Economic Assessment of the Mental Health and Wellbeing Benefits of Walking on the South West Coast Path: Methodology and Scoping Study

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1. Executive Summary

Our natural environments provide enormous benefits to our mental and physical health and wellbeing. They are our 'natural health service' (see Hardman 2020), providing both therapeutic and preventative benefits that can also reduce the burden of costs to the NHS. This report focuses on mental health and wellbeing benefits[1]. The benefits of spending time in natural environments for mental health and wellbeing include reductions in psychological stress, fatigue, anxiety and depression, and cognitive and psychological wellbeing benefits including an increased ability to 'function well'. The range of benefits also reflects the varied motivations for visiting (see below).

This research is especially timely. Since the start of the Covid-19 pandemic, the UK has experienced a sharp rise in mental health conditions, with referrals to NHS mental health services for conditions such as anxiety and depression at a record high; exacerbating health inequalities and making them more apparent. Although not replacing appropriate mental-health support and evidence-based psychological therapies, it is important that support for mental wellbeing is conceptualised in a holistic way.

This trajectory is likely to continue given the current global insecurity and conflict and the rising cost of living. At the same time, more people have been spending time in natural environments and there is growing public awareness about the health benefits of this. Evidence also suggests that coastal habitats bring particular benefits and that the most significant health benefits are likely to be for marginalised groups (see e.g. Elliott *et al*. 2018).

The South West Coast Path (SWCP) consists of 630 miles of National Trail passing through a range of biodiverse and varied coastal natural environments, including beaches, cliffs, grassland, woodland, saltmarsh, sand dunes, heathland and scrub.

It includes some of the most scenic coastal locations in the UK, and attracts more than 8 million visits per year. It therefore plays an important role in providing mental as well as physical health and wellbeing benefits to visitors. This research aims to assess what these are, and to investigate how they can be quantified and expanded.

Rationale and aims of this research

This report sets out the findings of research that aimed to assess the economic mental health and wellbeing benefits of the SWCP and investigate how these can be maximised. It examines various valuation methods and their suitability for assessing benefits from walking on the SWCP. Based on this, it also offers recommendations that relate to the policy and practice that are concerned with realising the potential of engaging with the path for creating positive mental health and wellbeing impacts, particularly for under-represented groups. The research was commissioned by the South West Coast Path Association (SWCPA), and funded by Natural England (Jan- Mar 2022).

Due to the constraints of time and resources, this research primarily takes the form of a methodological and scoping study. Due to the limitations of available data, an avoided cost method was used in capturing information on the cost benefit to mental health and wellbeing of this engagement, and accordingly, the findings on these impacts should be seen as initial and indicative; pointing up the need for further research in quantifying more accurately these important benefits.

Results and conclusions

For all the valuation methods there are limitations due to the data currently available (see Table 14.1, Appendix 1). Within these limitations the avoided costs methods provide the simplest and most suitable route to a valuation and moreover are less susceptible to results that might be confounded by issues of double counting. However, this method measures only costs avoided (to the NHS and workplaces) due to known mental ill-health, and it therefore vastly underestimates actual mental health and wellbeing benefits. Data that rely on low past estimates of common mental health conditions and that do not include specific reference to benefits for younger and older people, more occasional walkers or those with undiagnosed conditions[2] are likely to provide only a partial picture of the range and scale of wider wellbeing benefits.

These limitations could be addressed through future data collection/securing of other data sources (see below) e.g. incorporation of wellbeing and life satisfaction questions in future visitor/ wellbeing surveys, to give a more accurate picture of the real mental health and wellbeing benefits. The avoided cost valuations could also be refined by obtaining local NHS and other sources of data for the populations along the SWCP. The value of the mental health and wellbeing benefits will also differ spatially, notably between the more urban and rural environments from which visitors come; urban areas are closer to greater population density, and may therefore be likely to lead to higher valuations when taking into account benefits at community level.

Insights from the qualitative literature show that walking on the SWCP also provides extensive qualitative mental health benefits that are harder to measure and which vary according to people's differing motivations and experiences. These include benefits that are *hedonic* (positive feelings and mood) and those that are *eudaimonic* (feelings of competence, purpose, achievement, autonomy) with there being three pathways to their achievement: *restoration* (restoring capacities); *instoration* (building capacities); and *mitigation* (reducing harm) (Valuing Nature 2019) with both associated with a range of therapeutic experiences. These might be *immersive* (both restorative and inspiring); *symbolic* (personal and cultural); *social* and *achievement* experiences (see Bell *et al*. 2015). The previous SWCP study also highlighted transformative benefits of walking on the SWCP (see Petersen 2021).

These mental health benefits would not normally involve any extra costs for additional users of the path, e.g. there would be no (or not much) increase in maintenance costs for the path itself if more people used it. So more people could experience these benefits for (roughly) the same cost. However, there is a threshold for this, which depends on site-specific factors. If this threshold was exceeded, the costs of maintenance/repair of the path would increase and the mental health benefits could potentially decrease. Examples of this are severe erosion of paths[3], heavy vehicle traffic at/near access points for the SWCP and/or large numbers of walkers using congested sections of the path at well-known locations. Some locations may lack appropriate infrastructure to support large(r) visitor numbers. Efforts to maximise the economic mental health benefits therefore need to be considered in combination with environmental management of the varied environments of the site/ path section and with appropriate access and public transport/traffic measures. The environments along the SWCP are diverse, and encompass a range of topographies, types and densities of vegetation, with likely significant health benefits from nurturing diversity in these rich environments.

A wider conclusion of this study is to highlight an aspect that has often been excluded from conventional understandings of health. The research literature shows that our health - including mental health - is clearly influenced by the quality of the immediate environment in which we live as

well as our opportunities to spend time in natural environments. Reconnecting more people to their natural environments as well as improving the environments in which deprived groups live and expanding equity of access to natural environments is likely to yield enormous mental health and wellbeing benefits.

Similar inequalities to those highlighted in mental health services are manifested in the experience of particular groups and communities with regard to accessing the mental health and wellbeing benefits of natural environments. Their presence represents overlapping disadvantage for the groups and communities concerned; for those for example who are living in deprived areas; those with disabilities; and Black and Minority Ethnic (BAME) groups. However, people are visiting our natural environments - including the SWCP - in ever greater numbers (a 'silver lining' of the Covid-19 pandemic) and this presents enormous potential to increase the mental health and wellbeing benefits that arise from engagement with the SWCP, providing there are also accompanying efforts to expand equity of access.

Therefore, increasing equity of access to the coastal environments of the SWCP for under-represented groups represents a key lever to help reduce mental (and physical) health inequalities. In practice this is likely to require greater engagement with key stakeholders including under-represented groups and organisations involved in the management of the SWCP coastal environments.

Recommendations and Actions

1. **Additional research is urgently needed to provide for more measures by which the mental health and wellbeing benefits of path usage can be assessed.**

The SWCPA should:

i. maintain an overview of emerging research in relation to benefits of green and blue space activity and its relevance to the SWCP environment;
ii. monitor potential for commissioning additional local research relevant to its health and wellbeing objectives;
iii. ensure that decisions on environmental management of the path integrate a) assessments of health and wellbeing economic benefits; b) equality and inclusion impacts in line with increasing equity of access, and utilise existing partnerships with voluntary and community sector organisations to achieve this;
iv. develop alignment of its research outcomes and aspirations with key regional universities to optimise capture of research funding for new research;
v. consolidate and develop its current approaches to wellbeing research by:
    - incorporating into its path visitor and user wellbeing surveys questions, metrics from sources such as the SWEMWBS and the Life Satisfaction survey together with improved demographic data to better quantify wellbeing benefits and incorporate place of origin in usage data;
    - seeking to ensure that existing programmes e.g. Connecting Actively to Nature (CAN)[4] are shaped to include SWEMWBS and Life Satisfaction metrics in future visitor surveys;
    - adopting measures to capture the self-reported benefits of walking on the SWCP that are available in personal narratives and written accounts, including those walking one or more sections or the SWCP in its entirety, building on the framework of experiences illustrated in figure 7.2 below.

2. A collaborative approach with key regional stakeholders is needed to ensure action on improving equity of access through strategy and practice

The SWCPA should:

i.   with key health and community sector partners in the region, establish a collaborative strategy for identifying and addressing barriers to equitable access to the path, that:
   - includes the existing partner organisations with responsibility for path management;[5]
   - includes existing and new community and voluntary sector partner programmes (e.g. the CAN programme; Devon MIND; Devon and Cornwall Refugee Support) and community organisations that typically represent otherwise under-represented groups (such as community centres, places of worship etc) and which:
   - links to the three Integrated Care Systems (ICSs) and the 64 Primary Care Networks (PCNs) within the region;
   - takes account of broader regional initiatives on access to green and blue space;
   - is overseen by a steering group of people drawn from under-represented communities, including black and minority ethnic communities, disability groups, younger people and those with mental health problems and accessed through outreach activity into those groups;
   - provides for a costed implementation agreement owned by the stakeholder parties.

3. Expand access to the mental health and wellbeing benefits of the SWCP by investigating and increasing the use of social prescribing

The SWCPA together with the region's PCNs should:

i.   review the potential for linking people identified as benefiting from the physical and social activities afforded by the SWCP to the path through social prescribing (SP);
ii. together, and with SP Link Workers, agree on the measures to be taken by NHS organisations and SWCPA to optimise existing social prescribing practice in relation to green and blue space activity in the SW region;
iii. consider instituting within Devon a SWCP Social Prescribing pilot, to evidence the value and potential of SP to the path and to highlight innovative ways of meeting the needs of individuals with SPs effectively when participating in path activity as individuals or in groups[6].

2. Rationale and aims of the research

This report reviews relevant literature and outlines the methodology, scoping and options for assessing the economic mental health and wellbeing of walking on the South West Coast Path (SWCP), as well as providing some initial economic assessment findings (estimates using avoided costs methods). The research was commissioned by the South West Coast Path Association (SWCPA), and funded by Natural England (Jan-Mar2022).

This research is especially timely: since the start of the Covid-19 pandemic the UK has experienced a sharp rise in mental health conditions with referrals to NHS mental health services for conditions

such as anxiety and depression at a record high[1]. This trajectory is likely to continue given the current global insecurity and conflict and the rising cost of living. At the same time there is growing awareness of and evidence on how spending time in natural environments can positively impact on people's mental health, with particular benefits associated with coastal environments.

This research builds on the findings of the SWCP Economic Health and Wellbeing Assessment 2020 (Petersen 2021). The 2020 report recommended further work assessing the economic mental health and wellbeing benefits, as well as investigating consistency and comparability amongst mental health / wellbeing indicators. In addition, the valuation methodology has also been developed further in the literature since the 2021 report was completed, with, for example, the UK's Forest Research carrying out economic assessments into mental health and wellbeing of UK woodlands (Saraev *et al*. 2020; 2021), which contains relevant methodological information that can be adapted to other types of environments. This research investigates how suitable methodologies can (or could) be applied to the SWCP where appropriate data is available.

Mental health and wellbeing here refers to all aspects along the continuum from mental ill-health (including recovery from) to wellbeing, happiness and healthy cognitive and emotional functioning (see below); some of these aspects can be harder to quantify. This report therefore also covers the more intangible and less measurable (qualitative) aspects of mental health and wellbeing below.

2.1. Aims of this research

This research aims to assess the economic mental health and wellbeing benefits of the SWCP and investigate how these can be maximised. It examines the different valuation methods and their suitability for assessing benefits from walking on the SWCP. The report also includes recommendations relating to policy and practice, thereby potentially creating positive mental health and wellbeing impacts for diverse and under-represented groups. The research questions are as follows:

Main research question:
What are the economic mental health and wellbeing benefits of the SWCP and how could these be maximised?

Secondary research questions:
- How can the SWCPA's work encourage recovery from the negative mental health impacts of Covid-19? And how can it facilitate and consider greater inclusion, access, engage with diverse groups, etc;
- What are the barriers to accessing the path in the context of expanding access and therefore mental health benefits, as well as physical health and economic benefits?

3. Background and context

3.1. The South West Coast Path

The SWCP is a 630 mile-long trail running through Somerset, Dorset, Devon and Cornwall, connecting many communities to the diverse nationally important landscapes around the coast of the South West. It passes through a range of biodiverse and varied coastal natural environments (beaches, cliffs, grassland, woodland, saltmarsh, sand dunes, heathland and scrub etc) and includes

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[1] The number of referrals for NHS mental health care is reported to have reached a record high at the end of 2021 in England – up from 3.8 million in the previous two years to 4.3 million referrals in 2021 for conditions such as anxiety and depression, with an estimated 1.4 million people still waiting for treatment (data source: NHS Digital March 2022 reported in https://www.bbc.co.uk/news/health-60734769)

some of the most scenic coastal locations in the UK. The South West Coast Path Association (SWCPA) is a registered charity whose mission is to champion the SWCP in order to help people access, enjoy and protect Britain's longest National Trail[2]. The region has a strong tourism sector with over 8 million visits to the SWCP a year - bringing over £500 million to the local economy and supporting over 11,000 jobs. In addition to the environmental and visitor economy aspects, the SWCP provides significant health and wellbeing benefits to the community. The SWCPA and wider Trails Partnership has undertaken research to quantify the impact of the SWCP on the visitor economy and the economic health and wellbeing benefits. The SWCPA have also collected qualitative data on the health and wellbeing benefits (both physical and mental) of walking the SWCP to individuals.

