MULTIPLE CAPITALS ACCOUNT
HOWS WOOD, ESKDALE

Prepared by: L. Mansfield
On Behalf of: Friends of the Lake District
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Key Takeaways

Multiple Capitals Accounting

A Multiple Capitals Account (MCA) is a mechanism designed to value all the benefits a landscape provides for society. It supplies significantly more information about the value of land to the economy, society and cultural heritage as well as to nature and climate change than a Natural Capital Account can.

Site Specific

- Hows Wood generates a Net Present Value (NPV) of £2.28m (£1.5m stocks and £778k flows) compared to Little Asby Common (£28.1m of which £7.68m is stocks and £20.5m is flows).
- This generates a stock: flow ratio for Hows Wood of £1 to £0.52 and for Little Asby £1 to £2.67.
- Over 50 years, Hows Wood could generate £58m (£32m stocks and £26m flows) compared to Little Asby Common (£734m of which stocks are £217m and flows £517m).
- Hows Wood generates an NPV of £465k per hectare compared to Little Asby Common at £60k. This is probably due to most people having greater access, cultural familiarity and economic understanding of the value of woods, along with the psychology of open and enclosed landscapes.
- Grant investment at Little Asby Common of £852k is associated with £27.2m of multiple capitals, and if continued at the same rate for the next 50 years, £3.4m investment could support £730m of multiple capitals

Summative

- NPV and 50 -Year Discounting model valuations vary by site and by hectarage.
- Commons command less total capital value than woodlands per hectare but generate higher stock to flow ratios.
- Grants have large multiplier effects in terms of pound for pound investment with respect to multiple capitals.
- Cultural capital is valued the most by the public.
- With respect to average Willingness to Pay (WTP), there is no statistical difference in respondents' valuations for natural, human and social capital. In contrast, cultural capital flows are statistically different between Little Asby and Hows Wood, ie. valued more at Little Asby than Hows Wood.
- With respect to average WTP, there were no statistically significant differences for average WTP capital stocks and flows between FLD members and the public.
- The '300 respondents' threshold typically deemed essential for WTP experiments can be challenged through an examination of the relationship between standard errors and sample size, suggesting results between 150 and 250 could be equally valid.
- Outputs from MCAs include: valuing non-monetary goods as part of a whole landscape; application as a scalar technique; valuing human, social and cultural capital in landscape change and development.
- Outcomes from MCAs include: tool for total cost-benefit analysis; a tool for management planning to enable best value; a tool for bidding, evaluation and monitoring effectiveness of policy interventions and grants, and calculating the truth worth of a landscape.

Executive Summary

Introduction

Friends of the Lake District (FLD) are a charity who campaign for the landscapes of Cumbria. Owning twelve distinct blocks of land across the county, including Little Asby Common in east Cumbria, and How's Wood in west Cumbria, FLD's work includes commenting on policy proposals and plans, from national to local, demonstrating best practice on its land, feeding this experience back into its policy work, and engaging the public in the outdoors and landscape issues.

Recently, FLD has become interested in the application of a multiple capitals approach as a mechanism to value all the benefits a landscape provides for society. In 2022, it commissioned a Natural Capitals Account for all its land holdings and while worthwhile, it was felt that the results did not reflect the full financial value and benefits their land brings to society. Instead, a multiple capitals account could do this – looking at all the benefits which land provides. A multiple capitals approach had been previously conceptually explored on behalf of the national Landscapes team at Natural England. This culminated in the production of the first attempt nationally (and believed to be internationally) to calculate a landscape multiple capital account for a rural landscape. The Multiple Capitals Account for Little Asby Common calculated the following total economic value for 2022/23: £61.2m (public perception dominated) to £20.2m (Benefits Transfer dominated). This was broken down into: Cultural Capital (£55.2m to £17.3m); Natural Capital (£2.93m to £1.19m); Human Capital (£1.92m to £726K)' Social Capital (£1.15m to £1.12m) and Financial Capital (£876K all scenarios).

This work and its results generated substantial debate and discussion amongst stakeholders interested in landscape management at the regional and national level, particularly related to natural capital accounting and its relationship with other capitals. Additionally, the work revealed the report had four particular weaknesses:

- Length of time of visitor survey
- Explanation of Willingness to Pay (WTP - how much someone is willing to pay to maintain significant tangible and intangible characteristics of a landscape.
- Limited non-FLD membership surveyed creating 'organisational' bias
- WTP sample size of survey did not hit the standard 300 threshold (244 responses)

This report, therefore, is FLD's response to the increased interest and weaknesses raised to help develop the methodology further, through calculating a second Multiple Capitals Account using another of their sites, Hows Wood in Eskdale. The exercise also provides an opportunity to include any new accounting tools to help reduce reliance on WTP and to apply other accounting techniques used for Natural Capital such as:

- One year and fifty-year extrapolation of value
- Inclusion of a discounting rate of 3.5% or alternative accepted rate
- Division into stocks and flows
- Closer inspection of double accounting between capitals

Finally, this second Multiple Capitals Account allows comparison of results between:

- FLD members and non-members
- Between LAC and How's Wood

Findings

Little Asby Common

The total Net Presen Value (NPV) for Little Asby Common for 2023 was calculated at £28.1m through accounting methodology B, of which £7.7m was stocks and £20.5m flows. Thus, for every £1 of stock, £2,67 of flows were generated for the baseline year. An Agri-Environment Scheme (AES) and Heritage Lottery Fund (HLF) grant investment of £852k helps support £27.2m of multiple capitals on the common.

A 50-year discounting model suggests that £734m of capital could be generated, divided into £217m of stocks and £517 flows. As a consequence, for every £1 of stock it could be possible to generate £2.39 of flows over this period. If AES grants continue at a similar level of investment with an interest rate of 2%, over 50 years, £3.4m of grants could generate £730m of multiple capitals across the common. This means £1 of grant funding could support £63 of stocks and £150 of flows.

Hows Wood

The second Multiple Capitals Account for Hows Wood calculates its Net Present Value (NPV) at £2.28m with stocks accounting for £1.5m and flows, £778k. Overall cultural capital is valued the most accounting for 70% of capital, followed by natural capital (15%).

For every £1 of stock generated in 2025, £0.52 of flows follows, however the ratio varies by capital, with natural and cultural capital producing more stocks than flows, whereas human capital produces more flows than stocks.

The most valued stock assets are routeways (CC), species (NC) and drystone walls (CC), and the least are those related to site management (HC). However, £1 of labour is associated with the support of £352 of multiple capitals. With respect to flows, Access & PROWs (CC) are most valued, followed by financial multiplier effects (FC) and sense of community (SC). On the other hand, Landscape Aesthetics (CC) were valued the least.

A 50-yr discounting model suggests that Hows Wood will generate £58m in total (£32m stocks and £26m flows). Overall, for every £1 of stock, £0.81 of flows could be expected, which is reflected for natural and cultural capital, but not human capital, where flow value should exceed that of stock. For instance, £1 of labour could generate £24,614 of multiple capitals.

With respect to the WTP element of the respondents survey, for the 2025 baseline NPV, natural capital stock, human capital flows and social capital flows are valued the most., whereas cultural capital flows the least. A comparison between FLD members and Non-FLD members with respect to average WTP demonstrated there were no statistically significant differences for those capital stocks and flows, which could be compared. Having noted this, FLD members did in general, value capital stocks and flows more than Non-members for 87% of attributes measured.

Comparing Little Asby Common and Hows Wood

When comparing the two Multiple capital accounts it is inevitable that the LAC account will generate more capital than Hows Wood due to even their relative sizes (464 ha vs. 8ha).

However, taking account of areal extent, Hows Wood generates per hectare significantly more capitals than Little Asby. Common (£465k vs. £60k).

Little Asby Common creates more flows in relation to stock per hectare than Hows Wood does, almost twice as much (£3.02 vs. £1.52 respectively). For both sites, more natural capital stock than flows are generated; although it is greater from the Common. Cultural and human capital flows are much greater at Little Asby than Hows Wood.

With respect to average WTP, there is no statistical difference in the monetary values respondents suggested for natural, human and social capital. In other words, these three capitals are valued the same at both sites. In contrast, cultural capital is statistically different overall and further analysis demonstrated that flows were different, but stocks were not between Little Asby and Hows Wood.

Comparing the 50-Year discounting model, demonstrated that Little Asby Common should produce £594m multiple capitals in contrast to £91m at Hows Wood. Once again, considering the relative size of the two sites showed that a hectare of the common could produce £1.3m in contrast to the wood at £11.2m. However, Little Asby will generate £2.31 of flows for every £1 of stock in contrast to Hows Wood where a £1 will generate only £0.81. Thus, society may gain more benefit (flows) from maintaining Little Asby Common than Hows Wood, depending on one's objectives.

Addressing Challenges raised from the Little Asby Common Multiple Capitals Account

This exercise sought to address several issues which evolved from the review of the Little Asby Common Multiple Capitals Accounting methodology. Regarding the online survey, the window of response was lengthened, more explanation of Willingness to Pay (WTP) was provided, non-FLD members (the public) responses were sought and an attempt to hit the 300+ response target.

All of these were achieved except for 300 or more responses. A brief critical review of the '300' target was undertaken in this report, which suggests that a range of 150 to 250 responses is equally valid when taking standard errors into account.

Valuation techniques were updated where possible, along with the application of NPV and 50-Yr discounting model for Hows Wood and retrospectively for Little Asby Common. The division of all capital into stocks and flows formed part of this process based on the suggested classification (summarized in Table 29 in the main report). Double counting was explored further, the conclusion of which is that Natural Capital accounting inherently suffers from double counting whereas a Multiple Capitals Account does not as it is multiple values which the technique aims to capture. With respect to WTP results, there was no statistical difference between the two groups and the two sites, apart from cultural capital flows. Finally, a local business survey focused on demand, rather than supply side this time.

Comparison with Natural Capitals Accounts (NCS, 2024) Report

Valuation and methodological comparative analysis was undertaken between the natural capital assessments undertaken by Natural Capitals Solutions (2024) report, and the two Multiple Capitals Accounts for Little Asby Common and Hows Wood. The NCS report valued 16 attributes, whereas LAC valued 37 and Hows Wood 38. Due to its character, the NCS report classified all attributes as natural capital and there was evidence of capital

appropriation in three cases regarding a multiple capitals approach; ie. the Natural Capital Accounting process incorporates non-natural capital in its evaluation.

Detailed examination of methodological techniques found variations in most cases where it was possible to divine this due to commercial sensitivity. Some interesting comparisons were:

- Carbon sequestration and Air Quality were under-estimated in the MCAs, probably due to slight differences in methodological calculations.
- Health benefits were over-estimated for the MCAS because they used a more detailed and in-depth methodology and were thus a more accurate representation of reality. This means that the NCS (2024) report under-estimated their value.
- Recreational Visitor Value and flood regulation valuations were on a par, even though the latter employed a completely different calculation tool for the NCS (2024).

Potential Outputs and Outcomes of conducting a Multiple Capitals Account

Key outputs associated with an MCA include:

- Calculating non-monetary goods and services beyond natural capital allows for an assessment of the total benefits of a piece of land as a whole.
- Focused reporting can take place at different geographical scales eg site, valley, catchment, massif.
- Recognising and valuing socio-ecological systems, biocultural heritage and knowledge and skills which shape a landscape.
- Calculating various multiple capitals accounts with minimum, average and maximum values
- Comparison of MCAs with other MCAs and other capital assessments as subsets.
- Ability to specify which attributes (assets) a client would like to value.
- Cutting data to explore issues eg residents vs. visitors, members vs. non-members.
- It facilitates a holistic view of all component capitals that make up a landscape rather than concentrating on some to the detriment of others.

Key outcomes related to these outputs can include:

- Assessment of what people or managers want/ need the most or least.
- Aiding with management planning by identifying opportunities, alternatives, best value or priorities (see Mansfield, 2025).
- Forming the basis of a funding bid to demonstrate added value at the end of a project.
- Monitoring and evaluating baselines and success or issues for improvement.
- Providing new insights about a site or landscape
- Using an MCA as part of a cost-benefit analysis beyond current methodologies
- Awareness raising of value of the process of landscape production beyond food and nature (PR and comms).
- Enabling more effective and efficient resource allocation.
- Contributing to making more informed decisions about land use strategies/ plans as it allows the impact of decisions to be assessed against all capitals rather than just those found in natural capital assessments. This will enable decision makers to identify potential conflicts and synergies between capitals when making plans.

- An MCA also demonstrates the true worth and cost of maintaining our landscapes and the full range of public benefits they deliver. In turn, this enables society to recognize their value and pay for them.

Recommendations

The following recommendations are suggested in response to the findings of this second multiple capitals account:

- Continue to add new valuation techniques to reduce WTP reliance.
- Repeat methodology on similar landscapes to confirm valuations and refine process.
- Expand to new landscapes (both types and different scales) and sites to continue testing MCA methodology
- Employ MCA to improve management planning and other outcomes
- Develop MCA to enable impact and opportunity assessments, eg. calculating the impact of x action on all the capitals, not just one. This could highlight impacts across the board not previously considered or show how small management tweaks could have a higher impact than expected.
- Share findings with other researchers and policy makers investigating cultural capital and/or any who are beginning to explore multiple capital approaches. There is currently a lot of disjoint siloed thinking as well as others' finding similar issues to both these MCA studies.
- Consider if each type of capital assessment could be done in isolation and then dropped in to the model when done to all come together at some point to alleviate survey fatigue and WTP complexities.
- Aim to find either a mechanism to reach 300 respondents for a WTP survey or adopt easier/different techniques to value those attributes currently reliant on WTP.
- Lobby Office of National Statistics and National Government to adopt the MCA methodology.

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1. INTRODUCTION

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[2] Mansfield L., Darrall J & Partington L. (2023) 'Investigating the Public Benefits of Little Asby Common: Multiple Capitals Account.' A report prepared for Friends of the Lake District.

- FLD members and non-members
- Between LAC and How's Wood

1.1 Structure of Report

The report starts by updating a review of the literature addressing the previous report's weaknesses, the concepts of stock and flow, discounting and double counting. There is also a brief update on accounting techniques. The methodology focuses on demonstrating how an account is calculated as well as addressing the weaknesses explored in the literature review. Results and discussion are blended into an overarching Findings chapter. This focuses on reworking of the MCA for Little Asby Common with a division into stocks and flows, and the calculation of a 50 -year discounting model; calculating an NPV (Net Present Value) and 50-yr discounting model for Hows Wood drawing partially on an online survey (summary in Appendices) and a comparative analysis between FLD membership and Non-FLD membership for Hows Wood. The final part of the Findings chapter compares the accounting results for Little Asby Common with those of Hows Wood. The penultimate chapter, Discussion responds to the issues raised in the original Little Asby Common MCA and finally, explores the value of conducting a Multiple Capitals Account. The report ends with a series of Conclusions and Recommendations.

2. LITERATURE REVIEW

The purpose of this review is four-fold. First, for those unfamiliar with the concept of multiple capitals, to be introduced the concept, its relationship to landscape and the methodology previously employed for Little Asby Common, using Hows Wood. The second part of the literature review is to consider the application of various Natural Capital Accounting tools for other types of capital *viz a vis*, stocks & flows and discounting. Third, to explore double counting across the different capitals and finally to review any new accounting tools that have become available since the Little Asby Common report.

2.1 Landscape & Multiple Capitals

At its simplest, capital refers to the point 'when resources or assets are invested to create new resources'[3]. We can invest this capital as individuals, communities and/or societies to create a better standard of living and quality of life to make us more resilient and adaptable to change. In other words, capitals should be perceived as a positive benefit encompassing environmental resources, our own individual capabilities and capacity, how we work together to solve challenges, our culture and where we get the wherewithal to make change happen to improve our circumstances.

A range of capitals are recognised by society[4], the most well-known of which are natural capital (such as ecosystems, species and geodiversity) and social capital ('the glue that holds society together'). Other forms of capital include human (knowledge and skills), cultural (structures and processes created through human endeavour) and financial (for example money).

Each of these capitals have many individual components (*dimensions*) which work in isolation or collectively. These dimensions can improve or deteriorate, they can shape or be shaped by place, space or time (past, present and future), influence or influenced by endogenous or exogenous processes, and support and be shaped by individuals, groups or organisations. In other words, capitals and their dimensions can encourage the creation of new resources and develop current ones, whilst at the same time working in a homeostatic integrated way to support each other or less desirably, deteriorate, undermining positive sustainable resource use.

The concept of multiple capitals and their dimensions can be applied to landscape spatially and temporally, particularly where society has managed and adapted the environment to create a range of semi-natural habitats [5](Green, 1985). Consequently, it is evident that human capital and when people work collectively, social capital, are also important for the shaping of such a landscape. The evolving product, therefore, is a cultural landscape, constituting structures and processes which are adapted to and created in response to an environment, and form the cultural capital of a place. Whilst, historically, much of our

[3] Flora CB., Flora JL & Fey S (2004) *Rural Communities: Legacy and Change*, Second Edition Boulder:Westview

[4] Hodgson G (2014) 'What is capital? Economists and sociologists have changed its meaning: should it be changed back?' *Cambridge Journal of Economics* Vol.38(5):1063-1086

[5] Green B (1985) '*Countryside Conservation'* George Allen & Unwin: London

cultural landscape was shaped though subsistence living, since the mid 16th Century, the ability to create surplus to sell has led to a capitalist mode of production which has in turn created landscapes supported by financial capital.

With multiple capitals interacting to create our landscape, society can then benefit from a range of goods and services produced from such interactions, which, in relation specifically to natural capital are referred to as ecosystem services. The corollary is that UK and other state's cultural landscapes are landscapes derived from and supported by multiple capitals and their dimensions, which in turn provide ecosystem services from which society can benefit. In turn, society can choose to pay for these services, but do so, we must create markets from which to sell. Thus, we need a way to financially value capitals and their ecosystem services.

2.2 Multiple Capital Accounting

Previously commissioned work for Natural England[6] (Wain *et al*., 2021 a-d; Mansfield, 2021) developed a conceptual framework relating a multiple capitals approach to landscape and landscape change. After reviewing the current knowledge base, a set of five capital definitions and their dimensions (sub-components) were agreed, and these latterly fed through directly into the accounting phase of the Little Asby Common Multiple Capitals Account (Box and Table over). Details of the Accounting method are outlined in the Methodology section of this report.

Box – Agreed Definitions of the Five Capitals

- **Natural -** The aspects of the natural environment that provide benefits to people. England's varied natural environment, its ecosystems, geodiversity and landscapes, provides people with a wide range of benefits, upon which human wellbeing depends. These include food, clean water and air, the regulation of climate and hazards such as flooding, thriving wildlife and cultural and spiritual enrichment (Wigley et al., 2021).

- **Human** – the knowledge, skills, competencies and attributes embodied in individuals thatfacilitate the creation of personal, social and economic well-being (OECD, 2001).

- **Social -** the networks of relationships among people who live and work in a particular society, enabling that society to function effectively. Networks together with shared norms, values and understanding that facilitate cooperation within and among groups (OECD, 2001).

- **Cultural -** The many and diverse ways people - in a specific geographical and socio-economic context – deal with and influence nature and natural resources. Cultural capital is made up of tangible (building, structures and locations) and intangible (ideas, practices, beliefs, traditionsand values) assets.

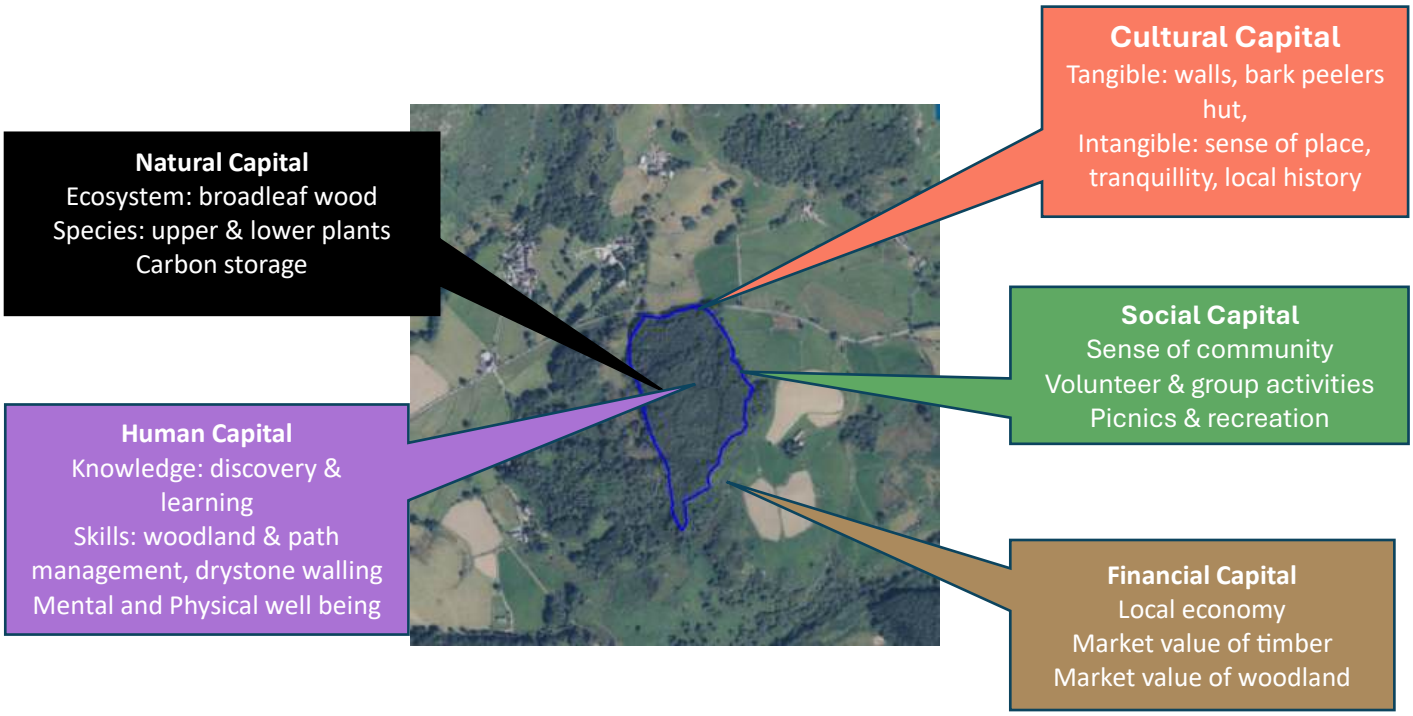
- **Financial –** assets that exist in a form of currency that can be owned or traded, including (but not limited to shares, bonds and banknotes.

[6] Wain J., Mansfield L., Wren G & Charlton J (2021 a-e) '*Relationship of Landscape with the Natural Capital Approach And Five Capitals Model*' A study prepared for Natural England, made up of 5 individual papers including: Mansfield L (2021) '*Multiple Capitals Conceptual Framework Development: Key Findings and Proof of Concept*.' CNPPA: University of Cumbria

Table 1- Dimensions of Different Capitals

Capital	Dimensions
Natural	Ecosystems Species Freshwater Land Minerals Air Oceans Natural functions and processes Geodiversity Landscapes
Human	Education (formal and informal) Knowledge, skills & work experience Traditional practices & core belief systems Practices Motivations Empathy Life experiences Relationships & social learning
Social	Relations of trust – values and trust, organisations Reciprocity and exchange – communication channels, membership Common rules and norms – social norms Connectedness, networks and groups: Bonding – within communities of interest locally Bridging – between communities of interest locally Linking – between communities of interest local to external
Cultural	Tangible structures Private goods Common-pool goods Collective goods Tool goods Buildings Boundaries Historic monuments Contemporary built environment Intangible activities Practices and processes, recreation Sense of place, way of life Perception - sight, sound, smell, touch Inspiration, escapism, relaxation, spiritual Contemporary capitals Buildings Equipment Infrastructure (such as roads, ports, bridges, and waste and water treatment plants)
Financial	Currency - Shares, bonds, banknotes Crypto currency - Carbon trading, natural capital accounting

Figure 1 – Hows Wood: Capitals, Dimensions & Attributes



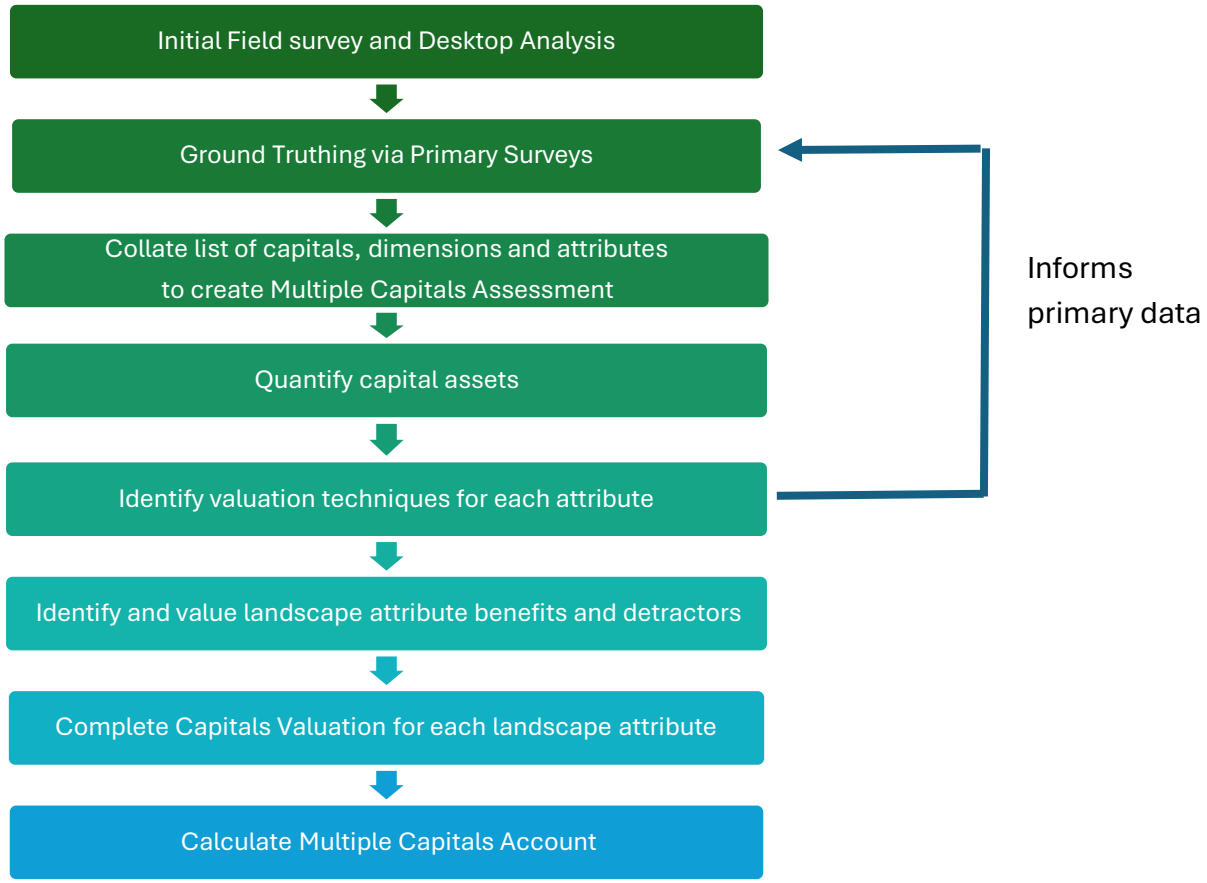
The process to identify capitals, dimensions and landscape attributes developed for Little Asby Common was applied to Hows Wood uses a combination of field survey, desktop secondary data analysis and FLD staff knowledge. Figure 1 summarises field survey re-formatted as a table (Table 2) in preparation for identifying all attributes for each capital dimension. Measurable indicators can then be identified for Hows Wood to create a valuation methodology and ultimately the multiple capital accounting process, as was used for Little Asby Common.

Table 2 – Hows Wood: Landscape Attributes and related capitals

Capital	Dimension	Attribute
Natural	Ecosystems	Habitats, Species, Wildlife, lower plants
		Carbon storage & management
	Freshwater	Water storage and flood management
	Geodiversity	Local geology
	Air	Clean & fresh (low pollution)
Human	Knowledge	Discovery & learning
	Skills	Path management
		Skills from volunteering
	Well being (Physical & mental)	Recreational benefits
		Volunteer benefits
	Labour	Employment opportunities
		Volunteer labour/ site mgt
		FLD staff labour/site mgt
		Contractors eg ecological surveys
Social	Cognitive	Organised events
		Educational visits
		Research, Field trips and studies
	Structural	Volunteer activities
		Volunteer opportunities
	Relational	Sense of Community
		Volunteer groups
		Picnics
Cultural	Heritage (tangible)	Archaeology & built heritage
		Drystone walls & boundaries
		Routeways & trading routes
	Heritage (intangible)	Local history, legends & place names
		Art & literature
		Place names
	Traditional Practices & Skills (intangible)	Woodland mgt. Skills
		Drystone Walling skills
	Landscape Aesthetics (intangible)	Openness, vistas and views, wildness
		Sense of Place
		Tranquillity, inspiration, dark skies
	Recreation & Sport (both)	Permissive paths & PROWs
		Visitor visits
		Recreation
Financial	Currency	Market value of timber
		Market value of woodland
		Local Business Multiplier Effects

These tasks form the first three steps of the methodology shown in Figure 2, which the latter detailed stages are explained in the main Methodology section.

Figure 2 – Methodological Stages to Create a Multiple Capitals Account



2.3 Employing Natural Capital Accounting Tools to Other Capitals

Several techniques are employed in Natural Capital Accounting which potentially have transferability to the other capitals as part of a Multiple Capitals Account; these include stocks & flows, and discounting. The benefits of adopting such an approach allow for the application of similar valuation and accounting techniques, a comparable lexicon and cross referencing between accounts. Having said this, their application needs careful consideration.

2.3.1 Stocks & flows

At its simplest, an asset is a resource which has economic value. With respect to land resource management these are referred to as *stock*[7]. The term stock has been transposed and applied as the collective term for the fundamental building blocks of the environment which make up natural capital; geology, soils and biodiversity etc…[8]. These components in turn can produce benefits, goods and services for society, referred to as *flows*. With respect to natural capital these flows are termed *ecosystem services* and explored increasingly as a discrete package by leaving stocks to be associated with natural capital *in sensu stricta*.

[7] Rees J (1990) '*Natural Resources: allocation, economics and policy*.' Routledge: London

[8] Costanza R. & Daly H. (1992) 'Natural Capital and Sustainable Development.' *Conservation Biology* Vol.6(1): 37-46 https://doi.org/10.1046/j.1523-1739.1992.610037.x

Consensus has settled at including geology, soils, habitats, species, air, water, minerals and genetic resources as components or dimensions of natural capital stock[9], supported by ecosystem services classification systems such as CICES (Common International Classification of Ecosystem Services v5.1[10]) and the four-fold one employed by the Millenium Ecosystem Assessment adopted by the UK Government[11] which includes:

- Provisioning – those products obtained directly from functioning ecosystems which provide for human needs and include food and fibre
- Regulating – benefits created through the regulation of stocks such flood management or climate mitigation
- Cultural – non-material benefits that we can acquire though spiritual enrichment, educational values and so on, and include recreation, habitats and sense of place.
- Supporting – those necessary to produce all other ecosystem services such as pollination.

Given the character of ecosystem services, many are created through various interrelationships between different stock characteristics, and thus we cannot attribute certain flows to discrete stocks. For example, flood management is derived from the combined effects of geology, soils and habitats; whereas other relationships can be more straightforward such as biodiversity (stock) and pollination (flow). In turn, this complexity can impact on how we classify attributes, in other words deciding to which capital an attribute belongs.

Importantly for land management, as Maseyk *et al.* (2017)[12] note, to provide ecosystem services, there needs to be investment in the management of natural capital stocks, as we can affect stocks which produce flows, and not the other way round. For example, we can plant trees to improve flood management, but we cannot do the converse. Recently, the UK government has started to create separation between investment in the management stock and that of flows. Stock is increasingly seen as the responsibility of the public purse (ie. government) and flows by private finance, hence the rise in BNG and green finance schemes. The separation of natural capital stocks and flows is also typical of accounting lines in a Natural Capital Account, as conducted by Natural Capital Solutions (2024)[13] for FLD (Table 3).

