air pollution regulation refers to the ability of habitats to absorb pollutants from the air thereby limiting adverse impacts on human health. Vegetation across habitat areas can impact the air quality through absorption of pollutants. This ecosystem service measures the absorption of the following: fine particulate pollutants (PM2.5), particulate pollutants (PM10), sulphur dioxide (SO_2), nitrogen dioxide (NO_2), Ammonia (NH_3) and ozone (O_3).

The approach to quantification and valuation follows the Liverpool John Moores University (LJMU) and NatureScot (2025, unpublished) methodology for air pollution regulation. The air pollution regulating method was updated from the EcoUplift method in collaboration with NatureScot. Biophysical and monetary estimates for each local authority and each broad habitat type are derived from the 2024 ONS

Natural Capital Accounts detailed summary tables[33]. The estimates used in the ONS natural capital accounts originate from Jones et al. (2017, republished 2019)[34]. These estimates are then applied with specificity to each habitat, accounting for the spatial variation[35] in air pollutant removal between the local authorities.

The monetary flow is calculated by applying the unit value of avoided health damage costs (health benefits) per tonne of each pollutant to the tonnes of pollutant removed calculated in the physical flow. These unit values are specific to each broad habitat type and each local authority - the value of the air pollution regulating service depends on the proximity of the population to benefit from this service. The avoided health damage costs underpinning this monetary estimate include:

- Respiratory hospital admissions as a result of exposure effects from any or all of the four pollutants
- Cardiovascular hospital admissions as a result of exposure effects from PM2.5, NO_2 and O_3
- Loss of life years (because of long-term exposure effects from PM2.5 and NO_2)
- Deaths (short-term exposure effects from O_3).

The following digital process was followed to apply the Liverpool John Moores University (LJMU) and NatureScot methodology to the NHS Scotland Natural Capital Accounts:

1. Polygons were intersected with OS Built Up areas Local Authority areas and each polygon was assigned a Local Authority value and an Urban binary yes/no value.
2. The UKHab classification of habitats was converted into the UK National Ecosystem Assessment broad habitat types. Woodland and grassland habitats that intersected with built-up areas were considered to be urban, and patches of urban woodland less than 0.5 ha in size were classified as urban trees.
3. For each polygon, the habitat area (ha) was multiplied with the corresponding biophysical estimates for its local authority. This produced estimates for annual removal (tonnes) of pollutant removed for all 6 pollutants (NH_3, NO_2, O_3, PM2.5, PM10, and SO_2).
4. For each polygon, pollutant removal estimates (tonnes) were multiplied with the corresponding local authority estimates for value of pollutant removal (£/tonne) to produce an estimate of the annual value of pollutant removal for each polygon (£).
5. Estimates were summarised for each site and presented in tonnes of pollutant removed for all 6 pollutants, and the value of removal in £ for NO_2, O_3, PM2.5, and SO_2.

Monetary values are uprated to 2024 prices using the ONS, 2025 ‘GDP deflators at market prices, and money GDP December 2024 deflator[36].

The asset value of the service is calculated over the 100-year time period using the HM Treasury Green Book ‘social time preference rate’ (STPR)[37] for risk to health and

life in line with ENCA guidance. This builds in the assumption that welfare or utility associated with additional years of life will not decline as real incomes rise over time.

B.3.2 Greenhouse Gas Regulating

Physical flows: Net carbon sequestration by habitat type, tCO_2e/ha

Valuation method: Cost-based approach, marginal abatement cost to meet UK net zero target 2050, £/tCO_2e

Evidence source: Evidence from ENCA 3.2 (2025): Natural England (2021), CEFAS (2021), ONS (2023), DESNZ (2024)

Discount rate: Standard social time preference rate (STPR) (3.50%, declining after 30 years)

Asset value assumptions: Increasing non-traded cost of carbon over time

Greenhouse gas regulation refers to the ecosystem processes by which atmospheric functions are regulated. The focus for the baseline natural capital accounts is on the exchange of carbon dioxide equivalents (CO_2e) between habitats and the atmosphere.