3.2.   The United Nations Sustainable Development Goals (SDGs)

Through conducting policy-relevant research, relevant data analysis and making recommendations, working in partnership with the SWCPA (who have existing partnerships with organisations including with the National Trails network, the National Trust, MIND, the NHS, academic institutions and relevant consultancy firms), this study contributes to increasing understanding and facilitating improvements towards the following SDGs[3]:

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Goal 10: Reduce inequality within and among countries

Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

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[2] It also represents a key open access route given that the public only has legal access to around 8% of England's land area due to access restrictions and trespass laws (see Hayes 2020).
[3] https://sdgs.un.org/goals

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17 PARTNERSHIPS FOR THE GOALS

3.3.   Mental health and wellbeing in the UK: Types, prevalence and associated costs

Common mental health conditions, such as depression, anxiety and stress are estimated to affect up to 15% of the population at any one time, and one in four people will experience a mental health problem at some time in their lives (Garside *et al.* 2020:10; Department of Health 2017, Mental Health Taskforce 2016). In the UK, depression is the third most common reason for attending General Practice (GP) consultations and is the single greatest cause of workplace absenteeism. People suffering from poor mental health are at risk of dying 15-20 years earlier than people with good mental health (Mental Health Taskforce 2016). In addition, the burden of poor mental health falls disproportionately on the most socio-economically deprived and marginalised groups (Garside *et al.* 2020:10).

The economic and social costs (including NHS costs) relating to mental health at national level are huge. The Centre for Mental Health estimated the health-related costs of mental health problems (for England) at £19.8 billion for 2018/19; based on estimates of the cost of services provided by England's NHS and local authorities for people with mental health problems (O'Shea and Bell 2020). This was down from £21.3 billion in 2009-10 (Centre for Mental Health 2010)[4]. Figures for 2020/21 estimate that £11.7 billion was spent in England by the NHS alone (NHS England and Clinical Commissioning Groups (CCGs)) on mental health services (not including dementia or learning disability services) (Baker 2021).

Using the Centre for Mental Health figures, the overall economic and social costs of mental health problems to the economy are estimated at £119 billion per year for England (O'Shea and Bell 2020; 2018-19 figures); including costs related to loss of workplace output (£36 million) and human capital costs (£69 million). For work-related costs, Parsonage and Saini (2017) estimated that mental health problems in the UK workforce cost employers £34.9 billion per year (for 2016). This was broken down into £10.6 billion in sickness absence; £21.2 billion in reduced productivity at work, or 'presenteeism'; and £3.1 billion in replacing staff who leave their jobs because of their mental health.

Types and prevalence of mental health conditions

In order to calculate a valuation relating to mental health benefits it is necessary to know the prevalence of relevant mental health conditions. Estimates for mental health conditions in the UK vary considerably, e.g. for depression, from 2% (McCrone *et al*. 2008) to between 17% and 21% (2021) (ONS 2021). Common types of mental health conditions are illustrated in the graph below, with relative prevalence showing generalised anxiety disorder as the most common specified

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[4] Presumably reflecting a drop in funding between 2010 and 2019 due to UK government austerity measures.

common mental disorder (apart from other / not specified) (Baker 2021 based on McManus *et al*. 2016; 2014 figures).

Figure 3.1: Common Mental Disorder prevalence: specific disorders: % reporting specific CMDs within the last week, England 2014
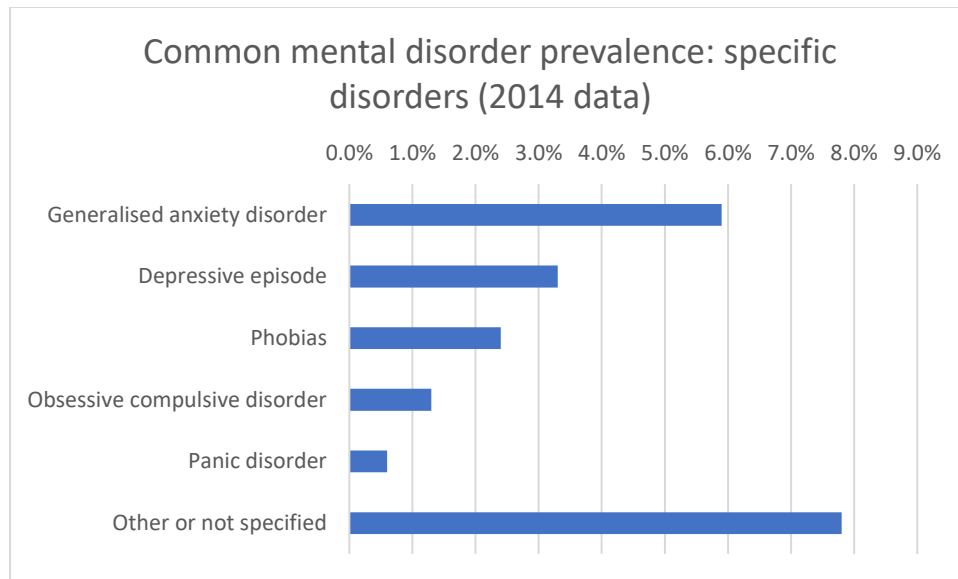
Source: reproduced from Baker 2021:6 based on data from the Adult Psychiatric Morbidity Survey 2014 (McManus et al. 2016) showing rates of generalised anxiety disorder (5.9%); depression (3.3%) and common mental disorder not specified (7.8%).

More recent Office for National Statistics (ONS) and NHS sources give **much higher figures**, although these have also been affected by the Covid-19 pandemic (see also section below):

- An estimated 17% of adults have experienced a 'common mental disorder' (CMD) like depression or anxiety in the past week (2021-22) (ONS 2021).
- Rates for depression peaked in early 2021 (21% during 27 Jan-7 Mar) rising sharply from 10% in 2019[5] before the coronavirus (COVID-19) pandemic. Since the end of March 2021 (31 Mar-4 Apr), levels have been largely stable at 17% (ONS 2021).
- OECD (2021) figures show anxiety (or symptoms of anxiety) rates of 20% pre-Covid **and 50% in 2020** in the UK.
- Around 17% of children aged 6 to 16 had at least one probable mental health problem in 2021, up from 11% in 2017 (NHS Digital 2021a).

3.4.   Effects of the Covid-19 pandemic on mental health and wellbeing

In addition to the lives lost and impacts of illness (including long Covid), the pandemic has also led to greater economic insecurity, anxiety, disruption of many aspects of life, and, for many people, increased stress and challenges to their mental health (Helliwell *et al.* 2021). Covid-19 has led to an

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[5] Available figures show the prevalence of depression in Australia to be similar to the UK in 2017-18 – 10.4% (ABS 2018); this is relevant in terms of comparability using the methodology and figures from Shanahan *et al*. 2016 (see below). However, OECD (2021) figures show a larger increase during the pandemic in Australia compared to the UK from 10% (2019) to 28% (2021).

increase in reported mental health conditions, and has exacerbated existing inequalities (see below). It has also disrupted mental health service provision and the accompanying physical distancing and self-isolation has negatively impacted on people's social connections, vital for happiness and wellbeing (Helliwell *et al.* 2021). NHS sources highlight a record high in referrals (see above) and (e.g. as reported in Gregory 2022) a huge rise in depression, anxiety, psychosis and eating disorders since Covid hit, sparking a dramatic rise in the numbers of people experiencing mental health problems, with 1.6 million estimated to be waiting for specialised treatment and another 8 million who are unable to get on the waiting list but would benefit from support.

The Office for National Statistics (2021) reports a rise in rates of depression during the pandemic (see above). Figures on mental health for July – Aug 2021 also show that of adults experiencing some form of depression, 74% reported that the coronavirus pandemic was affecting their wellbeing; compared with around 32% of adults with no or mild depressive symptoms (ONS 2021). The pandemic, including lockdown restrictions, also affected many people's ability to work, leading to a negative impact on wellbeing. Although many of the effects of the pandemic on the UK's mental health have been negative, it has led to **much greater awareness of mental health issues, which could potentially have a positive impact on relevant policies and provision in future** (Helliwell *et al*. 2021).

3.5. Inequalities relating to mental health and wellbeing

There are marked mental health inequalities relating to gender, disability, socio-economic status, employment status and ethnicity in terms of prevalence, people's experiences of and access to service provision for mental health. For instance, up to date ONS (2021) figures for the period 21 July to 15 August 2021 (source unless indicated otherwise) show that:

- **Younger adults** and **women** were more likely to experience some form of depression, with 32% of women aged 16 to 29 years experiencing moderate to severe depressive symptoms, compared with 20% of men of the same age.
- **Disabled** (36%) and **clinically extremely vulnerable** (CEV) **adults** (28%) were more likely to experience some form of depression than non-disabled (8%) and non-CEV adults (16%)[6].
- 29% of **adults on lower incomes** (e.g. who reported being unable to afford an unexpected expense of £850) experienced some form of depression, compared with 11% of adults who were able to afford this expense.
- **Unemployed** adults were twice as likely (31%) to experience some form of depression than those who were employed or self-employed (15%).
- 24% of **adults living in the most deprived areas** of England experienced some form of depression; compared with 12% of adults in the least deprived areas of England.
- **Those identifying as Black/Black British** were more likely than average to have experienced a CMD in the last week (23%), with non-British people identifying as White least likely (14%) compared to other groups (see figure 3.2 below) (Baker 2021; McManus et al. 2016; 2014 figures).
- Referrals to Increasing Access to Psychological Therapies (IAPT) are higher in **deprived areas**. In 2020/21, referral rates were 76% higher in the most deprived areas than the least deprived areas. However, people living in deprived areas are less likely to enter or finish treatment after referral than those living in less deprived areas. They are also less likely to

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[6] The pandemic combined with labour shortages in the social care sector are likely to have significantly adversely affected the essential support available to these groups.

see their conditions improve after therapy, and less likely to recover after therapy (Baker 2021).

- Rates of probable mental disorders have increased since 2017 among **children and young people**; in 6 to 16 year olds from 11.6% to 17.4%, and in 17 to 19 year olds from 10.1% to 17.4%. Rates in both age groups remained similar between 2020 and 2021 (NHS Digital 2021a).

Figure 3.2: Graph of people reporting a Common Mental Disorder (CMD) in the last week by ethnicity (England 2014; age standardised)
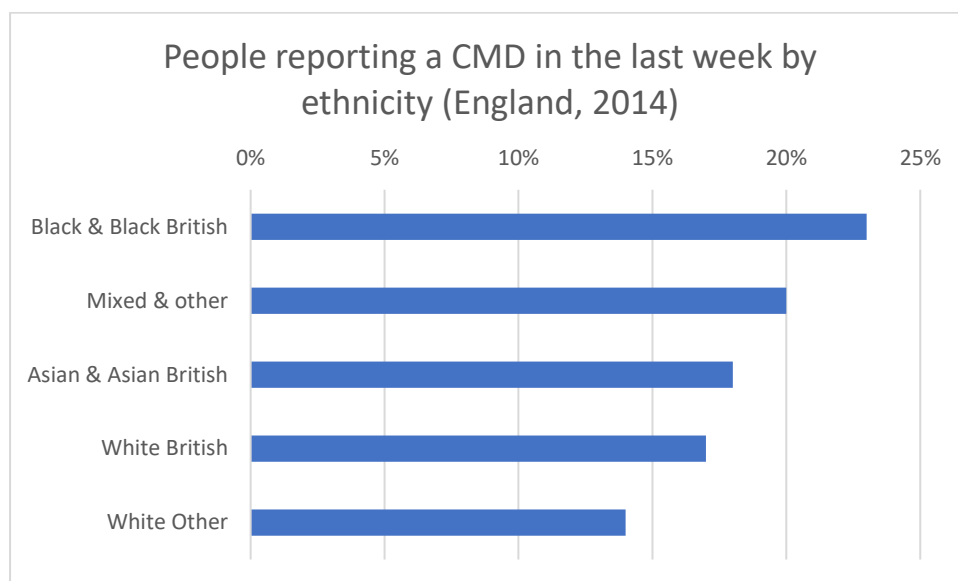
Source: adapted from Baker 2021:7 based on data from the Adult Psychiatric Morbidity Survey 2014 (McManus et al. 2016).

The data also shows regional differences: perhaps surprisingly, those in the **South West of England** were the most likely to have experienced a Common Mental Disorder (CMD) in the last week (21%), after accounting for age differences between regions. CMDs were least common in the South East and East of England (14%). However, this is a measure of self-reported mental ill health so does not reflect diagnosis of clinical cases, and is not age standardised (Baker 2021:7-8; McManus et al. 2016). These figures may also be influenced by spatial differences in access to information, diagnosis and service provision as well as in the effects of the pandemic (see Baker 2021:18). In addition, these figures are likely to be an underestimate – it is estimated that around **50% of patients attending GPs with depressive disorders do** not have their symptoms recognised (see Baker 2021:8). (McManus *et al*. (2016) similarly estimate that only 48.2% of individuals receive treatment for anxiety and 59.4% for depression)[7].

Access and barriers to service provision

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[7] This could be due to a combination of factors including insufficient training or available GP practice specialist expertise in recognising depression and mental health conditions; lack of time or capacity to give to patients' mental health in the face of the backlog in treating more serious health conditions; common misconceptions about how different groups or individuals may present with mental health conditions; and / or patients' presentation of multiple health conditions in one appointment.