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[9] NCC 2014 Natural Capital Committee (2014) '*Towards a Framework for Defining and Measuring Changes in Natural Capital. Working Paper 1.* Accessed at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/516946/ncc-working-paper-measuring-framework.pdf on 14/04/23; United Nations *et al.* (2023) '*System of Environmental-Economic Accounting-Ecosystem Accounting*' (SEEA EA). White cover publication, pre-edited text subject to official editing. Available at: https://seea.un.org/ecosystem-accounting.

[10] EEA (2023) '*CICES – Towards a common classification of ecosystem services*.' Accessed at: https://cices.eu/ on 27/08/23

[11] Defra (2007) '*An Introductory Guide to valuing ecosystem services*.' Defra: London PB12852

[12] Maseyk FJF., Demeter L., Csergo AM. & Buckley YM. (2017) 'Effect of management on natural capital stocks underlying ecosystem service provision: a 'provider group' approach' *Biodiversity Conservation* Vol.26: 3289–3305 https://doi.org/10.1007/s10531-017-1406-9

[13] Natural Capital Solutions (2024) '*Baseline natural capital assessment of the Friends of the Lake District's land ownership.*' A report to Friends of the Lake District.

Table 3 – Natural Capital Stocks & Flows (NCS, 2024)

Attribute valued in NCS Study (2024)	Stock or Flow (ecosystem services)
Habitat areas	Stock
Carbon Storage & sequestration	Flow
Air Purification	Flow
Local Climate regulation	Flow
Pollination	Flow
Food Production	Flow
Timber/ woodfuel production	Flow
Water flow regulation	Flow
Water supply regulation	Flow
Accessible Nature	Flow

The separation conceptually of stocks and flows within other types of capital is unusual currently. Neither can we refer to them as ecosystem services as this latter term relates solely to natural capital, and in certain instances natural capital flow can be re-classified as another capital's stock, this is particularly the case for cultural ecosystem services and cultural capital[14]. An initial determination has been made to split other types of capital into stocks and flows in relation to upland agricultural systems as shown in Table 4 by Mansfield (2025)[15]. A repeat of this division will be attempted by drawing on elements of Table 4 to calculate a Multiple Capital Accounts for Hows Wood.

[14] Lawson R., Riganti P., Kaszynska, Leeson A. (2024) 'Culture and Heritage Capital (CHC) Proto-Typology Report.' Ipsos. Accessed at: https://assets.publishing.service.gov.uk/media/675c426d239b9237f0915378/22-090150-01_Ipsos_CHC_Proto_Typology_Note_12_12_24_-_GM_accessible.pdf

[15] Mansfield LT (2025) '*Multiple Capitals Approach for Upland Agricultural Resilience*.' Routledge: London

Table 4 – Capitals and Dimension Stocks & Flows present in Upland Agricultural Systems (Mansfield, 2025; Table 9.4)

	Dimensions	
Capital	**Stocks**	**Related Flows**
Natural	Geology Soil Water Biodiversity Air	Regulating Ecosystem Services Supporting Ecosystem Services Cultural heritage values of others Recreation & ecotourism by others
Human	Cognitive – culture & world image	Knowledge accrual (AKIS) by individuals including digital skills
	Affective – personal traits	Sense of Place, identity
	Conative - human capability	Human capacity, behaviour e.g. Skills
Social	Relational (trust etc..)	Obligations, Sanctions, trustworthiness
	Structural (bonding, bridging and linking networks)	Partnerships, community groups etc…
	Cognitive	Traditional Knowledge Social learning
Cultural	Tangible (plus machines & equipment) Intangible	Tangible cultural landscape
		Cultural Diversity
		Inspiration & aesthetic values
		Local Distinctiveness
		Traditions, agency
Financial	Private finance Public finance	Added value eg butter, leather goods
		Contracting for others
		Food production eg. livestock, crops
		Non-food production eg biofuels
		Commodification of ecosystem services
		Pluriactivity (off-farm income)
		External Financialisation

Recent work from DCMS which has attempted to address the division of Cultural & Heritage Capital (CHC) into stocks and flows is of particular benefit, as it enables the parallelling of natural capital accounting (Table 5)[16]. This division also justifies and refines that suggested by Mansfield (2025) and this report. Nevertheless, there is a fair amount of overlap between cultural and social capital concepts in Lawson *et al.*'s proposal which requires careful handling to avoid capital appropriation and double accounting issues. Consequently, for this report, Communal Services remain the classified under social capital and Environmental services under natural capital. The reprofiling exercise into stocks and flows for Little Asby

[16] Sagger H. & Bezzano M (2024) '*Embedding a Culture and Heritage Capital Approach*' Department of Culture, Media & Sport; Lawson R., Riganti P., Kaszynska, Leeson A. (2024) 'Culture and Heritage Capital (CHC) Proto-Typology Report.' Ipsos. Accessed at: https://assets.publishing.service.gov.uk/media/675c426d239b9237f0915378/22-090150-01_Ipsos_CHC_Proto_Typology_Note_12_12_24_-_GM_accessible.pdf

Common (Section 4.3) and the new Hows Wood MCA (Section 4.4) have adopted this latter approach.

Table 5 - Proto-typology for CHC Stocks & Flows as proposed by Sagger & Bezzano (2024)[17]

Stocks
Built Historic Environment eg. buildings & structures
Cultural venues eg attractions
Historic landscapes eg. rural landscapes & views
Collections & Archives eg. steam trains
Creative & artistic works eg, paintings, books, poetry
Digital Assets eg. online web materials
Intangible heritage eg. traditions & practices
Creative & cultural knowledge eg. knowledge & skills
Flows
Aesthetic services eg. attractiveness and beauty
Authenticity services eg. distinctiveness, symbolism, uniqueness
Communal services eg. social connectedness
Inspirational services eg. aspiration, spiritual uplift
Identity services eg. cultural interpretation
Knowledge services eg. comprehension, research, education
Health services eg. wellbeing, physical and mental
Environmental services eg. habitats

2.3.2 Discounting

Another tool commonly used in Natural Capital Accounting is that of *discounting*. This is defined by The Green Book (HM Treasury, 2024:14.1)[18] as;

> '*Costs and benefits with different time spans to be compared on a common "present value" basis. The public sector discount rate adjusts for social time preference, defined as the value society attaches to present, as opposed to future, consumption. It is based on comparisons of utility across different points in time or different generations*.'

In other words, an NCA is considering that people generally place more value on immediate costs or benefits in the present as compared to those that occur in the future. Consequently, there is an opportunity cost[19] to spending money now rather than saving whatever for future consumption. The idea of discounting is contentious amongst environmental economists and there are a wide range of figures used by different organisations from 0 to 10%. Even different rates are employed where the capital assets are privately owned, with other figures for those that relate to common property resources or public goods (Khan & Greene, 2013)[20].

[17] Sagger H. & Bezzano M (2024) '*Embedding a Culture and Heritage Capital Approach'* Department of Culture, Media & Sport. https://assets.publishing.service.gov.uk/media/67613c15822e581bd8f7d61a/Final_ECHCA_Accessible_16_12_24.pdf

[18] HM Treasury (2024) '*The Green Book: Central Government Guidance on Appraisal and Evaluation*.' HM Treasury. Accessed at: https://assets.publishing.service.gov.uk/media/6645c709bd01f5ed32793cbc/Green_Book_2022__updated_links_.pdf

[19] Opportunity Cost: the loss of alternatives when one alternative is chosen, or the profit foregone from a missed opportunity.

[20] Kahn, J. and Greene, P., 2013. Selecting discount rates for natural capital accounting. *Issue paper*, *2*.

The current accepted discounting rate by the UK government is 3.5% for most attributes, excluding health which has a value of 1.5% for 1 to 30 years (HM Treasury, 2024)[21]. These figures reduce over time to 3.0% and 1.29% respectively from 31 to 75 years. They are applied to the baseline year value to calculate a 50-year figure for each attribute (HM Treasury, 2024: Tables 7 & 8). An example is shown in Table 6 where an attribute has a baseline value of £9000. In other words, as each year goes by the financial value of a stock or flow degrades by 3.5% or 3% etc..; it's a bit like compound interest, but in reverse.

Table 6 – Example of Discounting 1 to 50 years using £9000 NPV
(Source: HM Treasury, 2024; Tables 7 & 8)

Year	Discounting factor (3.5% 1 to 30 yrs, 3% 31 to 50 yrs)	Standard Discounted Value	Health Discounting Factor (1.5% 1 to 30 yrs and 1.29% 31 to 50 yrs)	Health Discounted Value
0	0.0000	9000.00	0.0000	9000.00
1	0.9962	8965.80	0.9852	8867.00
2	0.9335	8401.50	0.9707	8735.96
3	0.9019	8117.10	0.9563	8606.85
4	0.8714	7842.60	0.9422	8479.66
5	0.8420	7578.00	0.9283	8354.34
6	0.8135	7321.51	0.9145	8230.88
7	0.7860	7073.92	0.9010	8109.24
8	0.7594	6834.70	0.8877	7989.40
9	0.7337	6603.58	0.8746	7871.33
10	0.7089	6380.27	0.8617	7755.01
11	0.6849	6164.51	0.8489	7640.40
….	….	…..	….	….
46	0.2220	1998.00	0.5215	4693.50
47	0.2156	1940.40	0.5149	4634.10
48	0.2093	1883.70	0.5083	4574.70
49	0.2032	1828.80	0.5019	4517.10
50	0.1973	1775.70	0.4955	4459.50
TOTAL VALUE (50 years)		**213502.44**		**317092.84**

Discounting is, nevertheless, simplistic with regards to the wider environment and other capitals operating within it. For example, capital attributes can, year on year, increase their financial value; carbon can accumulate as a flow created as trees mature and storage increases. Thus, a newly created wood stores less carbon than a wood which is 10 or 20 years old reaching a maximum around 40 to 60 years, then slowing as trees age (Table 7). These rates are also influenced by species, diurnal and seasonal patterns, and leaf cover

[21] HM Treasury (2024) '*The Green Book: Central Government Guidance on Appraisal and Evaluation*.' HM Treasury.

(Wilkinson *et al*., 2016)[22]. Therefore, both the Forestry Commission and UK Government are cautious about developing Woodland carbon credit systems paying for tonnes of CO_2 or C stored.

Table 7- Carbon Sequestration changes with Age (Source: Table 8, Glynn, 2013)[23]

Woodland Type		Age Class (Years)							
		0-10	11-20	21-40	41-60	61-80	81-100	>100	Total
Conifer	Area (000ha)	0.3	3.5	2.7	7.1	1.7	0	0	15.3
	tCO2/ha/year	2.6	11.0	9.3	6.6	4.5	0	0	
	Total tCO2	780	38500	25110	46860	7650	0	0	118900
Broadleaf	Area (000ha)	0.2	6.9	6.4	10.4	6.7	6.5	4.1	41.1
	tCO2/ha/year	1.4	8.4	18.1	6.3	3.9	3.3	2.0	
	Total tCO2	280	57960	115840	65520	26130	21450	8200	295380
Total	Area (000ha)	0.5	10.4	9.1	17.5	8.4	6.5	4.1	56.4
	Total tCO2	1060	96460	140950	112380	33780	21450	8200	414280

The application of discounting to other capitals is also complex. For instance, social capital is known to increase and decrease temporally and spatially, as does cultural capital[24]. An example here is the operation of Commoners Association and the commoners within it and their ability to maintain communal activities[25]. Increased financial hardship, foreclosure of tenancies and lack of succession can all reduce social and cultural capital[26]. In contrast, formation of partnerships and CICs can stabilise and even enhance these types of capital[27].

Human capital, in the form of education is cumulative for everyone until 16 in the UK, then can become specialist from 16 to 21 (FE and HE qualifications). After that, people train for certain and/or within professions through CPD and over time their skills increase. People can volunteer providing labour and improve their own knowledge and skills. Some volunteers are highly skilled such as those who conduct species identification for a hobby and then offer that knowledge gratis to a charity. Knowledge and skills can also be lost as rural industries

[22] Wilkinson, M., Crow P., Easton EL., Morison JIL. (2016)' Effects of management thinning on CO2 exchange by plantation oak woodland in Southeast England.' *Biogeosciences* Vol 13: 2367-2378.

[23] Glynn M. (2013) '*Marches Timber Study: building the evidence base for a Woodland Enterprise Zone*.' In association with Sandwood Enterprise on behalf of the Forestry Commission

[24] Pretty J. & Ward H. (2001) 'Social Capital and the Environment.' *World Development* Vol.29(2):209-227. https://doi.org/10.1016/S0305-750X(00)00098-X

[25] Burton R, Mansfield L, Scharwz G, Brown L (2005) '*Social Capital in Hill Farming*' A report for the International Centre for the Uplands

[26] Morgan O. (2024) '*Belonging and Connecting: The value of social and cultural capitals within the UK hill farming community*.' Unpublished PhD, University of Cumbria: Carlisle, UK.

[27] Mansfield L. & Morgan O. (2024) '*The Contribution of Wasdale Farming to Social and Cultural Capital of Wasdale and the Lake District.*' On behalf of Wasdale CIC.

become uneconomic or replaced by other resources, such as coppice management, hefting or thatching.

The increase and decrease of capital attributes are also affected by interdependencies between attributes[28]. In some instances, an increase in one may lead to a reduction in another, or positive feedback; for example, the desire to improve upland habitat may need the reduction in livestock grazing, thus whilst natural capital should increase, farming social and cultural capital can decline as farmers abandon commoning [29]. Consequently, capital attributes are dynamic, constantly spiralling up and down continuously [30] affected by the priorities and objectives of each situation, as to whether capital components improve or decline.

The corollary of this brief discussion about discounting is that the tool lacks the sophistication to fully credit benefits and costs operating in a 'multiple capitals' framework. With this proviso, discounting will be applied to enable some form of comparison with other single capital accounts.

2.3.3 Double Counting

A final feature warranting further discussion is that of 'double counting'. Double counting refers to the way in which multiple financial values of an attribute are included in different parts of a Natural Capital Account multiple times[31]. For example, we may calculate and include the monetary values of ecological, landscape aesthetic and practical management skills monetary values of a hedge separately in three different parts of a Natural Capital Account. In doing so, we are accounting for different embedded attributes of the hedge three times, when in fact there is only one hedge. One way to overcome this double (or even triple) counting is to identify the monetary value of a hedge and then split that figure down into its component values using some form of weighting system for each value. Powell *et al.* (2019)[32] applied this approach in relation to the ecosystem services provided by drystone walls in a valuation study for Historic England, more successfully for some values than others.

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[28] Pigg K., Gasteyer SP., Martin KE., Keating K. & Apaliyah GP. (2013) 'The Community Capitals Framework: an empirical examination of internal relationship.' *Community Development* Vol.44(4):492-502 https://doi.org/10.1080/15575330.2013.814698

[29] Morgan O. (2024) '*Belonging and Connecting: The value of social and cultural capitals within the UK hill farming community*.' Unpublished PhD, University of Cumbria: Carlisle, UK.; Mansfield L. (2025) '*Multiple Capitals Approach and Upland Agricultural Resilience*.' Taylor & Francis: London.

[30] Emery M. & Flora C. (2006) 'Spiraling-Up: Mapping Community transformation with Community Capitals Framework.' *Community Development* Vol.37(1):19-35. https://doi.org/10.1080/15575330609490152 ; Mulema AA., Boonabaana B., Debevec L., Nigussie L., Alemu M. & Kaaria S. (2021) 'Spiraling up and down: Mapping women's empowerment through agricultural interventions using the community capitals framework in rural Ethiopia, *Community Development* Vol.52(1):113-130 https://doi.org/10.1080/15575330.2020.1838589

[31] Lui S., Constanza R., Farber S. & Troy A. (2010) 'Valuing Ecosystem Services: Theory, Practice and the need for transdisciplinary synthesis' *Ecological Economics Reviews* Vol. 1185(1) 54 to 78

[32] Powell J., Lake J., Gaskell P., Courtney P., & Smith K (2019) '*Developing an ecosystem approach – drystone walls*' research Report Series no43/201, Historic England.

In contrast, with respect to the Multiple Capitals Account concept, we *should be aiming to disaggregate* multiple attribute values to enable us to account for the different capital stocks and flows. For example, a drystone wall has natural (ecological), human (walling skills), cultural (landscape aesthetic) and financial (agricultural) values. In this respect it is important to recognise that:

- NCA and MCA are conceptually related but aiming to do two very different jobs.
- An NCA suffers from capital appropriation, whereas an MCA explicitly recognises the individual capital components which constitute 'the wall'.
- In accounting for multiple capitals embedded in a landscape attribute, the full value of the attribute is being recognised.
- By recognising explicitly, the different capital values it directs us to appreciating the importance of other capitals in the production of a landscape's attributes which could be overlooked if implicitly embedded.

The corollary is that these variations provide a clearer understanding of capital dimensions which might need further explicit support or may be currently overlooked or dismissed as unimportant, typically elements of human or social capital (Mansfield,2025).

2.4 Update of Valuation Techniques

Several updates are of use to this MCA, which are specifically related to woodlands include[33]:

- The removal of air pollution by trees calculated at £580/ha for broadleaves and £170/ha for conifers
- Carbon sequestration rates by woodlands at 6.2tonnes/ ha [this seems to be an average based on the work of Glynn,2013; but there is no information on how it was derived nor what type of woodland to which it relates (broadleaf, conifer or mixed)].
- The value of flood regulation for broadleaves (£302/ha), conifers (£342/ha.), heather moorland (£144/ha.) and grassland (£140/ha.)
- Visitor Welfare from ORVAL updated 2022 – Woodlands £2054/ha/yr and part of a larger landscape calculated at £392/ha/yr.

Whilst the NCS (2024) report, commissioned by FLD, included other natural capital flows, there were no additional monetized flows beyond those in the Little Asby Study (Mansfield *et al*., 2024)[34]. Similar flows were calculated, but methodologies varied:

- Air Quality
- Carbon
- Water quality and flood regulation
- Recreation
- Health & well-being.

A comparative analysis was completed as part of the discussion in this report which looked at methodology and accounting lines.

Given the type of volunteer activities occurring at Hows Wood, different MET (Metabolic Equivalent of Task) values were applied to various conservation tasks as follows:

- Path maintenance: 6.3 METS
- Drystone walling: 6.0 METS

[33] https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/woodlandnaturalcapitalaccountsuk/2022

[34] See note 1.

- Woodland management skills: 5.3 METS

These figures were derived from the closest equivalent tasks found on the international *Compendium of Physical Activities* [35]. There are no 'countryside management tasks' listed, but there are arboricultural and horticultural tasks which were used as the nearest equivalents.

2.5 Summative Comments

This brief literature review has provided an overview of Multiple Capitals for those unfamiliar with the concept, its relationship to landscape and the methodology previously employed for Little Asby Common. The second part of the literature review has considered the application of various Natural Capital Accounting tools for other types of capital *viz a vis*, stocks & flows and discounting. Third, it has considered double counting across the different capitals and finally reviewed any new accounting tools that have become available since the Little Asby Common report. The review has also introduced new developments regarding cultural capital and the work of DCMS and finally, added new relevant accounting techniques.

The next part of the report focuses on the methodology to answer a range of questions posed through the review of Little Asby Common MCA to enable a new MCA iteration for Hows Wood.

[35] https://pacompendium.com Accessed: 15/02/24

3 METHODOLOGY

3.1 Introduction

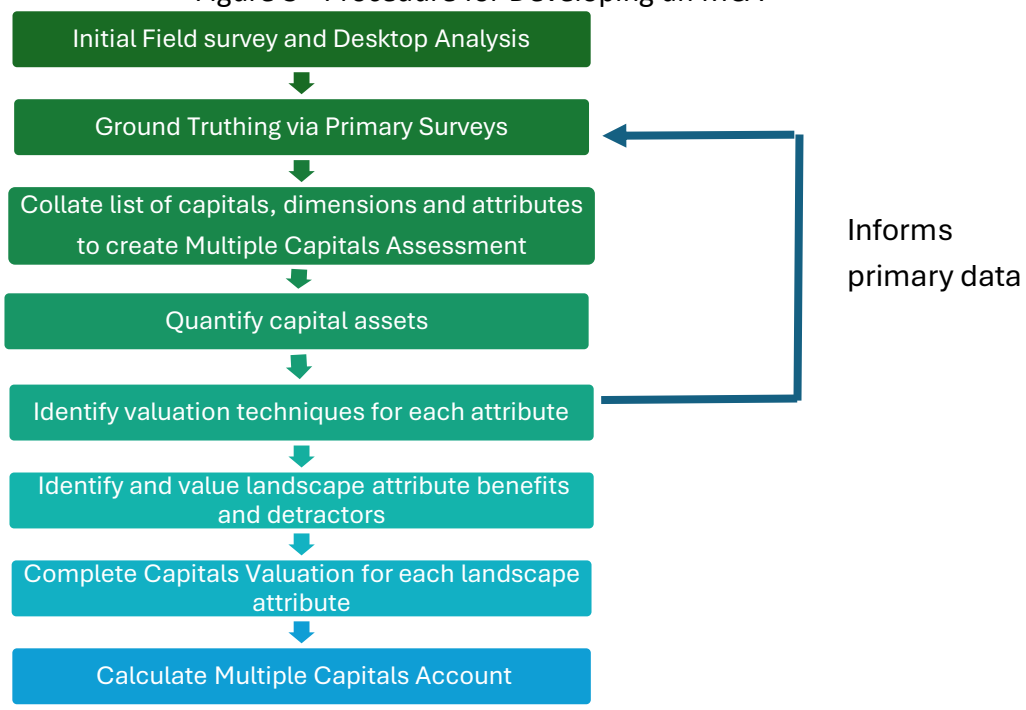
The methodology for this piece of work is designed to be iterative in terms of the previously developed Multiple Capitals Accounting methodology developed for Little Asby common. In doing so it will address the following objectives:

- To calculate a Multiple Capitals Account for Hows Wood including 'stocks & flows' along with discounting for 50 years.
- To review Account B for Little Asby Common and apply a 'stocks & flows' approach along with discounting for 50 years.
- To employ any new valuation techniques to reduce reliance on WTP
- To attain a target of 300 respondents to the Hows Wood WTP survey
- To compare the accounts for Little Asby Common and Hows Wood
- To critically review the overall findings

3.2 Calculation of a Multiple Capitals Account

Following on from the first three stage described in the Literature Review above, Figure 3 shows the processes used to develop a full MCA.

Figure 3 - Procedure for Developing an MCA



The ground truthing phase was supported by a review of Natural Capital Accounting (NCA) methodologies. Whilst still evolving, these provide an approach to value other capitals and

their attributes. A range of databases exist summarising methods and valuation techniques (eg. ENCA, 2021; HM Treasury's Green Book, DCMS Culture & Heritage Capital Evidence Bank accessed: and the ONS, 2021)[36] as well as an evolving academic literature.

Using all these sources three overarching valuation methods are available to us:

- *Direct Market value* – this refers to items with monetary value already extant. For example, livestock sale prices or gross margins per ha/Livestock Unit or salary information
- *Benefits transfer* – monetary values are gleaned from other databases or past studies for similar or near similar capital assets or attributes eg. Christie & Rayment (2012)[37] developed a system for SSSI habitats
- *Indirect Market Valuation* – applying selected techniques to gather monetary values from primary survey, such as stated preference (eg Contingent Valuation Method) or revealed preference.

The most appropriate valuation technique was selected for each attribute.

A useful CVM method employed was 'Willingness to Pay' (WTP), which can be used as a proxy measure when no other valuation tool is available. WTP asks people how much they are willing to pay for X or Y to generate a value (Willis *et al.,* 1993)[38]. The method has a long history of application in many contexts and is recognised by the HMRC's Green Book as valid. Having said this, it is important to appreciate it has several weaknesses related to bias if not careful in design and requires a large primary data set to be gather of at least 300 respondents, of which FLD attained 244 for Little Asby Common and Hows Wood 154 (see Mansfield *et al.*,2024[39] for this context).

The final phase of the process was to devise a data collation and mapping system for all the landscape attributes and their valuations. The following proforma, adapted from Yorkshire Water (2021), was devised for this task (Table 8 over).

For each account, **Benefits** (positive effect) and ***Detractors*** (negative effect) are calculated for each landscape attribute. For example, for SSSI habitats a benefit would relate to those units in favourable condition and a detractor, those which are not.

Three types of account can then be calculated:

- Account A – Total Maximum Value (Public Responses ie all WTP & Direct Market Values and infilled with Benefit Transfers)

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[36] ENCA (2021) *Data Services Handbook* Enabling a Natural Capital Approach guidance - GOV.UK (www.gov.uk); HM Treasury 2024 - see note 21; DCMS (2024) - https://www.gov.uk/guidance/culture-and-heritage-capital-research-and-outputs ; ONS, 2021 Accessed at: https://www.ons.gov.uk/economy/environmentalaccounts/methodologies/uknaturalcapitalaccountsmethodologyguide2021

[37] Christie M & Rayment M (2012) 'An economic assessment of the ecosystem service benefits derived from the SSSI biodiversity conservation policy in England and Wales' *Ecosystem Services* Vol 1 p70 to 84.

[38] Willis K., Garrod GD. & Saunders CM. (1993) '*Valuation of the South Downs and the Somerset Levels and Moors Environmentally Sensitive Area Landscapes by the General Public*.' Research report to MAFF, Centre for Rural Economy, Dept of Agricultural Economics and Food Marketing, University of Newcastle Upon Tyne.

[39] See note 2

- Account B – Total Threshold Value (Max. Benefit Transfers, Direct Market Values and gaps infilled with total land area WTP from surveys when no other methodology is available)
- Account C – Total Minimum Value (Min. Benefit Transfers, Direct Market Values and gaps infilled with direct WTP from surveys when no other methodology is available)

Table 8 – Capitals Accounting Proforma

		Which main class of capital attribute belongs to		
Dimension		Capital dimension		
Attribute		Landscape attribute		
Indicator		**Method**	**Unit**	**Source**
A	Name of attribute to be measured	Methodological approach for quantification and/or condition	Units of measurement	Primary data from LAC survey OR secondary source of published data
B	Several indicators may be needed			
C	Often the monetisation method	Using Direct Market Value, Benefits Transfer or Indirect Market Valuation	£	As per attribute
Asset/Stock		**Calculations**		
A		Assets in terms of quantity eg hectares of habitat, no. of people		
B		Assets in terms of quality eg different carbon capture values by habitat		
Monetary Flows		**Calculations**		
B		Cash value identified from method (could be primary or secondary source)		
Total Benefit (£)		Formula used to calculate cash value eg = A x B x C		
Total Detractor (£)		Formula used to calculate cash value		
£ Value		Actual cash value (identified as difference between benefit/ detractor)		
Notes on methodological calculations				
Notes here which define terms and variables used in calculations. AND/ OR A space to be used to update methodological developments from new studies				

In this exercise here for Hows wood, the methodology developed for Account B will be used to explore the use of stocks and flows and discounting concepts. Account B for Little Asby common can be found in Appendix 1.

3.3 Iterative Adjustment: Stocks & Flows

Based on the literature review and MCA site survey, Table 9 lists the division of capital attributes into stocks and flows for Little Asby Common and Hows Wood. Grants are not part of the Hows wood assessment as there are no active grants in 2025.

3.4 Iterative Adjustment: Discounting Values

Three sets of rates will be used to calculate 50 years of discounting:

- 3.5% for 1 to 30 years and 3% for 31 to 50 years all attributes excluding the following two sets;
- 1.5% for 1 to 30 years and 1.29% for 31 to 50 years for volunteer & visitor well-being, and air quality in line with the Green Book.
- 2% increase per annum for salary increases and contractor work

Table 9 – Capital Attributes: Stocks and Flows

CAPITAL	ATTRIBUTE	LITTLE ASBY COMMON	HOWS WOOD
Stocks			
Natural	Geology	✓	✓
Natural	Limestone Pavement	✓	NA
Natural	Habitats	✓	✓
Natural	Species	✓	✓
Human	Site Management (Volunteers)	✓	✓
Human	Site Management (WDLP staff)	✓	NA
Human	Site Management (FLD staff)	✓	✓
Human	Site Management (NE Staff)	✓	NA
Human	Site Management (Contractors)	✓	✓
Social	Commoners Association	✓	NA
Social	Commoners labour	✓	NA
Social	Communal grazing	✓	NA
Cultural	Archaeology & Built Heritage	✓	✓
Cultural	Local History, legends & place names	✓	✓
Cultural	Drystone Walls	✓	✓
Cultural	Routeways & trading routes	NA	✓
Cultural	Woodland skills	NA	✓
Cultural	Drystone Walling Skills	✓	✓
Financial	Utilities	✓	NA
Flows			
Natural	Air Quality	✓	✓
Natural	Carbon Sequestration /storage/mgt	✓	✓
Natural	Water storage & flood management	✓	✓
Human	Discovery & Learning	✓	✓
Human	Social Learning	✓	NA
Human	Volunteer wellbeing	✓	✓
Human	Visitor Recreation well being	✓	✓
Human	Skills from volunteering	✓	✓
Human	Employment opportunities	NA	✓
Social	Picnicking	✓	✓
Social	Volunteers SROI (activities & opportunities	✓	✓
Social	Volunteer groups	✓	✓
Social	Local community SROI (sense of community)	✓	✓
Social	Organised events	✓	✓
Social	Educational Visits	✓	✓
Social	Research, field trips and studies	✓	✓
Cultural	Dark Skies	✓	✓
Cultural	Vistas & views	✓	✓
Cultural	Tranquillity	✓	✓
Cultural	Openness & Wildness	✓	✓
Cultural	Art & Literature	✓	✓
Cultural	Recreation	✓	✓
Cultural	Access	✓	✓
Cultural	Permissive paths & PROWs	NA	✓
Cultural	Visitor visit value	✓	✓
Cultural	Inspiration	✓	✓
Financial	Grants	✓	NA
Financial	Farm gross margins	✓	NA
Financial	Multiplier effects (farm business)	✓	NA
Financial	Multiplier effects (local businesses)	✓	✓

Agri-Environment (AES) grants were extrapolated from the previous AES which ended in 2019 and now has a series of formally agreed rollovers. From 2025 an extrapolated grant was calculated. Each ten-year block was assumed to see the same payment per annum in line

with the previous standard NE agreement. Each 'new extrapolated' grant was calculated to have another 20% compound value on the previous one (ie to represent a 2% per annum increase if grant rates were in line with annual inflation).

3.5 Increasing WTP survey respondents

Following on from our experience of the Little Asby Common survey, various attempts were made by the author, FLD and the Landscape team at NE to encourage more respondents for the Hows Wood survey to reach the 300 benchmark. This included:

- Focused FLD campaign including press releases, mailings to members and supporters, regular mentions in FLD's 'Postcard from the Lakes'.
- Circulation of the survey nationally via the Ecosystem Services Network, CPRE Network, NE Staff nationally and locally.
- FLD paid for a social media campaign as well as writing to local Parish Council networks, local businesses and local walking networks eg Lakeland Way.
- Posting the survey on the December edition of Europarc Atlantic Isles Newsletter
- The Woodland Trust circulated the request in their internal newsletter
- Lobbying UG students and staff at University of Cumbria

4 FINDINGS

4.1 Introduction

The first part of the results section (4.2) covers a brief site description of Hows Wood. The next section (4.3) is a reworking of Multiple Capitals Account B (original in Appendix 1) or Little Asby Common from Mansfield *et al.* (2023), considering NPV (Net Present Value) and 50-year discounting, as well as a division into stocks and flows. Asset calculations have not been updated from the previous work, based on time limitations. Section 4.4 provides a Multiple Capitals Account for Hows Wood and includes: stocks and flows, NPV and discounting. Section 4.5 compares Little Asby Common and Hows Woods in terms of assets measured and some comparative data analysis. The results are discussed further in the next section.

4.2 Site Description – Hows Wood

Hows Wood covers 8 ha (20 acres) in upper Eskdale located in the far western edges of the Lake District National Park and World Heritage Site. It sits upon a glacial roche moutonnée[40] reaching to 10m above sea level surrounded on three sides by grazing land belonging mainly to the National Trust and a road on the fourth. The wood can be divided into two main compartments, the northern part classed as semi-natural ancient woodland and the southern area as ancient, replanted woodland (FLD, 1992; Figure 4).