The physical flow is calculated by applying biophysical estimates for annual carbon sequestration rates delivered by different habitat types, to the habitats identified in the asset register at each spatial level. This gives an approximation of the average quantity of CO_2e removed from the atmosphere by a given habitat type in a year (tCO_2e/yr). The following literature listed in Defra's Enabling a Natural Capital Approach (ENCA) guidance was used as sources of biophysical evidence:

- Natural England (2021) - NERR094 - Edition 1: Carbon Storage and Sequestration by Habitat 2021[38]
- CEFAS (2021) - Blue Carbon stocks and accumulation analysis[39]
- ONS (2023) - Urban natural capital accounts[40]

It is to be noted that there are many factors that determine the level of sequestration a habitat can deliver including the condition of a habitat. The sources of biophysical evidence used provide a method of approximating this physical flow without the specific variability of these factors for the NHS Scotland habitats.

The monetary flow is calculated by multiplying the physical flow: tonnes of carbon dioxide equivalent sequestered each year, by the DESNZ (2024)[41] non-traded cost of carbon for policy appraisal and evaluation. This valuation estimate reflects the marginal abatement cost to meet the UK 2050 net zero target. This dataset provides a low and high range of non-traded cost of carbon values which are used to provide a low and high estimate as a sensitivity test.

The asset value assumes that the non-traded cost of carbon is increasing over time with recommended values provided until 2050 after which a real annual growth rate of 1.5% is applied in line with DESNZ guidance. The standard social time preference rate (STPR)[37] is used to discount the future flows over the 100-year period.

B.3.3 Flood Regulating

Physical flows: Water retention capacity of woodland, wetland and grassland habitats.

Valuation method: Replacement cost approach & Benefit transfer

Evidence sources:

Woodland:

- Forest Research (2023) Revised valuation of flood regulation services of existing forest cover to inform natural capital accounts, Fitch et al (2022), Flood regulation services

Wetland:

- Average water stored by ha of wetland per year (m^3/ha/yr)[1]
- Area of each habitat type within site boundary is used as multiplier to estimate physical flow

Grassland

- Average water stored by ha of grassland per year using bare soil counterfactual[1]
- Area of each habitat type within site boundary is used as multiplier to estimate physical flow

Discount rate: Standard social time preference rate (STPR) (3.50%, declining after 30 years)

Asset value assumptions: Flood regulation benefits are consistent over time

Flood regulation refers to the regulation of water flow by vegetation, which retains water and releases it slowly, reducing flood damage to downstream receptors.

The physical flow for this service considers the water retention capacity of woodland, wetland and grassland habitats. The area of each flood regulating habitat is multiplied by its corresponding average capacity to absorb and store water to regulate flood events (m^3). Flood regulating benefits are only measured in the accounts where there is a reasonable chance of flooding, i.e. the natural assets intersect with a higher risk flood area. To account for this, flood regulating benefits are only accounted for when a habitat intersects with any of the following SEPA flood maps[42]:

- Surface Water & Small Watercourses Flood Map: Present Day - High
- Surface Water & Small Watercourses Flood Map: Climate Change 2070 - high emissions - Medium
- River Flood Map: Present Day - High
- River Flood Map: Climate Change 2080 – High Emissions - Medium

The monetary flow for woodlands is based on flood regulation benefits provided by woodland habitats. For wetlands, this is based on the annual value of water stored per ha of inland and coastal wetland. Finally, for grassland this is based on the annual value of water stored per ha of grassland per year.

B.3.4 Visual Amenity

Physical flows: Uses % change in house prices within 1km^2 from a broad habitat type

Uses housing density for each local authority in the UK, based on number of houses in the local authority and the area of each local authority[44]

Valuation method: Hedonic pricing, Average price for a property across regions and devolved powers in 2020 is multiplied by % change in house price from each broad habitat type[44]

Annualises the total value that a habitat contributes to a change in house price, based on a 30-year period to replicate a flow of value derived from a habitat

Evidence source: Gibbons et al. (2014) The amenity value of English nature: a hedonic price approach

Discount rate: Standard social time preference rate (STPR) (3.50%, declining after 30 years)

Asset value assumptions: Discounted over 100 years

Visual amenity benefits relate to the influence habitats have on an aesthetically pleasing landscape. This is based on the premise that houses close to green and blue spaces attract a price premium. [43]

For the physical flows, EcoUplift uses housing density information for the relevant local authority. This approach assumes all houses are spread evenly within each local authority, this may not be the case especially in rural areas. The monetary flows are based on a % change in house price from each habitat type. Average house prices are region specific.