People from Black or Black British ethnic groups were around 20% more likely to be in contact with mental health services than those in White ethnic groups. Meanwhile, those in Asian or Asian British ethnic groups were around 12% less likely to be in contact with services than those in White ethnic groups (age-standardised) (Baker 2021:17; NHS Digital 2021a).

Access to IAPT shows marked ethnic disparities: people identifying as White made up 83.6% of referrals with a known ethnicity in 2020/21, although this was down slightly from 85.5% in 2019/20 (Baker 2021; NHS Digital 2021b). A report by the NHS Race and Health Observatory in 2022 corroborated the disparity in access to services for non-White ethnic groups and found clear **barriers** to seeking help for mental health problems rooted in distrust of both primary care and mental health care providers (due to perceived lack of understanding of their lived experience by healthcare and authority figures), as well as a fear of being discriminated against in healthcare (Kapadia *et al*. 2022).

Effects of the Covid-19 pandemic on inequalities in mental health and wellbeing

The pandemic has also led to an increase in reported mental health conditions and has highlighted and exacerbated existing socio-economic, ethnic, gender and other inequalities in access to mental health services and outcomes (see e.g. Di Gessa *et al*. 2022). Nonetheless, figures on inequalities in IAPT outcomes between ethnic groups were similar to previous years, showing little change (Baker 2021; NHS Digital 2021b).

4. The benefits of spending time in natural environments on mental health and wellbeing

Our **natural environments provide enormous benefits to our mental and physical health and wellbeing** – they are our 'natural health service' (see e.g. Hardman 2020) – providing both therapeutic and preventative benefits that can also reduce the burden of costs to the NHS. There is growing evidence and a burgeoning literature on the benefits of spending time in natural environments for mental health and wellbeing, including reductions in psychological stress, fatigue, anxiety and depression, and psychological and cognitive benefits, including an increased ability to 'function well', with the most significant benefits reported for marginalised groups (see e.g. Elliott *et al*. 2018). This includes work on the pathways through which spending time in natural environments can benefit our mental health and wellbeing (see White et al. 2019; e.g. Shanahan et al. 2016; Barton and Pretty 2010; White *et al*. 2021; Bell et al. 2015; Richardson et al. 2021; Natural England 2016a;b). Relevant aspects are covered in more detail in the various sections below. There is also a growing body of evidence about both the importance and **benefits of connecting with nature for psychological wellbeing**, especially those aspects associated with 'functioning well' (e.g. Martin *et al*. 2020; Pritchard et al. 2020).

The national policy context highlights the role of natural environments in promoting health and wellbeing, including the UK's 25 Year Environment Plan (Defra 2018), which contains the key commitment to connect people with the environment to improve their health and wellbeing. However, the potential for the natural environment to improve wellbeing has so far not been fully realised, amid criticisms of overlapping responsibilities and a lack of coordination (e.g. between local authorities, the health sector, the environmental sector and voluntary sector organisations) (see Thomson *et al*. 2020:9-10;12; Brammall *et al*. 2020).

The **amount of time** and **frequency** of visits to natural environments matters – for example Shanahan *et al*. (2016) report that **people who made longer visits to green spaces (i.e. over 30 minutes in the course of a week) had 7% lower rates of depression** along with other health benefits (e.g. 9% lower rates of high blood pressure). This figure is used in the valuation results below.

Data from the People and Nature Survey demonstrates that more people have accessed natural environments since the start of the Covid-19 pandemic, due to restrictions on other activities, peaking in May 2020 (441 million visits) and slowly decreasing to 282 million visits in Dec 2021 – similar to pre-pandemic levels (Natural England 2022). Figures for footfall on the SWCP in 2021 were between **12% and 26% higher compared to 2019** (figures cover two different sites[8]). This increase in visitor numbers has presented both opportunities in terms of new groups engaging with nearby natural environments and health and wellbeing benefits; as well as challenges for management (see Petersen 2021 for further details[9]).

According to the People and Nature Survey, in the period Apr2020 to Dec2021, by far the highest proportion of visits by adults were to urban greenspace (parks, fields, playgrounds) (between 40 and 55%). Visits to the beach / other coastline / sea by comparison accounted for between 15 and 30% of visits – still a very considerable proportion of visits (Natural England 2022).

The same source (Dec2021) found that **31% of adults had not spent any time in green and natural spaces** in the previous 14 days, an increase on November 2021 (26%). The proportion of adults not spending any time in green and natural spaces peaked in Apr-May 2020 at almost 50%; decreased to around 22% in Sep 2020, rose slightly to almost 30% and then fell to its lowest point **21%** in Aug 2021, then slowly increased since then. The difference is likely to be at least partly due to the (seasonal) weather. However, those not visiting are also likely to be influenced by socio-economic disparities in access to greenspace. Adults with a **lower total annual household income** were **less likely to have visited a greenspace / natural environment** in the last 14 days at all and if they did, made **fewer visits.** Adults' reasons for not spending time in green and natural spaces during the previous 14 days (Dec2021) included[10]: 'Bad / poor weather' (43%); 'Poor physical health (or illness)' (20%); 'Too busy at work / with family commitments' (19%) and 'Too busy at home' (18%). 'Stayed at home to stop coronavirus spreading / Government restrictions' was reported as a barrier to spending time outside for 16% of respondents (Dec2021) up from 11% in November 2021. A number of the reasons cited relate to **mental health and / or inequities in access to natural (or safe) environments**: 'Poor mental health or well-being' was given as a reason by 8% of respondents; and 'Nowhere near me is nice enough to spend my free time in' by 10% of respondents. 5% of respondents reported 'Fear / worry about crime or anti-social behaviour' as a reason and 3% reported 'Cost / too expensive' as a reason. These factors reflect ongoing health and other inequalities[11]. Addressing inequalities through facilitating greater access is therefore likely to produce enormous mental (and physical) health and wellbeing benefits (Natural England 2022).

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[8] Visitor numbers were 26% higher at Strete Gate (South Devon) in 2021 compared to 2019 and 12% higher at Sennen Cove (Cornwall) in 2021 compared to 2019 (source: SWCPA people counter data 2022 (internal)). These are the only two sites for which longer term data is currently available.

[9] See also blog posts by Petersen (2021/2022) on https://connectingenvironmentandwellbeing.blog/

[10] Survey question: Q27a / M2B_Q2: What was the main reason or reasons for not spending free time outdoors in the last 14 days?

[11] The research evidence shows that disadvantaged / deprived communities face environmental inequalities in relation to both where they live and the natural environments / green space they have access to and are able

4.1. Inequalities in access to green/blue space

Access to natural environments, and therefore the benefits that these bring, shows marked inequalities as noted above, with people living in poorer communities (in England) tending to have less access to natural environments, and therefore fewer opportunities to connect with nature (Natural England 2022; see also Wildlife and Countryside Link 2022 and Thomson *et al.* 2020). Similar inequalities to those highlighted in mental health services are manifesting in terms of accessing the mental health and wellbeing benefits of natural environments. This therefore represents **overlapping disadvantage** to these groups – it is more difficult for them to access the mental health benefits (including preventative benefits) from regular visits to natural environments; and if they do experience mental health conditions, they are less likely to be able to access mental health services.

Research commissioned by Defra (Thomson *et al*. 2020:6) on people most at risk of poor mental health and wellbeing identified a number of barriers (real and perceived) to access and engagement as follows:
- **Practical and financial**: transport - cost and accessibility; cost of activities / equipment; knowledge and awareness of what is on offer;
- **Personal**: beliefs that the natural environment is 'not for me'; qualities relating to the natural environment itself; fear; confidence; lifestyle and circumstances;
- **Cultural**: lack of diversity in the environmental sector; messages / communications that do not resonate (with certain groups); negative associations with outdoor spaces; specific barriers for BAME women; volunteering culture linked to a sense of (not) belonging.

The Defra research also underlined the important role that voluntary sector organisations play in increasing equity of access to natural environments for at-risk groups, but highlighted a number of challenges and barriers relating to how these organisations coordinate and work together, including: different motivations and responsibilities; lack of strategic oversight; over-reliance on volunteers; too much bureaucracy for small groups; local authority cuts; and a short-term funding model.

This research commissioned by Defra (Thomson *et al*. 2020:7;14) provides suggested key ingredients for successful and sustainable engagement and to improve wellbeing of under-represented / at-risk groups (see tables 14.7 and 14.8, Appendix 1); some of which may be useful for SWCP walking groups and activities using the social prescribing model, as well as being more widely applicable.

Black, Asian and Minority Ethnic (BAME) groups and inequalities in access to natural environments

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to visit. People living in deprived, socio-economically disadvantaged and ethnic minority communities are often disproportionately exposed to multiple environmental health hazards, including those related to air pollution, hazardous waste and intrusive urban development and infrastructure lines (Alvarez and Evans 2021:1; Mitchell 2019:6). It is argued that the health of residents in these neighbourhoods is undervalued to enable the production, resource extraction, and waste management demanded by the modern world; and that this disproportionate exposure to hazards represents a key mechanism driving health inequalities along socio-economic, ethnic and spatial lines (Alvarez and Evans 2021:1). These types of inequalities, however, mainly fall outside the scope of this report, although they are likely to impact on mental health inequalities.

The Defra research (Thomson *et al*. 2020:6) also highlighted particular barriers for BAME communities. BAME groups tend to visit natural environments less frequently – with a far lower proportion of non-white groups accessing them. 2015-6 figures from Natural England (2021b) found that just 26% of people identifying as Black spent time in natural environments compared with 44% of people identifying as White. Although according to Natural England's (2021a) People and Nature Survey these figures were higher for Apr-Jun 2020 (51% of ethnic minority groups visited a natural environment compared to 60% of white British people), these were compiled during the first Covid-19 lockdown when most other activities were restricted (more recent figures are not yet readily available). It is estimated that only 1% of visitors to UK national parks come from BAME backgrounds (see Booth 2019). The 2019 Glover Landscapes Review (Glover 2019) identified that BAME communities, older people (65+), young people (especially adolescents) and people living in deprived areas visited natural environments least. 18% of children living in the most deprived areas never visit the countryside (rural natural environments) at all[12]; and 20% fewer Visibly Minority Ethnic children go out into green spaces weekly compared to white, middle-class children. (From England and Wales Census (2011) figures, around 13% of the population nationally are BAME, but this differs regionally and locally.)

The reasons why fewer BAME people visit natural environments include practical issues, such as inequalities regarding the **location of housing in relation to green spaces, as green spaces tend to be disproportionately located in or near more affluent areas** rather than where most BAME people live. According to a Natural England (2011) Access to Nature report, in areas where more than 40% of residents were black and minority ethnic there was **11 times less green space** than in areas where residents were largely white. As mentioned above, another important factor is lack of public transport to green spaces / natural environments generally – for instance it is estimated that 93% of all visits to National Parks are made by car but less than half of all households in England have access to one[13]. In addition, cultural issues come into play such as inappropriate provision and in some cases, a reported sense of feeling excluded, conspicuous, or being made to feel unwelcome (see Parveen 2020; and evidence for the Natural England (2005) Diversity Review). According to the People and Nature Survey data for Dec 2021, 5% of adult respondents who had not visited a natural environment in the last 14 days cited concerns related to 'Fear of encountering prejudice from other people' (Natural England 2022)[14]. Although there is in some cases longstanding evidence on what the complex barriers to access are, and some organisations have shifted their emphasis and attracted new visitors[15], it appears there is still work to be done. There is also a lack of understanding of how diverse populations like to use natural environments, as highlighted by Dr Anjani Khatwa[16], an earth scientist who presented in June 2021 at the SWCPA Forum[17], coinciding with the G7 Carbis Bay summit.

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[12] The Glover report figures refer to visits to the countryside and National Parks rather than urban green spaces or natural environments; these types of differences in reporting make it more difficult to compare such figures across sources.

[13] CRPE (the Countryside Charity) 2018. National Parks and AONBs: we want access for all. https://www.cpre.org.uk/news/access-for-all/

[14] Survey question: Q29a / M2B_Q4A: Thinking about visiting green and natural spaces, are you concerned or worried by any of the following?

[15] See e.g. the National Trust – *Guardian* article https://www.theguardian.com/uk-news/2021/oct/16/cream-teas-at-dawn-inside-the-war-for-the-national-trust

[16] See Anjani Khatwa's Twitter post: https://twitter.com/jurassicg1rl/status/1403352258541195267

[17] See SWCPA post: https://twitter.com/JulianGrayComms/status/1401527918489128962

Consultation and engagement with key stakeholders from under-represented groups, including discussions about how best to increase inclusion and widen access and what the barriers are, represent important ways forward to address inequities in access to natural environments (see recommendations)[18]. In addition, gaps have also been identified in the **representation** of our diverse communities in the organisations in charge of our natural environments which can impact on how diversity and inclusion are implemented[19]. Khatwa highlights the environmental sector as one of the 'whitest' in the UK, with only 0.6% of the workforce identifying as 'non-white' (and 2.5% as 'other white')[20]. In addition, the 2019 Glover Landscapes Review (Glover 2019) found that BAME board members are extremely rare nationally: across National Parks and AONBs together only 0.8% are from BAME communities. It is likely that in order for access and inclusion to be improved we need to employ people who are representative of the populations they serve; involving both policy and organisational change. Natural England (2011) identified a need for organisational change to improve diversity, requiring relevant policies, strategies and action plans to be in place and practical steps to be implemented - including improving the representation of BAME communities among management structures, staff and volunteers; providing information about what is on offer at places where minority ethnic communities are likely to see it; and using positive images in communications and publicity materials that they can identify with (the Defra 2020-2024 Equality, Diversity and Inclusion (EDI) Strategy (Defra 2020) also provides detailed EDI action points).