Figure 4a – Northern Compartment

Figure 4b – Southern Compartment

[40] Roche moutonnée – an asymmetrical rock outcrop formed by glacial scouring (scraping and abrading) on a valley floor. The rock has a smooth rounded up-glacier face and a jagged gently sloping tail down glacier in the direction of ice flow.

The vegetation is dominated by upland sessile oak and birch with a shrub layer of rowan, holly and some hazel, with an associated ground flora. The ground flora of the lower slopes of the site is particularly rich in ferns, mosses, lichens and slime molds, giving the site a unique sense of place (Figure 5; Bullard, 2023).


Figure 5a –Ferns & Mosses of the lower slopes. Figure 5b – A Slime Mold

Historically, the wood was managed as coppice serving the local bobbin mills and bark for tanning. The remains of a bark peelers hut can be seen close to the road boundary (Figure 6a) and an old Brengun carrier from the war (Figure 6b). In 1967 the Forestry Commission acquired the wood and re-afforested the area with Japanese Larch, Sitka Spruce and Lodgepole Pine. Once the FLD had bought the wood in 1987 they set about clearing the conifers over 25 years to allow the restoration of the semi-natural woodland (FLD, 1992).


Figure 6a – The Bark Peelers Hut Figure 6b – Remains of WWII Bren Gun Carrier

FLD also restored the boundaries (drystone walls and fences) to make them stock proof, improved the circular footpath, inserted bridges, improved access points and installed a viewing platform at the northern edge (pers. comm. J Darrall, 07/07/24; Figure 7). A Public Right of Way footpath leads from the road to the Open Access National Trust land on the other side of the wood, dedicated 2015. FLD also created in 2013 a circular walk linking the road to permitted access onto National Trust land and other public rights of way. This is now a PRoW (Figure 8).

Figure 7 – Looking West from the Viewing Platform towards the Old Man of Coniston

Figure 8 - Public Right of Way through Hows Wood

FLD continue to manage the woodland for low level recreational access. Interpretation is provided on the FLD website including a virtual 360 tour of the wood[41]. FLD regularly survey the biodiversity the most recent of which have been birds and lower plants[42]. Trees are regularly monitored for windblow etc., walls and fenced checked and maintained.

4.3 Reworked Little Asby Accounts

The MCA for Little Asby was reworked by dividing previous Account B into stocks and flows forming an NPV (Net Present Value), equivalent to a Natural Capitals Account, but delineating other capitals in a similar fashion (this is a first attempt to do this) (Tables 10 and 11).

Adjustments to Account B have been: movement of grants from a financial capital detractor to a flow, and the movement of drystone walling skills to cultural stock, in line with CHC typology development work (Lawson *et al.*, 2024) and the movement of learning to flows. A 50-year Discounting account was also calculated.

[41] FLD Hows wood 360 Virtual Tour accessible at: https://www.friendsofthelakedistrict.org.uk/hows-wood

[42] Friends of the Lake District (var. dates) Bird Surveys, Higher, Lower Plants

4.3.1 Stocks & Flows

Table 10 – Multiple Capital **Stock** NPV Account for Little Asby Common

CAPITAL	DIMENSION	ATTRIBUTE	BENEFIT (£)	DETRACTOR (£)
Natural	Geodiversity	Limestone Pavement & Geology	484,090.29	
Natural	Ecosystems	Habitats	375,159.42	*263,940.12*
Natural	Ecosystems	Species	329,968.43	
Human	Labour	Site Management (Volunteers)	13,600.00	
Human	Labour	Site Management (WDLP staff)	4,885.10	*1,234.64*
Human	Labour	Site Management (FLD staff)	1,734.68	*350.48*
Human	Labour	Site Management (NE Staff)	444.22	*119.60*
Human	Labour	Site Management (Contractors)	79,877.00	*4,357.00*
Social	Bonding Network	Commoners Association	1,702.80	
Social	Reciprocity & Exchange	Commoners labour	26,396.37	*5,680.29*
Social	Common Rules & Norms	Communal grazing	777,029.61	
Cultural	Heritage	Archaeology & Built Heritage	1,029,024.88	
Cultural	Heritage	Drystone Walls	4,149,608.07	
Cultural	Skills	Drystone walling	669,600.00	
Financial	Currency	Utilities	8141.00	
		Total Natural	1,189,218.14	263940.12
		Total Human	100,541.00	6061.72
		Total Social	805,128.78	5680.29
		Total Cultural	5,848,232.95	0
		Total Financial	8,141.00	0
		Total Benefits (£)	**7,951,261.87**	
		Total Detractors (£)		275,682.13
		TOTAL STOCK Net Present Value	**7,675,579.74**	

Table 11 – Multiple Capital **Flow** NPV Account for Little Asby Common

CAPITAL	DIMENSION	ATTRIBUTE	BENEFIT (£)	*DETRACTOR (£)*
Natural	Air	Air Quality	3114.54	
Natural	Natural Processes & Functions	Carbon Sequestration	54,356.13	
Natural	Freshwater	Water storage & flood management	297,290.56	
Human	Education	Discovery & Learning	778,910.72	
Human	Education	Social Learning	112,475.32	
Human	Well being	Volunteer wellbeing	39,950.23	
Human	Well being	Visitor Recreation well being	214,108.26	*66.30*
Social	Recreation & sport	Picnicking	0	
Social	Reciprocity & Exchange	Volunteers SROI	128,626.35	
Social	Bridging Network	Local community (minus Commoners) SROI	181,250.00	
Cultural	Recreation and sport	Visitor visit value	181,047.36	*96.12*
Cultural	Landscape Aesthetics	Dark Skies	256,449.74	
Cultural	Landscape Aesthetics	Vistas & views	736,888.30	
Cultural	Landscape Aesthetics	Tranquillity	1,030,369.38	
Cultural	Landscape Aesthetics	Openness & Wildness	930,027.91	
Cultural	Heritage	Local history & place names	1,043,116.48	
Cultural	Heritage	Art & Literature	252,862.40	
Cultural	Recreation & Sport	Access	12,032,729.60	
Cultural	Inspiration	Inspiration	505,724.80	
Financial	Currency	Grants	852,278.67	
Financial	Currency	Farm gross margins	191,168.00	
Financial	Currency	Multiplier effects (farm business)	137,182.50	
Financial	Currency	Multiplier effects (local shops)	501,438.00	
		Total Natural	354,761.23	
		(DW skills have been moved to Cultural STOCK) Total Human	1,145,444.53	*66.30*
		Total Social	309,876.35	
		Total Cultural	16,969,215.97	*96.12*
		(Grants have been moved into benefits column) Total Financial	1,682,067.17	
		Total Benefits (£)	**20,461,365.25**	
		Total Detractors (£)		*162.42*
		TOTAL FLOW Net Present Value	**20,461,202.83**	

4.3.2 Multiple Capitals NPV Baseline

Table 12 - Multiple Capital Account Baseline Year: Little Asby Common
(Source: Mansfield et al., 2023; reworked data)

CAPITAL	STOCKS	FLOWS	TOTAL
Natural	925,278.02	354,761.23	1,280,039.25
Human	94,479.28	1,145,444.53	1,239,923.81
Social	799,448.49	309,876.35	1,109,324.84
Cultural	5,848,232.95	16,969,119.97	22,147,752.92
Financial*	8,141.00	1,682,067.17	1,690,208.17
Sub Totals	**7,675,579.40**	**20,461,365.25**	
		Total Net Present Value	***28,136,782.57***

* grants have been reallocated from detractor to flow benefits column

NPV results show that the MCA for Little Asby Common was calculated as £28.1m, the majority of which was cultural capital (£22.1m) or 78.7% of the total (Table 12). Financial capital came second followed by human, natural, and then social. Subjective ranking from the Online Survey, placed natural capital benefits the highest followed by human, cultural, financial and then social.

For stocks cultural capital was valued the most (£5.8m) followed by natural (£925k), then social (£799k), human (£94k) and financial (£8k) last. For flows the order was cultural (£16.9m), financial (£1.7m), human (£1,1m) natural (£355k) and finally, social capital (£310k). With respect to stocks and flows, the ratio between the two for each capital was calculated. The total Stock to Flow ratio is 2.67, meaning that for every £1 of stock generated, £2.67 of flows follow. For each capital group the ratios are:

- Natural 1: 0.38
- Human 1: 12.12
- Social 1: 0.39
- Cultural 1: 2.09
- Financial 1: 206.62

Natural and Social capital produce more stocks than flows. In contrast, human, cultural and financial capital generate more flows per £1 of stock. The financial flow is high due to the inclusion of Agri-Environment and HLF grants. Removing these led to the ratio reducing to 1: 101.93. Another way of thinking about financial capital is to consider the value of grant investment for Little Asby Common. Consequently, the spend of £852,278.67 has supported £27.2m of multiple capitals (a ratio of every £1 of grant investment supporting £32 of stocks and flows, £9 and £23 respectively).

Analysis of labour for management purposes showed that in total £126,937.37 has been spent of which £79,877 was for specific contracts. The cost of day-to-day management is therefore £47060.37 for the baseline year (including landscape professionals, volunteers and commoners). This equates for every pound spent on labour £597 of multiple capitals is generated, of which the commoners generate £335 and the landscape professionals £262. Of course, we acknowledge that in the future we need to calculate how much of some of the benefit accrued is directly from the labour done and its multipliers. The rest is accrued from the part that labour plays in the whole land management process as described by the

multiple capital stocks and flows. Further work would need to be done to define these levels specifically to consider concepts such as leakage, displacement and/or deadweight.

4.3.3 50-Year Multiple Capitals Discounted Value Account

Application of a 50-Yr Discounting model calculated a total value of £733.4m for Little Asby Common of which stocks will total £216m and flows £516.7m (Table 13). Thus, for every £1 of stock, £2.39 of flows will be generated. Overall, cultural capital will generate the most total value (£563.4m) or 76.8%. This will be followed by financial (£76.4m), human (32.6m), natural (£31.6m) and social capital (£29.1m).

Table 14 shows with respect to stocks, cultural capital could generate the most (£170.1m) followed by natural (22.8m), social (£21.5m), human (£1.4m) and financial (£710k). For flows, cultural capital could generate £393.3m, followed by financial (£75.8m), human (31.2m), natural (£8.8m) and social (£7.6m).

Table13 – Summative 50-Yr Discounting: Little Asby Common

CAPITAL	STOCKS	FLOWS	TOTAL
Natural	22,847,520.84	8,795,918.63	31,643,439.47
Human	1,413,233.11	31,215,813.17	32,629,046.28
Social	21,532,565.24	7,651,652.76	29,184.218.00
Cultural	170,165,334.94	393,256,680.80	563,422,015.74
Financial*	710,473.13	75,842,573.07	76,453,046.20
Sub Totals	216,669,127.26	516,762,638.43	
		Total 50-Yr Discounted Value	***733,431,764.87***

With respect to stocks and flows, the ratio between the two for each capital was calculated. The total Stock to Flow ratio could be 2.39, meaning that for every £1 of stock generated, £2.39 of flows could follow. For each capital group, the ratios could be:

- Natural 1: 0.38
- Human 1: 22.09
- Social 1: 0.36
- Cultural 1: 2.31
- Financial 1: 106.75

Table 14 – 50-Yr Discounting Model: Little Asby Common

STOCKS			FLOWS		
CAPITAL	**ATTRIBUTE**	**Discounted Value**	**CAPITAL**	**ATTRIBUTE**	**Discounted Value**
Natural	Limestone Pvt. & Geology	11953447.89	Natural	Air Quality	112847.57
Natural	Habitats	2746293.69	Natural	Carbon Sequestration	1342194.20
Natural	Species	8147778.45	Natural	Water storage & flood mgt.	7340876.88
Sub Total Natural Stocks		*22,847,520.04*	Sub Total Natural Flows		*8,795,918.63*
Human	Site Mgt. (Volunteers)	1186885.46	Human	Discovery & Learning	19,233,330.84
Human	Site Mgt. (WDLP staff)	4885.10	Human	Social Learning	2,777,308.09
Human	Site Mgt. (FLD staff)	151387.24	Human	Volunteer wellbeing	1,447,496.71
Human	Site Mgt. (NE Staff)	38767.52	Human	Visitor Recreation well being	7,757,677.53
Human	Site Mgt. (Contractors)	31307.79			
Sub Total Human Stocks		*1,413,233.11*	Sub Total Human Flows		31,215,813.17
Social	Commoners Association	42046.56	Social	Picnicking	0
Social	Commoners Labour	2303637.33	Social	Volunteers SROI	3176119.01
Social	Communal Grazing	19186881.35	Social	Local community SROI	4475533.75
Sub Total Social Stocks		*21,532,565.24*	Sub Total Social Flows		*7,651,652.76*
Cultural	Archaeology & Built Heritage	25409299.75	Cultural	Visitor Visit Value	4470530.04
Cultural	Local History & place names	25757257.99	Cultural	Dark Skies	6332410.85
Cultural	Drystone Walls	102464612.23	Cultural	Vistas & views	18195564.57
Cultural	Drystone walling (skill)	16534164.96	Cultural	Tranquillity	25442498.95
			Cultural	Openness & Wildness	22964807.17
			Cultural	Art & Literature	6243830.10
			Cultural	Access	297119378.92
			Cultural	Inspiration	12,487,660.20
Sub Total Cultural Stocks		*170,165,334.94*	Sub Total Cultural Flows		*393,256,680.80*
Financial	Utilities	710,473.13	Financial	Grants	3,426,109.61
			Financial	Farm gross margins	16,683,420.52
			Financial	Multiplier effects (farm business)	11,972,052.51
			Financial	Multiplier effects (local shops)	43,760,990.42
Sub Total Financial Stocks		*710,473.13*	Sub Total Financial Flows		*75,842,573.07*
Total Multiple Capital Stocks		216,669,126.44	***Total Multiple Capital Flows***		516,762,638.43
GRAND TOTAL MULTIPLE CAPITAL DISCOUNTED VALUE					**733,431,764.87**

Natural and Social capital should produce more stocks than flows. In contrast, human, cultural and financial capital could generate more flows per £1 of stock. As before, financial capital low should be high due to the inclusion of Agri-Environment and HLF grants, even though extrapolated. Removing these led to the ratio reducing to 1: 101. Using the same idea about grant investment explored in NPV above, a 50-Yr spend of £3.4m could support £730m of multiple capitals (a ratio of every £1 of grant investment supporting £213 of stocks and flows, £63 and £150 respectively).

Employing the same methodology for labour as for NPV, day to day management (landscape professionals and commoners, not contractors) could cost around £3.7m over 50 years. This in turn suggests that for every pound spent on labour £198 of multiple capitals could be produced, with all the same caveats as discussed above.

4.4 Hows Wood Multiple Capitals Account

A Net Present Value, a 50-Yr Discounting Model both divided into stock and flows were calculated for Hows Wood using the same attribute (asset) allocations as the previous Little Asby Common MCA. This allowed for comparative work later in this report.

4.4.1 Stocks & Flows

Tables 15 and 16 show the MCA for Hows Wood calculating a NPV of £1.50m for stocks and £778K for flows, a total MCA value of £2.28m. The three most valued stocks are:

- Routeways (Cultural Capital)
- Species (Natural Capital)
- Drystone walls (Cultural capital) [using Powell *et al.*'s (2019) methodology].

The lowest valued capital stocks were the three Human ones, related to the management of the site, these cumulatively were valued at £6438. Nevertheless, the ratio of management to production of multiple capitals suggests that for every £1 of labour, a multiple capital value generated is £352[43] (same caveats as above).

With respect to flows, the three most valued *were:*

- Access & Public Rights of Way (cultural capital) - running through the wood and the adjacent Open Access land belonging to the National Trust
- Multiplier Effects (financial capital) for local businesses (shops, cafes, pubs, accommodation and the Ravenglass & Eskdale heritage railway)
- Sense of Community (Social capital) for the local community

Landscape Aesthetics for this site were not highly valued at all by people, in total the six attributes (assets) were valued at £34,356.48 collectively.

Table 15 – Multiple Capital Stock NPV Account for Hows Wood

CAPITAL	DIMENSION	ATTRIBUTE	BENEFIT (£)	DETRACTOR (£)
Natural	Geodiversity	Local Geology	4321.10	
Natural	Ecosystems	Habitats	8746.76	
Natural	Ecosystems	Species	324,582.00	
Human	Labour	Site Management (Volunteers)	1800.00	
Human	Labour	Site Management (FLD staff)	1038.15	
Human	Labour	Site Management (Contractors)	3600.00	
Cultural	Heritage	Archaeology & Built Heritage	1402.00	
Cultural	Heritage	Drystone walls & Boundaries	216,790.87	
Cultural	Heritage	Routeways & trading routes	501,800.00	
Cultural	Heritage	Local history, legends and place names	7996.60	
Cultural	Traditional practices	Woodland management skills	10,873.88	
Cultural	Traditional practices	Drystone Walling skills	55,000.00	
		Total Natural	**337,649.76**	
		Total Human	**6438.15**	
		Total Social	**0**	
		Total Cultural	**1,153,229.35**	
		Total Financial	**0**	
		Total Benefits (£)	***1,497,317.26***	

[43] Calculated by adding all stocks and flows together for Hows Wood (£2,275,327.78) then subtracting human capital stock (£6438) to give £2,268,889.78. This remaining value of all stocks and flows is then divided by 6438 to get a value of £352.

Table 16 – Multiple Capital Flow NPV Account for Hows Wood

CAPITAL	DIMENSION	ATTRIBUTE	BENEFIT (£)	*DETRACTOR (£)*
Natural	Natural Processes & Functions	Carbon Sequestration	3478.10	*249.64*
Natural	Freshwater	Water storage & flood management	2657.60	
Natural	Air	Quality - Clean & fresh	4715.40	
Human	Knowledge	Discovery & Learning	7875.00	
Human	Skills	Skills from volunteering	4110.00	
Human	Well being	Volunteer wellbeing	430.84	
Human	Well being	Visitor Recreation well being	53,707.60	
Human	Labour	Employment opportunities	2196.00	
Social	Cognitive	Organised events	1990.00	
Social	Cognitive	Educational visits	2012.00	
Social	Cognitive	Research, field trips & studies	0.00	
Social	Structural	Volunteer opportunities	3531.00	
Social	Relational	Sense of Community (SROI)	81,250.00	
Social	Relational	Volunteer groups (SROI)	67,109.40	
Social	Relational	Picnicking	12,652.75	
Cultural	Heritage	Art & Literature	1776.41	
Cultural	Landscape Aesthetics	Openness	6666.00	
Cultural	Landscape Aesthetics	Wildness	7767.90	
Cultural	Landscape Aesthetics	Vistas & views	4817.03	
Cultural	Landscape Aesthetics	Tranquillity	9942.99	
Cultural	Landscape Aesthetics	Inspiration	2459.33	
Cultural	Landscape Aesthetics	Dark skies	2703.23	
Cultural	Recreation & sport	Visitor visits value	4050.78	
Cultural	Recreation & sport	Access & PROW	359,366.00	
Cultural	Recreation & sport	Recreation	36,036.00	
Financial	Currency	Multiplier effects (local businesses)	94,958.00	
		Total Natural	**10,851.10**	**249.64**
		Total Human	**68,319.44**	
		Total Social	**168,545.15**	
		Total Cultural	**435,585.77**	
		Total Financial	**94,958.00**	
		Total Benefits (£)	**778,259.46**	
		Total Detractors (£)		
		TOTAL FLOW Net Present Value	**778,009.82**	
		Total Detractors (£)		
		TOTAL STOCK Net Present Value	**1,497,317.26**	

4.4.2 Multiple Capitals NPV Baseline

Further analysis of Hows Wood NPV shows that Cultural Capital accounts for the highest value at £1.59m or 69.8% of the total MCA. Natural capital is valued next at £348k, followed by social (£168.5k) and then financial (£95k), with human generating the lowest (£75k). This is probably due to the low levels of recreation and volunteering that take place in the wood. When compared to the subjective ranking from the Online Survey natural capital benefits were placed the highest followed by human, cultural, social and financial. The discrepancy

arose probably because only 55% of people had visited Hows Wood, but many people across the entire survey recognise the importance of such a site for well-being, thus health benefits are undervalued.

Table 17 shows that with respect to stocks, there are only three capitals generating value; cultural (£1.15m) natural (£338k) and human (£6k). Flows are generated for all capitals with cultural the highest (£436k) followed by social capital (£169k), financial (£95k), human (£68k) and lastly natural capital (£11k).

Table 17 - Multiple Capital Account Baseline Year Hows wood 2025

CAPITAL	STOCKS	FLOWS	TOTAL
Natural	337,649.76	10,601.46	**348,251.22**
Human	6438.15	68,319.44	**74,757.59**
Social	0	168,545.15	**168,545.15**
Cultural	1,153,229.35	435,585.77	**1,588,815.12**
Financial	0	94,958.00	**94,958.00**
Sub Totals	**1,497,317.26**	**778,009.82**	
		Total Net Present Value	***2,275,327.08***

The total Stock to Flow ratio is 0.52, meaning that for every £1 of stock generated, £0.52 of flows follow. The ratio between the two for each capital was calculated as follows:

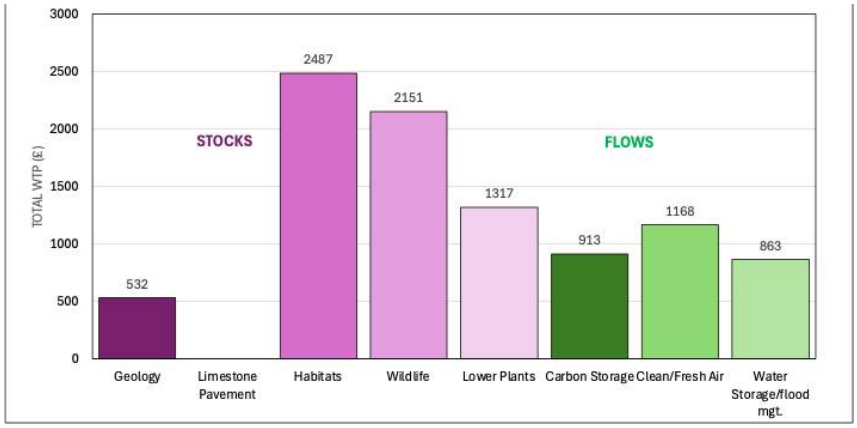
- Natural 1: 0.3
- Human 1: 10.61
- Social n/a (no stocks)
- Cultural 1: 0.38
- Financial (no stocks)

Natural and cultural capital therefore produce more stocks than flows in similar proportions. Human capital produces more flows than stocks. As for Little Asby Common, we can consider the value of labour for multiple capitals. The result is that for every pound spent on labour, £352 of multiple capitals occurs (again with all the same caveats as above).

Figures 9 to 13 show detailed analysis of ***Total WTP valuations*** for Hows Wood. For these diagrams stocks are represented as pink and flows as green.

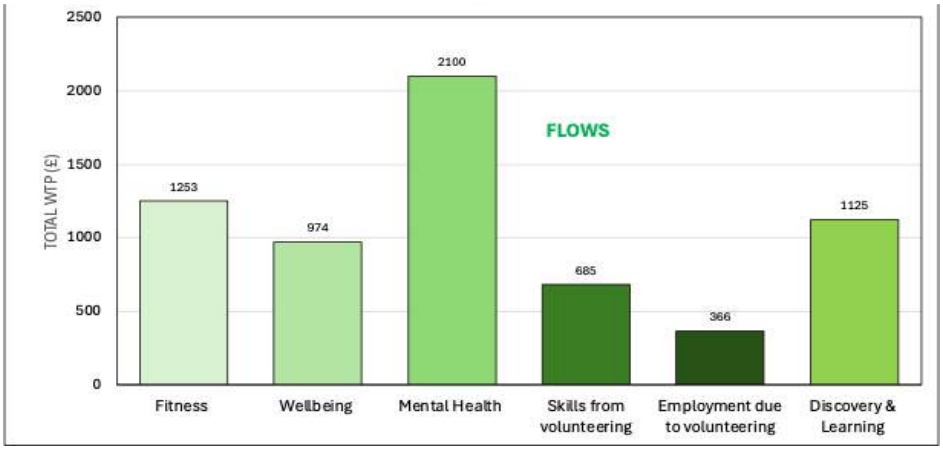
For natural capital, stocks were valued more than flows by survey respondents, apart from geology which has the lowest Total WTP (Figure 9).

Figure 9: Hows Wood: Total Willingness to Pay for Natural Capital Benefits 2025



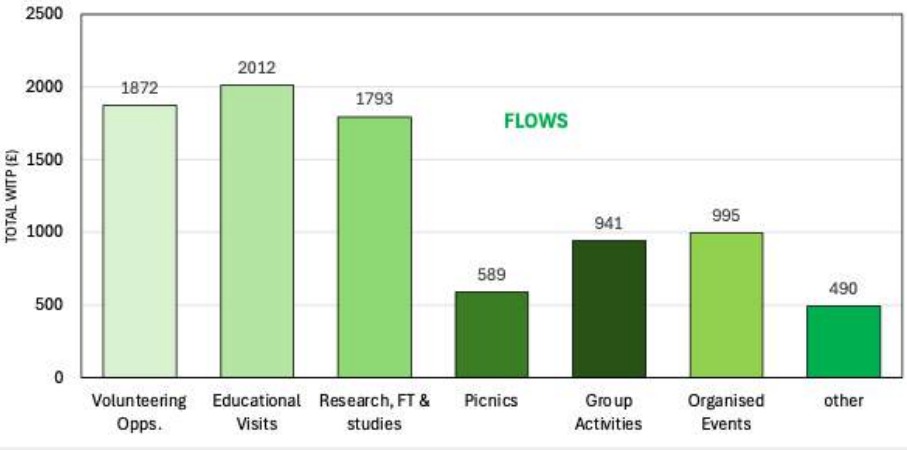
With respect to human capital, WTP was used to measure flows only. From Figure 10 it is evident that Mental Health was prized above all other human capital attributes (assets), followed by physical fitness (almost half of that of Mental Health) and then Discovery & Learning at £1125 total WTP.

Figure 10 - Hows Wood: Total Willingness to Pay for Human Capital Benefits 2025



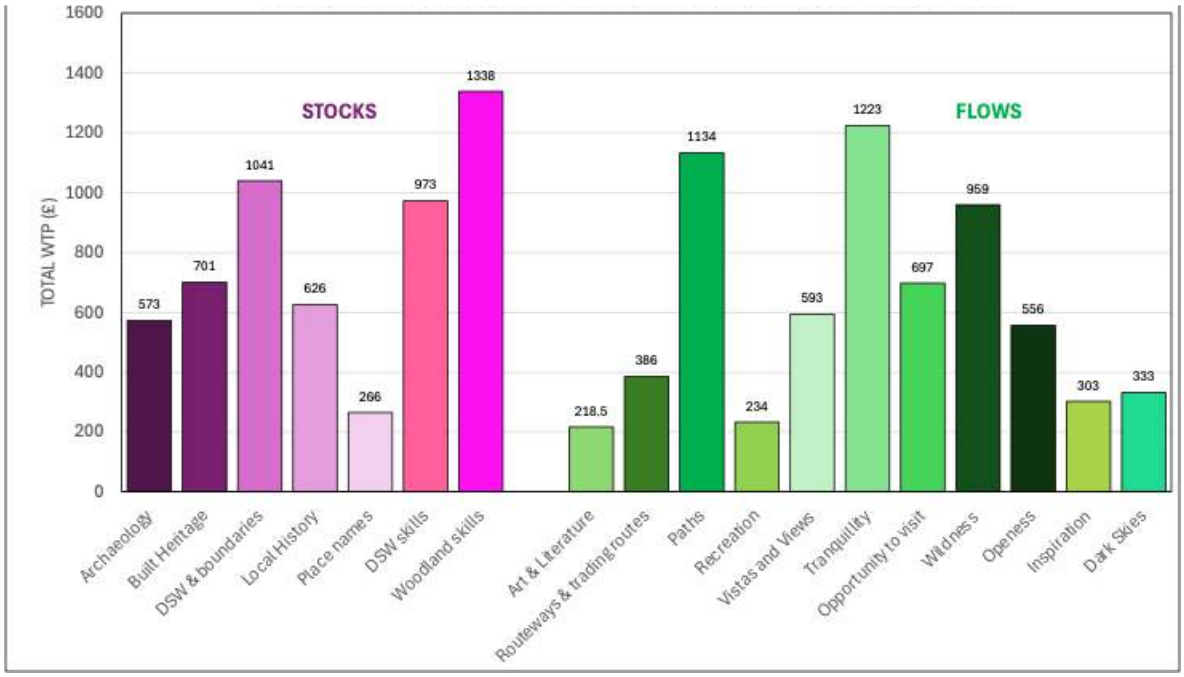
As with human capital, social capital WTP measured only flows (Figure 11). Educational visits and Volunteering were the most valued, whereas picnics the least. This reflected qualitative survey comments which were all for discouraging picnicking in the wood.

Figure 11 - Hows Wood: Total Willingness to Pay for Human Capital Benefits 2025



Cultural capital WTP valued both stocks and flows (Figure 12). For cultural stocks, skills (woodland and drystone walling) and the walls themselves were valued the most with Total WTP calculated at £1338, £1041 and £993 respectively. The three lowest valued cultural stocks were all Heritage assets. Finally, for cultural capital flows, total WTP was highest for tranquillity (£1223), paths (£1134) and wildness (£973).

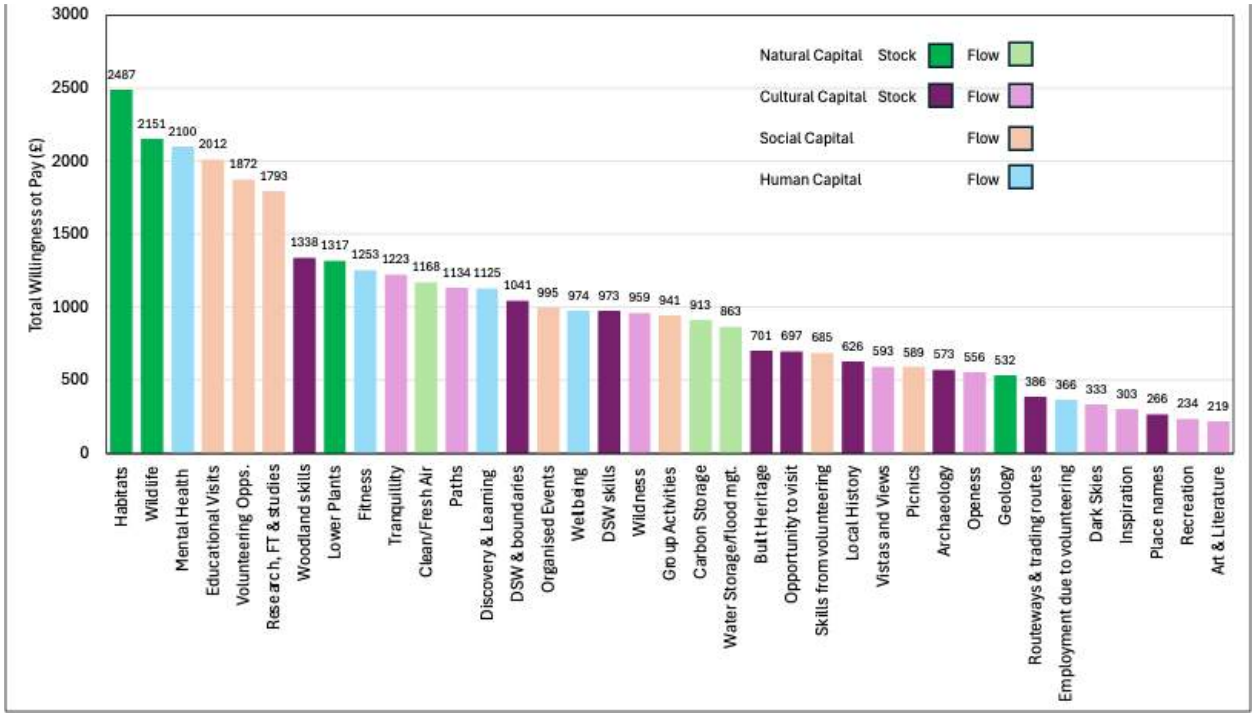
Figure 12 - Hows Wood: Total Willingness to Pay for Human Capital Benefits 2025



Finally, Figure 13 shows all the attributes (assets) across the four capitals where WTP was employed as a technique. It shows that natural capital stock, human flows and social flows were the three highest valued of all the assets measured in this exercise (£2487 to £1793). At

the other end of the spectrum a range of cultural capital flows, measured using WTP, were the least valued.