To minimise the risk of double counting, the model has estimated the national average for the number of houses within a km^2 of any given area. The number of houses where one habitat type can deliver flows of visual amenity is divided across 10 broad habitat types, as defined by Gibbons et al (2014)[44] converted to UKHab classification.

Note, the amenity benefits from nature in the NHS context can also benefit patients through improved health outcomes as a result of the views looking out on nature as outlined across the literature. Habitats such as woodlands and hedgerows can provide noise regulating benefits, but noise is likely to be incorporated at least to some extent as part of the visual amenity values for households so there would be double counting to include separately. However, noise regulating benefits result in improved sleep for patients within the hospital sites which is not accounted for. Both of these additional benefits to patients are covered qualitatively in the report.

B.3.5 Recreation (health and wellbeing)

Physical flows: Visits to NHS Scotland greenspace / Visits that enable individuals (visitors) to reach an annual 120 minute per week threshold of exposure to greenspace which provides a wellbeing benefit / QALYs gained

Valuation method: Estimated cost to the NHS to provide an additional QALY to NHS patients, £/QALY

Evidence source: Loria-Rebolledo et al., (2025), Office for National Statistics (2022)

Discount rate: Social time preference rate (STPR) for risk to health and life (1.5%, declining after 30 years)

Asset value assumptions: Constant visits to greenspace over the 100-year period

Recreation refers to the health and wellbeing benefits to individuals from recreational visits to NHS Scotland sites. NHS Scotland greenspace provides areas for recreation – these spaces provide a use value to the individual pertaining to the increase in wellbeing associated with each visit. This value is dependent on a number of factors including the location, type and quality of habitat, local population density and the availability of substitute recreational opportunities[12].

NHS Board level estimates of visitors to NHS Scotland greenspace are estimated in the accounts via the exposure method used in Loria-Rebolledo et al., (2025) 'Valuing the health and wellbeing benefits of NHS Scotland's outdoor estate'[45]. The study is particularly well suited to use in the natural capital accounts given that it is a primary study to quantify and value the health and wellbeing benefits provided by NHS Scotland outdoor spaces. The study presented monetary values based on two methods: the ONS exposure-based method and a Willingness to Pay (WTP) survey. The exposure method was seen to be the most appropriate for use in the natural capital accounts. This assumes individuals who spend at least 120 minutes a week in the outdoors receive a set amount of health benefits, with an assigned monetary value based on the NHS resources needed to achieve this health gain, expressed as additional quality-adjusted years of life. It presents a transparent methodology and robust results and confidence intervals.

In the physical flow account, a visit[46] is defined as:

"…any type of visit either to use NHS services, to visit or accompany a relative or friends, or just to enjoy the things within the site."

Of these total visits, visit duration and number of annual visits data are used to estimate the average duration of exposure to NHS Scotland open spaces. If this amount exceeds the 120-minute per week annual threshold, the respondent is assumed to derive the health benefits of open space exposure from visits to NHS Scotland open spaces. This accounts for visits to general outdoor sites in order that exposure to open space can be attributable to visits to NHS Scotland sites (i.e. the individual would not have otherwise reached the 120-minute threshold in absence of NHS sites).

Using the ONS approach, this health benefit to the individual is equal to 0.01995 Quality Adjusted Life Years (QALYs). QALYs is a measure of the state of health of a

person or group in which the benefits, in terms of length of life, are adjusted to reflect the quality of life. Thus, one QALY is equal to one year of life in perfect health. This measure takes into account:

- Quantity of life (how long you will live for)
- Quality of life (the quality of your remaining years of life)

This measure is often used to assess the value for money of medical interventions in healthcare.

The number of individuals with attributable health benefits and total QALYs received are presented as a physical flow metric alongside total visits in the accounts. This health benefit encompasses both physical and mental well-being.

Monetary estimates are derived from the cost to the NHS to provide an additional QALY to NHS patients (£12,936 in 2008 prices)[47]. The value of 0.01995 QALYs received by each individual receiving attributable health benefits used in the accounts is approximately £370 (2024 prices).