Disability and inequalities in access to natural environments

The Natural England (2005) Diversity Review also found that for disabled people, the principal barriers to access and use related to availability of transport and the cost of visiting the countryside, a lack of knowledge of suitable facilities, as well as a basic lack of provision for disabled people (see also a WHO 2011 report on enabling environments). According to the People and Nature Survey figures for Dec 2021, 6% of all adult respondents who had not visited any natural environments in the last 14 days cited the reason: 'Lack of facilities and access points for those with disabilities' (Natural England 2022). Social isolation (which has been heightened because of Covid-19) was also reported as a barrier as well as feeling vulnerable due to the inherent unpredictability of the countryside. The availability of information has at least improved since 2005 – including the availability of information about wheelchair accessible locations (see the free searchable mapping app Wheelmap)[21]. A report on the East Devon Pebblebed Heaths (Petersen 2018) found that an audit of paths and access points from a disability access point of view[22] is likely to yield a number of simple measures that could be taken at relatively low cost that would significantly improve access

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[18] See tables 14.7 and 14.8, Appendix 1, and examples of engagement with BAME groups e.g. Peak District Mosaic https://www.southwestpeak.co.uk/projects/community/mosaic ; the Hillwalking Hijabi https://www.instagram.com/the_hillwalking_hijabi/?hl=en and Black Girls Hike https://www.instagram.com/bgh_uk/?hl=en
[19] See https://www.heritagefund.org.uk/blogs/black-history-month-breaking-down-barriers-nature-young-black-people
[20] https://www.heritagefund.org.uk/blogs/black-and-brown-faces-green-spaces
[21] https://wheelmap.org/
[22] A network of local groups exist who are able to advise on these aspects and carry out audits e.g. in Devon, the Devon Countryside Access Forum (DCAF) https://www.devon.gov.uk/prow/devon-countryside-access-forum/

for this group. The SWCPA have been actively working with local disability groups on understanding and improving disabled access for the SWCP[23].

Recent literature highlights that **recreational visits to the coast** in England, particularly for walking, are **more likely to be made by people from lower socio-economic backgrounds compared to other natural environments** (e.g. woodlands). Therefore*,* ensuring coastal environments of the SWCP are accessible to socio-economically disadvantaged communities represents a key lever to **help reduce health inequalities** (Elliott *et al.*, 2018; Garrett *et al.* 2019). There is also huge potential to expand accessibility and increase the health benefits for disadvantaged, BAME and disabled groups.

4.2. Health and wellbeing benefits associated with the coast

The evidence is already strong, and growing, in relation to the health and wellbeing benefits of spending time in blue spaces (the oceans, coastal areas and inland waters such as lakes, rivers and canals) (see e.g. Gascón *et al.* 2017; White *et al.* 2013; White *et al.* 2010; Kelly 2021). Visual (and multisensory) aspects play a part in this - studies have shown that blue spaces tend to be rated top for their views, with coastal margin views particularly favoured[24] (White *et al.* 2010; see also Bell *et al.* 2015 on multisensory aspects).

The coast in particular has become the focus of increasing interest in relation to health and wellbeing (see e.g. Defra 2019; Natural England 2016c; White *et al.* 2013; Bell *et al.* 2015; see also Severin *et al.* 2021; Hooyberg *et al.* 2020). **People living near the sea report better levels of general health and higher levels of physical activity than those living inland, particularly in deprived areas** (see for example White *et al.* 2013; Wheeler *et al.* 2012; White *et al.* 2010 and the Blue Health project[25]). Recent estimates indicate that 271 million recreational visits are made to coastal environments annually (Defra 2019:1; Elliott *et al.* 2018). Coastal visits also tend to last longer and involve a greater range of activities than visits to countryside or urban destinations[26] (Natural England 2016c).

The coast has been shown to play a role as a therapeutic and restorative landscape for promoting well-being and mental health, with people living by the coast reporting better mental health compared to those living further inland. Individuals report increased happiness when spending time in marine and coastal margins, compared to green spaces and urban environments (see e.g. Defra 2019:1). A recent study conducted in Belgium (Severin *et al.* 2021) corroborates these benefits – finding that access to the coast (although not visit frequency), was positively associated with wellbeing, with, coastal residents reporting less boredom and worry, and more happiness than inland residents.

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[23] Working with Disabled Ramblers / DCAF - see press article and video from July 2021 here https://www.itv.com/news/westcountry/2021-07-10/making-the-south-west-coast-path-more-accessible
[24] See https://bluehealth2020.eu/news/why-bluespace/
[25] https://www.ecehh.org/research/bluehealth/
[26] On average visits to the coast lasted around three hours (3hrs 3 mins), about an hour longer than the averages recorded for visits to the countryside or urban destinations (1 hr 58 mins and 1 hr 51 mins respectively) (Natural England 2016c: 25).

5. Conceptualisation of mental health and wellbeing in the research literature

In order to carry out an economic valuation it is necessary to be clear about what we mean by mental health and wellbeing (see Glossary). Historically, as mentioned above, mental health is often conceptualised as (the absence of) mental ill-health – predominantly focused on psychological disorders (diagnosable mental health conditions e.g. depression, anxiety, schizophrenia, dementia, autism; as recognised by the World Health Organization (WHO 2019)); as well as psychological distress (see Galderisi *et al.* 2015; Saraev *et al.* 2020:14).

However, the 2004 WHO definition of mental health is as 'a state of well-being in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community' (WHO, 2004). This definition represents an important shift towards recognising wellbeing as a key aspect of mental health, therefore increasing its relevance to the wider population. This shift is reflected in development of widely-adopted approaches of measuring mental health and wellbeing, including the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) (Tennant et al., 2007). This kind of conceptualisation reframes mental health and wellbeing as essentially interchangeable terms.

However, Galderisi *et al.* (2015) also point out that we still need a **more inclusive definition of wellbeing** – they highlight issues with reliance on the hedonic (associated with feeling pleasure) and eudaimonic aspects (relating to 'functioning well') of mental health. They underline that the current WHO definition is likely to exclude some groups such as refugees/migrants and disabled people, who may be prevented from working by social/cultural norms and processes (including UK government restrictions on the right to work e.g. for asylum seekers) and / or discrimination (systemic or otherwise). Eudaimonic/hedonic definitions of wellbeing may also not be particularly suitable for assessing the larger numbers of people who may also have found themselves unable to work due to pandemics and / or conflict situations.

In terms of valuation pathways, a wider conceptualisation of mental health benefits can be used to reflect both an individual's wellbeing as well as wider values to society – e.g. associated with avoided costs to the NHS and avoided losses to organisations through impacts on workplace productivity. Therefore, a person's interactions with the SWCP (and other natural environments) can be seen to reduce the risk of mental illness, contribute to wellbeing, as well as help reduce losses in economic output. Wellbeing and avoided cost components are therefore not necessarily mutually exclusive but can be complementary (or additional) – they reflect the different types of mental health benefit that the SWCP can provide (see Saraev *et al.* 2020).

Green social prescribing is an important funded route to providing mental health and wellbeing benefits from spending time in natural environments, including widening access and inclusion (see Garside *et al.,* 2020; Fullam *et al.* 2021). Green social prescribing is referral by a GP to a community-based group activity or service in the outdoor natural environment (such as local walking for health schemes, community gardening and food-growing projects)[27]. This is growing in importance for

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[27] For a list of resources compiled by the European Centre for Environment and Human Health on social prescribing see https://beyondgreenspace.net/green-social-prescribing-resources/social-prescribing/ ; see also info about a new multi-partner research consortium https://www.sheffield.ac.uk/scharr/news/using-green-social-prescribing-prevent-and-tackle-mental-ill-health ; and the University of Plymouth's social prescribing research programme https://www.plymouth.ac.uk/research/primarycare/social-prescribing

tackling and preventing mental health, especially because of the range of effects of the pandemic and lockdowns on our wellbeing; and there is considerable scope for expansion of social prescribing for mental health and wellbeing, including relating to groups walking on the SWCP (see recommendations).

5.1.   Different models of (mental) health and wellbeing

Wellbeing has been conceptualised in different ways, discussed briefly below, and reflects differences in definitions of health which inform economic mental health valuations. Useful diagrams and illustrations of the pathways between spending time in natural environments and mental health and wellbeing benefits are provided below.

There are two broad types of models of health (which also apply to mental health) – the **biomedical** and **socio-ecological** model (Valuing Nature Programme 2018:4; 2019). The biomedical model conceptualises health as an objective, observable and measurable state primarily concerned with the presence of a disease, bodily function, and capacity to undertake certain tasks. This is the approach to health that has long underpinned the health sciences and health services. The socio-ecological model, in contrast, reflects a wider understanding of health and positions the concept as a reflection of the whole of human experience. This model suggests that ideas of health are socially or culturally 'constructed' (i.e. an idea or understanding that has been jointly constructed and / or influenced by people in a society rather than being an external 'objective truth') and are inherently political.

Within Public Health there is now renewed recognition that **social and other non-medical factors strongly influence health** (Garside *et al.* 2021). Health can therefore be understood as acting in three interlinked domains (Valuing Nature Programme 2018:4):

1) **physical or physiological** (relating to the biomechanical functioning of the human body),
2) **mental, psychological or emotional**, and
3) **social** (relating to how we connect with others).

We highlight in this report that **our relationship (and engagement) with our (natural) environment represents a fourth interlinked domain** that has often been excluded from conventional understandings of health. The research evidence shows that our health (including mental health) are clearly influenced by the quality of the immediate environment in which we live as well as our opportunities to spend time in more natural environments[28].

Wellbeing similarly has multiple conceptualisations (see above) but can be broadly understood as 'an overall evaluation that an individual makes of his or her life in all its important aspects' and as a 'state of equilibrium or balance that can be affected by life events or challenges', of which health

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[28] See also work on biophilia e.g. Kellert and Wilson (1993).

and mental health are important components (Valuing Nature Programme 2018:5)[29]. Some definitions of wellbeing do include the environment (see below)[30].

The Wellbeing Wheel
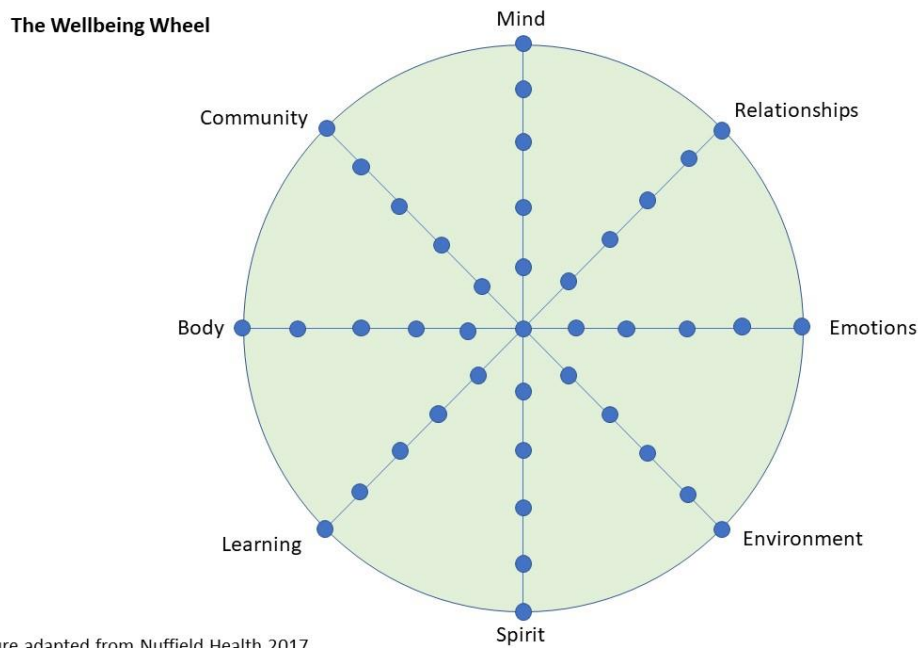
Figure adapted from Nuffield Health 2017

The Wellbeing Wheel (figure 5.1 is another simple conceptualisation of the different interlinked aspects of wellbeing, including our relationship with the environment (Nuffield Health 2017; see also Kelly 2021: 22-23 for suggestions on how to rate and improve individual wellbeing using this wheel).

5.2.   Different types, aspects of and ways of measuring wellbeing

This section draws from a summary in Kelly (2021: 20), detailing how different aspects of wellbeing are measured / assessed:

Subjective (personal) wellbeing – how people think / feel about their own wellbeing (individuals are asked directly) – in general this yields more in depth insights but is more difficult to compare across populations:

- Life satisfaction – when asked directly (see table 8.1 below and table 14.1, Appendix 1)
- Hedonic wellbeing - positive feelings/emotions – feelings of pleasure etc
- Eudaimonic wellbeing – how meaningful people feel their lives are, aspects of 'functioning well', competence and autonomy.