Figure 13 - Hows Wood: Total Willingness to Pay All Attributes



4.4.3 50-Yr Discounting Model Hows Wood

Overall, How Wood could generate £58m of multiple capitals over the next 50 years, of which £32m is stock and £26m flows (Table 18). Thus, for every £1 of stocks supported, £0.81 of flows could be created.

Table 18 – 50Yr Discounted Multiple Capitals Account for Hows Wood

STOCKS			FLOWS		
CAPITAL	**ATTRIBUTE**	**Discounted Value**	**CAPITAL**	**ATTRIBUTE**	**Discounted Value**
Natural	Geology	106,669.19	Natural	Air Quality	151,285.18
Natural	Habitats	215,980.25	Natural	Carbon Sequestration	79,719.07
Natural	Species	8,014,773.49	Natural	Water storage & flood mgt.	65,623.05
Sub Total Natural Stocks		*8,337,452.93*	Sub Total Natural Flows		*296,627.31*
Human	Site Mgt. (Volunteers)	157,087.78	Human	Discovery & Learning	194,454.23
Human	Site Mgt. (FLD staff)	79,418.47	Human	Skills from volunteering	358,683.77
Human	Site Mgt. (Contractors)	38,066.69	Human	Volunteer wellbeing	15610.41
			Human	Visitor Recreation well being	1,945,960.62
			Human	Employment opportunities	191,647.09
Sub Total Human Stocks		*274,572.94*	Sub Total Human Flows		*2,706,356.11*
N/A			Social	Organised events	49,138.27
			Social	Educational visits	49,681.51
			Social	Research, field trips & studies	0.00
			Social	Volunteer opportunities	87,189.57
			Social	Sense of Community (SROI)	2,006,273.75
			Social	Volunteer groups (SROI)	1,657,195.57
			Social	Picknicking	312,429.29
Sub Total Social Stocks		*0*	Sub Total Social Flows		*4,161,817.97*
Cultural	Archaeology & Built Heritage	34,619.03	Cultural	Art & Literature	43,864.18
Cultural	Drystone walls & Boundaries	5,353,130.24	Cultural	Openness	164,600.87
Cultural	Routeways & trading routes	12,390,746.68	Cultural	Vistas & views	118,945.05
Cultural	Local history, legends and place names	197,456.85	Cultural	Wildness	191,787.42
Cultural	Woodland mgt Skills	948,974.27	Cultural	Tranquillity	245,518.27
Cultural	Drystone walling skills	4,799,904.42	Cultural	Inspiration	60,727.25
			Cultural	Dark skies	66,727.08
			Cultural	Permissive paths & PROWs	8,873,660.89
			Cultural	Visitor visits value	100,024.29
			Cultural	Recreational access	889,822.53
Sub Total Cultural Stocks		*23,724,831.48*	Sub Total Cultural Flows		*10,755,696.86*
		0	Financial	Multiplier effects (local businesses)	8,192,120.62
Sub Total Financial Stocks		*0*	Sub Total Financial Flows		*8,192,120.62*
Total Multiple Capital Stocks		32,336,857.35	***Total Multiple Capital Flows***		26,112,618.87
GRAND TOTAL MULTIPLE CAPITAL DISCOUNTED VALUE					**58,449,476.22**

With respect to capital stocks and flows, Table 19 shows that natural and cultural could produce more stocks than flows, 0.04 and 0.45 respectively. For human capital, more flows should be produced for every £1 of stock, a value of £9.86. As there are no stocks for social and financial capital a ratio cannot be calculated.

Table 19 – Summative 50-Yr Discounting: Hows Wood

CAPITAL	STOCKS	FLOWS	TOTAL
Natural	8,337,452.49	296,627.31	8,634,079.80
Human	274,572.94	2,706,356.11	2,980,929.05
Social	0.00	4,161,817.97	4,161,817.97
Cultural	23,724,831.48	10,755,696.86	34,480,528.10
Financial*	0.00	8,192,120.62	8,192,120.62
Sub Totals	32,336,857.35	26,112,618.47	
		Total 50-Yr Discounted Value	**58,449,476.22**

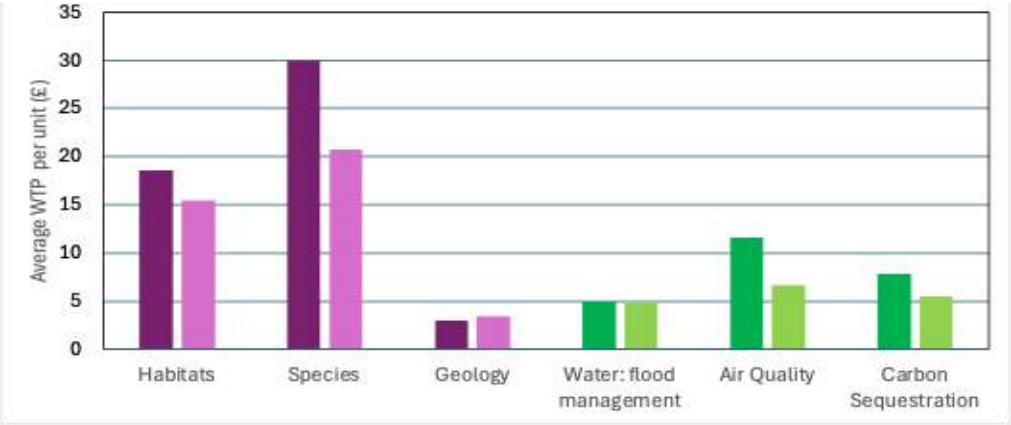
With respect to labour, over 50 years one pound could generate £24,614 of multiple capitals, using the previous methodology with the same caveats.

4.5 Comparison between Hows Wood survey respondents: FLD Membership vs. Non-FLD Public

The online survey data for Hows wood identified 25 FLD members versus 129 non-members who returned WTP values. Figures 14 to 17 provide comparison by capital. Overall, the average WTP for FLD members is £8.14, in contrast the average for non-FLD Public is £5.89.

For natural capital (Figure 14), the biggest discrepancies come from Species (£30.00 vs £20.78 FLD: Non-FLD) and Air Quality (£11.60 vs £6.70).

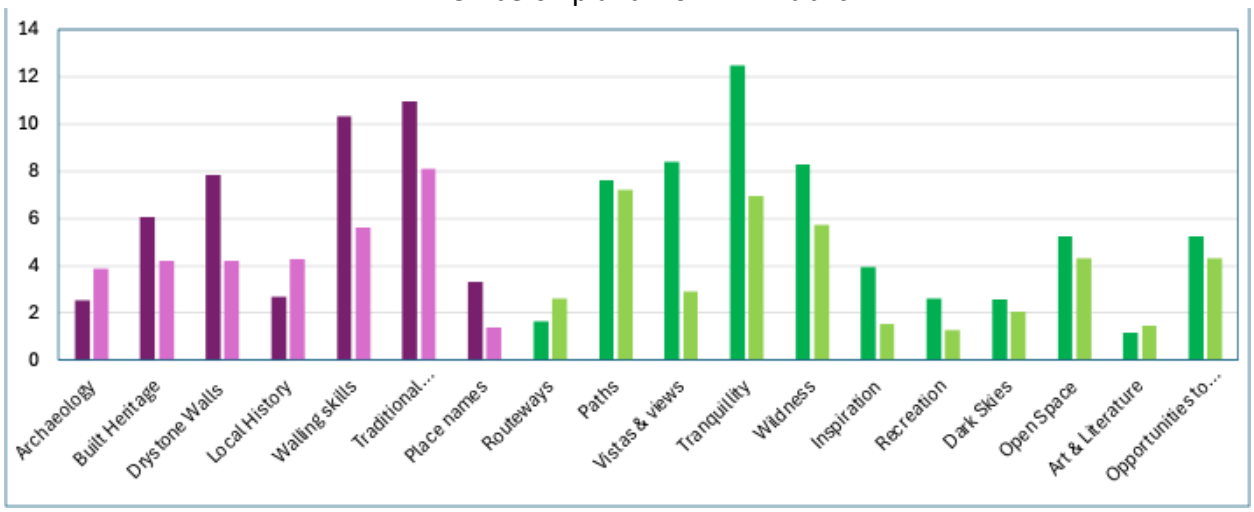
Figure 14 – Comparison of Natural Capital Average WTP values for Hows Wood: FLD Membership and Non-FLD Public



(key: dark shades members and light shades the public)

For cultural capital (Figure 15) the greatest differences were for Walling skills (£7.84 vs. £4.19), Vistas and Views (£8.40 vs. £2.92) and Tranquility (£12.48 vs. £6.95).

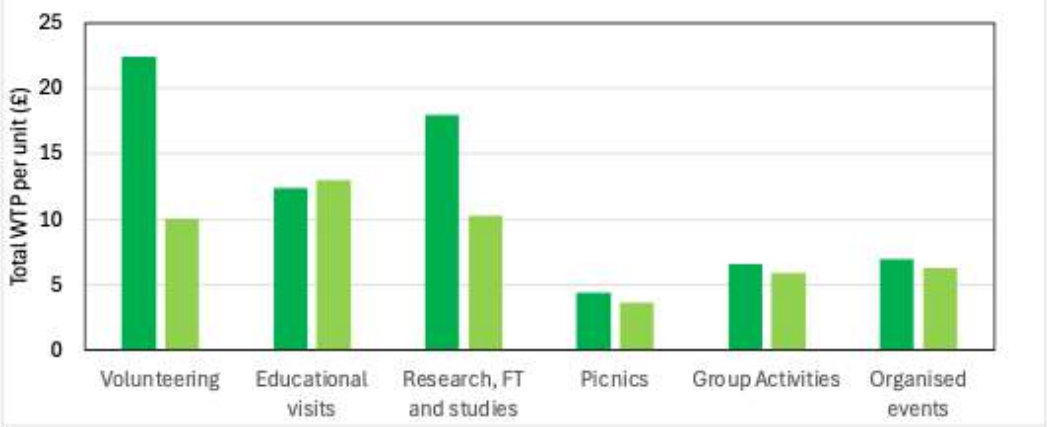
Figure 15: Comparison of Cultural Capital Average WTP values for Hows Wood: FLD Membership and Non-FLD Public



(key: dark shades members and light shades the public)

Social capital attributes (Figure 16) were most disparate for Volunteering (£22.40 vs. £10.02) and Research, Field Trips and site studies (£18.00 vs. £10.25).

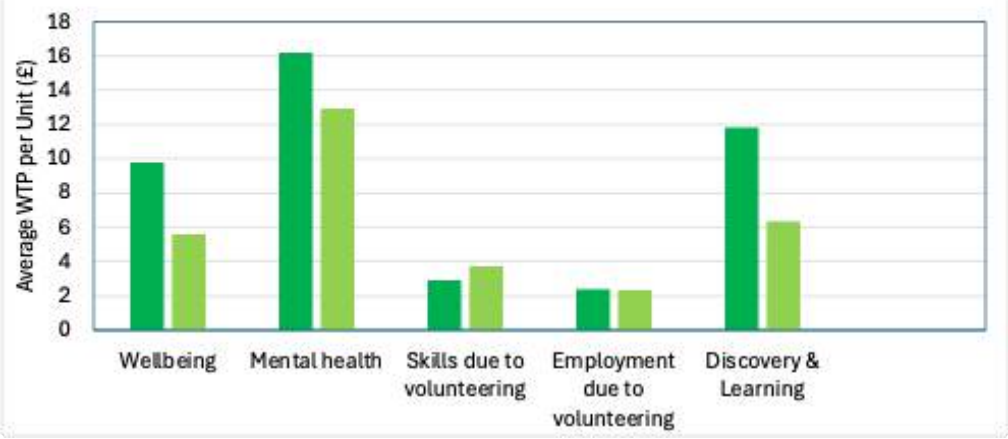
Figure 16: Comparison of Social Capital Average WTP values for Hows Wood: FLD Membership and Non-FLD Public



(key: dark shades members and light shades the public)

Finally, for Human Capital average WTP (Figure 17) was at its greatest variance for Mental Health (£16.20 vs. £12.94) and Discovery & Learning (£11.80 vs. £6.34).

Figure 17: Comparison of Human Capital Average WTP values for Hows Wood: FLD Membership and Non-FLD Public



(key: dark shades members and light shades the public)

In all these cases, FLD members valued attributes more than Non-FLD Public. The data also reveal that only in six instances (over 36 attributes) do the non-FLD Public value attributes more than FLD members. These were: Geology (NC stock), Archaeology (CC stock), Local History (CC stock), Routeways (CC stock), Educational visits (SC flow) and Skills due to Volunteering (HC flow). All of these could be labelled as *place-specific* attributes.

Whilst there were variations between the individual attributes, overall, there were no statistically significant differences in the medians between FLD membership and non-FLD public via the Mann-Whitney U-test (Table 20).

Table 20– Mann-Whitney U Test Results: Comparing FLD members to non-FLD Public average WTP results for main Capitals

	Stock/ flow/ both	No. of Assets Compared	U calculated Value	U critical Value	Confidence Level	Result
Natural	Both	6	15	5	95%	Not sign.
Human	Flows	6	13	5	95%	Not sign.
Social	Flows	6	12	5	95%	Not sign.
Cultural	Both	18	119	99	95%	Not Sign.

4.6 Comparison between LAC and Hows Wood

The aim in this section is to compare the results for Little Asby Common and Hows wood with regards to NPV and 50-Yr Discounting. Clear contrasts exist between the two sites in relation to dominant habitat type, LAC is a moorland, Hows is a woodland, and size, 464ha. and 8.1ha. respectively. It is also important to remember that for the WTP exercise the LAC MCA was calculated from 244 respondents and Hows Wood, 154. Little Asby Common resides outside the Lake District National Park/WHS but recently subsumed into the Yorkshire Dales National Park extension in 2016 and recently championed by an HLF Landscape programme. In contrast, Hows Wood lies deep within the Lake District, but is situated in one

of the more isolated, less accessible and visited valleys. LAC is managed ostensively by commoners and able to draw on agri-environment grants, whereas Hows Wood has access to neither resource, reliant on FLD and volunteers for its management. Finally, Little Asby common can be considered as a *landscape in itself*, whereas Hows Wood sits *within* a landscape.

4.6.1 Net Present Values

The MCA for Little Asby Common was calculated at £28.1m in contrast to Hows Wood, which was £2.28m. This was to be expected given the size of LAC in relation to Hows Wood. When site area is considered Little Asby Common generates around £60k per hectare in contrast to Hows Wood which generates £465k per hectare. For stock, the hectarage rate is £16.5k (LAC) compared to £185K (HW) and for flows, £44K (LAC) to £96k (HW). For three capitals (natural, human and cultural), Hows Wood generated ***more NPV per hectare*** than Little Asby Common, stocks and flows (Table 21). However, there are hidden subtleties in the data.

Table 21 – NPV Capital, Stock and Flow: Comparisons between Little Asby and Hows Wood

	Total Little Asby Common	**Little Asby Common per ha**	**Total Hows Wood**	**Hows Wood per ha**	**LAC:HW (Total value)**	**LAC:HW (per ha)**
STOCKS						
Natural	925,278.02	1,994.13	337,649.76	41,685.16	2.74	0.05
Human	94,479.28	203.62	6,438.15	794.83	14.67	0.26
Social	799,448.49	1,722.95	0.00	0.00		
Cultural	5,848,232.95	12,603.95	1,153,229.35	142,373.99	5.07	0.09
Financial	8,141.00	17.55	0.00	0.00		
Totals	***7,675,579.74***	***16,542.20***	***1,497,317.26***	***184,853.98***	***5.13***	***0.09***
FLOWS						
Natural	354,761.23	764.57	10,601.46	1,308.82	33.46	0.58
Human	1,145,444.53	2,468.63	68,319.44	8,434.50	16.77	0.29
Social	309,876.35	667.84	168,545.15	20,808.04	1.84	0.03
Cultural	16,969,215.97	36,571.59	435,585.77	53,776.02	38.96	0.68
Financial	1,682,067.17	3,625.14	94,958.00	11,723.21	17.71	0.31
Totals	***20,461,365.25***	***44,097.77***	***778,009.82***	***96,050.60***	***26.30***	***0.46***

Overall, Little Asby Common generates twice as much total flow to stock as Hows Wood did (£3.02 to 1.52 respectively; Table 22). Little Asby Common generates more benefits per hectare for the stock it has than Hows Wood; ie we get more 'bang for our buck'. For those individual capital stock:flow ratios which could be compared (ie. natural, human and cultural), natural ratios are of a similar magnitude and direction (LAC cf. HW 0.38 and 0.03 respectively).

Table 22 – Ratios of NPV Stocks to Flows:
Comparisons between Little Asby Common and Hows Wood

Capital	**Little Asby S:F ratio**	**Hows Wood S:F ratio**
Natural	0.38	0.03
Human	19.21	10.61
Social	0.39	-
Cultural	3.28	0.38
Financial	206.62	-
TOTAL	**3.02**	**1.52**

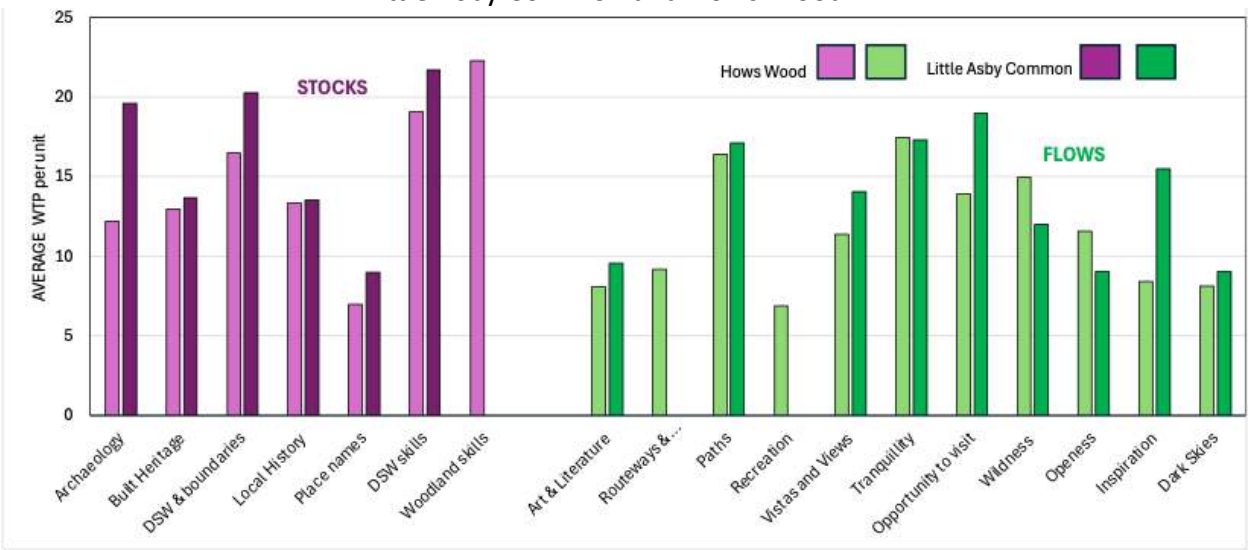
Thus, more natural capital stock than flows are generated for both sites, although it is greater for the Common. For human capital, both site ratios show at least a ten-fold increase in flows generated from a unit of stock (LAC cf. HW 19.21 and 10.61 respectively), although twice as much flow is generated at Little Asby (probably due to the much higher levels of recreation undertaken at the site). For cultural capital, there is a site disparity for stocks to flows (LAC cf. HW 3.28 and 0.38), demonstrating that greater flows are generated from stock at Little Asby in contrast to Hows Wood, where it is the reverse, lots of stock generating little flow. This disparity is probably due to the rich archaeological heritage of Little Asby Common, in contrast to Hows Wood. In summary, cultural and human capital flows are much greater at Little Asby than Hows Wood.

Application of the Mann-Whitney U test comparing Average WTP medians (for each of the four capitals using WTP) show that there is no difference in the monetary values respondents provided for different attributes (assets) for Natural, Human and Social capital (Table 23). In other words, these three capitals are valued the same on both sites through WTP. In contrast, cultural capital between the two is statistically different (U calc=37 @ 95% confidence). Further investigation splitting stocks from flows found stock total WTP values were not different, but the flows were statistically different. However, there seems to be no pattern in the variance, ie. random assets (attributes) have higher average WTP (Figure 18).

Table 23 – Mann-Whitney U Test Results for Little Asby Common Compared to Hows Wood

	Stock/ flow/ both	No. of Assets Compared	U calculated Value	U critical Value	Confidence Level	Result
Natural	Both	7	9	8	95%	Not sign.
Human	Flows	6	10	2	95%	Not sign.
Social	Flows	6	9	5	95%	Not sign.
Cultural	Both	18	37	74	95%	Sign.
Cultural	Stocks	7	9	6	95%	Not sign.
Cultural	Flows	11	13	23	95%	Sign.

Figure 18 – Cultural Capital Stocks & Flows: Comparison between Little Asby Common and Hows Wood



4.6.2 50-Year Discounting

The 50-Year Discounted MCA for Little Asby Common is projected to be around £594m in contrast to Hows Wood, at nearly £91m. When site area is factored into the MCA, a hectare of LAC could generate £1.3m compared to £11.2m for Hows Wood. As before, 'the devil is in the detail'. Table 24 shows a comparison between the two sites as a set of stock to flow ratios. Overall, the figures suggest that LAC will generate £2.39 of flows for every £1 of stock, in contrast to Hows Wood, where £1 stock could generate only £0.81.

For both sites, £1 of natural capital stock could be associated with low flow figures (£0.38 LAC and £0.04 HW respectively). Human capital values are projected to be the converse for both sites large, ie for £1 of human capital stock LAC might be associated with £22.09 and Hows Wood £9.86. With respect to cultural capital, there could be a contrast between the sites with Little Asby Common possibly generating more flows from the stock and Hows Wood the converse, less that £1 of flow from £1 of stock. There are no comparable results for social and financial capital as there was no 50-yr stock for Hows Wood.

Table 24 – Ratios of 50-Year Stocks to Flows:
Comparisons between Little Asby Common and Hows Wood

Capital	Little Asby S:F ratio	Hows Wood S:F ratio
Natural	0.38	0.04
Human	22.09	9.86
Social	0.36	-
Cultural	2.31	0.45
Financial	106.75	-
TOTAL	**2.39**	**0.81**

4.7 Summary of Findings

The following points can be made in relation to the re-calculation of the Multiple Capitals Account for Little Asby Common:

- The total NPV for Little Asby Common was £28.1m which can be divided into £7.68m of stocks and £20.5m flows.
- This calculates as an overall NPV stock to flow ratio of 2.67 (£1 stock to £2.67 flows).
- For LAC NPV, stocks cultural capital was valued the most (£5.8m) followed by natural (£925k), then social (£799k), human (£94k) and financial (£8k) last. For flows the order was cultural (£16.9m), financial (£1.7m), human (£1,1m) natural (£355k) and finally, social capital (£310k).
- AES and HLF grant investment at LAC of £852K is associated with 27.2m of multiple capitals.
- For every £1 spent on labour, £597 of capital was maintained.
- The 50-Yr discounting model for Little Asby common projects a possible value of £733.5m comprising £216.7m of stocks and £516.8m of flows.
- This calculates as an overall 50-Yr stock to flow ratio of 1:2.39.
- With respect to 50-yr projected stocks, cultural capital could generate the most (£170.1m) followed by natural (22.8m), social (£21.5m), human (£1.4m) and financial (£710k). For flows, cultural capital could generate £393.3m, followed by financial (£75.8m), human (31.2m), natural (£8.8m) and social (£7.6m).

- If AES grant investment continues at the same rate, a 50-Yr spend of £3.4m could support £730m of multiple capitals (a ratio of every £1 of grant investment supporting £213 of stocks and flows, £63 and £150 respectively).

With respect to the new Multiple Capitals Account for Hows Wood, the following has been determined:

- The total NPV for Hows Wood is valued at £2.28m of which stocks account for £1.5m and flows 778k.
- The most valued NPV stock attributes (assets) are Routeways (CC), Species (NC) and Drystone walls (CC), and the least are those related to site management (HC).
- £1 of labour is associated with £352 of multiple capitals.
- Most valued NPV flows are Access & PROW (CC), Multiplier Effects (FC) and Sense of Community (SC), suggesting Hows Wood is prized as a local community resource. On the other hand, Landscape Aesthetic attributes (assets) were valued the least.
- Cultural Capital accounts for the highest value at £1.59m or 69.8% of the total MCA. Natural capital is valued next at £348k, followed by social (£168.5k) and then financial (£95k), with human generating the lowest (£75k).
- The total Stock to Flow ratio is 0.52, meaning that for every £1 of stock generated, £0.52 of flows follow. Natural and cultural capital produce more stocks than flows. Human capital produces more flows than stocks.
- Specifically, analysis of Total WTP for Hows Wood WTP shows that natural capital stock, human flows and social flows are the three highest valued (£2487 to £1793), whereas a range of cultural capital flows, were the least valued.
- The 50-Yr Discounting Model suggests £58m of multiple capitals could be generated of which £32m is stock and £26m flows.
- Overall, for every £1 of stocks supported, £0.81 of flows could be created.
- With respect to capital stocks and flows, natural and cultural could produce more stocks than flows and for human capital, more flows could be produced for every £1 of stock.
- With respect to labour, over 50 years £1 could be associated with £24,614 of multiple capitals.
- A comparison of Average WTP between FLD and Non-FLD public from the online survey demonstrated that there were no statistically significant differences, but there were isolated variances, the largest being in relation to Species. FLD members valued 87.5% of attributes more than the Non-FLD public.

Finally, a comparison of results between Little Asby Common and Hows Wood led to the following main points:

- The MCA for Little Asby Common was calculated at £28.1m in contrast to Hows Wood, which was £2.28m.
- When site area is considered Little Asby Common generates around £60k per hectare in contrast to Hows Wood which generates £465k per hectare.
- For stock, the hectarage rate is £15k (LAC) compared to £185K (HW) and for flows, £45.5K (LAC) to £281k (HW).
- For three capitals (natural, human and cultural), Hows Wood generated ***more NPV per hectare*** than Little Asby Common, stocks and flows.
- Detailed NPV comparative analysis shows that Little Asby Common generates twice as much total flow to stock as Hows Wood does (£3.02 to 1.52 respectively).

- Little Asby Common generates more benefits per hectare for the stock it has than Hows Wood; ie we get more 'bang for our buck'.)
- For those individual capital stock:flow ratios which could be compared (ie. natural, human and cultural), natural ratios were of a similar magnitude and direction (LAC cf. HW 0.38 and 0.03 respectively).
- More natural capital stock than flows are generated for both sites, although it is greater for the Common.
- Cultural and human capital flows are much greater at Little Asby than Hows Wood.
- Comparing Average WTP via the Mann-Whitney U test shows that there is no difference in the monetary values respondents provided for different attributes (assets) for Natural, Human and Social capital. In other words, these three capitals are valued the same on both sites through WTP.
- In contrast, cultural capital is statistically different; further investigation found cultural capital stock total WTP values were not different, but the flows *were* statistically different. Ie. cultural capital flows are more important at Litle Asby Common than Hows Wood.
- The 50-Year Discounted MCA for Little Asby Common is projected to be around £594m in contrast to Hows Wood, at nearly £91m.
- When site area is factored into the 50-Yr MCA, a hectare of LAC could generate £1.3m compared to £11.2m for Hows Wood.
- However, the 50-Yr figures suggest that LAC will generate £2.31 of flows for every £1 of stock, in contrast to Hows Wood, where £1 stock could generate only £0.81.
- For both 50-Yr models for the two sites, £1 of natural capital stock could be associated with less that £1 for flows. Human capital values for both sites show the opposite more than £1 flows from £1 of stock. For cultural capital, 50-Yr modelling suggests LAC will more than £1 of flows per £1 of stock, whereas Hows Wood is the reverse.

5. Discussion

The purpose of this discussion is to reflect upon a range of issues raised through the development of the first MCA and to demonstrate how they have been addressed in this work on Hows Wood. It also provides an opportunity to compare the results between the two MCAs and the Natural capital Account produced for FLD by Natural Capital Solutions (2024). Finally, this discussion provides an opportunity to consider the value of conducting a Multiple Capitals Account exercise for wider landscape management.

5.1 Addressing Issues Raised Post- LAC MCA

The calculation of a second Multiple Capitals Account for Hows Wood provided an opportunity to review the process and develop it. Table 25 summarizes the various issues raised (core and other) and how they were addressed in this exercise using Hows Wood. The FLD team also met with the national Natural Capitals team of Natural England to resolve some of the issues and challenges encountered for the Little Asby Common MCA.

Table 25 – Tackling Post-Little Asby Common MCA issues

Issue	Suggested solution	Result
Core Issues to Address:		
Too short online survey window (4 weeks)	Increase the length of time the survey ran.	Survey ran from October 2024 to end of January 2025
Improve explanation of WTP to respondents	Instructions in the online survey	Fewer people raised issues with understanding how WTP worked.
Survey non-FLD members to remove organizational bias	Extend the survey to other online communities	Survey was extended to cover: • Focus FLD public campaign • Included in Ecosystem Services Network and CPRE Network • Sent to NE Staff nationally and locally. • Social media campaign. • Writing to local Parish Council networks, local businesses and local walking networks • Posted internally for students at local University campus with land management interests. • Posted Europarc Atlantic Isles Newsletter (124 protected areas organisations) WTP results between FLD members and the general public were compared
Ensure sample size meets the '300' threshold	Extension of survey outlets	154 (target not achieved)
Other considerations :		
Add in new valuation techniques	Review of research literature, EVRI and ENCA databases	Requests to various NCA specialists yielded no new techniques. See section 2.4. Updates: • The removal of air pollution by trees • Carbon sequestration rates by woodlands • The value of flood regulation for broadleaves • Visitor Welfare from ORVAL updated 2022

Provide NPV and 50-Yr extrapolations	Conduct 50-Yr discounting modelling	Conducted for Little Asby Common and Hows Wood
Include discounting rates of 3.5%	Apply 3.5% discounting rate	3.5% was applied as a standard minus the following: 1.5% health benefits as per Gov.UK guidelines +2% per year inflation for labour, contracting and grants
Explore conceptually the division into stocks and flows of other capitals beyond natural,	Review current knowledge relating to other capitals beyond natural capital.	See section 2.3.1 Inclusion of Cultural & Heritage Capitals work by Dept. of Culture, Media & Sport & Sagger & Bezzano (2024) and Lawson et al. (2024) Inclusion of Mansfeld (2025) ideas (textbook about multiple capitals) which reviewed all capitals contemporary position on the matter
Divide accounts into stocks and flows where possible	Re-structure LAC MCA Apply to Hows Wood MCA	Task completed see Sections 4.4 and 4.5 in this report.
Compare results between FLD and non-FLD members	Focus on Average WTP for 36 attributes in Hows Wood.	No statistically significant differences. Overall, FLD valued assets more than Non-FLD public in 87.5% of cases. See section 4.6 of report.
Closer inspection of double counting	Review the nature of double counting	Task completed see Section 2.3 – multiple capitals provide opportunity to value all attributes derived from individual assets. Eg drystone walls have ecological, cultural and skill components, all equally valid and thus should be valued.
Doing a local business survey	Collect local business data	Demand side: See online survey of people's expenditure in pubs, cafés, shops, accommodation and Ravenglass & Eskdale Railway. Supply side was not analyzed this time.