The asset value of the service is calculated over the 100-year time period using the HM Treasury Green Book 'social time preference rate' (STPR)[48] for risk to health and life in line with ENCA guidance. This builds in the assumption that welfare or utility associated with additional years of life will not decline as real incomes rise over time.

A low / high range of values specific to the population receiving attributable health benefits, the Quality Adjusted Life Years (QALYs), and value of health benefits was provided by Loria-Rebolledo et al., (2025) to assist with Recreation (health and wellbeing) estimates in the Natural Capital Accounts. The ranges capture the uncertainties associated with the sampling techniques of the study at the 95% confidence interval. These ranges are presented as a sensitivity test in the summary tables.

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[31] Loria-Rebolledo, L. E., Boyers, D., Watson, V., Antunes, M., & Chalmers, N. (2025). *Valuing the health and wellbeing value of the NHS Scotland's outdoor estate: How are NHS open spaces used and what is their value to the Scottish population*. Scottish Environment, Food and Agriculture Research Institutes (SEFARI). https://doi.org/10.57064/2164/25103

[32] Enabling a Natural Capital Approach - data.gov.uk

[33] UK natural capital accounts - Office for National Statistics. This included a detailed set of tables on air pollution removal which applied air quality damage costs from Ricardo (2018): https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1902271109_Damage_cost_update_2018_FINAL_Issue_2_publication.pdf

[34] https://nora.nerc.ac.uk/id/eprint/524081/

[35] Estimates for urban woodland specific to the Local Authority level could not be provided due to lack of granularity in the ONS Natural Capital Accounts detailed summary tables for urban woodland habitat area, which is rounded to the nearest 1,000ha (10 km^2). This means that many LA's have a rounded estimate of 0ha of urban woodland, but a positive value for pollutant removal in the detailed summary tables. Instead, an average of LA estimates that had sufficient urban woodland habitat area (rounding to 1,000 ha) to be recorded with a non-zero value in the

detailed summary tables was taken and applied across all Local Authorities as a biophysical estimate for Scottish urban woodland air pollutant removal.

[36] GDP deflators at market prices, and money GDP December 2024 (Quarterly National Accounts) - GOV.UK

[37] The Green Book (2022) - GOV.UK

[38] Carbon Storage and Sequestration by Habitat 2021 - NERR094

[39] SSB Legacy – Blue Carbon stocks and accumulation analysis for Secretary of State (SoS) region - ME5439

[40] https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/urbannaturalcapitalaccountsuk/2023

[41] Carbon valuation - GOV.UK

[42] Flood maps | Beta | SEPA | Scottish Environment Protection Agency

[43] https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/households

[44] http://eprints.lse.ac.uk/49375/1/__lse.ac.uk_storage_LIBRARY_Secondary_libfile_shared_repository_Content_Mourato%2C%20S_Mourato_amenity_%20value_English_Mourato_amenity_value_english_2014.pdf

[45] Loria-Rebolledo, L. E., Boyers, D., Watson, V., Antunes, M., & Chalmers, N. (2025). *Valuing the health and wellbeing value of the NHS Scotland's outdoor. estate: How are NHS open spaces used and what is their value to the Scottish population*. Scottish Environment, Food and Agriculture Research Institutes (SEFARI). https://doi.org/10.57064/2164/25103

[46] Total visits were estimated by AECOM under guidance from the authors by assigning visit numbers based on each board's share of the total benefits. This is an approximation that carries lower confidence than the attributable benefit population and QALY data also reported in the physical flow accounts.

[47] Health benefits from recreation methodology, natural capital, UK - Office for National Statistics