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[29] A widely publicised simple way of thinking about improving our wellbeing is provided by the New Economics Foundation in their five ways to wellbeing – 1. Connect; 2. Be active; 3. Take notice; 4. Keep learning; 5. Give. (see Aked *et al.* 2008).

[30] The Department of Health (2011) policy document 'No Health without Mental Health' included the environment in the definition of wellbeing as 'a positive state of mind and body, feeling safe and able to cope, with a sense of connection with people, communities and the wider environment' (DoH 2011:90).

Other aspects that fall into this category (hedonic wellbeing) are emotional experiences of awe, wonder, nostalgia and memorable moments (e.g. of sunsets, rainbows, storms etc[31]); which recent research shows can have beneficial mental health effects (see Severin *et al*. 2021; Pritchard *et al*. 2020)[32].

Examples of measurement tools in this category are the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) and its shorter version SWEMWBS (Tennant *et al*. 2007); as well as life satisfaction measures (direct questions).

Objective wellbeing – is based on assumptions about basic human needs and rights, e.g. food, shelter, education, physical health, safety, etc; and can be compared across populations. These aspects can be measured by self-report (e.g. for specific characteristics such as presence / absence of a specific health condition) or by measurement using population-level measures e.g:

- Mortality rates
- Housing quality
- Life expectancy
- Income

These types of information can also be combined to create overall 'objective' measures of wellbeing (e.g. life satisfaction).

Conceptualisations of needs are also relevant to the idea of wellbeing and cover similar ground (internal and external aspects) - see for example Prof. Mark Maslin's re-imagined and updated version of Maslow's (1943) original hierarchy of needs, shown below, including the domains of intervention on the right:

Figure 5.2: Maslin's (2021) Hierarchy of Needs
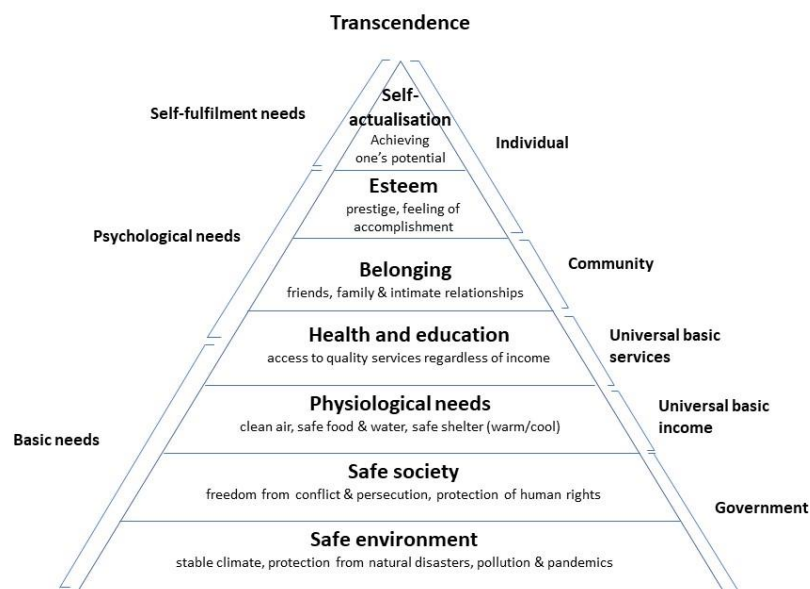
Adapted from Maslin's (2021) Hierarchy of Needs diagram (based on Maslow 1943)

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[31] See https://www.ecehh.org/people/alex-smalley/

[32] As discussed in a recent European Centre for Environment and Human Health Seminar 3rd Feb 2022.

Source: Maslin 2021[33]

Note here that in this conceptualisation the environment (here emphasising aspects of a safe environment) is the first level of basic needs.

5.3. Happiness research

The World Happiness Report, produced by the United Nations Sustainable Development Solutions Network (which supports the realisation of the SDGs) emphasises happiness and wellbeing over conventional conceptualisations of economic growth and Gross Domestic Product (GDP) (Helliwell *et al*. 2021), since research has demonstrated that a rise in GDP does not necessarily lead to a rise in wellbeing or life satisfaction (see e.g. Birkjær, Kaats and Rubio 2020). This builds on what is now a considerable body of research on happiness (see e.g. Layard 2006)[34]. Other research on this topic points to a **link between happiness and structural factors such as levels of inequality and social trust, and the effectiveness of the welfare state and of parental support policies** (see e.g. *New Scientist* article Robson 2022).

<u>The Well-Being-Year (WELLBY)</u>

The World Happiness Report 2021 advocates that we should judge a society by the extent to which it enables people to experience lives that are long and full of wellbeing. For any individual, the measure of this is simply the well-being he/she experiences each year (WELLBY), summed up over all the years of his/her life (Helliwell *et al*. 2021:193). This approach calculates and compares the WELLBY value at country level. WELLBYs can be given a monetary value and related to income in a similar way to life satisfaction (see Helliwell *et al*. 2021:199). A similar measure, the Wellbeing Adjusted Life Year, is provided by the Happiness Research Institute (Birkjær, Kaats and Rubio 2020). However, it appears that more methodological work is needed to be able to operationalise and to calculate economic equivalents of these for particular environments such as the SWCP.

The varied differences in conceptualisation of wellbeing and wide variety of ways that research studies have measured mental health and wellbeing – e.g. focusing on **mood** and **self-esteem** (Barton and Pretty 2010); **happiness** (Helliwell *et al*. 2021) **stress** (reduction) and **changes in working memory** (Bratman *et al*., 2019), **wellbeing** (Fujikara *et al*. 2017), **depression, anxiety and stress** (e.g. Shanahan *et al*. 2016), or other types of **mental ill-health** (avoided costs methods). In addition, some studies focus on **prevalence** of health conditions (e.g. Wheeler *et al*. 2015 on general health prevalence) and others on **outcomes**. The Valuing Nature Programme (2019) report provides a systematic list of all the numerous metrics used in studies relating to mental health, wellbeing and the environment – 122 different metrics in total[35]. This huge variety makes comparison across sources, and therefore the task of calculating / comparing valuations using different sources, more complex. Saraev *et al*. (2020; 2021) choose to base their valuation on Shanahan *et al*. (2016) because

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[33] Twitter post 1Nov2021: https://twitter.com/profmarkmaslin/status/1455188123214913541?lang=en-GB
[34] See also e.g. the Happiness Research Institute (based in Copenhagen): https://www.happinessresearchinstitute.com/; Gretchen Rubin's the *Happiness Project*: https://gretchenrubin.com/books/the-happiness-project/about-the-book/ ;Bhutan's Gross National Happiness Index which measures happiness in nine domains including psychological wellbeing and health: https://ophi.org.uk/policy/gross-national-happiness-index/ ; and other practical happiness initiatives such as the Action For Happiness' Mindful March 2022: https://actionforhappiness.org/sites/default/files/Mar%202022.jpg
[35] See the Health metric extraction table which covers general and mental health https://valuing-nature.net/demystifying-health-metrics-1

the nature dose framework encompasses duration, frequency and intensity (vegetation complexity) of exposure to natural environments, linking this with rates of depression. This approach has been adapted and followed as far as this is possible in the SWCP case, combined with avoided cost methods (see below).

5.4. Social wellbeing and cohesion

Recent research reported in Shanahan *et al.* (2016) indicated that those who visited natural environments more frequently showed **greater social cohesion / social wellbeing** (see also Lovell *et al.* 2015; Natural England 2016a; de Moor 2013)[36]. Social cohesion / social wellbeing is considered an integral component of mental health (for example it is included in some mental health / wellbeing assessment scales e.g. the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS))[37]. The important social dimensions of mental health and wellbeing that are a feature of human-natural environment interactions are also detailed in Bell *et al*. 2015 (see below); see also Petersen (2021) for social aspects of health and wellbeing benefits in relation to the SWCP and the Connecting Actively to Nature (CAN) projects, including SWEMWBS measures. This research found that CAN group activities and projects on the SWCP improved social wellbeing, and social contact constituted both an important motivation for and benefit of spending time (with others) on the SWCP. There is also a growing body of work on the flip side of social wellbeing and cohesion – social isolation and loneliness, covered comprehensively elsewhere (see e.g. Motta 2021; plus Wheeler, Lobley, McCann and Phillimore 2021 and Wheeler and Lobley 2021 in a farming context)[38]. As highlighted above, the Covid-19 pandemic, with its accompanying physical distancing and self-isolation, has negatively impacted on people's social connections, which are vital for happiness and wellbeing, but at the same time has raised awareness of the importance of social connections (Helliwell *et al*. 2021).

6. Pathways and mechanisms for nature-health benefits

Relevant and useful visual representations of the relevant pathways and mechanisms are provided below (and the valuation logic chain diagram in figure 8.1).

The following diagram (figure 6.1 shows a simple model of intertwining linkages between natural environments and health and wellbeing (including physical health; adapted from Valuing Nature 2019:11; Markevych et al. 2017). The pathways highlighted here are *mitigation* (**reducing harm),** *instoration* (**building capacities)** and *restoration* (**restoring capacities**, or recovery). These are relevant to health and wellbeing generally but pertinent for mental health and wellbeing (see section on restoration / recovery below).

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[36] Although causality is less clear due to the multiple influences and variables acting.
[37] See e.g. https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs/about/
[38] The Wheeler and Lobley (2021) farm study found a strong association between loneliness and mental wellbeing using WEMWBS and anxiety measures. See also e.g. this article by Gretchen Rubin detailing seven types of loneliness and suggestions on ways to address them https://www.psychologytoday.com/gb/blog/the-happiness-project/201702/7-types-loneliness-and-why-it-matters

Source: adapted from Valuing Nature 2019:11; Markevych *et al*. 2017.

Other models such as Shanahan *et al.* (2016:2), adapted in figure 6.2 below, incorporate relevant aspects of ecosystem services, here presented as ecosystem properties and functions:

Figure 6.2: Hypothesized pathways to health and wellbeing outcomes from experiences in nature (Shanahan et al. 2016)
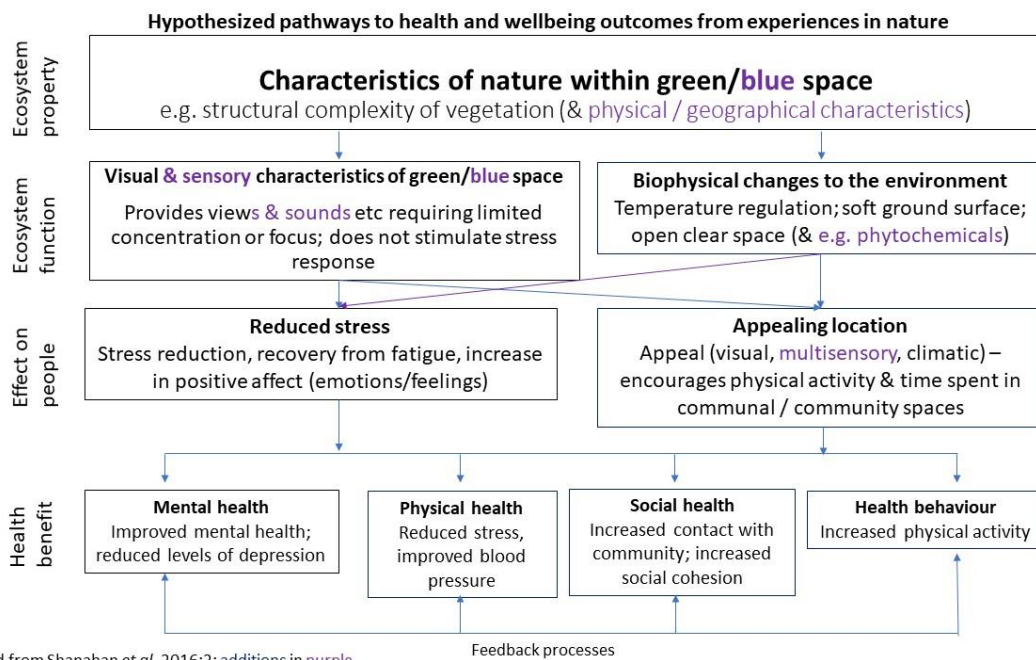
Figure adapted from Shanahan et al. 2016: 2 (additions shown in purple).

Here we have expanded the diagram to cover blue and coastal spaces as well as green spaces, and added other aspects of ecosystem function mentioned in the literature such as phytochemicals (from plants/trees – see below) and multisensory aspects (in addition to visual / views) (see below).

7. Qualitative benefits of mental health and wellbeing from natural environments and the coast

The SWCPA 2020 online survey results showed a number of self-reported qualitative mental health benefits (hedonic and eudaimonic aspects) of walking on the SWCP including reduced stress, feeling more positive, feeling inspired to be active/creative/take action; as well as increased nature connection, as illustrated below (see figure 7.1 (see also Petersen 2021)).