Whilst many of these issues were resolved in this second MCA, the sample size of the WTP element of the survey was not. There are several possible reasons for this this lack of attaining the 300 target, some of which were substantiated by respondents to this survey and the previous one. First, some people are simply philosophically and ethically opposed to placing a financial value on non-market or non-material goods, particularly those related to the natural environment. Second, people found WTP too complex a concept to 'get their heads round' and thus unable to give a fair response. Third, several respondents commented that the survey was too long and gave up part way through, even after several attempts. These challenges of WTP are not unusual and have been identified as problematic in previous research projects using this technique[44].

Another way of looking at this is to recognize that too few responses for the WTP results may not be statistically valid. Within the science of statistics, it is accepted that the larger the sample the more representative the results are of a population. This sample size also allows researchers to detect meaningful differences between sub-samples within the survey. Other

[44] Eg. McFadden D & Train K (2017) '*Contingent Valuation of environmental goods: a comprehensive critique.*' Edward Elgar Publishing: Cheltenham.

important factors considered for identifying a sample size which result in a sample size of 50 to 100 are[45]:

- Ensuring the margin of error is as small as possible – by this we mean the smaller the margin of error the more precise our results will be.
- Amount of variability in a population will affect accuracy, thus the more varied WTP values given, the larger sample needs to be.
- How confident we want to be in our results, that is the higher the confidence level the more likely our results are not atypical. For many statistical tests where the data are not normally distributed this tends to be 95%, ie. there is a 1:20 chance are results are atypical.
- Population size – this only becomes important if we aim to sample more than 5% of our population.

For WTP, 300 is often regarded as the best balance practical feasibility (cost) and statistical power. This is derived from the seminal work about WTP and contingent valuation by Mitchell & Carson (1992)[46] who suggest 250 to 2500, and from various polling research exercises demonstrating minimizing margins of error to around 5.6%. A review paper by Memon *et al.* (2020)[47] ranged from using a ratio of 5:1 per question asked (thus in our case 27 WTP questions needing 135 respondents) 384 employing the Krejcie and Morgan Table[48] and up to 500 using various sample size calculators. HM Government UK suggest 300 respondents are needed for a WTP methodology.

Nevertheless, we can also consider the standard errors a sample size contains. A standard error refers to how likely a sample mean varies from the population mean; thus, a large standard error suggests that the sample is not very representative of, or accurate, in terms of the population in question. As sample size increases so these errors decrease, *but the relationship between the two is not a proportional one*, instead the error is inversely proportional to the square root of the sample size and has a decay curve shape (Figure 19).

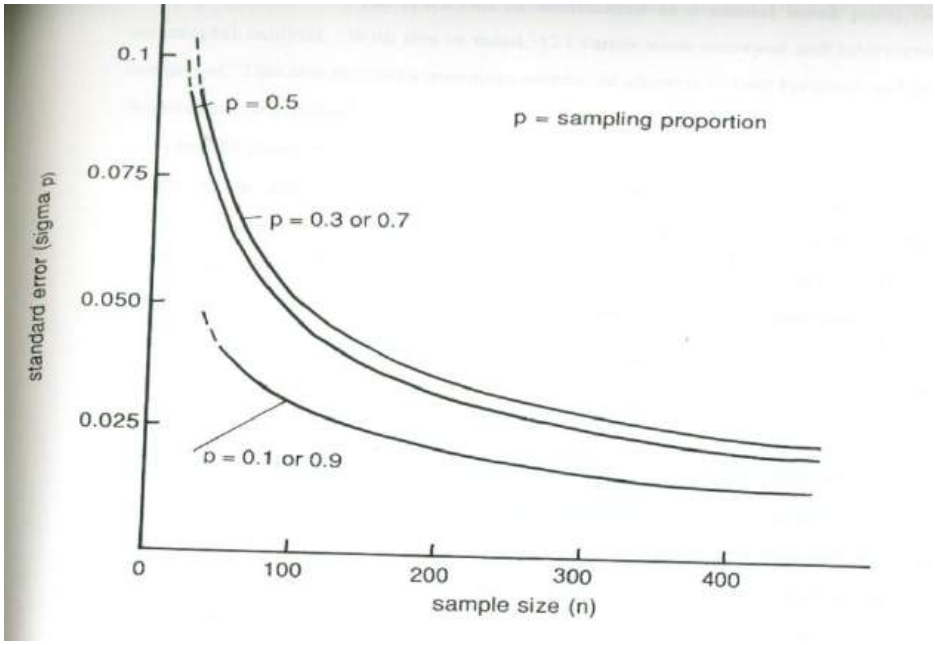
[45] National Audit Office (2001) 'A Practical Guide to Sampling.' Online: https://www.nao.org.uk/wp-content/uploads/2001/06/SamplingGuide.pdf accessed: 25/04/25.

[46] Mitchell RC & Carson R (1989) '*Using surveys to value public goods: the contingent valuation method.*' Washington DC: Resources for the Future.

[47] Memon MA, Ting H., Cheah J-H., Thurasmay R., Chuah F & Cham TH. (2020) 'Sample Size for Survey Research: Review and Recommendations.' *Journal of Applied Structural Equation Modeling* Vol.4(2)

[48] Krejcie RV & Morgan DW (1970) 'Determining sample size for research activities.' *Educational and Psychological Measurement* Vol 30:607-620.

Figure 19 - The Relationship between Sample Size and Standard Error



(Source: adapted from Silk, 1985:160[49])

Doubling or tripling the sample size does not double or triple the precision of our accuracy. Therefore, we can see from Figure 19, that once a sample size reaches 100 the magnitude to which the sample error can be reduced decays slowly, whereas a sample of less than a 100 sees the standard error increase rapidly. Arguably, a sample size of 100 can be seen as a natural break point for meaningful analysis, with between 150 to 250 suggestive of a representative sample, particularly when time and expense preclude more expansive surveys. This relationship also holds for various sampling proportions as well, as shown. In summary, whilst 300 seems to be the accepted norm for WTP experiments, there is scope to accept somewhere between 150 and 250 as satisfactory.

5.2 Comparing MCA results with Natural Capital Solutions Report (2024)

Between the Little Asby Common MCA and Hows Wood MCA, *Natural Capital Solutions* presented a Natural capitals Account for the Friends of the Lake District land portfolio (NCS, 2024). Table 26 shows the overlap in natural capital attribute valuations for LAC (2023) and Hows Wood (2025). Alternative capital in the table means that for Little Asby and Hows wood the data are part of a different capital family eg Visitor wellbeing is classified under Human capital, unlike the NCS report where it sits under Natural Capital.

[49] Silk J (1985) '*Statistical Concepts in Geography.*' Hemel Hempstead: Allen & Unwin Inc.

Table 26 – Comparing Natural Capiral Valuations: NCS (2024) and Two MCAs

Attribute	Stock/Flow	Included in NCS (2024)	Included in Mansfield et al. (2023)	Included in this Hows Wood report
Natural Capital				
Limestone Pavement & geology	Stock	No	Yes	Geology
Habitats	Stock	Yes	Yes	Yes
Species	Stock	No	Yes	Yes
Air Quality	Flow	Yes	Yes	Yes
Carbon Sequestration	Flow	Yes	Yes	Yes
Water storage & flood management	Flow	No	Yes	Yes
Water supply regulation	Flow	Yes	No	No
Water flow regulation	Flow	Yes	No	No
Pollination	Flow	Yes	No	No
Local Climate regulation	Flow	Yes	No	No
Food Production	Flow	Yes[2]	Alternative capital	N/A
Timber & woodfuel production	Flow	Yes	N/A	No
Recreation	Flow	Yes[1]	Alternative capital	Alternative capital
Human Capital				
Visitor well being	Flow	Alternative capital	Yes	Yes
Cultural				
Recreation value	Flow	Alternative capital	Yes[4]	Yes
Financial				
Farm Gross Margins	Flow	Alternative capital	Yes[3]	N/A

Footnotes 1-4: calculated in different ways

Whilst there seem to be accounting lines which overlap, it is important to point out that techniques for measuring attribute (asset) values differ between the NCA and MCA reports. This is part of the challenge of moving from NCA to MCA generically. Overall, it is believed that air pollution (PM2.5 government data), carbon sequestration (t/CO_2e government data), visitor value (through ORVAL) and health benefits followed similar techniques, with the caveat that the NCS (2024) technical appendices has certain commercial sensitivities. However, more data were available for health benefits for Little Asby and Hows Wood due to the online survey eliciting detailed visitor behaviour and the combined use of METS and QALYs. For other assets measured by the NCS report, only flood regulation used WTP.

An attempt to compare the valuations is given in Table 27 for NPV and Table 28 for a 50-Yr discounting model. For Hows Wood, the NPV reported by the NCS (2024) report for natural capital flows, was calculated as £34,000, and for Little Asby £436,000. In comparison to the figures derived from the MCA work:

- Under-estimations were made for carbon (both sites) and air quality (LAC) from the MCAs, probably due to weighting systems employed by NCS (2024).
- Notable over-estimations were made for health QALYs (both sites) and flood regulation from the MCAs. LAC and Hows Wood had much more detailed data and therefore is more realistically correct. The flood regulation figure was generated via WTP but does demonstrate the value the public place on this benefit.

- Roughly on a par was calculated for air quality, Recreational VV and flood regulation for Hows Wood. These results contradict conclusions from the previous two statements and warrant further analysis.

Table 27 – Comparing Natural Capital Accounts: Net Present Value for Hows Wood & Little Asby Common

	NCS (2024) (Central values)		Mansfield et al. (2023)	(This report)
Natural Capital Flow (Benefit)	**Little Asby Common**	**Hows Wood**	**Little Asby Common**	**Hows Wood**
Carbon	214k	17k	54k	3.5k
Air Quality	17k	4k	3k	4.7k
Health QALY	2k	2k	214k	53k
Recreation visitor value	155k	6k	181k	4k
Flood regulation	50k	2k	297k	2.6k
TOTAL (rounded)	**436k**	**34k**	**749k**	**67.8k**

Moving on to the 50-Yr Discounting Model, the NCS report for Little Asby Common predicts 13.35m compared to an MCA of 20.9m (Table 28). For Hows Wood, the NCS report predicts 1.05m and the MCA 3m. the higher values for the MCA could be due to the more accurate wellbeing and visitor value data generated from the online surveys. Patterns which emerge include:

- Under-estimations on carbon and air quality from both the MCAs.
- Over-estimations health benefits for both sites, plus flood reduction for Little Asby Common from the MCAs.
- 'On a par' calculations came for Recreational Visitor Value and Flood reduction for Hows Wood from the MCA. The latter is of great interest as NCS (2024) used an algorithm to calculate flood reduction whereas Hows Wood used WTP.

Table 28 – Comparing Natural Capital Accounts: Discounted Value 50 years Hows Wood & Little Asby Common

	NCS report (2024)		Mansfield et al. (2023)	This report
Natural Capital Attribute	**Little Asby Common**	**Hows Wood**	**Little Asby Common**	**Hows Wood**
Carbon	7.1m	558k	1.3m	151k
Air quality	616k	129k	113k	80k
Health QALY	1.8m	82k	7.7m	1.9m
Recreational visitor value	3.8m	140k	4.5m	100k
Flood reduction	66k	67k	7.3m	66k
TOTAL (rounded)	**13.35m**	**1.05m**	**20.9m**	**3.0m**

The corollary of this brief comparative exercise demonstrates the validity of generating health benefit data from online surveys, that weighting systems warrant further thought and that in some instances WTP generates comparative values to complex algorithms.

5.3 The Value of Conducting an MCA exercise

The process of calculating a multiple capitals account provides opportunities to generate a series of outputs and outcomes which ultimately lead to clearer, more accurate decisions

based on evidence that is comparable, in which landscape managers can have more confidence.

Key outputs associated with an MCA include:

- Calculating non-monetary goods and services beyond natural capital allows for an assessment of the total benefits of a piece of land as a whole.
- Focused reporting at different geographical scales eg site, valley, catchment, massif.
- Recognising and valuing socio-ecological systems, biocultural heritage and knowledge and skills which shape a landscape.
- Calculating various multiple capitals accounts with minimum, average and maximum values
- Comparison of MCAs with other MCAs.
- Ability to specify which attributes (assets) a client would like to value.
- Cutting data to explore issues eg residents vs. visitors, members vs. non-members.

Key outcomes related to these outputs can include:

- Assessment of what people or managers want/ need the most or least.
- Aiding with management planning by identifying opportunities, alternatives, best value or priorities (see Mansfield, 2025).
- Forming the basis of a funding bid to demonstrate added value at the end of a project.
- Monitoring and evaluating baselines and success or issues for improvement.
- Providing new insights about a site or landscape
- Using an MCA as part of a cost-benefit analysis beyond current methodologies
- Awareness raising of value of the process of landscape production beyond food and nature (PR and comms).
- Enabling more effective and efficient resource allocation.
- Contributing to making more informed decisions about land use strategies/ plans.
- An MCA also demonstrates the true worth and cost of maintaining our landscapes and the full range of public benefits they deliver. In turn, this enables society to recognize their value and pay for them.

6. Conclusions & Recommendations

6.1 Conclusions

The purpose of this Multiple Capitals Accounting exercise has been to provide a second opportunity to test the accounting methodology developed for Little Asby Common at another site, whilst at the same time addressing some of the issues raised from that pilot. Key developments were an initial attempt at a division into stocks and flows for all capitals, and a 50-yr discounting model.

6.1.1 Little Asby Common

The total NPV for Little Asby Common for 2023 was calculated at £28.1m through accounting methodology B, of which £7.7m was stocks and £20.5m flows. Thus, for every £1 of stock, £2,67 of flows were generated for the baseline year. An AES and and HLF grant investment of £852k helps support £27.2m of multiple capitals on the common.

A 50-yr discounting model suggests that £734m of capital could be generated, divided into £217m of stocks and £517 flows). As a consequence, for every £1 of stock is could be possible to generate £2.39 of flows over this period. If AES grants continue at a similar level of investment with an interest rate of 2%, over 50 years, £3.4m of grants could generate £730m of multiple capitals across the common. This means £1 of grant could support £63 of stocks and £150 of flows.

6.1.2 Hows Wood

The second Multiple Capitals Account for Hows Wood calculates its NPV at £2.28m with stocks accounting for £1.5m and flows, £778k. Overall cultural capital is valued the most accounting for 70% of capital, followed by natural capital (15%).

For every £1 of stock generated in 2025, £0.52 of flows follows, however the ratio varies by capital, with natural and cultural capital producing more stocks than flows, whereas human capital produces more flows than stocks.

The most valued stock assets are routeways (CC), species (NC) and drystone walls (CC), and the least are those related to site management (HC). However, £1 of labour is associated with the support of £352 of multiple capitals. With respect to flows, Access & PROWs (CC) are most valued, followed by financial multiplier effects (FC) and sense of community (SC). On the other hand, Landscape Aesthetics (CC) were valued the least.

A 50-yr discounting model suggests that Hows Wood will generate £58m in total (£32m stocks and £26m flows). Overall, for every £1 of stock, £0.81 of flows could be expected, which is reflected for natural and cultural capital, but not human capital, where flow value should exceed that of stock. For instance, £1 of labour could generate £24,614 of multiple capitals.

With respect to the WTP element of the respondents survey, for the 2025 baseline NPV, natural capital stock, human capital flows and social capital flows are valued the most., whereas cultural capital flows the least. A comparison between FLD members and Non-FLD members with respect to average WTP demonstrated there were no statistically significant differences for those capital stocks and flows, which could be compared. Having noted this, FLD members did in general, value capital stocks and flows more than Non-members for 87% of attributes measured.

6.1.3 Comparing Little Asby Common and Hows Wood

When comparing the two Multiple capital accounts it is inevitable that the LAC account will generate more capital than Hows Wood even their relative sizes (464 ha vs. 8ha). However, taking account of areal extent, Hows Wood generates per hectare significantly more capitals than Little Asby. Common (£465k vs. £60k).

Little Asby Common creates more flows in relation to stock per hectare than Hows Wood does, almost twice as much (£3.02 vs. £1.52 respectively). For both sites, more natural capital stock than flows are generated; although it is greater from the Common. Cultural and human capital flows are much greater at Little Asby than Hows Wood.

With respect to average WTP, there is no statistical difference in the monetary values respondents suggested for natural, human and social capital. In other words, these three capitals are valued the same at both sites. In contrast, cultural capital is statistically different overall and further analysis demonstrated that flows were different, but stocks were not between Little Asby and Hows Wood.

Comparing the 50-Yr discounting model, demonstrated that Little Asby Common should produce £594m multiple capitals in contrast to £91m at Hows Wood. Once again, considering the relative size of the two sites showed that a hectare of the common could produce £1.3m in contrast to the wood at £11.2m. However, Little Asby will generate £2.31 of flows for every £1 of stock in contrast to Hows Wood where a £1 will generate only £0.81. Thus, society may gain more benefit (flows) from maintaining Little Asby Common than Hows Wood, depending on one's objectives.

6.1.4 Addressing Challenges raised from the Little Asby Common Multiple Capitals Account

This exercise sought to address several issues which evolved from the review of the Little Asby Common Multiple Capitals Accounting methodology. Regarding the online survey, the window of response was lengthened, more explanation of WTP was provided, non-FLD members (the public) responses were sought and an attempt to hit the 300+ response target.

All of these were achieved except for 300 or more responses. A brief critical review of the '300' target was undertaken which suggests that a range of 150 to 250 responses is equally valid when taking standard errors into account.

Valuation techniques were updated where possible, along with the application of NPV and 50-Yr discounting model for Hows Wood and retrospectively for Little Asby Common. The division of all capital into stocks and flows formed part of this process based on the suggested classification shown in Table 29. This enabled comparison between the results for the two sites, the results of which are given in earlier parts of Section 6 here.

Table 29 – Suggested Classification of Stocks and Flows for Multiple Capitals used in this Accounting Methodology

STOCKS			FLOWS		
CAPITAL	**DIMENSION**	**ATTRIBUTE**	**CAPITAL**	**DIMENSION**	**ATTRIBUTE**
Natural	Geodiversity	Local Geology	Natural	Natural Processes & Functions	Carbon Sequestration
Natural	Ecosystems	Habitats	Natural	Freshwater	Water storage & flood management
Natural	Ecosystems	Species	Natural	Air	Quality - Clean & fresh
Human	Labour	Site Management (Volunteers)	Human	Knowledge	Discovery & Learning
Human	Labour	Site Management (FLD staff)	Human	Skills	Skills from volunteering
Human	Labour	Site Management (Contractors)	Human	Well being	Volunteer wellbeing
Cultural	Heritage	Archaeology & Built Heritage	Human	Well being	Visitor Recreation well being
Cultural	Heritage	Drystone walls & Boundaries	Human	Labour	Employment opportunities
Cultural	Heritage	Routeways & trading routes	Social	Cognitive	Organised events
Cultural	Heritage	Local history, legends and place names	Social	Cognitive	Educational visits
Cultural	Traditional practices	Woodland management skills	Social	Cognitive	Research, field trips & studies
Cultural	Traditional practices	Drystone Walling skills	Social	Structural	Volunteer opportunities
			Social	Relational	Sense of Community (SROI)
			Social	Relational	Volunteer groups (SROI)
			Social	Relational	Picnicking
			Cultural	Heritage	Art & Literature
			Cultural	Landscape Aesthetics	Openness
			Cultural	Landscape Aesthetics	Wildness
			Cultural	Landscape Aesthetics	Vistas & views
			Cultural	Landscape Aesthetics	Tranquillity
			Cultural	Landscape Aesthetics	Inspiration
			Cultural	Landscape Aesthetics	Dark skies
			Cultural	Recreation & sport	Visitor visits value
			Cultural	Recreation & sport	Access & PROW
			Cultural	Recreation & sport	Recreation
			Financial	Currency	Multiplier effects (local businesses)

Double counting was explored further, the conclusion of which is that Natural Capital accounting inherently suffers from double counting whereas a Multiple Capitals Account does not as it is multiple values which the technique aims to capture. With respect to WTP results there was no statistical difference between the two groups and the two sites. Finally, a local business survey focused on demand, rather than supply side this time.

6.1.5 A comparison between the Natural Capital Solutions Report and Multiple Capitals Accounting

A valuation and methodological comparative analysis was undertaken between the Natural Capitals Solutions (2024) report, and the two Multiple Capitals Accounts for Little Asby Common and Hows Wood. The NCS report valued 16 attributes, whereas LAC valued 37 and Hows Wood 38. Due to its character, the NCS report classified all attributes as natural capital and there was evidence of capital appropriation in three cases with regard to a multiple capitals approach.

Detailed examination of methodological techniques found variations in most cases where it was possible to divine this due to commercial sensitivity. However, some interesting comparisons were:

- Carbon sequestration and Air Quality were under-estimated in the MCAs
- Health benefits were over-estimated for the MCAS because they used a more detailed and in-depth methodology and were thus a more accurate representation of reality.
- Recreational Visitor Value and flood regulation valuations were on a par, even though the latter employed a completely different calculation tool in either case.

6.1.6 Potential Outputs and Outcomes

Key outputs associated with an MCA include:

- Calculating non-monetary goods and services beyond natural capital allows for an assessment of the total benefits of a piece of land as a whole.
- Focused reporting can take place at different geographical scales eg site, valley, catchment, massif.
- Recognising and valuing socio-ecological systems, biocultural heritage and knowledge and skills which shape a landscape.
- Calculating various multiple capitals accounts with minimum, average and maximum values
- Comparison of MCAs with other MCAs and other capital assessments as subsets.
- Ability to specify which attributes (assets) a client would like to value.
- Cutting data to explore issues eg residents vs. visitors, members vs. non-members.
- It facilitates a holistic view of all component capitals that make up a landscape rather than concentrating on some to the detriment of others.

Key outcomes related to these outputs can include:

- Assessment of what people or managers want/ need the most or least.
- Aiding with management planning by identifying opportunities, alternatives, best value or priorities (see Mansfield, 2025).
- Forming the basis of a funding bid to demonstrate added value at the end of a project.
- Monitoring and evaluating baselines and success or issues for improvement.
- Providing new insights about a site or landscape
- Using an MCA as part of a cost-benefit analysis beyond current methodologies
- Awareness raising of value of the process of landscape production beyond food and nature (PR and comms).
- Enabling more effective and efficient resource allocation.

- Contributing to making more informed decisions about land use strategies/ plans as it allows the impact of decisions to be assessed against all capitals rather than just those found in natural capital assessments. This will enable decision makers to identify potential conflicts and synergies between capitals when making plans.
- An MCA also demonstrates the true worth and cost of maintaining our landscapes and the full range of public benefits they deliver. In turn, this enables society to recognize their value and pay for them.

6.2 Recommendations

The following recommendations are suggested in response to the findings of this second multiple capitals account:

- Continue to add new valuation techniques to reduce WTP reliance.
- Repeat methodology on similar landscapes to confirm valuations and refine process.
- Expand to new landscapes (both types and different scales) and sites to continue testing MCA methodology
- Employ MCA to improve management planning and other outcomes
- Develop MCA to enable impact and opportunity assessments, eg. calculating the impact of x action on all the capitals, not just one. This could highlight impacts across the board not previously considered or show how small management tweaks could have a higher impact than expected.
- Share findings with other researchers and policy makers investigating cultural capital and/or any who are beginning to explore multiple capital approaches. There is currently a lot of disjoint siloed thinking as well as others' finding similar issues to both these MCA studies.
- Consider if each type of capital assessment could be done in isolation and then dropped in to the model when done to all come together at some point to alleviate survey fatigue and WTP complexities.
- Aim to find either a mechanism to reach 300 respondents for a WTP survey or adopt easier/different techniques to value those attributes currently reliant on WTP.
- Lobby Office of National Statistics and National Government to adopt the MCA methodology.

Key Takeaways

Multiple Capitals Accounting

A Multiple Capitals Account (MCA) is a mechanism designed to value all the benefits a landscape provides for society. It suuplies significantly more information about the value of land to the economy, society and cultural heritage as well as to nature and climate change than a Natural Capital Account can.

Site Specific

- Hows Wood generates a Net Present Value (NPV) of £2.28m (£1.5m stocks and £778k flows) compared to Little Asby Common (£28.1m of which £7.68m is stocks and £20.5m is flows).
- This generates a stock: flow ratio for Hows Wood of £1 to £0.52 and for Little Asby £1 to £2.67.

- Over 50 years, Hows Wood could generate £58m (£32m stocks and £26m flows) compared to Little Asby Common (£734m of which stocks are £217m and flows £517m).
- Hows Wood generates an NPV of £465k per hectare compared to Little Asby Common at £60k. This is probably due to most people having greater access, cultural familiarity and economic understanding of the value of woods, along with the psychology of open and enclosed landscapes.
- Grant investment at Little Asby Common of £852k is associated with £27.2m of multiple capitals, and if continued at the same rate for the next 50 years, £3.4m investment could support £730m of multiple capitals

Summative

- NPV and 50 -Year Discounting model valuations vary by site and by hectarage.
- Commons command less total capital value than woodlands per hectare but generate higher stock to flow ratios.
- Grants have large multiplier effects in terms of pound for pound investment with respect to multiple capitals.
- Cultural capital is valued the most by the public.
- With respect to average Willingness to Pay (WTP), there is no statistical difference in respondents' valuations for natural, human and social capital. In contrast, cultural capital flows are statistically different between Little Asby and Hows Wood, ie. valued more at Little Asby than Hows Wood.
- With respect to average WTP, there were no statistically significant differences for average WTP capital stocks and flows between FLD members and the public.
- The '300 respondents' threshold typically deemed essential for WTP experiments can be challenged through an examination of the relationship between standard errors and sample size, suggesting results between 150 and 250 could be equally valid.
- Outputs from MCAs include: valuing non-monetary goods as part of a whole landscape; application as a scalar technique; valuing human, social and cultural capital in landscape change and development.
- Outcomes from MCAs include: tool for total cost-benefit analysis; a tool for management planning to enable best value; a tool for bidding, evaluation and monitoring effectiveness of policy interventions and grants, and calculating the truth worth of a landscape.

Appendices

Appendix 1	Multiple Capitals Account B for Little Asby Common
Appendix 2	Hows Wood Online Questionnaire
Appendix 3	Hows Wood Survey Results
Appendix 5	Glossary of Terms
Appendix 4	Compendium of Capital Attribute calculations

Multiple Capitals Account B :

Little Asby Common: Total Threshold Valuation 2022/23

(Max. Benefit Transfers, Direct Market Values and gaps infilled with Total WTP from surveys when no other methodology is available)

Capital	Dimension	Attribute	Benefit (£)	*Detractor (£)*
Natural	Geodiversity	Limestone Pavement & Geology	484,090.29	
Natural	Ecosystems	Habitats [1]	375,159.42	*263,940.12*
Natural	Air	Air Quality	3114.54	
Natural	Natural Processes & Functions	Carbon Sequestration	54,356.13	
Natural	Ecosystems	Species	329,968.43	
Natural	Freshwater	Water storage & flood management	297,290.56	
Human	Labour	Site Management (Volunteers)	13,600.00	
Human	Labour	Site Management (WDLP staff)	4,885.10	*1,234.64*
Human	Labour	Site Management (FLD staff)	1,734.68	*350.48*
Human	Labour	Site Management (NE Staff)	444.22	*119.60*
Human	Labour	Site Management (Contractors)	79,877.00	*4,357.00*
Human	Well being [2]	Volunteer wellbeing	39,950.23	
Human	Well being [2]	Visitor Recreation well being	214,108.26	*66.30*
Human	Skills	Drystone walling [3]	669,600.00	
Human	Education	Discovery & Learning	778,910.72	
Human	Education	Social Learning	112,475.32	
Social	Recreation & sport	Picknicking	0	
Social	Common Rules & Norms	Communal grazing	777,029.61	
Social	Bonding Network	Commoners Association	1,702.80	
Social	Reciprocity & Exchange	Commoners labour	26,396.37	*5,680.29*
Social	Reciprocity & Exchange	Volunteers SROI [4]	128,626.35	
Social	Bridging Network	Local community (minus Commoners) SROI [4]	181,250.00	
Cultural	Recreation and sport	Visitor visit value [5]	181,047.36	*96.12*
Cultural	Landscape Aesthetics	Dark Skies	256,449.74	
Cultural	Landscape Aesthetics	Vistas & views	736,888.30	
Cultural	Landscape Aesthetics	Tranquillity	1,030,369.38	
Cultural	Landscape Aesthetics	Openness & Wildness	930,027.91	
Cultural	Heritage	Archaeology & Built Heritage	1,029,024.88	
Cultural	Heritage	Local History & place names	1,043,116.48	
Cultural	Heritage	Drystone Walls	4,149,608.07	
Cultural	Heritage	Art & Literature	252,862.40	
Cultural	Recreation & Sport	Access	12,032,729.60	
Cultural	Inspiration	Inspiration	505,724.80	
Financial	Currency	Grants [6]	852,278.67	

Financial	Currency	Farm gross margins	191,168.00	
Financial	Currency	Multiplier effects (farm business)	137,182.50	
Financial	Currency	Utilities	8141.00	
Financial	Currency	Multiplier effects (local shops)	501,438.00	
		Total Natural	1,543,979.37	*263,940.12*
		Total Human	1,915,585.53	*6,128.02*
		Total Social	1,115,005.13	*5,680.29*
		Total Cultural	22,147,848.92	*96.12*
		Total Financial	1,690,208.17	*0.00*
Total Benefits (£)			**28,412,627.12**	
Total Detractors (£)				***275,844.55***
TOTAL MULTIPLE CAPITAL VALUATION			**28,136,782.57**	

(1) Uses Christie et al (2011) SSSI valuations with detractors for unfavourable condition
(2) QALY value is £20,000
(3) DSW uses Drystone Walling Association walling rates
(4) Uses Social Value Engine ™
(5) Uses ORVal Valuation method
(6) Grants have been switched to benefit flows after review and further discussion

Appendix 2
Hows Wood Online Questionnaire

What do you think is special about Hows Wood?

Trees and woodlands are can be important for many reasons. They may provide a home for wildlife, absorb carbon or slow the flow of water to prevent flooding downstream. But what makes Hows Wood special to you? Is it the springtime bluebells, the distinctive sound of a cuckoo in summer, the views of Harter Fell or the peace and tranquillity you feel as you take a stroll through the woodland?

Many of the things we believe are special can be overlooked when decisions are made about our landscapes, because others feel they have no financial value.
Friends of the Lake District is working with Professor Lois Mansfield of Environmentors Ltd to understand the true value of Hows Wood.

We need your views on what is special and important to you about Hows Wood. Even if you have never visited (a virtual tour is available here), we still want to know what you value about your experiences in woodland in general. This information will help us to make sure that the things people value are protected in the future.

The survey should take around 20 minutes to complete.

If you would like to discuss it further please contact us at info@fld.org.uk

Where is Hows Wood?

Hows Wood is situated in upper Eskdale in the Lake District National Park and English Lake District World Heritage Site (see location map on Google) and covers 20 acres (8 hectares). A virtual tour of Hows Wood is available here.

Friends of the Lake District bought the wood from the Forestry Commission in 1987 to restore the ancient native woodland, remove the conifers and as a way of showcasing

the way forward for managing woodlands. The dry stone walls were restored, a Bark Peelers Hut was conserved and a circular walk waymarked. Today, Hows Wood is an example of a wood that has regenerated naturally with very little human impact.

About you

The following questions will help us to understand your involvement in Hows Wood and how important it is to you.