[48] The Green Book (2022) - GOV.UK

Appendix C : Asset Register for NHS Scotland Estate

Table C.1: Asset Register for NHS Estate by UKHab code

Habitat Code	Habitat Type	Total (ha)
c1c	Cereal crops	26.24
c1f	Horticulture	0.22
f2a	Lowland fens	0.24
f2e	Reedbeds	0.16
f2f	Other wetlands	0.82
g1b	Upland acid grassland	1.44
g1c	Bracken	0.04
g3a	Lowland meadows	0.14
g3c	Other neutral grassland	91.81
g3c8	Holcus-Juncus neutral grassland	0.14
g4	Modified grassland	256.34
h1b	Upland heathland	0.03
h2a	Hedgerow (priority habitat)	1.81
h2b	Other hedgerows	0.01
h3	Dense scrub	0.22
h3b6	Other hazel scrub	0.02
h3d	Bramble scrub	0.23
h3e	Gorse scrub	0.75
h3f	Hawthorn scrub	0.02
h3g	Rhododendron scrub	0.17
h3h	Mixed scrub	17.84
h3j	Willow Scrub	0.40
r1	Standing open water and canals	0.33
r1g	Other standing water	0.65
r2	Rivers and streams	0.01
r2b	Other rivers and streams	0.39
u1	Built-up areas and gardens	45.04
u1b	Developed land; sealed surface	113.42
u1b5	Buildings	177.42
u1b6	Other developed land	260.49
u1c	Artificial unvegetated, unsealed surface	2.70
u1d	Suburban/ mosaic of developed/ natural surface	9.59
u1f	Sparsely vegetated urban land	3.41
w1b	Upland mixed ashwoods	1.86
w1d	Wet woodland	3.48

Habitat Code	Habitat Type	Total (ha)
w1f	Lowland mixed deciduous woodland	18.49
w1g	Other woodland; broadleaved	88.42
w1h	Other woodland; mixed	45.72
w2b	Other Scot's Pine woodland	4.31
w2c	Other coniferous woodland	3.87

Total area (ha)	**1,178.68**
No. of sites	**249**
Area Biodiversity Units	**5,237.61**

Table C.2: Asset register by Area Board

UKHab Code	Habitat Type	Ayrshire and Arran	Borders	Fife	Lanarkshire	Grampian	Orkney	Forth Valley	Western Isles	Dumfries and Galloway	Shetland	Lothian	Highland	Tayside	Greater Glasgow and Clyde	Total
c1c	Cereal crops	0.00	0.00	**26.24**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**26.24**
c1f	Horticulture	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.22**	0.00	0.00	**0.22**
f2a	Lowland fens	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.24**	0.00	**0.24**
f2e	Reedbeds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.16**	0.00	**0.16**
f2f	Other wetlands	**0.39**	0.00	**0.04**	0.00	0.00	0.00	**0.39**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.82**
g1b	Upland acid grassland	0.00	0.00	0.00	0.00	0.00	**0.07**	0.00	**1.38**	0.00	0.00	0.00	0.00	0.00	0.00	**1.44**
g1c	Bracken	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.04**	0.00	**0.04**
g3a	Lowland meadows	0.00	0.00	0.00	0.00	0.00	**0.14**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.14**
g3c	Other neutral grassland	**15.32**	**0.26**	**10.95**	**0.65**	**2.48**	**1.90**	**9.87**	**3.04**	**3.09**	**0.18**	**2.86**	**16.73**	**6.22**	**18.29**	**91.81**
g3c8	Holcus-Juncus neutral grassland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.14**	0.00	**0.14**
g4	Modified grassland	**19.80**	**7.54**	**26.22**	**12.71**	**16.49**	**1.73**	**21.36**	**1.65**	**14.05**	**0.36**	**35.93**	**36.00**	**26.37**	**36.14**	**256.34**
h1b	Upland heathland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**	0.00	**0.03**
h2a	Hedgerow (priority habitat)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.81**	0.00	0.00	0.00	**1.81**
h2b	Other hedgerows	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**	0.00	0.00	0.00	**0.01**
h3	Dense scrub	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.22**	0.00	**0.22**
h3b6	Other hazel scrub	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.02**	0.00	**0.02**
h3d	Bramble scrub	0.00	0.00	**0.02**	**0.18**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**	0.00	0.00	**0.23**
h3e	Gorse scrub	0.00	0.00	**0.03**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.44**	**0.27**	**0.75**
h3f	Hawthorn scrub	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	**0.02**
h3g	Rhododendron scrub	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.04	0.03	**0.17**
h3h	Mixed scrub	**0.17**	**0.30**	**1.28**	**0.18**	**0.45**	**0.28**	**0.27**	**0.04**	**0.26**	0.00	**3.19**	**4.86**	**1.79**	**4.76**	**17.84**
h3j	Willow Scrub	**0.20**	0.00	0.00	0.00	0.00	**0.01**	0.00	0.00	**0.03**	0.00	0.00	0.00	**0.16**	0.00	**0.40**