Figure 7.1: Qualitative benefits reported in the SWCPA 2020 online survey
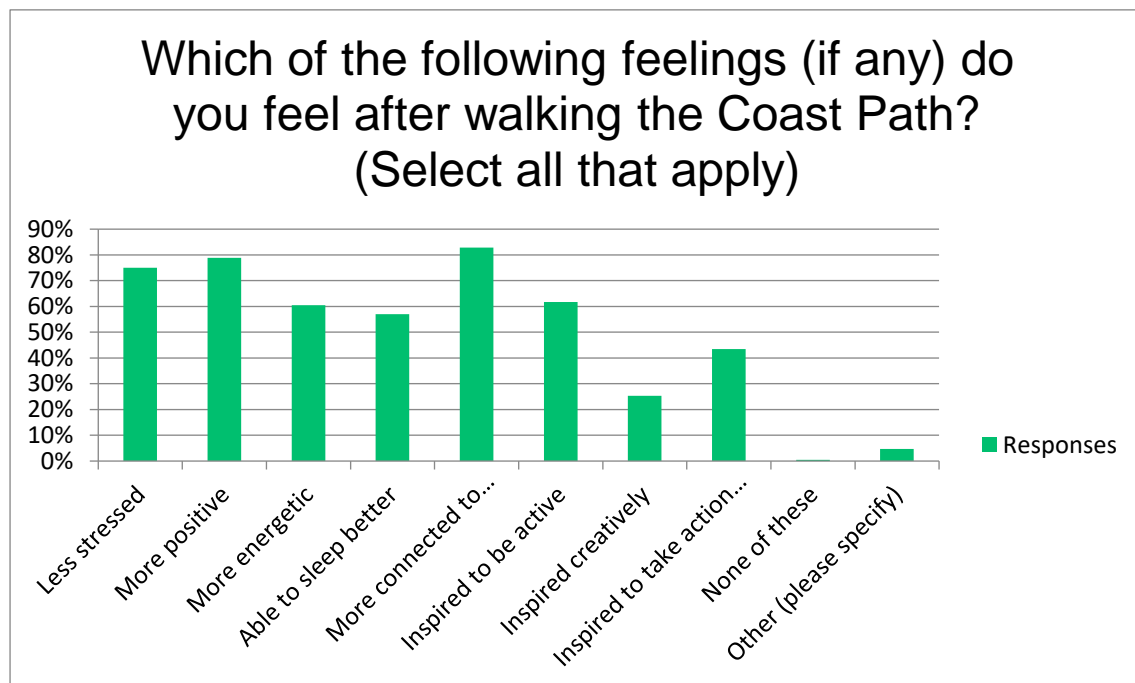
N = 964.

Further relevant dimensions of mental health and wellbeing benefits drawn mainly from the qualitative literature are provided below (although they may involve aspects that have been measured or are measurable).

7.1. Therapeutic landscapes and attention restoration

Therapeutic landscapes (Gesler 1996:96;1992; see also Bell *et al*. 2015; Kelly 2021) are landscapes where 'the physical and built environments, social conditions and human perceptions combine to

produce an atmosphere which is conducive to healing[39]. The SWCP clearly has a variety of such landscapes (see below).

Natural environments and the theory of attention restoration

Previous research has shown the value of experiences of immersive restoration, reflecting processes described by Kaplan's (1995) theory of 'attention restoration' in green and blue spaces (see Bell *et al.* 2015 for a summary; White *et al.*, 2010). Kaplan's theory highlights two important areas of (paying) attention: firstly, '**directed attention**', which allows sustained focus on uninteresting subjects that are judged to be important. Tiredness ('directed attention fatigue') results from directed attention as effort is required to block out interesting but less important subjects. Secondly, '**indirect attention**' occurs in response to subjects that capture our attention with little or no cognitive effort, allowing the brain's cognitive resources to be restored. This enables us to return to direct attention. For example, by allowing themselves to engage with the captivating multisensory elements of the coastal setting, participants in research conducted at SWCP sites in Cornwall by Bell *et al.* (2015:60), reported being able to clear their mind of everyday cognitive 'noise'.

7.2.   Types of therapeutic experiences at the coast

People visit the coast and walk on coastal paths for a number of different reasons that can be related to wellbeing – for inspiration, for adventure/physical challenge, and others because of attachment to a particular place for personal, shared or cultural reasons, or to meet up with friends and family. The following diagram (figure 7.2) can aid in understanding the different types of motivations and experiences that might draw people to the coast in general and to the SWCP. We have included spiritual aspects of natural environments (cultural/personal) in this version as such experiences and motivations for visiting can be important to people (whatever their beliefs), as reflected by Gesler's (1996) original conceptualisation of therapeutic landscapes (and healing), as well as in more recent accounts[40].

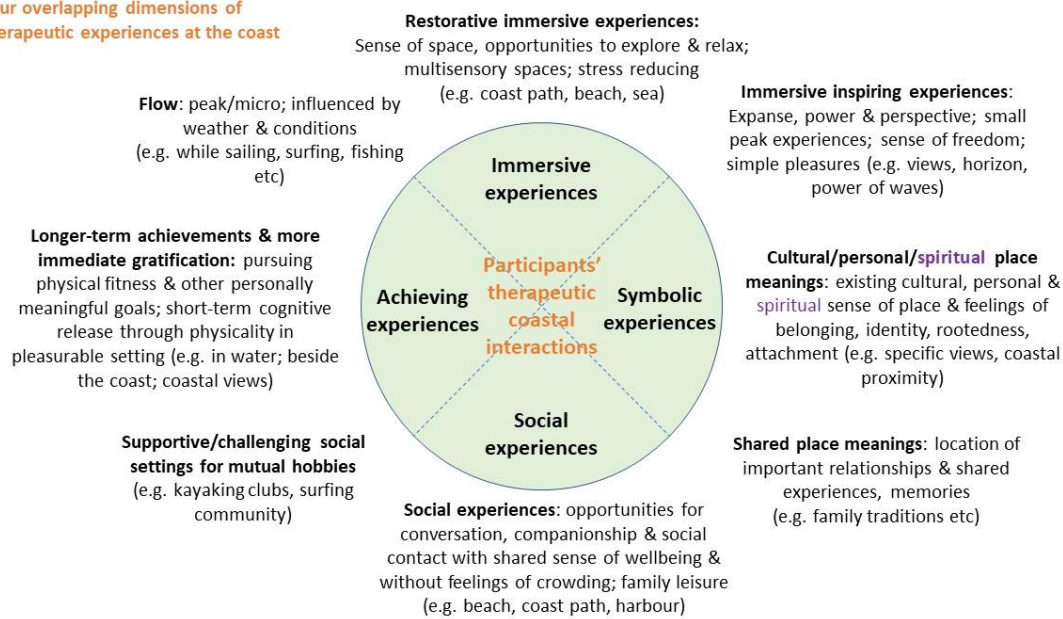[39] The term *healing* 'is used here in a broad manner to include cures in the biomedical sense (physical healing), a sense of psychological well-being (mental healing) and feelings of spiritual renewal (spiritual healing)' (Gesler, 1996:96).
[40] E.g. the coast as a 'thin' place – where the separation between the spiritual and the physical / earth realms is perceived to be relatively thin – see e.g. Winn 2018.

Figure 7.2: Four dimensions of therapeutic experiences at the coast

Four overlapping dimensions of therapeutic experiences at the coast

Restorative immersive experiences: Sense of space, opportunities to explore & relax; multisensory spaces; stress reducing (e.g. coast path, beach, sea)

Flow: peak/micro; influenced by weather & conditions (e.g. while sailing, surfing, fishing etc)

Immersive inspiring experiences: Expanse, power & perspective; small peak experiences; sense of freedom; simple pleasures (e.g. views, horizon, power of waves)

Longer-term achievements & more immediate gratification: pursuing physical fitness & other personally meaningful goals; short-term cognitive release through physicality in pleasurable setting (e.g. in water; beside the coast; coastal views)

Cultural/personal/spiritual place meanings: existing cultural, personal & spiritual sense of place & feelings of belonging, identity, rootedness, attachment (e.g. specific views, coastal proximity)

Immersive experiences

Achieving experiences

Participants' therapeutic coastal interactions

Symbolic experiences

Social experiences

Supportive/challenging social settings for mutual hobbies (e.g. kayaking clubs, surfing community)

Shared place meanings: location of important relationships & shared experiences, memories (e.g. family traditions etc)

Social experiences: opportunities for conversation, companionship & social contact with shared sense of wellbeing & without feelings of crowding; family leisure (e.g. beach, coast path, harbour)

Adapted from Bell *et al.* 2015:65; additions in purple.

The therapeutic experiences associated with the coast adapted from Bell *et al.* 2015 are therefore broadly categorised as follows:

- **Immersive** experiences - both **restorative** (e.g. a sense of space, opportunities to explore, captivating multisensory spaces, relaxation); and **inspiring** (e.g. appreciating expanse, sense of freedom etc);
- **Symbolic** experiences e.g. cultural, personal, spiritual and shared place meanings (including feelings of identity, belonging; memories);
- **Social** experiences (and providing settings for group activities / hobbies); and
- **Achievement** experiences - long-term achievements and short-term goals (e.g. physical fitness).

The original study was carried out along the coast in Cornwall (May-Nov 2013), therefore covering part of the SWCP; these types of experiences are likely to be applicable more generally to walking on the SWCP. Different people (or the same individual at different times) will focus in on and seek different aspects/experiences. The nature of the coast (and coastal path) as a fluid land-sea boundary has positive ramifications for wellbeing benefits and recovery because of the enhanced variety of environments and ability to incorporate so many different types of experiences (see Bell *et al.* 2015; Kelly 2021[41]).

As highlighted above, these experiences include ('immersive') opportunities for indirect attention, which can restore our energy and capacity for direct attention and focus; escaping from social expectations, influences and values (and e.g. from being bombarded by advertising messages); gaining a sense of perspective; and clearing your head / switching off from the day-to-day; moments of 'flow' of varying size/intensity (peak or micro). These bring related cognitive benefits, including cognitive and emotional release (see Bell *et al.* 2015:60; Kelly 2021). Other sources have pointed to a

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[41] See also Kelly 2021 for details of the physical and mental health benefits of immersion in cold water.

mirroring process of physical and emotional movement, suggesting that 'moving physically through a place is often paralleled by emotional transitions' (Ryan 2012:209; see also Bell *et al.* 2015:59).

Some of the experiences in the 'achieving' category may at times be arduous and / or physically painful, e.g. due to the challenging, dynamic coastal terrain and ambient conditions; and this is of particular relevance to the SWCP, especially for walkers attempting the frequent steep uphill sections, as well as those walking longer distances. Studies have found that these types of experiences contribute to feelings of competence, purpose and achievement amongst participants, which are important components of eudaimonic wellbeing (see Bell *et al.* 2015:60).

7.3. Nature connectedness pathways to mental health and wellbeing

Evidence on nature connectedness in the literature (see e.g. a meta-analysis in Pritchard *et al.* 2020; Martin *et al.* 2020) indicates that people who are more connected to or engaged with nature tend to have both greater eudaimonic well-being (aspects of 'functioning well' and autonomy) and hedonic wellbeing (pleasurable aspects), and also have higher levels of self-reported personal growth. The literature suggests that nature connection promotes a form of relatedness that can be distinguished from social connectedness (with friends/family) as important in its own right, and is associated with (is a predictor of) happiness (Pritchard *et al.* 2020; Zelenski and Nisbet 2014). In terms of autonomy (eudaimonic wellbeing), research suggests that when experiencing nature, individuals are enabled to express their personal distinctiveness, escaping the constraints of external influences / values imposed by society. The freedom and autonomy felt in the wildness of nature enables individuals to reinforce their own intrinsic beliefs and values, to gain perspective on the things that really matter, and to feel inspired. This also links to emotional experiences of awe and wonder mentioned above (Pritchard *et al.* 2020:1160-1161; Ridder 2005).

<u>Noticing nature – multisensory aspects, nature connection and beneficial emissions from plants and trees</u>

The importance of actively noticing nature[42] and using all of our senses in the pathways to beneficial effects from spending time outdoors (e.g. through stress reduction) is being increasingly recognised (Franco, Shanahan and Fuller 2017; Richardson *et al.* 2021; Shanahan *et al.* 2016); and, for example, multisensory aspects are a key feature of walking meditations and sensory walks[43]. Sight, sound, smell, touch, taste, and other less obvious senses such as proprioception[44] – awareness of how the muscles and joints are moving, and interoception[45] – awareness of the body internally e.g. whether we feel hot and cold, hungry, etc (important for regulating our emotions), all play a role. Interoception has recently been highlighted as playing a significant but little recognised role in our wellbeing (see e.g. Robson 2021) and is clearly influenced by our immediate environment. Arguably there are also other types of awareness such as of our geographical position / where we are going

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[42] See e.g. the Finding Nature blog https://findingnature.org.uk/2021/10/19/how-actively-noticing-nature-not-just-time-in-nature-helps-promote-nature-connectedness/
[43] See for example guides to walking meditation – e.g. University of California, Berkeley, USA https://ggia.berkeley.edu/practice/walking_meditation ; and information about specially designed 'sensory walks' accessible to all including people with disabilities and sensory impairments from the Sensory Trust https://www.sensorytrust.org.uk/ and Sense https://www.sense.org.uk/get-support/arts-sport-and-wellbeing/sense-sport/our-programme/sensory-walks/
[44] See for example https://www.griffinot.com/what-is-proprioception/
[45] See e.g. https://www.kelly-mahler.com/what-is-interoception/

(navigational sense), and sense of place. Actively noticing nature is also emphasised as a first step towards other types of engagement with our environments – appreciating beauty, making meaning, and feeling emotions or compassion[46] – which are important for encouraging pro-environmental and pro-conservation actions (crucial in the context of tackling the current climate and biodiversity crises) (Mackay and Schmidt 2019; Barrows *et al.* 2022)[47] – as well as for supporting our health and wellbeing.