1. Have you ever been to Hows Wood?

- ◯ Yes
- ◯ No

2. If you have never been to Hows Wood, why not?
(please now go to question 8)

3. Please select the category that best represents you

	Select
Local resident	
Resident in Cumbria	
Visitor from elsewhere in the UK	
International visitor	
Volunteer	

Other (please specify)

4. If you have visited Hows Wood, what do you normally do there?
(Some of these activities may not be allowed in the woodland, but we would still like to understand their role in how much you value Hows Wood)

	Select
Walking	
Dog walking	
Enjoy views	
Nature & bird watching	
Running	
Volunteering	
Pass through on way to other destination	
Cycling in the local area	
Camping nearby	
Horse riding nearby	

Other (please specify)

5. How often do you carry out each of the activities selected above in Hows Wood?

	Every day	A few times a week	About once a week	A few times a month	Once a month	A few times a year	Once a year	Other
Walking	○	○	○	○	○	○	○	○
Dog walking	○	○	○	○	○	○	○	○
Enjoy views	○	○	○	○	○	○	○	○
Nature & bird watching	○	○	○	○	○	○	○	○
Running	○	○	○	○	○	○	○	○
Volunteering	○	○	○	○	○	○	○	○
Pass through on way to other destination	○	○	○	○	○	○	○	○
Cycling in the local area	○	○	○	○	○	○	○	○
Camping nearby	○	○	○	○	○	○	○	○
Horse riding nearby	○	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○	○

Other (please specify)

6. For how long do you normally carry out each of the activities selected above in Hows Wood?

	Less than 30 mins	30mins - 1 hour	1.5 - 2 hours	2 - 2.5 hours	2.5 - 3 hours	3 - 3.5 hours	3.5 - 4 hours	4 - 4.5 hours	4.5 - 5 hours	5 - 5.5 hours	5.5 - 6 hours	Other
Walking	○	○	○	○	○	○	○	○	○	○	○	○
Dog walking	○	○	○	○	○	○	○	○	○	○	○	○
Enjoy views	○	○	○	○	○	○	○	○	○	○	○	○
Nature & bird watching	○	○	○	○	○	○	○	○	○	○	○	○
Running	○	○	○	○	○	○	○	○	○	○	○	○
Volunteering	○	○	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○	○	○

Pass through on way to other destination	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

Cycling in the local area

Camping nearby	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Horse riding nearby	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯
Other	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

Other (please specify)

7. Please provide your postcode

This information will be used to understand who is interested in Hows Wood and how far people travel to visit.

8. If you travel through Hows Wood to another destination, or use Hows Wood as part of a longer route, please tell us where else you visit on your journey.

9. If you live near Hows Wood does it contribute to your sense of community?

- ◯ Yes
- ◯ No
- ◯ Occasionally
- ◯ N/A

Please explain your answer

About you

10. Do you participate in any local or voluntary organisations which affect Hows Wood directly?

For example, volunteer for Friends of the Lake District

- ◯ Yes
- ◯ No

Please name any organisations you participate in and say how often you go to them in a year

11. Do you feel your physical and mental welfare benefits from being a member of the organisation(s) stated in question 10?

- ◯ Yes
- ◯ No
- ◯ Sometimes
- ◯ N/A

Please explain your answer

Benefits of Hows Wood

We want you to tell us what benefits Hows Wood provides. This may include things such as dark skies, views and tranquil walks, species diversity, carbon storage or local geology.

Valuing the benefits of Hows Wood

Many of the things we might believe are special about Hows Wood can be overlooked in the decision making process because others feel they have no financial value. We want to understand how important all aspects of the woodland are even if they don't have a direct financial value. The following questions will help us to get a more complete picture of what the woodland provides and what people value the most.

To understand the true value of the woodland to people it is sometimes necessary to put a financial value on things that cannot normally be valued in this way. Our research is looking at people's *willingness to pay* for the benefits that do not have a financial value, e.g. fresh air, fitness, learning.

Willingness to pay is a technique used in economics to determine the maximum price at or below which a person will definitely buy one unit of a product. This is purely a theoretical task to help us understand how all benefits contribute to the local economy, and the health and well being of the local community and wider society. It

will allow these benefits to be more accurately compared to the sort of direct financial benefits that decision makers are more familiar with.

We have split the benefits of Hows Wood into five categories: Natural benefits, cultural benefits, social benefits, personal benefits and financial benefits. (N.B. each category has a different number of benefits. The data processing and analysis of results will ensure the values are comparable).

Natural benefits of Hows Wood

12. **Natural benefits – The natural environment of the woodland gives us many benefits.** Which of the following do you value in relation to Hows Wood? If you've never been to Hows Wood, then think about woodland in general instead. (please select as many as required)

	Geology
Wildlife	

13. Other

Valuing the natural benefits

Please estimate your theoretical willingness to pay for these benefits per year and per unit (where stated). (NB: 1 hectare is roughly the size of 1.5 football pitches)

14. Thinking about the things you ticked/valued above, if you had £100 a year to spend on maintaining these things at Hows Wood (or in woodland generally if you've never been), how would you spend it?

Please state your answer in pounds and pence per year and per unit (where stated). To do this task you do not need to split your £100 across all benefits, but it must add up to £100 at the bottom. You cannot spend more than £100 in total.

Clean/ fresh air (per hectare)

Habitats (per hectare)

Wildlife (per species)

Carbon storage (per hectare)

Lower plants (mosses & ferns) (per hectare)

Open space (per hectare)

Geology (per site)

Water storage/ flood management (per hectare)

Other

Cultural benefits of Hows Wood

15. **Cultural benefits - The cultural heritage benefits of the woodland.**

Which of the following do you value in relation to Hows Wood? If you've never been to Hows Wood, then think about woodland in general instead. (Please select as many as required)

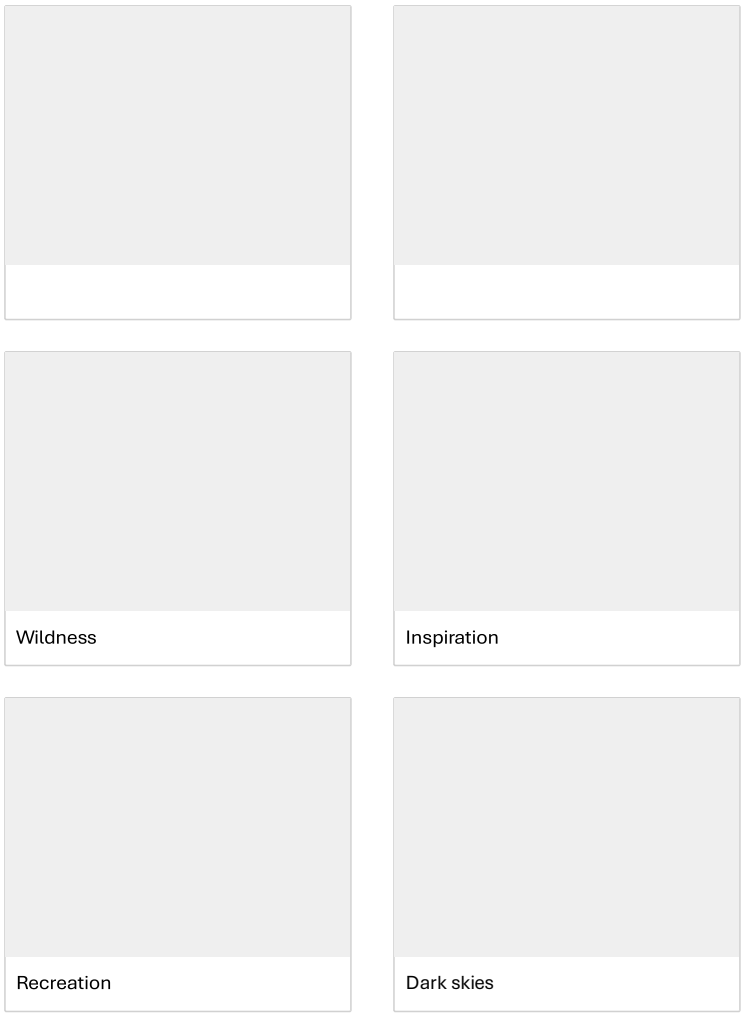
Paths

None of the above

16. Other

17. **Cultural benefits continued...**

Which of the following do you value in relation to Hows Wood? If you've never been to Hows Wood, then think about woodland in general instead. (please select as many as required)



Valuing the cultural benefits

Please estimate your theoretical willingness to pay for these benefits per year and per unit (where stated). (NB: 1 hectare is roughly the size of 1.5 football pitches)

18. Thinking about the things you ticked/valued above, if you had £100 a year to spend on maintaining these things at Hows Wood (or in woodland generally if you've never been), how would you spend it?

Please state your answer in pounds and pence per year and per unit (where stated). To do this task you do not need to split your £100 across all benefits, but it must add up to £100 at the bottom. You cannot spend more than £100 in total.

Archaeology (per find)	
Dry stone walls & boundaries (per metre)	
Built heritage e.g Bark peelers hut (per structure)	
Local history, legends & traditions (for the wood)	
Art & literature (for the wood)	
Routeways/trading routes (per metre)	
Local place names (per name)	
Paths (per metre)	
Vistas & views (from the wood)	
Tranquillity (for the wood)	
Opportunity to visit (per person)	
Wildness (per hectare)	
Inspiration (for the wood)	
Recreation (per activity)	
Dark skies (from the wood)	
Other	

Social benefits of Hows Wood

19. **Social benefits - Enjoying doing things with others or for others in the community, relationships and engagement in the community.**

Which of the following do you value in relation to Hows Wood? If you've never been to Hows Wood, then think about woodland in general instead.? (please select as many as required)

None of the above

20. Other

Valuing social benefits

Please estimate your theoretical willingness to pay for these benefits per year and per unit (where stated).

21. Thinking about the things you ticked/valued above, if you had £100 a year to spend on maintaining these things at Hows Wood (or in woodland generally if you've never been), how would you spend it?

Please state your answer in pounds and pence per year and per unit (where stated). To do this task you do not need to split your £100 across all benefits, but it must add up to £100 at the bottom. You cannot spend more than £100 in total.

Volunteering opportunities (per day)	
Educational visits (per visit)	
Research, field trips & studies (per visit)	
Picnics (per visit)	
Group activities (per activity)	
Organised events (per event)	
Other	

Personal benefits of Hows Wood

22. **Personal benefits - This is the personal benefit of Hows Wood to you (wellbeing, traditional woodland skills such as coppicing, fitness, improving mental health).**
Which of the following do you value in relation to Hows Wood? If you've never been to Hows Wood, then think about woodland in general instead.? (please select as many as required)

- [ ] None of the above

23. Other

Valuing personal benefits

Please estimate your theoretical willingness to pay for these benefits per year and per unit (where stated).

24. Thinking about the things you ticked/valued above, if you had £100 a year to spend on maintaining these things at Hows Wood (or in woodland generally if you've never been), how would you spend it?

Please state your answer in pounds and pence per year and per unit (where stated). To do this task you do not need to split your £100 across all benefits, but it must add up to £100 at the bottom. You cannot spend more than £100 in total.

Drystone walling skills (per activity)	
Fitness benefits (per activity)	
Traditional woodland skills (per activity)	
Wellbeing benefits (per activity)	
Mental health benefits (per activity)	
Skills from volunteering (per activity)	
Employment due to volunteering (per activity)	
Discovery and learning (per activity)	
Other	

Valuing the financial benefits of Hows Wood

25. When you visit Hows Wood how much do you visit local businesses?

	Every day	Once a week	A few times a month	Once a month	A few times a year	Once a year
Local shops	○	○	○	○	○	○
Pubs	○	○	○	○	○	○
Cafes	○	○	○	○	○	○
Accommodation	○	○	○	○	○	○

Ravenglass & Eskdale Railway (The Ratty)	○	○	○	○	○	○

Other (please specify)

26. **Financial benefits - Money spent in the local area whilst enjoying Hows Wood.** When you visit Hows Wood do you spend any money in the following businesses? If so how much?

	Less than £10	£11-£50	£51-£100	£101-£500	More than £500
Local shops	○	○	○	○	○
Pubs	○	○	○	○	○
Cafes	○	○	○	○	○
Accommodation	○	○	○	○	○
Ravenglass & Eskdale Railway (The Ratty)	○	○	○	○	○

Other (please specify)

Ranking the benefits

We want to know what matters most to you in terms of the natural, cultural, social, personal or financial benefits of Hows Wood.

27. Thinking about all the benefits you value above, please rank Natural, Cultural, Social, Personal and Financial to show how much you value each category of benefits. *(You can drag and drop each choice or use the arrows to rank - 1/top being most valued and 5/bottom being least valued)*

Natural benefits

Cultural benefits

Social benefits

Personal benefits

Financial benefits

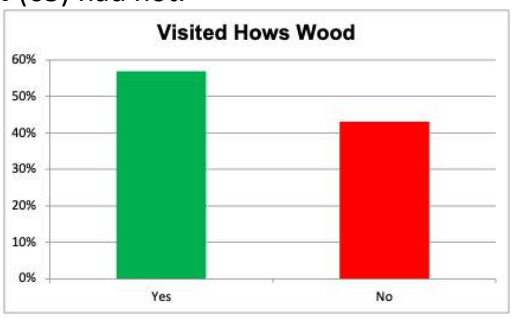
28. Is there anything else you would like to tell us about your experiences at Hows Wood, its benefits and

what you think is special?

Thank you for completing the survey **If you would like more information about the project, Hows Wood or Friends of the Lake District please get in touch at info@fld.org.uk**

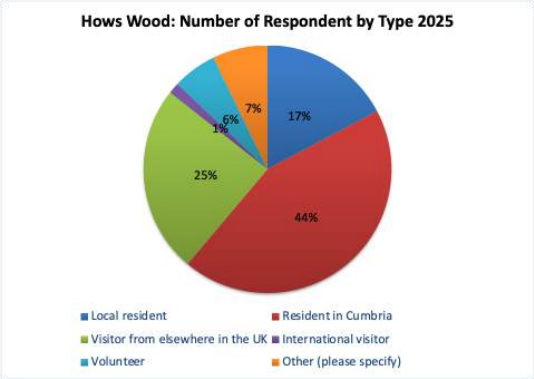
Appendix 3 – Hows Wood Online Survey Results

The online generated one hundred and fifty three responses, of which 57% (86) had visited the wood at some point and 43% (65) had not.



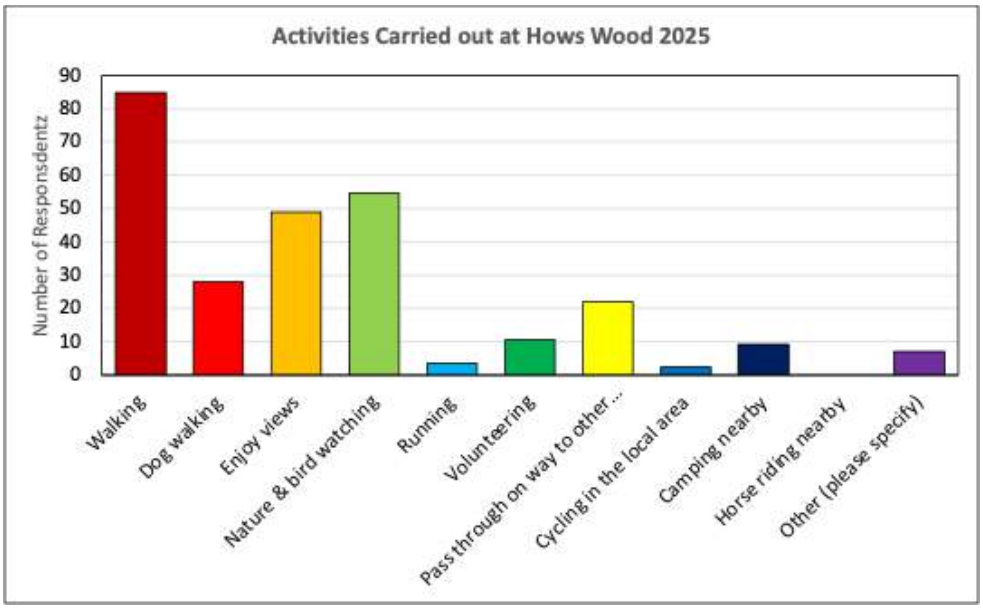
Of those who had never been and answered the question as to why they had not visited Hows Wood, the main reasons for not visiting were eighteen did not know of its existence, seven did not visit that part of the Lake District, four did not realise it was accessible to the public, three had never been to the Lake District, two commented on lack of public transport in this area and two did not know it belonged to FLD.

The majority of respondents (67%) were from Cumbria (locals, Cumbrians and volunteers), of which seventeen percent of people answering the survey were locals.

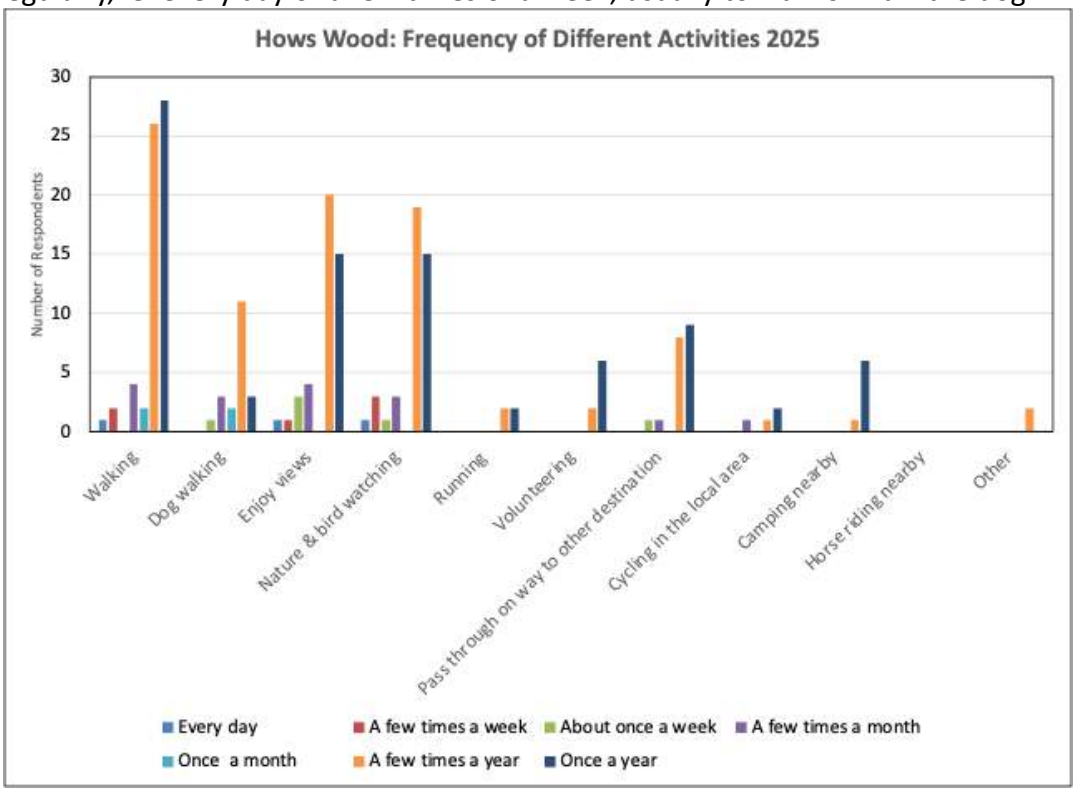


Activities Carried out in Hows Wood

For those respondents who had visited the wood, they were asked to comment on both the type and length of times they spent on a range of activities. Most Hows Wood visitors undertook walking either around or through the site (85%). The next most popular activity was nature & bird watching (55%) followed by looking at views (47%). Twenty eight percent visited to the wood to walk their dog and another 22% passed through the wood to reach other destinations.

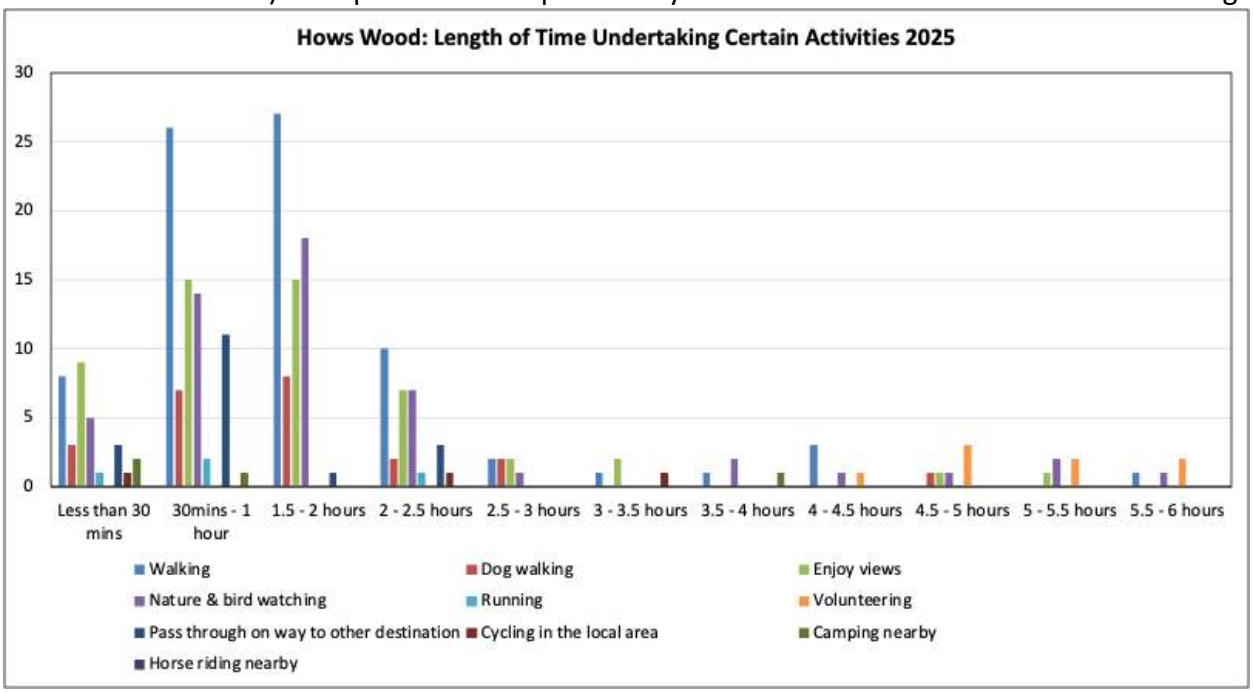


Respondents were asked to select how often and how long they carried out each activity. The graph below shows that most people carried out the activity a few times a year or once a year. Fewer people carried out activities more frequently, which was confined to walking, nature & bird watching, enjoying views and dog walking. A minority (less than five people) visited the wood regularly, ie. every day or a few times of a week, usually to walk or walk the dog.



Most people spent less than three hours in Hows Wood, apart from volunteers who spent between four and six hours at a time (see figure below). Walkers remained in the wood for the

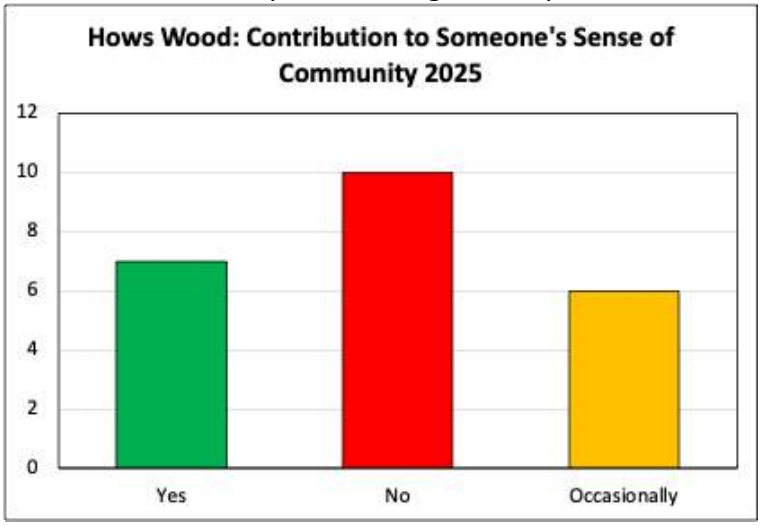
longest which tallies with the time it takes to circumnavigate the circular trail (between 30 minutes and 2 hours). This pattern was replicated by those interested in nature & bird watching.



The Benefits of Hows Wood

Twenty percent of people engaged with volunteering and work parties in the wood, such as those organised by FLD (specifically 24). Other organisations mentioned but in much smaller numbers (1s and 2s) included: Arnside & Silverdale AONB, the Woodland Trust, National Trust, rambling or walking groups (3), Local Access Forum, Cumbria Wildlife, the Church, the Ravenglass & Eskdale Railway, and the National Park.

Overall, a quarter of respondents felt these sorts of activities had a positive physical and mental well-being impact for them. For those that lived near Hows Wood only 13 felt that the wood contributed to their sense of community, even though 50 respondents were locals.



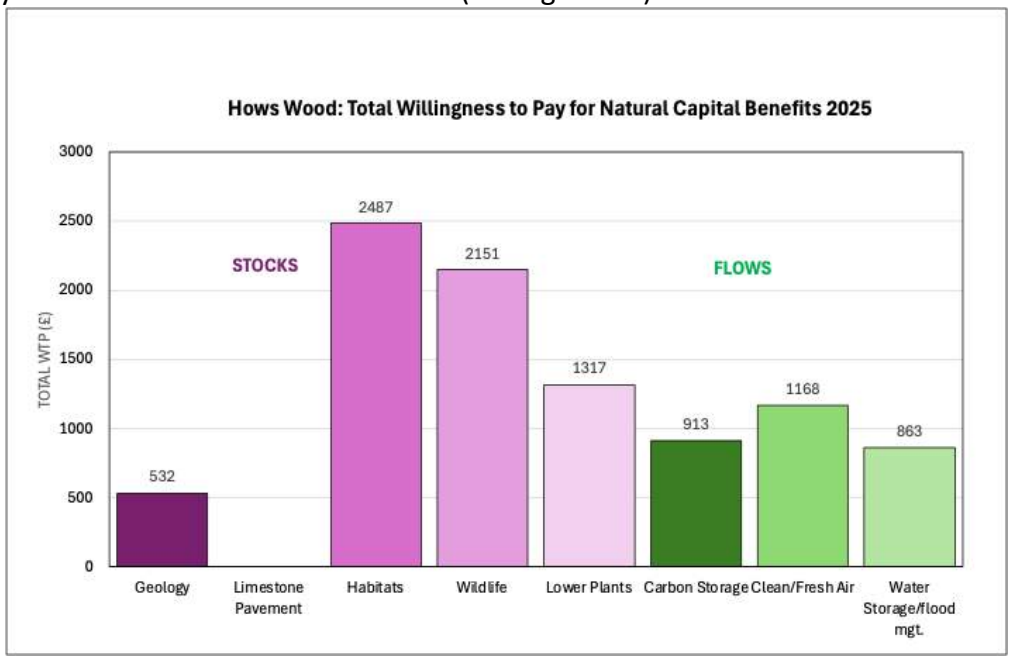
Willingness to Pay

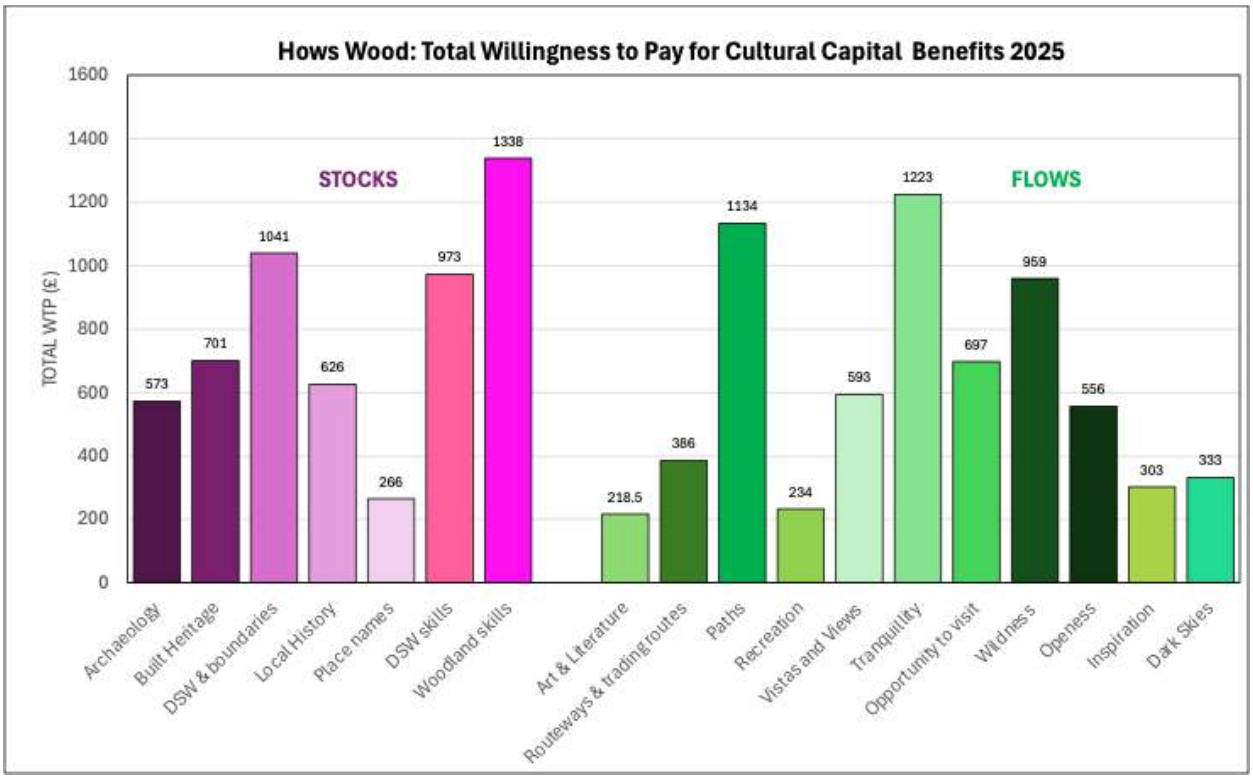
Most of the survey focused on eliciting information about the range of benefits Hows Wood provides. Questions 12 to 23 asked people to select which benefits (capital attributes -stocks or flows) they valued for four types of capital; natural, cultural, social and human. Respondents were then asked how much they would be willing to pay (WTP) to maintain the benefits they had selected by sharing £100 across those they had chosen. Financial capital was dealt with as a separate entity.

For ***natural capital***, of the seven attributes measured, the benefit with the highest Total WTP was habitat (£2487) followed by Wildlife (£2151) and then lower plants (£1317) (which are prolific at Hows Wood). The lowest WTP was for geology (£532). Overall, stocks were valued more highly than flows (stock average = £1622 cf. flow average = £981).

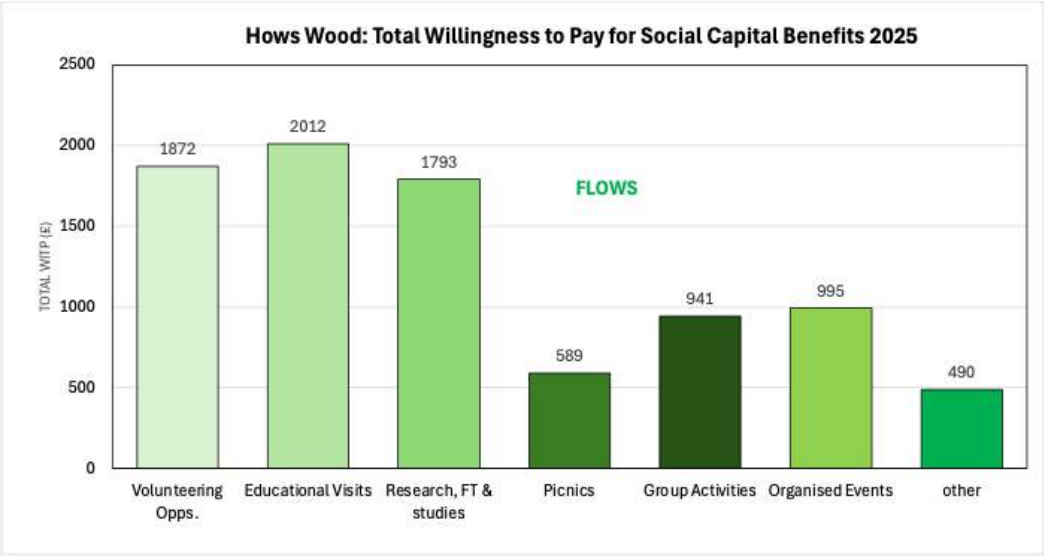
For ***cultural capital***, the highest total WTP was for woodland skills (£1338), tranquillity (£1223), paths (£1134) and drystone walls (£1031). The least valued benefit was Art & Literature at £129. Overall, stocks were valued more than flows (average £788 vs. £603).