UKHab Code	Habitat Type	Ayrshire and Arran	Borders	Fife	Lanarkshire	Grampian	Orkney	Forth Valley	Western Isles	Dumfries and Galloway	Shetland	Lothian	Highland	Tayside	Greater Glasgow and Clyde	Total
r1	Standing open water and canals	0.00	0.00	0.00	0.00	0.00	0.00	**0.03**	**0.06**	0.00	0.00	0.00	0.00	0.00	**0.23**	**0.33**
r1g	Other standing water	0.00	0.00	0.00	0.00	**0.01**	0.00	**0.52**	**0.08**	0.00	0.00	**0.05**	0.00	0.00	0.00	**0.65**
r2	Rivers and streams	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**	0.00	0.00	0.00	0.00	0.00	0.00	**0.01**
r2b	Other rivers and streams	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.39**	0.00	0.00	0.00	**0.39**
u1	Built-up areas and gardens	**5.21**	**0.92**	**10.02**	**7.72**	**5.88**	**1.16**	**4.22**	**1.19**	**2.25**	**0.10**	0.00	0.00	0.00	**6.37**	**45.04**
u1b	Developed land; sealed surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**79.23**	**7.72**	**26.46**	0.00	**113.42**
u1b5	Buildings	**16.83**	**4.40**	**15.09**	**13.70**	**12.74**	**2.17**	**11.14**	**2.22**	**7.26**	**0.39**	0.00	**26.00**	**16.62**	**48.86**	**177.42**
u1b6	Other developed land	**31.60**	**8.07**	**25.54**	**25.94**	**19.14**	**3.01**	**27.55**	**3.34**	**14.46**	**0.56**	0.00	**42.08**	0.00	**59.20**	**260.49**
u1c	Artificial unvegetated, unsealed surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.56**	**1.65**	**0.42**	**0.07**	**2.70**
u1d	Suburban/ mosaic of developed/ natural surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**9.59**	0.00	0.00	0.00	**9.59**
u1f	Sparsely vegetated urban land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.36**	**3.05**	**3.41**
w1b	Upland mixed ashwoods	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.86**	**1.86**
w1d	Wet woodland	**0.85**	0.00	**0.39**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.24**	**3.48**
w1f	Lowland mixed deciduous woodland	**4.59**	**0.74**	0.00	1.24	0.81	0.00	3.10	0.00	0.06	0.00	0.00	0.00	0.00	**7.95**	**18.49**
w1g	Other woodland; broadleaved	**13.49**	**0.82**	**5.39**	**5.34**	**7.63**	**0.35**	**12.50**	**0.31**	**4.85**	**0.08**	**15.91**	**8.26**	**5.78**	**7.72**	**88.42**

UKHab Code	Habitat Type	Ayrshire and Arran	Borders	Fife	Lanarkshire	Grampian	Orkney	Forth Valley	Western Isles	Dumfries and Galloway	Shetland	Lothian	Highland	Tayside	Greater Glasgow and Clyde	Total
w1h	Other woodland; mixed	**5.08**	**2.56**	**6.21**	**0.96**	**3.61**	0.00	**0.81**	**0.00**	**1.34**	0.00	**5.90**	**11.23**	**2.47**	**5.56**	**45.72**
w2b	Other Scot's Pine woodland	**0.35**	0.00	**0.08**	0.00	**3.88**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**4.31**
w2c	Other coniferous woodland	**0.51**	**0.04**	0.00	**0.02**	**0.05**	0.00	**0.15**	0.00	**0.04**	0.00	**0.62**	**1.91**	**0.54**	0.00	**3.87**

Total area (ha)	**114.40**	**25.64**	**127.50**	**68.64**	**73.19**	**10.81**	**91.92**	**13.29**	**47.68**	**1.67**	**156.05**	**156.76**	**88.54**	**202.61**	**1,178.68**
No. of sites	14	10	15	21	30	7	12	8	13	2	34	36	22	25	249
Area Biodiversity Units	644.69	105.91	505.19	184.96	330.49	44.85	485.54	69.56	200.42	5.24	626.44	381.93	735.83	916.55	5,237.61

Appendix D : References

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