A growing body of research also suggests another (biophysical and ecosystem function) pathway for health and wellbeing benefits experienced when in natural environments – through breathing in of beneficial natural chemicals emitted by trees and plants e.g. phytochemicals / phytoncides and other volatile organic compounds (see e.g. Antonelli *et al*. 2020). These benefits (including effects such as increased relaxation, decreased mental fatigue, enhanced mood and cognitive function and antibacterial and anti-inflammatory effects) are significant and some have been shown to last for up to 30 days after a walk in a forest (in this case after 'forest bathing', increasingly popular in Japan and elsewhere) (see Li 2010). This is complemented by the wealth of illuminating biological research on the fascinating interlinked role of trees and fungi in the health of our ecosystems (see Hooper 2021 article on Suzanne Simard's work)[48].

7.4. Recovery and restorative effects and the links with natural environments

Recovery as conceptualised here includes enhancing people's capacity to live (well) with mental (and physical) illness as well as complete recovery from it. Recovery and restorative effects are important elements of the natural environment-related pathways to mental health and wellbeing (see figure 6.1 above and Valuing Nature Programme 2019:11)[49]. Francis (2022), for example, highlights the strong links between recovery in a medical sense and the natural environment[50]. It has long been established that patients recovering in a hospital bed both recover more quickly and need less pain-relieving medication if they have a view of nature - out onto something green, growing and alive – and better still if they have physical access to it e.g. via a hospital garden (Ulrich 1984; Franklin 2012). There is now also a burgeoning interest in technology-aided virtual experiences of nature[51]. Francis (2022) also highlights the similarities of recovery and healing to the medieval concept of *viriditas*, or "greening" – being reinvigorated by the same life force that exists in trees as much as in humans.

Recovery is multi-faceted and reflects the three main domains of health outlined above (Valuing Nature Programme 2018), often involving a combination of physical (encompassing medical and exercise-related), emotional aspects and / or building social connection and combating isolation (see

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[46] TV programmes such as the BBC's Green Planet are illuminating of the beauty and wonder of plant life – helping us to notice nature and its symbiotic relationships in new ways https://www.bbc.co.uk/iplayer/episode/m0013cl5/the-green-planet-series-1-1-tropical-worlds

[47] See also Finding Nature blog https://findingnature.org.uk/2019/09/16/nature-connectedness-and-pro-nature-behaviours/

[48] See Petersen 2021 blog post https://connectingenvironmentandwellbeing.blog/2021/05/13/screen-time-vs-nature-connectedness-is-the-internet-the-world-wide-web-a-poor-imitation-of-the-wood-wide-web/

[49] See Petersen 2022 blog post https://connectingenvironmentandwellbeing.blog/2022/01/31/recovery-environmental-restoration-and-adjusting-to-change-walking-the-south-west-coast-path/

[50] See also related article in the Guardian Jan2022 https://www.theguardian.com/world/2022/jan/04/we-need-to-respect-the-process-of-healing-a-gp-on-the-overlooked-art-of-recovery?fbclid=IwAR0lIeOJylQe-Ciao4xJVgpQxTt1fSs5rry_3PmoodfmSyNJ2CvT4JS2O1I

[51] See for example the ECEHH Virtual Nature project https://wcceh.org/projects/virtual-nature/

Hari 2018)[52] and stress reduction (as stress tends to exacerbate other factors with a range of detrimental effects on health and wellbeing, e.g. see Storoni 2017)[53].

Emotional aspects of recovery can also involve engaging with and addressing or questioning external societal influences, messages and beliefs (see e.g. Brown 2010; 2015). Emotional recovery and adjusting to change can also involve processing our emotions and overcoming grief – in its widest sense – which includes adjusting emotionally to the everyday small setbacks and disappointments that we all experience (see e.g. Turton *et al.* 2020), in addition to the bigger instances such as bereavement, or the managed realignment/restoration, erosion or loss of existing habitats and environmental climate-related change, which is happening on the SWCP[54] (see also Hamilton 2020). There are some changes that as individuals we may be able to do little about (e.g. large-scale immediate climate-related impacts – and the SWCP is subject to extensive climate-related erosion) but there is much that can be done to mitigate, restore, recover from and adjust to such changes (and our emotional responses to them).

Research on the emotional dimensions of engagement with climate change (Hamilton 2020; 2019) provides a useful simple conceptualisation of this process: through fostering dimensions of relationship *within* (to inner, emotional worlds), *between* (to other people) and *beyond* (to the more-than-human world – i.e. environment), 'emotional methodologies' can create safe-enough spaces to acknowledge painful emotions, support the processing of emotions (and recovery), and enable constructive, active and sustained engagement, e.g. with climate change (Hamilton 2020:2). By extension we can also apply this to processes of environmental and personal restoration.

Walking on the SWCP provides an opportunity to experience the linkages between personal recovery / restoration and larger scale environmental restoration and change, situating it in its wider context and perspective. People are visiting our natural environments in greater numbers (a silver lining of the Covid-19 pandemic) – and this brings enormous potential to increase the mental health and wellbeing benefits from our natural environments, providing there are also accompanying efforts to make access more inclusive.

8. Economic mental health and wellbeing valuation: Concepts and methodology

This section outlines the concepts and methodology for carrying out an economic health and wellbeing valuation. This consists of the following two main components (based on Saraev *et al*. 2020:5; see also table 8.1 below and 14.1, Appendix 1):

1. **Quantifying the mental health and wellbeing benefits / impacts using a metric** e.g. a self-reported mental health scale or directly observable characteristic or intervention. This is then compared to an appropriate baseline measure (e.g. a standardised baseline, or pre-

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[52] See also a related book review here https://www.theguardian.com/books/2018/jan/17/lost-connections-johann-hari-review

[53] An evidence-based book with various strategies on how to reduce stress; see also the related podcast https://drchatterjee.com/becoming-stress-proof-with-dr-mithu-storoni/

[54] As highlighted in the Petersen 2022 blog post in relation to the River Otter https://connectingenvironmentandwellbeing.blog/2022/01/31/recovery-environmental-restoration-and-adjusting-to-change-walking-the-south-west-coast-path/

intervention survey); and

2. **Monetising the mental health and wellbeing benefits / impacts** using a valuation pathway.

Valuations are likely to be more robust if additional data is used e.g. longitudinal data / cohort studies etc. Double counting (see Saraev *et al.* 2020) may be an issue in some cases e.g. if using a natural capital accounting approach; i.e. accounting for the same benefits twice – e.g. as part of the recreational value as well as the mental health and wellbeing value.

There are a variety of different conceptualisations of what is included as mental health and wellbeing impacts in valuations – and the particular metric, method and data used (see table 8.1 below). These are outlined briefly below and in more detail in table 14.1, Appendix 1.

Table 8.1: Individual valuation pathways and metrics for mental health and wellbeing

Type of valuation pathway	Metric / measuring instrument
Quality Adjusted Life Years (QALYs)[55]	**EQ-5D** (recommended in NICE 2019) or other validated QALY metric
Wellbeing indicators - measure feelings and functional aspects of mental wellbeing	**The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS / SWEMWBS – short version)**
Life satisfaction scores	**Life satisfaction question (survey)** e.g. 'Overall, how satisfied are you with your life nowadays?' To be answered on a scale of 0 to 10, where 0 is "not at all" and 10 is "completely".
Avoided costs	**GP visits** (for mental health reasons)
	Mental illness drug prescriptions
	Costs of poor mental health (productivity losses)
	Workplace absenteeism (for mental health reasons)
	Costs to NHS / local government (mental health)
	GHQ-12 - self-reported mental health metric

The process (valuation logic chain) is illustrated in figure 8.1 below. This includes mediating factors (see also section on pathways; and Saraev *et al.* 2020). In practice, several of these factors will influence mental health and wellbeing outcomes. In particular, **physical activity is a major mechanism for mental health and wellbeing benefits** (see for example White *et al.* 2019; White *et al.* 2016; Saraev *et al.* 2020; 2021)[56], and in practice mental and physical health components of overall health and wellbeing may be difficult to disentangle (see Saraev *et al.* 2020).

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[55] QALYs are a measure of the state of health of a person or group in which the benefits, in terms of length of life, are adjusted to reflect the quality of life. One QALY is equal to 1 year of life in perfect health. (NICE https://www.nice.org.uk/glossary?letter=q)

[56] The University of East Anglia / Sport England's MOVES tool provides an estimate of the mental health benefits related to physical exercise – see Saraev *et al.* 2020; 2021 – but tends to yield relatively low figures. It estimates that on average, adults in the UK can reduce their incidence of depression by 0.67% by walking two hours a week (see Saraev *et al.* 2021:10).

Nature connectedness or relatedness (the differences in the way people view their connection with the natural world), it is argued, could also both drive interactions with nature and enhance wellbeing in its own right. For example, Shanahan *et al*. (2016:5) found that **higher levels of nature relatedness predicted greater feelings of social cohesion and higher levels of physical activity**, corroborating other research which has found that people with higher nature relatedness / connectedness scores also often report better wellbeing, happiness and life satisfaction, as well as lower levels of anxiety.

Figure 8.1: Mental health and wellbeing valuation logic chain

Mental health and wellbeing valuation logic chain

Influences Physical characteristics (size, location, species-composition) **+** **Exposure** (length of visit, frequency of visit, type of activity) **Change in response to a policy intervention**	**Mediators** (non-exhaustive list) Physical mediators (air pollutant removal, noise pollution reduction, biodiversity) **+** **Exposure mediators** (physical activity, social cohesion, mindfulness/nature connectedness) **+** **Individual mediators** (socio-economic status, mental wellbeing status, cultural values) **Working through the mediators**	**Mental health / wellbeing metrics** EQ-5D, SF-6D (QALY metrics) WEMWBS (wellbeing metrics), Life satisfaction GP visits, anti-depressant prescriptions, workplace productivity losses, self-reported mental health scale **Lead to changes in metrics**	**Mental health valuation pathway** QALY Wellbeing valuation Avoided costs **Changes in health metrics can be valued**

Adapted from Saraev et al. 2020: 7; additions in purple.

Source: Saraev *et al*. 2020:7; additions in purple.

There are some important differences between these approaches. Firstly, avoided costs and QALY approaches value the benefits associated with **reductions in mental illness**, whereas a wellbeing/ life satisfaction approach values improvement in mental health and benefits of interaction with natural environments for a larger proportion of the population; i.e. in **maintaining good mental health**. Secondly, a wellbeing valuation of mental health reflects a value to an **individual,** whereas the value of a reduction in mental illness is usually understood in terms of a wider **societal value**, for example, as cost savings to the NHS or productivity losses avoided. Given that the current understanding is of mental health as encompassing a continuum / broad spectrum of states, valuation purely on the basis of reductions in mental illness (i.e. avoided costs approaches) without considering the value of maintaining good mental health is likely to significantly **underestimate** the value of preventative (and therapeutic) interventions such as spending time in nature (Saraev *et al*. 2020:6).

The choice of valuation pathway (and metric), however, depends on a number of factors and practical considerations: the data available, the audience aimed at and the question the analysis is aiming to address; e.g. whether wider mental wellbeing benefits of the natural environment are of interest (e.g. for local government) or whether the avoided costs of mental illness are of primary interest (e.g. for an NHS trust) (Saraev et al. 2020: 8). In the case of the SWCP valuation, the wider

wellbeing benefits are of greatest interest, but available data is currently the main limiting factor. This means that the avoided cost valuation pathway is likely to be the most suitable method at this stage. However, the information gaps could be addressed through future data collection (see recommendations).

In addition, mental health and wellbeing values of spending time in natural environments are likely to **differ spatially** according to several factors – including the type and quality of environment, vegetation density (nature intensity) and biodiversity (perceived or actual) etc (see Saraev *et al*. 2020:11; see also a review of the links between nature, biodiversity and health in WHO 2021). Wheeler *et al.* (2015) found positive associations between certain environments (including broadleaf woodland, agricultural environments, and coastal environments) and general good health prevalence. However, in terms of mental health and wellbeing, further research appears to be needed on how biodiversity / vegetation density affects outcomes (see e.g. Shanahan *et al*. 2016; Dallimer *et al*. 2012). Interestingly, Dallimer *et al*. (2012) found that *perceived* **biodiversity** was more important than actual biodiversity, and highlighted that this may be influenced by a lack of botanical identification skills amongst the general population. More recent research has found positive associations between the amount of tree cover and mental health improvements (Zhang and Tan 2019), reduction of psychological distress (Astell-Burt and Feng 2019) and reduction in antidepressant medication prescriptions (Tayler *et al*. 2015), e.g. compared to shrubs, grass or built structures. These differences highlight apparent differences in how the physical (including vegetative) characteristics of a site can affect the mental health benefits provided (see Saraev et al. 2020). Environments along the SWCP are diverse, and encompass a range of topographies and types and densities of vegetation (including tree cover); Bell *et al*. (2015) highlight the benefits of nurturing diversity in these rich environments.