For stocks, traditional skills & practices were valued more than tangible or intangible heritage features (£1156 vs. £772 vs. £446 respectively). With respect to flows, recreational benefits and landscape aesthetic benefits were very similar (£668 vs.£661), whereas 'art & literature' and 'routeways 'commanded a much lower WTP (average £303).

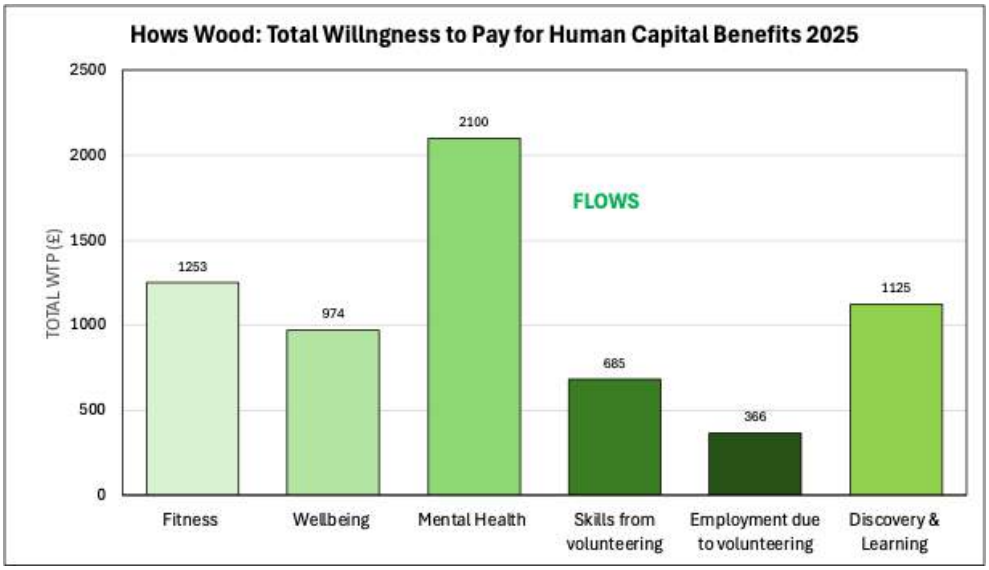




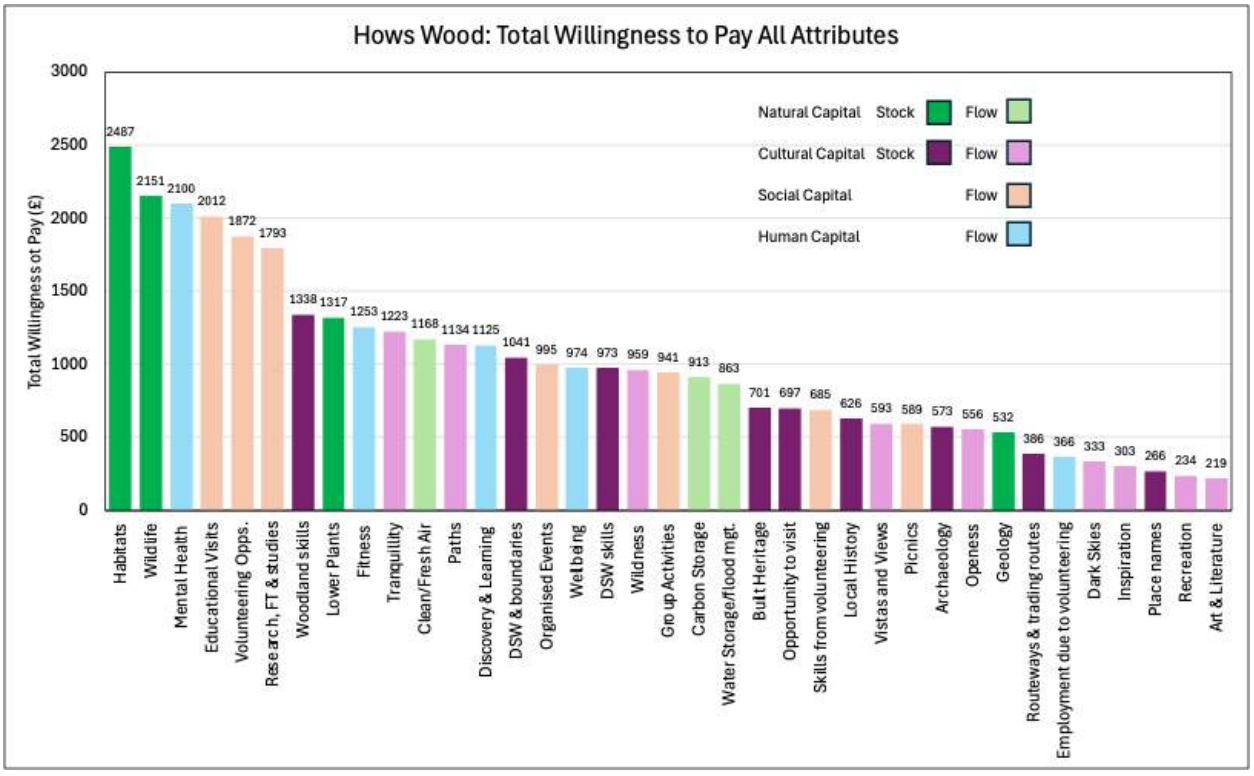
For ***social, capital***, all the benefits are classified as flows, there are no stocks. The highest total WTP respondents were prepared to pay was in relation to 'Educational Visits' (£2012) followed by Volunteering opportunities (£1872) and then 'Research, Field trips and studies' (£1793). The lowest total WTP was accredited to picnics, a topic which roused several negative comments from several respondents who see the wood not as a 'social' opportunity but a haven for wildlife and solitary reflection. A few people even went as far as to say any sort of social event would ruin the wood.



Finally, for ***human capital***, all the attributes measured as WTP were flows. Mental Health commanded the highest Total WTP at (£2100), followed by Physical Fitness (£1253) and then individual Discovery and Learning (£1125).

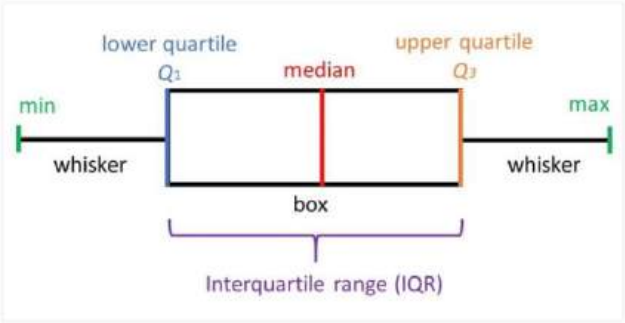


Overall, of all the attributes measured using Total WTP, the top five in descending order were: Habitats (£2487, NC stock), Wildlife (£2151, NC stock), Mental Health (£2100, HC flow), Educational Visits (£2012, SC flow) and Volunteering Opportunities (£1872, SC flow). The five least valued attributes were: Art & Literature (£219, CC flow), Recreation (£234, CC flow), Place names (£266, CC stock) and Inspiration (£303, CC flow).



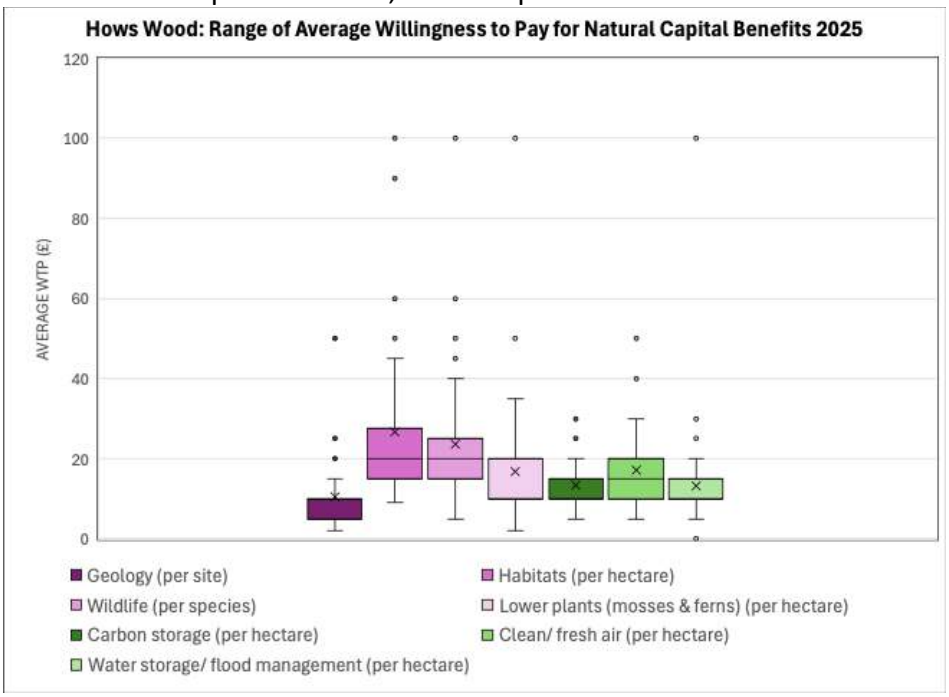
Dispersion of WTP

The following box and whisker graphs summarise range of WTP values identified by respondents in the survey for every stock and flow attribute. Data are interpreted thus:



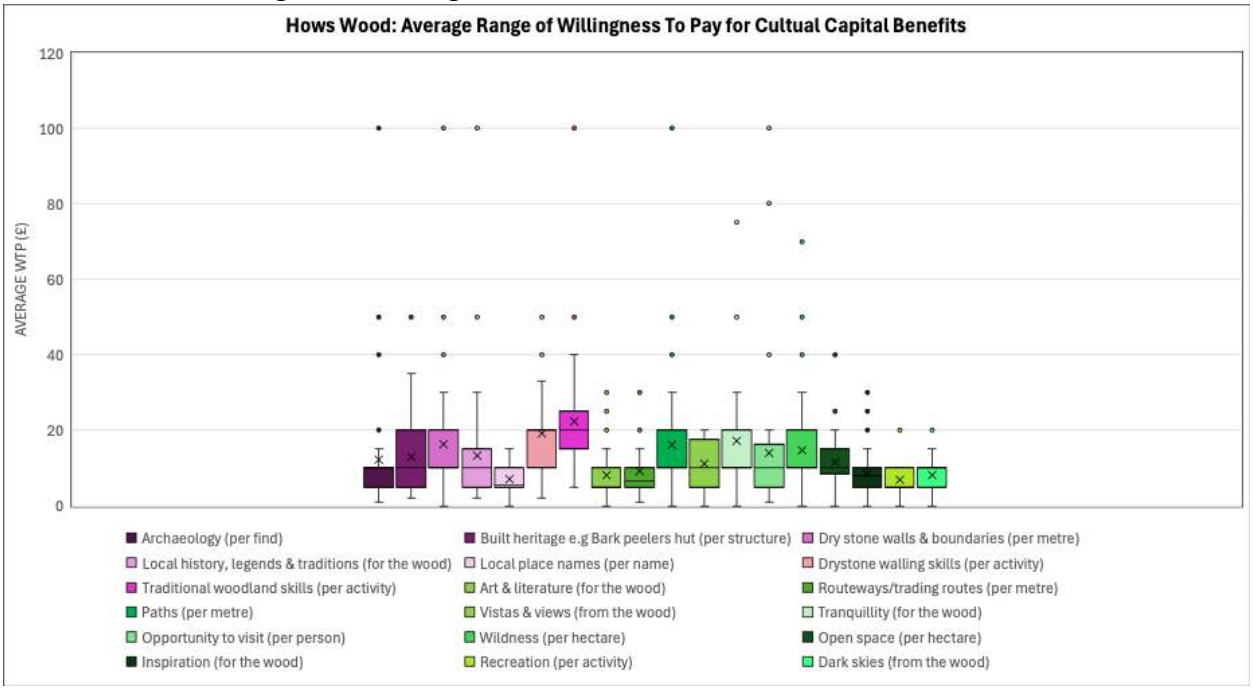
Where the median is roughly central to the box it suggests the data are normally distributed, if to the right (in our graphs above), data negatively skewed (WTP is generally high values), and to the left (in our graphs below) positively skewed (WTP is generally low values). Outliers are also shown as isolated dots and represent extreme WTP values expressed by individuals.

With respect to ***Natural Capital***, WTP for geology, carbon and water is quite concentrated with small ranges of values. Wildlife, habitats and lower plants have a much greater dispersion representing a wider range of WTP suggested by respondents. Extremes outliers exist for habitats, wildlife, lower plants and clean air (£100) where respondents 'spent' all their allocation on one natural capital attribute, at the expense of all others.

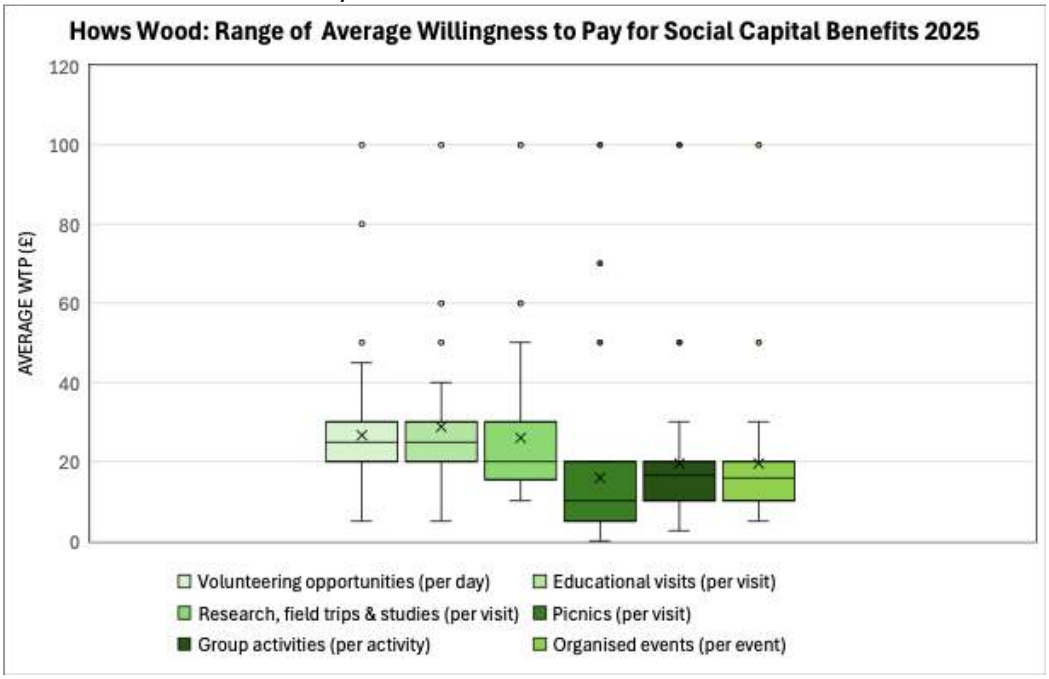


Cultural Capital attributes have much greater dispersions of WTP than natural capital, particularly the stock of Archaeology, Skills (drystone walling and woodlands) and the flows related to Landscape Aesthetics. Other cultural capital flows have much more concentrated

WTP, such as recreational flows and dark skies. Outliers again, have extreme values of £100, WTP allocations being used for single attributes to the exclusion of all others.

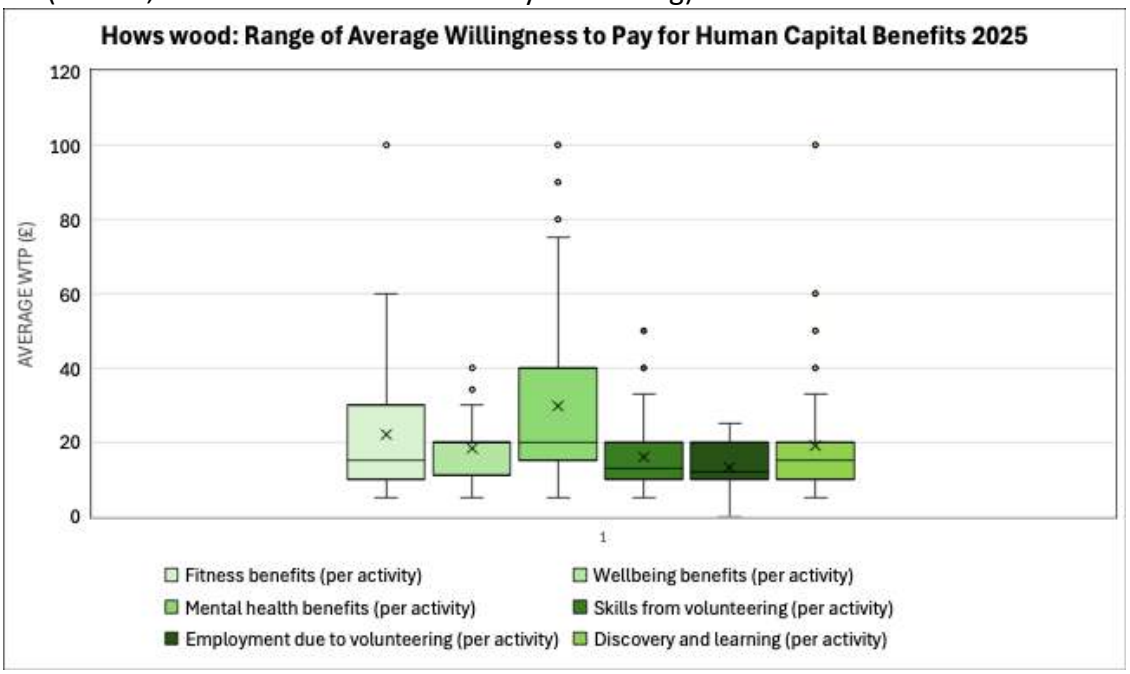


Regarding ***Social Capital Flows***, Picnics and Research had the greatest range of WTP values, whereas the others were relatively concentrated. All attributes had extreme outliers of 100%.



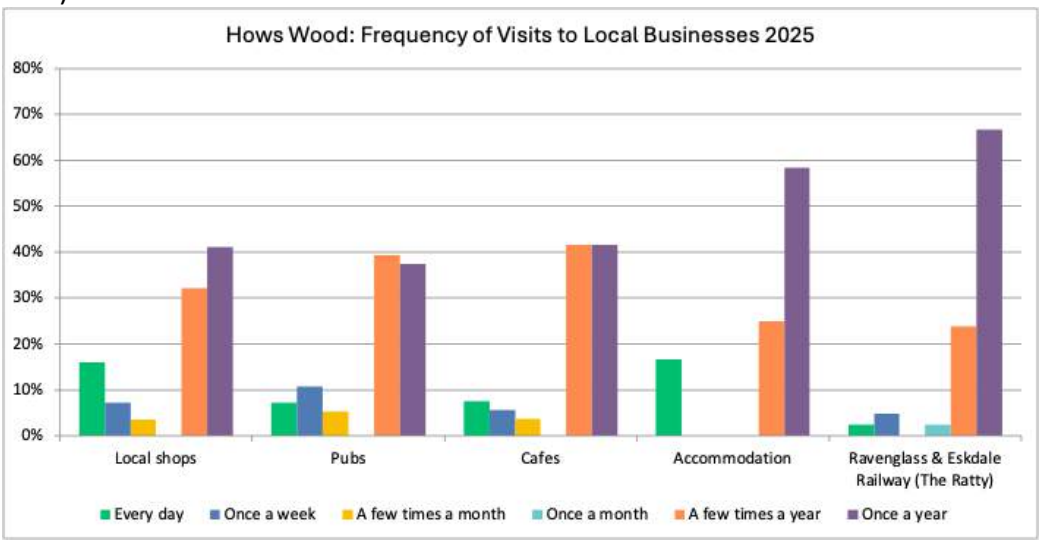
Finally for ***Human Capital flows***, Fitness and Mental Health has the most dispersed WTP values, both with positive skews suggesting more people were willing to pay smaller amounts of money for these services, but they both had long tails of data. WTP for the other social capital

attributes were much more concentrated around the mean values. Three attributes had 1005 outliers (Fitness, Mental Health and Discovery & Learning).



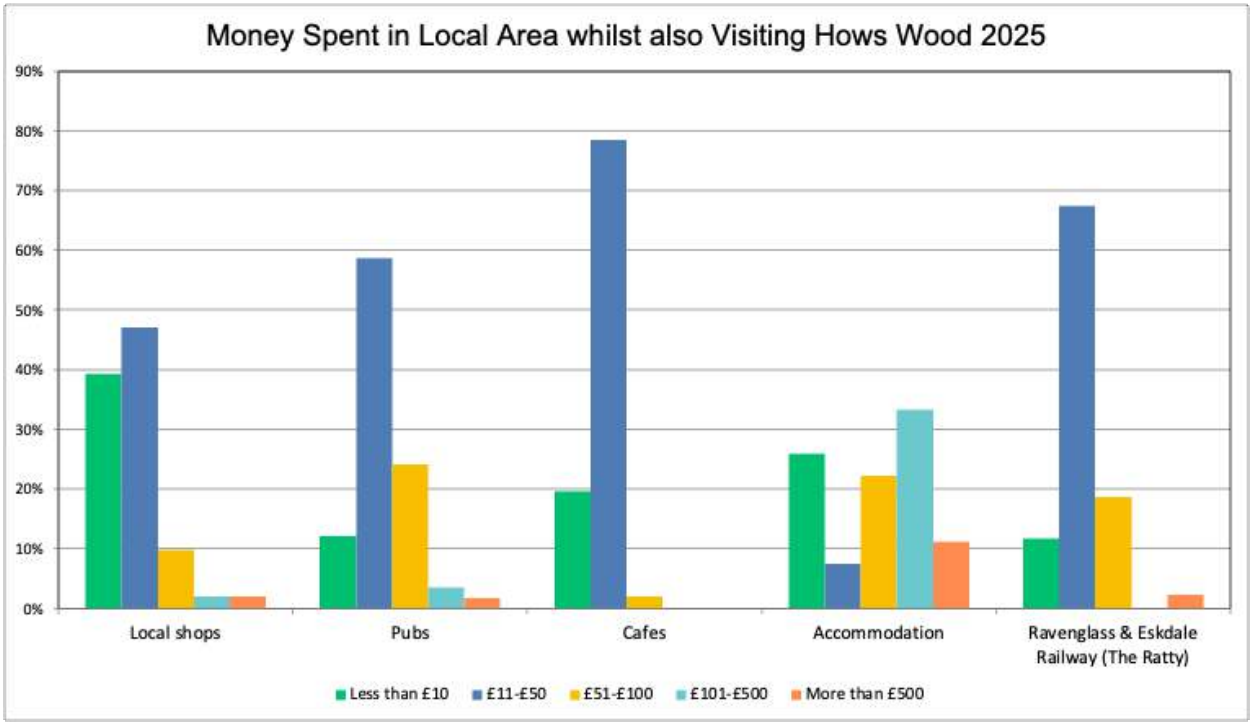
Financial Benefits

With respect to ***Financial Capital***, the majority visited local businesses either a few times a year or once a year. The most popular businesses were accommodation (58%) and the Ravenglass & Eskdale Railway, around two thirds of respondents who answered this question. Local shops, pubs and cafes were frequented more often but by much fewer people (less than 10% of respondents).



With respect to expenditure, 56% of people spent between £11 and £50 during their visit to the area, mainly in local shops, pubs and cafes. Another 21% less than £10, also in shops, pubs and cafes. With respect to accommodation there was a much greater spread of expenditure across the five classes, reflecting the existence of the local NT camp site and a range of holiday lets and farm accommodation. Only 2.6% spent more than £500, mainly on accommodation, but a few

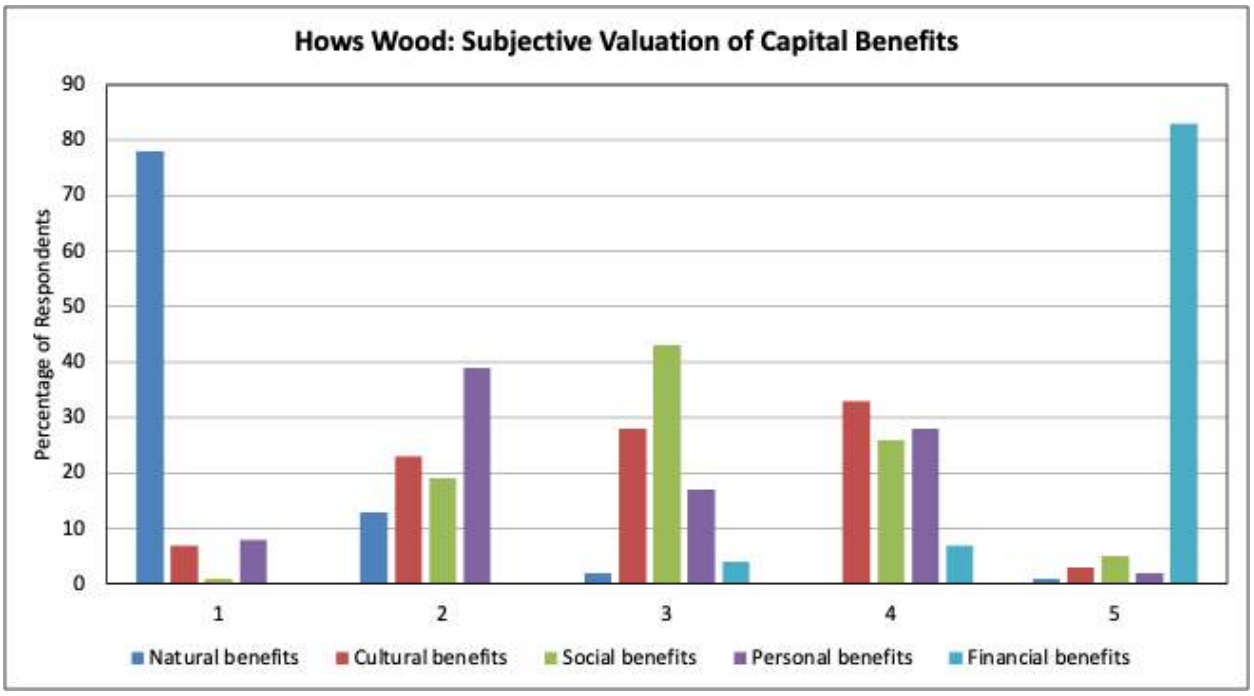
spent that amount in the local shops and pub. Overall, total expenditure ranged from between £5000 to £21,000, with an average of about £13,000 for the seventy respondents who answered this question.



These financial data were cross-tabulated between how much people spent and how often across a year, enabling the calculation of the median spend per year in the local economy. For local shops this amounted to £263,515, for pubs £126,468, cafes £52,780 and accommodation, £366,131. These data were used in the calculation of the Multiple Capitals Account.

Subjective Valuation of Benefits

A final question in the survey, asked respondents to rank each set of benefits (capital) in relation to each other. It is evident from the graph below, that attitudes were quite polarised with natural benefits (capital) were valued most and financial the least.



The order of ranking was then allocated a score, with 5 being the most valued down to 1 the least. A total score for each capital was then calculated using the number of respondents who selected the same rank, using the following equation:

Example *Natural Capital*:

Total score = (390 x 5) + (52 x 4) + (6 x 3) + (0 x 2) + (1 x 1)

= 748

Rank	1	2	3	4	5	SCORE TOTALS
Natural Capital	390	52	6	0	1	449
Cultural Capital	35	92	84	66	3	280
Social Capital	5	76	129	52	5	267
Human Capital	40	156	51	56	2	305
Financial Capital	0	0	12	14	83	109

Using this technique, natural capital was quantitatively, the most valued capital followed by human capital, with financial capital the least.

Additional Comments

Following the WTP questions, respondents were asked if there was anything further they would like to add about their experiences at Hows Wood. Twenty-seven people responded further.

- Five people commented on its peace and tranquillity especially in contrast to other parts of the Lake District
- Four people liked the lower plants (mosses, lichens and ferns)
- Three locals saw as part of their local landscape / sense of place remining them it was their home

- Two liked the way it had been returned to broadleaf woodland
- Two approved of FLD managing it
- Two liked that it was hidden of which one felt access should not be increased.
- One thought the virtual tour was fabulous
- Two, now they knew about it, would like to visit
- An international visitor found the wood helpful for the grieving process
- Once person would like the 'scrap' cleared up (I think they were referring to the Bren Gun carrier).

Other Comments

During the survey, four comments about the methodology arose:

Two people were ethically opposed to placing financial value on non-market goods and services, one of whom said '*I regard all of this as public ownership that I refuse to put a monetary value on the public benefits although I accept that in a capitalist society we may have to pay a high initial cost to purchase and spend money on enhancement and other improvements to benefit wider society, such as reduction of downstream flooding*.'

Another person said:

'*Many of the above [natural capital attributes] are interdependent - for example habitat will positively affect wildlife and carbon storage*.'

A further comment was:

'Cannot believe that you are wasting so much money on setting up this survey!!!!!!!!! If YOU don't know the benefits of woodlands., then should you really be working/volunteering for the organisation..... Maybe that is why the organisation is so out of touch?'

Appendix 4 – Capitals Accounting Compendium For Hows Wood

CAPITAL	ATTRIBUTE	MAIN VALUATION TECHNIQUE
STOCK		
Natural	Geology	WTP
Natural	Habitats	BT
Natural	Species	WTP
Human	Site Management (Volunteers)	DMV
Human	Site Management (FLD staff)	DMV
Human	Site Management (Contractors)	DMV
Cultural	Archaeology & Built Heritage	WTP
Cultural	Local History, legends & place names	WTP
Cultural	Drystone Walls	BT
Cultural	Routeways & trading routes	WTP
Cultural	Woodland skills	WTP
Cultural	Drystone Walling Skills	BT
FLOWS		
Natural	Air Quality	BT
Natural	Carbon Sequestration /storage/mgt	BT
Natural	Water storage & flood management	WTP
Human	Discovery & Learning	WTP
Human	Volunteer wellbeing	BT
Human	Visitor Recreation well being	BT
Human	Skills from volunteering	WTP
Human	Employment opportunities	WTP
Social	Picknicking	WTP
Social	Volunteers SROI (activities & opportunities	BT
Social	Volunteer groups	WTP
Social	Local community SROI (sense of community)	BT
Social	Organised events	WTP
Social	Educational Visits	WTP
Social	Research, field trips and studies	WTP
Cultural	Dark Skies	WTP
Cultural	Vistas & views	WTP
Cultural	Tranquillity	WTP
Cultural	Openness & Wildness	WTP
Cultural	Art & Literature	WTP
Cultural	Recreation	WTP
Cultural	Access	WTP
Cultural	Permissive paths & PROWs	WTP
Cultural	Visitor visit value	BT
Cultural	Inspiration	WTP
Financial	Multiplier effects (local businesses)	DMV

APPENDIX 4 – GLOSSARY OF TERMS

Asset - a resource which is owned or controlled by a business or an organisational entity which has economic value.

Attribute - a term used to describe part of a capital ***dimension***

Baseline – Year 0 of the account, usually present year.

Benefits transfer - a calculation of ***capital accounting*** from a previous study is transferred into a current study.

Capital – a metaphor regarding the positive benefits of environmental resources, our own individual capabilities and capacity, how we work together to solve challenges, our culture and where we get the wherewithal to make change happen to improve our circumstances.

Capital accounting - calculating the monetary value of a capital ***attribute*** or its benefit.

Common goods - a term used by resource managers to describe goods and services which have no market (financial) value.

Common property or pool resource - a resource which is non-excludable (we cannot stop people from using them) and rivalrous (can be diminished by use).

Contingent Valuation Method – a form of ***stated preference*** technique.

Cultural capital (Throsby) – 'the stock of cultural value embodied in an asset.' (p6.)

Dimension - a main component of a capital each of which can be sub-divided into ***attributes***.

Direct Market Value - items with monetary value already extant. For example, livestock sale prices or gross margins per ha/Livestock Unit or salary information

Discounting - converting costs and benefits that occur at different times into 'present-value equivalent'.

Discounting Model – a mathematical means of predicting the value of a capital stock or flow, the HM Treasury's Green Book suggests 50 years.

Ecosystem services – ecological structures, functions and processes through provide a service top benefit people and society in general.

Externalities - a term used by economists to describe goods and services which have no market (monetary) value, these can be positive or negative in character.

Financial capital – money and how it's use can penetrate agricultural activity and businesses.

Flow - benefits created by the management of assets.

Human capital - that which an individual brings through education, skills, life experience and entrepreneurship to improve their quality of life and standard of living.

Intangible cultural capital - those assets which are invisible and living including ideas, practices, beliefs, traditions and values which identify and connect individuals in a group.

Metabolic Equivalent of Task – a measure of energy expenditure beyond just resting (sitting), typically employed for calculating visitor well-being from recreational or other physical activities.

Natural capital - 'the elements of nature that directly or indirectly produce value of benefits to people'. (Natural Capital Committee, 2014:5).

Net Present Value – the difference between the present value of cash inflows (benefits) and the present value of cash outflows (detractors)

Non-market goods - a term used by economists to describe goods and services which have no market (monetary) value.

Physical capital – tangible items such as buildings, equipment, machines and livestock.

Public goods - a resource which is non-excludable (we cannot stop people using them) and non-rivalrous (use does not reduce availability).

Quality Adjusted Life Years – a metric used to compare the health benefits associated with different health related interventions, where 1 QALY is equivalent to one year lived in full health.

Relational social capital - characteristics and qualities of personal relationships eg trust or respect.

Revealed preference - a technique to find the financial value of a non market good by examining the expenditure made by people regarding their purchasing habits.

Social capital – 'features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating co-ordinated actions.' Putnam *et al.,* 1993:167).

Stated preference - a technique to find the financial value of a non-market good by asking people what they are willing to pay.

Stock - assets derived of or from the land.

Tangible cultural capital - ***cultural capital*** which has physical form eg a building.

Total Economic Valuation - the combined monetary value of direct and indirect valuation.

Willingness to Pay - a technique to calculate a persons stated preference for purchasing a non-market good, or how much are they willing to pay for a non-market good.

Capital	Natural			
Dimension	Geodiversity			
Attribute	Geology			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Areal extent	GIS data	Ha	GIS
B	Public value geology	Total WTP for Geology	£	Primary Survey
C			£	
D				
E				
F				
Asset/Stock	**Calculations**			
A	8.13			
B				
Monetary Flows	**Calulations**			
C	531.5			
D				
Net Benefit (£)	= A x C			
	4321.10			
Net Detractor (£)				
	0			
Total Benefit				
£ Value	4321.10			
Notes on Methodology				

Capital	Natural
Dimension	Ecosystems
Attribute	Value of SSSIs

Indicator	Indicator Name	Method	Unit	Source
A	Habitat extent	Areal cover of each NVC class OR Phase 1 class	Ha	Benefit Transfer: Client reports
B	Monetary Value	Value of each habitat type	£	Choice Experiment: Christie & Rayment (2012)
C	Habitat condition	1/2/3) Application of weightings: Favourable recovered = +1 Unfavourable recovering= -1 Unfaourable declining = -2 Unfavourable no change = -2 Destroyed = -3	Factor	Designed here using current classes from SSSI records at website: https://www.gov.uk/guidance/protected-areas-sites-of-special-scientific-interest
D	Unit Size	Each SSSI Unit by area		Taken from SSSI records at: https://www.gov.uk/guidance/protected-areas-sites-of-special-scientific-interest
E	Total Area	Areal extent of site	Ha	Client records
F	Public perception	Total WTP of respondents	£	Primary Survey

Asset/Stock	**Calculations**	
A	Habitat Type	Ha (A) / km (L)
	Standing water	0.00
	Heathlands	0.00
	Acid Grassland	0.00
	Calcareous Grassland	0.00
	Mesotrophic Grassland	0.00
	Fen/ Marsh/ Swamp	0.00
	Inland Rock	0.00
	Rivers & Streams (Km)	0.67
	Woodlands (broadleaf, yew etc..)	8.13
Monetary Flows	**Calulations**	
B	Standing water	622.00
	Heathlands	1141.00
	Acid Grassland	682.00
	Calcareous Grassland	914.00
	Mesotrophic Grassland	642.00
	Fen/ Marsh/ Swamp	861.00
	Inland Rock	200.00
	Rivers & Streams (perkm)	903.00
	Broadleaf Woodlands	1002.00
F	2478	

Net Benefit (£) (I)	Sum of (A x B) for each habitat OR A x F (WTP)
CExp	8746.76
WTP	2487.00
Net Detractor (£) (J)	= (Unit size/E) x total value x weighted score
Total Benefit	= I - J
£ Value (BT)	8746.76
£ Value (WTP)	20219.31

Notes on Methodology

Habitat Choice Experiment calculations using Christie & Rayment (2012) and other sources to get areas

Capital	Natural			
Dimension	Ecosystems			
Attribute	Species			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Number of species	To include: plants, mammals, birds,	N	Client
B	Lower plants	Bryophytes survey and ferns from	ha	Client survey
C	Valuation by Public perception	Total WTP for wildlife per species	£	Primary Survey
D	Valuation lower plants	Total WTP per lower plant	Ha	Primary survey
E				
F				
Asset/Stock	**Calculations**			
A	146			
B	8			
Monetary Flows	**Calulations**			
C	2151			
D	1317			
Net Benefit (£) (I)	= A x C plus B x D			
	324582.00			
Net Detractor (£) (J)				
Total Benefit	324582.00			
£ Value	324582.00			
Notes on Methodology				
Ensure to avoid double accounting from Indicator lists A and B				
£ Value	0.00			
Notes on Methodology				
Ensure to avoid double accounting from Indicator lists A and B				

Capital	Natural			
Dimension	Water			
Attribute	Flood mgt			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Site extent	Area measurement	ha	Client
C	Flood regulation	as per source	£	Report update
D	WTP flood mgt	WTP	£	Public survey
D				
E				
F				
G				
H				
Asset/Stock	**Calculations**			
A	8.8			
B				
Monetary Flows	**Calulations**			
C	302			
D	863			
Net Benefit (£) (I) [BT]	2657.6			
WTP	7594.4			
Net Detractor (£) (J)				
Total Benefit	= I- J			
£ Value	2657.6			
Notes on Methodology				
See report update				

Capital	Natural
Dimension	Air
Attribute	Air Quality

Indicator	Indicator Name	Method	Unit	Source
A	Vegetation Cover	Areal cover of each NVC/Phase 1 class collated by main vegetation group	Ha.	Benefits Transfer: Client survey
B	Air Quality purification	Application of PM10 purification factors by habitat	kg of absorbed PM/ha/yr	Benefits Transfer: Faccioli et al (2023) and various scoping papers listed in Faccioli et al (2023)
C	Monetay Value of air Quality purification	Value of air quality improvement is estimated by considering the health benefits (in terms of damage avoided) resulting in lower concentrations of PM10 in the air	£	Benefits Transfer: White et al. (2015) cited in Faccioli et al (2023)
D	Public valuation of clean air	WTP per ha.	£	Primary Survey
E	Total area of site	Areal measurement	Ha.	Client
F				

Asset/Stock	**Calculations**			
A	**Habitat Class (Faccioli et al (2023)**	**Ha (A)**	**PM 10 (B)**	**A x B**
	Open Water	0.67	0	0
	Heather grassland		0.64	0
	Heather		0.42	0
	Acid/Calcareous Grassland		0.46	0
	Fen/MarshSwamp		0	0
	Neutral grassland		0.46	0
	Woodland	8.13	580	4715.4
			SUM of A x B	***4715.4***
E	8.8			

Monetary Flows	**Calculations**
C	580
D	11.68

Net Benefit (£) (I)	= (A x B x C) or = (D x E)
PM 10	4715.40
WTP	1168
Net Detractor (£) (J)	
Total Benefit	8.13 x 580 = 4715.40 OR 1168 x 8.8= 10,278.40
£ Value	

Notes on Methodology

PM10 - partiulate matter of less tha 10 microns (micrometres) in size that can enter the body via inhalation. This is the standard used by the UK Government to monitor air pollution, see: https://www.gov.uk/government/statistics/air-quality-statistics/concentrations-of-particulate-matter-pm10-and-pm25

Capital	Natural				
Dimension	Natural Processes and functions				
Attribute	Carbon sequestration				
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**	
A	Vegetation Cover	Areal cover of each NVC or Phase 1 class collated into the main vegetation groups	**Ha.**	Benefits Transfer from client data	
B	Carbon Sequestered	See below	Tonnes of CO2/CO2e sequestered/ha/yr	]Updated from Faccioli et al (2023)	
C	Social value of carbon	Green Book value £69/TCO2e (£254/tC) for non-ETS Sectors (nontradeable carbon) 2019 figures	£	Benefits Transfer: Green Book and https://www.forestresearch.gov.uk/research/review-of-approaches-to-carbon-valuation-discounting-and-risk-management/	
D	Site size	GIS data	Ha.	Client	
E	Valuation by Public	Total WTP from Survey	£	From Primary Survey	
F					
Asset/Stock	**Calculations**				
A	***Habitat/NVC class/ Phase1 data***		***A (ha)***	***B(t/CO2e)***	***A x B***
	Open Water		**0.67**	-5.4	**-3.618**
	Heather grassland			1.61	
	Acid/Calcareous grassland			3.45	
	Fen/Marsh/Swamp			1.61	
	Neutral Grassland			3.91	
	Woodlands		**8.13**	6.2	**50.406**
				SUM of A x B - Row 15	**50.406**
				Open water detractor	**-3.618**
D	8.13				
Monetary Flows	**Calculations**				
C	69				
E	913				
Net Benefit (£)	Sum of (A x B)x C) OR (D x E)				
T/CO2e (l)	3478.01				
WTP	7422.69				
Net Detractor (£) (	Row 15 open water carbon loss				
	249.64				
Total Benefit	3228.37				
£ Value					
Notes on Methodology					
Previously Faccioli et al.'s calculations are based on areport by the RSPB (2017) which had previously scoped a large amount of literature to derive these figures. New fifgures as per report source 6.2t/ha of woodland carbon sequestration					

Capital	Human			
Dimension	Skills			
Attribute	Employment from volunteering			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Volunteer days	Number of days activity at Hows wood	n.	FLD data
B	Public perception of v	WTP	£	Survey
Asset/Stock	**Calculations**			
A	6.00			
Monetary Flows	**Calculations**			
B	366.00			
Net Benefit (£)				
Total Benefit £	2196.00			
Notes on Methodology				
HLF use a standard accepted rate employed for all HLF funded projects which can be used as a guide for other volunteer labour.				
Number of volunteers invovled in each session has been extrapolated as 6.				

Capital	Social			
Dimension	Reciprocity & Exchange			
Attribute	Volunteer SROI			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Number of volunteers	Volunteer Count	%	FLD
B	HACT factor	0.5 factor applied to	N.	see note below
C	Value vols place on frequent volunteering	Social Value Engine	£	Benefits Transfer from Rose Regeneration Social Value Engine
Asset/Stock	**Calculations**			
A	36			
B	0.5			
Monetary Flows	**Calculations**			
C	3728.3			
Net Benefit (£)	67109.40			
£ Total Value	67109.40			
Notes on Methodology				
Indicator A from the SVE is based on: https://www.powertochange.org.uk/wp-content/uploads/2020/06/Value_of_Volunteering_Working_Paper_Final.pdf - definition being (HACT, 2018) – when a person 'volunteers at least once per month for at least two months' and the method uses a 50 per cent figure to adjust for potentially double counting the wellbeing benefits for those volunteers who volunteer in a community business and elsewhere				

Human	Human			
Dimension	Labour			
Attribute	Site management FLD			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Proportion of Salary	Proportion of Gross Salary managing Hows Wood	%	FLD
B	Gross salary	Gross Salary for standard	£	Indeed on line 17/4/23
C	Salary deductions	Proportion of NI., Pension & Tax	£	FLD
Asset/Stock	**Calculations**			
A	15			
Monetary Flows	**Calculations**			
B	31658			
C	6396.26			
Net Benefit (£)	1301.01			
Net Detractor (£)	262.86			
£ Total Value	1038.15			
Notes on Methodology				
Gross salary taken from recent advert minus standard deducations supplied by FLD				

Capital	Human			
Dimension	Labour			
Attribute	Site Management contractors			
Indicator	Indicator Name	Method	Unit	Source
A	Contracts	total value awarded	£	FLD
				Ecological survey
				Bryophytes survey
Asset/Stock	Calculations			
	0.00			
Monetary Flows	Calculations			
A	3600			
Net Benefit (£)	3600.00			
Net Detractor (£)	0			
Total Benefit	0			
£ Value	0			
Notes on Methodology				
FLD contracts to survey vegetation also any maintenance beyond volunteer capacity				

Capital	Human			
Dimension	Labour			
Attribute	Site Management volunteers			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Volunteer days	Number of days activity at Hows wood	n.	FLD data
B	Volunteers	Number of volunteers in total	n.	FLD data
B	HLF valuation	standard value of £50/day	£	HLF volunteer rate
Asset/Stock	**Calculations**			
A	6.00			
B	6.00			
Monetary Flows	**Calculations**			
C	50.00			
Net Benefit (£)	=AxBxC			
Total Benefit £	1800			
Notes on Methodology				
HLF use a standard accepted rate employed for all HLF funded projects which can be used as a guide for other volunteer labour.				
Number of volunteers invovled in each session has been extrapolated as 6.				

Capital	Human			
Dimension	Skills			
Attribute	Skills from Volunteering			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Volunteer days	Number of days activity at Hows wood	n.	FLD data
B	Public perception of value per activity	WTP	£	Survey
Asset/Stock	**Calculations**			
A	6.00			
Monetary Flows	**Calculations**			
B	685.00			
Net Benefit (£)				
Total Benefit £	4110.00			
Notes on Methodology				
HLF use a standard accepted rate employed for all HLF funded projects which can be used as a guide for other volunteer labour.				
Number of volunteers invovled in each session has been extrapolated as 6.				

Capital	Social			
Dimension	Events			
Attribute	Socoal learning			
Indicator	Indicator Name	Method	Unit	Source
A	Education	No. of events	n	FLD
B	Group	No. of events	n	FLD
C	Organised	No, of events	n	FLD
D	research	No. of event	n	FLD
E	Education	WTP plus any school	£	Survey
F	Group	WTP not organised by FLD	£	Survey
G	Organised	WTP organised by FLD	£	Survey
H	Research	WTP eg Uni groups, NE, FC	£	Survey
Asset/Stock	Calculations			
A	1			
B	6			
C	2			
D	0			
Monetary Flows	Calculations			
E	2012			
F	940.5			
G	995			
H	1793			
Total Benefit (£)	9645.00			
Notes on Methodology				

Human	Human			
Dimension	Education			
Attribute	Discovery & learning			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Per Actvitiy	no of events	count	FLD
B	Public perception	Total WTP	£	Primary survey
Asset/Stock	**Calculations**			
A	7			
Monetary Flows	**Calculations**			
B	1125			
Net Benefit (£)	7875.00			
£ Total Value	7875.00			
Notes on Methodology				

Capital	Human				
Dimension	Well being				
Attribute	Volunteers				
Indicator	**Indicator Name**	**Method**		**Unit**	**Source**
A	Benefits from Volunteering walling	Number of volunteer - 30 min sessions (ie 6 hours per day = 12)		n	FLD records
B	Benefits from volunteering woodland mgt	Number of volunteer - 30 min sessions (ie 6 hours per day = 12)		n	FLD records
C	Benefits from volunteering path maintenance	Number of volunteer - 30 min sessions (ie 6 hours per day = 12)		n	FLD records
D	Activity type and Met value over 3	Walling as 6 METS, Woodland management 5.3/5.4 METS and Path Maintenance 6.3 METS		METs	Benefits Transfer (Ainsworth et al (2011)
E	QALY conversion	multiply C by 0.0106077 and divide by 52 weeks		QALY	Benefits Transfer White et al (2016)
F	Monetary value of 1 QALY	£20k NICE, £25K - Yorkshire Water, £60K the Green Book		£	Benefits Transfer (https://www.nice.org.uk/glossary?letter=q#:~:text=and%20cognitive%20impairment'.-,Quality%2Dadjusted%20life%
Asset/Stock	**Calculations**				
METS Calculation	Actvity Type	Number	MET value (D)	Met value (D)	
	Walling	2	6	12	
	Woodland Mgt	2	5.3	10.6	
	Path maintenance	2	6.3	12.6	
	TOTAL (D)			**35.2**	
QALYS conversion	**0.007180597**				
Monetary Flows	**Calculations**				
F	£20,000 or £25,000 or £60,000				
Total Benefit (£) NIC	143.61				
Yorkshire Water	179.51				
Green Book**	**430.84**				
Notes on Methodology					
See Human well being Recreation					

Capital	Human				
Dimension	Well being				
Attribute	Visitor Well Being				
Indicator	Indicator Name	Method		Unit	Source
A	Benefits of recreational & sport exercise	Number of visitor visits above 30 min sessions (ie 6 hours per day = 12)		n	Primary Survey
B	Activity type and Met value over 3	Activity type and MET Value		METs	Benefits Transfer (Ainsworth et al.;2011)
C	Count of METS over 3	Number of visits over 30 mins in a year where MET is over 3		n	Primary Survey and White et al (2016)
D	QALY conversion	0.0106077 and divide by 52 weeks		QALY	Benefits Transfer White et al (2016)
E	Monetary value of 1 QALY	£20k NICE, £25K - Yorkshire Water, £60K the Green Book		£	Benefits Transfer (Nice link)
F	Physical well being	No of visitor visits per year over 3METS		n	Primary survey
G	All well being	No of visitor visit sin total		n	Primary Survey
H	Public perception (P)	WTP (physical well being)		£	Primary Survey
I	Public perception (G)	WTP (general well being)		£	Primary Survey
J	Public perception (M)	WTP (mental well being)		F	Primary Survey
Asset/Stock	Calculations				
METS Calculation	Actvity Type	Number	MET value (D)	Met value (D)	
	Appreciating Scenery	896	1.30	1164.8	<3METs so not counted
	Picknicking	0	1.75	0	<3 METS so not counted
	Wildlife watching	1065	2.50	2662.5	<3 METS so not counted
	Walking with dog	220	3.00	660	
	Walking without dog	951	3.50	3328.5	
	Volunteering	12	3.00	36	
	Fell Running	8	7.00	56	
	Road Cycling	41	7.50	307.5	
	TOTAL (D)			**4388**	
QALYS conversion	0.895126685				
F	1232				
G	3193				
Monetary Flows	Calculations				
E	£20,000 or £25,000 or £60,000				
H	1252.5				
i	974.5				
J	2099.5				
Total Benefit (£) NIC	17902.53				
Yorkshire Water	22378.17				
Green Book **	53707.60				
Public Perception (p	1543080.00				
Pulbic perception (g	3111578.50				
Public perception (r	6703703.50				
Notes on Methodology					
Calculating physical flows:					
1) Identify the MET value for each recreational activity via Ainsworth et al (2011)					
2) For those with a value of 3 or greater, count up the number of 30 mins sessions over 52 weeks					
3) Sum these					
4) Multiply the figure by the QALY rate (0.016077) and divide by 52 to obtain total QALYS generated by LAC visitors over a year					

One MET is equivalent to a standard resting metabolic rate of 3.5ml of oxygen consumption per kg of body weight, per minute engaged in an activity. METs are thus a ratio of the metabolic rate associated with an activity compared
Quality Adjusted life Years (QALYs) is a metric used to compare the health benefits associated with different health
Calculating monetary flow value:
Monetary flow of 1 QALY was £20k as per Nice recommendations
Monetary value of QALY updated by Yorkshire Water to £25K in 2021 report
The Green Book records ` QALY as valued at £60k
Multiply number of QALYs from Physical calculation by £20k/£25K or £60K

Capital	Social			
Dimension	Structural			
Attribute	Voluhteer opportunities			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Number of visits		n	FLD
B	Pulbic valuation of vol. opps.	Total WTP by public	£	Primary survey
Asset/Stock	**Calculations**			
A	6			
Monetary Flows	**Calculations**			
B	588.5			
Net Benefit (£)	3531.00			
£ Total Value	3531.00			
Notes on Methodology				

Capital	Social			
Dimension	Recreation			
Attribute	Picknicking			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Number of visits	25% of all visits made to wood	%	FLD
B	valuation of picknicking	Total WTP by public	£	Primary survey
Asset/Stock	**Calculations**			
A	86			
Monetary Flows	**Calculations**			
B	588.5			
Net Benefit (£)	12652.75			
£ Total Value	12652.75			
Notes on Methodology				

Capital	Social			
Dimension	Bridging Network			
Attribute	Local Community			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Local People	Count of locals who feel they have a sense of community	N.	FLD Primary survey
B	Sense of Commnunity	SV Engine 'Sense of Community' proxy	N.	https://org.nhslothian.scot/Strategies/Documents/SenseOfBelonging.pdf
Asset/Stock	**Calculations**			
A	13			
Monetary Flows	**Calculations**			
C	6,250			
Net Benefit (£)	81250.00			
£ Total Value	81250.00			
Notes on Methodology				
Uses the SV Engine proxy of a sense of belonging to a community				

Capital	Cultural			
Dimension	Landscape Aesethetics			
Attribute	Drystone Walls			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Length of Walls	GIS data	m	FLD
B	culutral value of walls	Total WTP by survey respondents	£	Survey
C	HE Valuation			Powell et al (2019) report
Asset/Stock	**Calculations**			
A	1100			
Monetary Flows	**Calculations**			
B	1041			
C				
Net Benefit (£)				
Total Value (£) WTP	1145100.00			
Total Value (£) Powell et al 2019	216790.87			
£ Total Value (HE)	0.00			
Notes on Methodology				

Wall Function	**Indicator Value**	**Wieghted score**	**Financial proxy**	**Total Current value**	
Sense of Place	3	1.5	17 per visit	145222.50	5695 visits
Contribution to Landscape	2	0.5	17 per visit	48407.50	
Maintenance & reinvigoration of skills	3	0.5	1456/FTE	0.00	
Job Creation	0	0	900 per km	0.00	
Moss & Lichen	5	1	655 per ha	5325.15	
Long term Habs	5	1	1444 per ha	11739.72	
Separation for livestock Mgt	3		1250 per km	1375.00	
Shelter	1		3400 per km	3740.00	
Ownership Mgt	5		500 per km	550.00	
Overland flow	1		69.33/km	76.26	
Gap restoration	10		22.50/km	24.74	
Maintenance costs	0.5		300/km	330.00	
		Grand Total	**0**	**216790.87**	

Capital	Cultural			
Dimension	Heritage			
Attribute	Archaeology & Built Heritage			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Number of Structures	FLD Survey	N	FLD
B	Number of artefacts	Count of artefacts found at Hows Wood	N	FLD Survey
C	Public valuation of built structures	Total WTP of public from survey	£	WTP survey
D	Public valuation of archaeology	Total WTP of public from survey	£	WTP survey
Asset/Stock	**Calculations**			
A	2			
B	0			
Monetary Flows	**Calculations**			
C	701			
D	573			
Total Benefit (£)	1402.00			
£ Total Value	1402.00			
Notes on Methodology				

Capital	Cultural			
Dimension	Skills			
Attribute	Drystone walling skils			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Length of Walls	GIS database	m	FLD
B	Valuation by walling rate	Wallling rate in west Cumbria	£	Drystone Walling Association
C	CS Valuation	Walling rate by Countryside Stewardship paid rate	£/m	DEFRA
D	Public perception	WTP with 1.5m walled by six vols per activity	£/m	WTP survey
Asset/Stock	**Calculations**			
A	1100			
Monetary Flows	**Calculations**			
B	50			
C	37.45			
D	973 (648.67/m			
£ total Value DSWA	55000.00			
£ Total Value CS	41195.00			
£ total value	713757.00			

Notes on Methodology

Countryside Stewardship rate 31.91 plus 5.54 for top wiring; CSS rate options:
BN12 – restoration of at least one third the height of the wall (£31.91/m)
BN 15 – supplement of £15.91/m for walls with one of the following criteria:
•on a slope with an incline of more than 30 degrees
•greater than 1.6m in height
•in an inaccessible or remote location, such as a considerable distance from a track or situated on boggy ground
But BN15 can only be used when the applicant has "management control" of both sides of the boundary, as can BN13 (top Wiring @ 5.54/m) – LAC walls are owned one side only.

DSWA estimated cost of walling per metre/sq. metre in SE Cumbria for 2023 - £50. Note from DSWA: Cost for walling are always a bit of a challenge as there are so many factors that have to be taken into account. CS rates are a starting point, rather more a cost towards the work which the landowner should then top up. It can depend on factors such as availability of stone, ease of access, etc. as to the final charge per metre.

Salary Deductions for NI, Pension and Tax are almost impossible to calculate as it will depend on the number of FTEs involved in such a task.

Capital	Cultural			
Dimension	Tradtions			
Attribute	Woodland skills			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Area of woodland	GIS	ha	FLD
B	Work rate	assume rate 1 ha per day	ha	CMgt Professional
C	Pulbic perception	WTP	£	Primary survey
D				
E				
F				
Asset/Stock	**Calculations**			
A	8.13			
B	8.13 days			
Monetary Flows	**Calculations**			
C	1337.5			
Total Benefit	10873.88			
£ Value	10873.88			
Notes on Methodology				
Asuume woodland mgt work covers 1ha per day given the terrain and lack of vehicular access				

Capital	Cultural			
Dimension	Heritage			
Attribute	Local History & Place names			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Area of Site	GIS	ha	FLD
B	Place names	Those referred to in the FLD Leaflet	n.	FLD
B	Public valuation of local history	Total WTP by survey respondents	£	FLD
C	Public valuation of place names	Total WTP by survey respondents	£	Survey
Asset/Stock	**Calculations**			
A	8.1			
B	11			
Monetary Flows	**Calculations**			
B	626			
C	266			
Total Benefit	7996.60			
£ Value	7996.60			
Notes on Methodology				
Place names count was generated via the FLD materials				

Capital	Cultural			
Dimension	Recreation			
Attribute	Recreation			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Recrearional activity	No of people in survey	count	survey
B	Public valuation of recreation	Total WTP by survey respondents	£	Survey
Asset/Stock	**Calculations**			
B	154			
Monetary Flows	**Calculations**			
D	234			
Net Benefit (£)	36036.00			
£ Total Value				
Notes on Methodology				
WTP data was not used in the MCA but ORVAL visit value was instead. It is of interest how much more people appreciate a visit to the wood in comparison to Orvals very low value				

Capital	Cultural			
Dimension	Recreation			
Attribute	Access			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	ROW links	GIS	m	FLD
B	Public valuation of routeways	Total WTP from survey	£	Survey
Asset/Stock	**Calculations**			
A	1300			
Monetary Flows	**Calculations**			
B	386			
Total Benefit	501800.00			
£ Value	0.00			
Notes on Methodology				
Assumed PROW was one side of the looping permissive path				

Capital	Cultural			
Dimension	Heritage			
Attribute	Routeways & trading routes			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Minor Roads	GIS	m	FLD
B	Public valuation of routeways	Total WTP from survey	£	Survey
Asset/Stock	**Calculations**			
A	1300			
Monetary Flows	**Calculations**			
B	386			
Total Benefit	501800.00			
£ Value	0.00			
Notes on Methodology				
Assumed PROW was one side of the looping permissive path				

Capital	Cultural			
Dimension	Recreation & sport			
Attribute	Visitor visit value			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Number of visits	No of visitor from survey for the year	N	
B	Public value per visit ORVal	per visit	£	Benefits Transfer ORVal value for woodlands
C	Pulbic value per visit Sen	per visit	£	Benefits Transfer Sen et al (2014) value for woodlands
D	Public value per visit NEVO	per visit	£	Benefits Transfer NEVO - Exeter Uni
Asset/Stock	**Calculations**			
A	1119			
Monetary Flows	**Calculations**			
B	3.62			
C	3.34			
D	Not available software offline			
Net Benefit (£) ORVal	4050.78			
Net benefit (£) Sen	3737.46			
Net Benefit (£) NEVO	#VALUE!			
£ Total Value ORVal	4050.78			
£ Total Value Sen	3737.46			
£ Total Value NEVO	#VALUE!			
Notes on Methodology				
ORVal calculations SW Lakes catchment ttoal visitor welfare visit £21,452,152 with £59258338 visitor days thus average per visit is £3.62				

Capital	Cultural			
Dimension	Heritage			
Attribute	Art & Literature			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Art & literature	GIS database	ha	FLD
B	Public perception of A &L	Total WTP by survey respondents	£	Survey
Asset/Stock	**Calculations**			
A	8.13			
Monetary Flows	**Calculations**			
B	218.5			
Total Benefit	1776.41			
£ Value	1776.41			
Notes on Methodology				

Capital	Cultural			
Dimension	Landscape Aesethetics			
Attribute	Dark Skies			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Areal extent	GIS database	Ha	FLD
B	Public valuation of dark skies	Total WTP by survey respondents	£	Survey
Asset/Stock	**Calculations**			
A	8.13			
Monetary Flows	**Calculations**			
B	332.5			
Net Benefit (£)	2703.23			
£ Total Value	2703.23			
Notes on Methodology				

Capital	Cultural			
Dimension	Inspiration			
Attribute	Inspiration			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Areal extent	GIS datbase	ha	FLD
C	Public valuation of inspiration	WTP from survey	£	Survey
Asset/Stock	**Calculations**			
A	8.13			
Monetary Flows	**Calculations**			
C	302.5			
Total Benefit	2459.33			
£ Value	2459.33			
Notes on Methodology				

Capital	Cultural			
Dimension	Landscape Aesethetics			
Attribute	Openess			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Area of adjacent open access land	GIS data	ha	FLD
B	Public valuation of openess	Total WTP by survey respondents	£	Survey
Asset/Stock	**Calculations**			
B	12			
Monetary Flows	**Calculations**			
D	555.5			
Net Benefit (£)	6666.00			
£ Total Value	14433.90			
Notes on Methodology				
Openness inlciuded adjacant open access land to the site which can be accessed from ROW and permissive pathes.				

Capital	Cultural			
Dimension	Landscape Aesethetics			
Attribute	Tranquillity			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Areal extent	GIS database	ha	FLD
B	Public valuation of tranquillity	Total WTP by survey respondents	£	Survey
Asset/Stock	**Calculations**			
A	8.13			
Monetary Flows	**Calculations**			
B	1223			
Net Benefit (£)	9942.99			
£ Total Value	9942.99			
Notes on Methodology				

Capital	Cultural			
Dimension	Landscape Aesethetics			
Attribute	Vistas & Views			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Areal extent	GIS database	ha	FLD
B	Public valuation of vistas and views	Total WTP by survey respondents	£	Survey
Asset/Stock	**Calculations**			
A	8.13			
Monetary Flows	**Calculations**			
B	592.5			
Net Benefit (£)	4817.03			
£ Total Value	4817.03			
Notes on Methodology				

Capital	Cultural			
Dimension	Landscape Aesethetics			
Attribute	Wldness			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Area of site	GIS data	ha	FLD
B	Public valuation of wildness	Total WTP by survey respondents	£	Survey
Asset/Stock	**Calculations**			
A	8.1			
Monetary Flows	**Calculations**			
C	959			
Net Benefit (£)	7767.90			
£ Total Value	7767.90			
Notes on Methodology				
Openness inlciuded adjacant open access land to the site which can be accessed from ROW and permissive pathes.				

Capital	Financial			
Dimension	Currency			
Attribute	Visitor Spend multiplier effect			
Indicator	**Indicator Name**	**Method**	**Unit**	**Source**
A	Shops	See notes	£	Direct Market Value Survey
B	Pubs & cafes	See notes	£	Direct Market Value Survey
C	Accommodation	see notes	£	Direct Market Value Survey
D	Lal Ratty	see notes	£	Direct Market Value Survey
Asset/Stock	**Calculations**			
	nil			
Monetary Flows	**Calculations**			
A	41738			
B	29772			
C	19328			
D	4120			
Total Benefit	94958.00			
£ Value	94958.00			
Notes on Methodology				
These data needed reviewing. For example, in several places people seemed to infer they visited the pub 365 days a year and each time spent £500. In other instances people who lived at distance were using faciltiies 365 days of the year. The following data lines were adjusted based on Postcode information:				
Local postcodes reduced from 365 to 52. Out of county postcodes from 365 to 12. Several respondents did not give a count so it was assumed as a count of 1.				