The **urban/rural nature** of the environment is also likely to impact on mental health and wellbeing valuations – urban areas are closer to greater population density, and are therefore likely to lead to bigger valuations (see Saraev *et al*. 2020), since more people are likely to visit these sections of coastal path. In the literature there has also been a noticeable bias towards studying urban as opposed to rural environments, perhaps because of the larger numbers of people visiting urban natural environments. In the same way, access considerations are also likely to impact on SWCP valuations, including the level of accessibility of the particular section of the SWCP.

9. Examining the different methodologies and relevance to the South West Coast Path

The relevant mental health and wellbeing methodologies, details of data available/required and pros and cons in using these for the SWCP case are set out in detail in Appendix 1; table 14.1.

9.1.   Choice of methodology

The variety of methods and metrics used makes comparison across sources, and therefore the task of calculating / comparing valuations using the different sources, more complex (see above). Saraev *et al*. (2020; 2021) choose to base their valuation on Shanahan *et al*. (2016) because the nature dose framework encompasses duration, frequency and intensity (vegetation complexity) of exposure to natural environments, linking this with rates of depression. This approach has therefore been adapted and followed as far as this is possible in the SWCP case (see initial results below and in Appendix 1, table 14.2).

For all the valuation methods there are limitations due to the data currently available, but the avoided costs method provides the simplest route to a valuation (and is less susceptible to issues with double counting). However, this measures only costs avoided due to known mental ill-health conditions for the working age population (16-64yrs; 72.1% of the population), and is therefore likely to **vastly underestimate** the real mental health and wellbeing benefits, including for those who are healthy and / or without a diagnosed mental health condition. Therefore, incorporation of wellbeing and life satisfaction questions in future visitor surveys, or carrying out dedicated wellbeing surveys (ideally providing before and after data) would give a wealth of data that could give a more accurate picture of the overall mental health and wellbeing benefits.

10. SWCP Initial Valuation Results

The initial mental health benefits of walking on the South West Coast Path are estimated at between £1.6 million and £2.8 million (mid-range £2.2 million) per year (see table 14.2). These are initial results only based on the avoided costs of mental ill-health for working age people who are regular walkers on the SWCP. These represent a **vast underestimate** as they do not include benefits for younger and older people or more occasional walkers; they use very conservative figures for prevalence of mental health conditions, do not include those with undiagnosed conditions; and crucially do not include the wider wellbeing benefits – which require further data collection and analysis to calculate.

The initial valuation results are based on the method and estimated figures using the avoided costs method and basic figures as set in out in Saraev *et al*. (2021) and based on the nature dose framework value of 7% for the reduction in depression-related costs due to spending time outdoors (Shanahan et al. 2016) (see Table 14.2, Appendix 1 for detailed figures). These can be compared with previous valuations of economic mental health costs and benefits covering other areas (including natural environments in England; woodlands) in tables 14.3 and 14.4, Appendix 1.

Table 10.1: SWCP valuation results using avoided costs for depression, anxiety and common mental disorders (CMD-NOS) not specified

	Lower range figure (5%)	7% (as in Shanahan et al. 2016)	Higher range figure (9%)
Cost reduction for common mental health conditions (depression, anxiety, CMD-NOS) due to spending time walking on the SWCP	£1.6 million	£2.2 million	£2.8 million

Notes: This covers only the figures for the proportion of regular visitors to the SWCP who we estimate walk at least once a week on the SWCP for at least 30 mins (678250 visitors; based on 7.56% of the SWCPA visit numbers for 2019 of 8971562 (based on ICF 2019a:27; see Petersen 2021) - see table 14.2). All valuation figures are discounted at 1.5%. The low and high range figures are included to give an indication of the tolerance and to mitigate for uncertainties in the 7% figure for cost reduction across all common mental health disorders (Shanahan *et al*. 2016) and for the fact that the figure used for prevalence of depression may not be accurate and represents a conservative estimate (ONS 2021). This valuation assumes the same reduction in costs (for spending time outdoors walking on the SWCP) for anxiety and CMD-NOS as for depression.

Using different rates of prevalence for common mental health conditions changes the valuation significantly: using the less conservative and more up to date ONS (2021) figures for prevalence of 17% for depression and 20% for anxiety (the anxiety figure is pre-Covid) the mental health valuation is calculated as between £5.0 million and £9.1 million (mid range £7.1 million) (all other figures and method the same). Recalculating using the 50% figure for under-reporting of depression only (not anxiety) (Baker 2021; all other figures the same) results in a mental health valuation of between £7.6 and £13.7 million (mid range £10.6 million).

Because these figures are based on avoided costs for mental health conditions they **are additional to the mainly physical health benefits** calculated in the previous SWCP economic health valuation report (Petersen 2021); avoiding double counting.

11. Conclusions

Due to the constraints of time, resources and the data currently available for this research, this is primarily a methodological and scoping study, and therefore initial indicative figures only are given for the economic mental health and wellbeing valuation using **avoided costs methods** (see above and table 14.2, Appendix 1). **More research is needed to accurately quantify the mental health and wellbeing benefits**.

For all the valuation methods there are limitations due to the data currently available (see Table 14.1, Appendix 1), but the **avoided costs methods** provide the simplest and most suitable route to a valuation within the current data limitations; and are less susceptible to issues with double counting. However, these measure only costs avoided (to the NHS and workplaces) due to known mental ill-health, and therefore **vastly underestimate the real mental health and wellbeing benefits**. They rely on low past estimates of common mental health conditions, and do not include benefits for younger and older people or more occasional walkers; those with undiagnosed mental health conditions[57]; or crucially the wider **wellbeing benefits**.

These limitations could be addressed through future data collection / securing of other data sources (see recommendations), e.g., incorporation of wellbeing and life satisfaction questions in future visitor / wellbeing surveys, to give a more accurate picture of the real mental health and wellbeing benefits. The avoided cost valuations could also be refined by obtaining local NHS and other sources of data for the populations along the SWCP. The value of the mental health and wellbeing benefits

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[57] For example, it is estimated that around 50% of patients attending GPs with depressive disorders do not have their symptoms recognised (see Baker 2021:8).

will also **differ spatially** e.g. the **urban/rural** nature and visitor numbers for the site / path section impact on mental health and wellbeing valuations – urban areas are closer to greater population density, and are therefore likely to lead to bigger valuations.

Insights from the qualitative literature show that walking on the SWCP also provides **extensive qualitative mental health benefits that are harder to measure and vary according to people's differing motivations and experiences**. These include hedonic wellbeing benefits (positive feelings and mood) and eudaimonic wellbeing benefits (feelings of competence, purpose, achievement, autonomy). This includes through three pathways: **restoration** (restoring capacities), **instoration** (building capacities) and **mitigation** (reducing harm) (Valuing Nature 2019); and includes those arising from a range of therapeutic experiences – including **immersive** (both restorative and inspiring) experiences; **symbolic** (personal and cultural) experiences; **social** experiences and **achievement** experiences (see Bell *et al.* 2015). The previous SWCP study also highlighted transformative benefits of walking on the SWCP (see Petersen 2021).

It is likely that these economic mental health benefits do not involve any extra costs relating to additional users of the path, i.e., there is no increase in maintenance costs for the SWCP for the physical assets (the path)[58]. However, there is a theoretical and practical, site-specific, **threshold** for this beyond which the costs of maintenance / repair of the path would increase, and the mental health benefits could potentially decrease. Examples of this are severe erosion of paths[59], heavy vehicle traffic accessing the SWCP and / or large numbers of walkers using congested sections of the path at well-known locations that may lack appropriate infrastructure to support large visitor numbers[60]. Efforts to maximise the economic mental health benefits therefore need to be considered **in combination with environmental management of the varied environments of the site / path section and with appropriate access / accessibility and public transport / traffic measures**. The environments along the SWCP are diverse, and encompass a range of topographies, types and densities of vegetation; there are likely to be significant health benefits from nurturing diversity in these rich environments.

A wider conclusion of this study is to highlight that **our relationship (and engagement) with our (natural) environment represents a fourth interlinked domain of mental (and physical) health** that has often been excluded from conventional understandings of health. The research literature shows that our health, including mental health, is clearly influenced by the quality of the immediate environment in which we live as well as our opportunities to spend time in more natural environments. **Reconnecting more people to their natural environments (as well as improving the environments in which deprived groups live and expanding equity of access to natural environments) is likely to yield enormous mental health and wellbeing benefits**.

Similar inequalities to those highlighted in mental health services are manifesting in terms of accessing the mental health and wellbeing benefits of natural environments, representing **overlapping disadvantage** for these groups (e.g. for those living in deprived areas; with disabilities; and Black and Minority Ethnic (BAME) groups). However, people are visiting our natural environments, including the SWCP, in greater numbers (a silver lining of the Covid-19 pandemic) –

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[58] Cost-benefit analysis of the SWCP would be necessary to give a more definitive statement on this.
[59] Climate-related impacts on the SWCP are discussed briefly in section 7.4 above.
[60] A more extreme example is the type of fatality which occurred at Durdle Door, Dorset in June 2021, which may have been caused by the person taking a short-cut at a time when many people were trying to get to the beach https://www.theguardian.com/uk-news/2021/jun/15/woman-dies-after-falling-from-cliff-at-durdle-door

and this brings enormous potential to increase the mental health and wellbeing benefits from the SWCP, providing there are also accompanying efforts to expand equity of access.

People living near the sea report better levels of general health and higher levels of physical activity than those living inland, particularly in deprived areas. Therefore*,* increasing equity of access to the coastal environments of the SWCP for under-represented communities represents a key lever to **help reduce mental (and physical) health inequalities.** In practice this is likely to require **greater engagement with key stakeholders** including under-represented groups and organisations involved in the management of the SWCP coastal environments.

12. Recommendations

It is recommended that the SWCPA:

- **Refine the avoided costs valuation by obtaining more accurate data applicable to the mental health costs avoided** - e.g. through partnership working with MIND; the NHS.
- **Capture the mental wellbeing value of the SWCP through carrying out rigorous wellbeing research** - incorporating wellbeing survey questions, e.g. the SWEMWBS and Life Satisfaction metrics – surveying both visitors/tourists from elsewhere and local people (preferably before and after), and / or participants in a series of interventions (e.g. future Connecting Actively to Nature (CAN) programmes)[61]. This could be supplemented with incorporation of the SWEMWBS and Life Satisfaction metrics in future planned visitor surveys.
- **Develop a strategy for increasing equity of access (and barriers to this) by consulting and engaging with key stakeholders** from under-represented groups (e.g. people from deprived areas, BAME and disability groups, those with mental health conditions, young people etc) as well as the relevant local / national organisations that own and manage SWCP sections (including the National Trust)[62].
- **Increase equity of access through existing and new opportunities and partnerships** (e.g. the CAN programme; with MIND, NHS mental health services and Devon and Cornwall Refugee Support), and investigate opportunities for working with a wider range of groups, including disability groups, BAME groups, mental health and recovery charities (e.g. the Devon NHS Partnership Trust etc).
- **Expand access to the mental health and wellbeing benefits of the SWCP by investigating and increasing the use of social prescribing** as a mechanism for facilitating organised groups walking on the SWCP[63].
- **Increase insights into the qualitative benefits of walking on the SWCP through analysing the available narratives and written accounts**; including those walking one or more sections and the SWCP in its entirety; building on the framework on experiences illustrated in figure 7.2 below.

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[61] See Petersen (2021) for SWEMWBS measures and results for the SWCP CAN programme; if reliable before and after figures for these were available it would be possible to calculate a specific monetised valuation figure for the CAN projects/programmes using the values in Fujiwara *et al.* (2017: 5-6) – in table 14.6, Appendix 1.

[62] See tables 14.7 and 14.8 for notes on successful engagement strategies (Thomson *et al*. 2020).

[63] Staff training on mental health is likely to be beneficial; see also Petersen 2021 for further info on social prescribing.

Limitations of this study and further research ideas

This research was limited by time and key gaps in the data available, identified in the main report. Collecting and analysing data in the areas highlighted in the recommendations above, i.e. collecting wellbeing data; obtaining accurate disaggregated mental health cost data; engaging with stakeholders and analysing qualitative narratives; would allow a more accurate mental health and wellbeing valuation to be calculated. It would be particularly beneficial to collect longitudinal (panel) data incorporating wellbeing questions, in order to track differences and trends over time. Other limitations include gaps in the data identified in the previous SWCP report (Petersen 2021), e.g., accurate numbers for SWCP visitors as well as visits, etc; as well as limitations with figures used from the literature detailed above.

In terms of further research, drawing these results together with the physical health and wellbeing valuation results would enable the SWCPA to articulate the overall health and wellbeing value of the SWCP. This could be compared with alternative ways of monitoring the wider (including social) value associated with the SWCP such as the Social Return on Investment approach (see e.g. Goodspeed 2019; Social Value UK 2012). Whatever methodology is ultimately chosen, the report underlines the importance of local measures and understanding how local people and stakeholders value the SWCP, both quantitatively and qualitatively. The literature review is selective rather than exhaustive because of time constraints, especially the section on engagement strategies - this is intended only as an indication of potential directions or areas to explore. More systematic research on what works in this area, in addition to key stakeholder engagement, would be highly beneficial. In addition, research detailing the types and variety of environments that the SWCP passes through, perhaps drawing on natural capital accounting approaches, would enable the SWCPA to articulate better the added value and special character of the SWCP and how this may affect the health benefits associated with it.

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14. Appendix 1

Table 14.1: List of mental health valuation methodologies, pros and cons and data required

Type of methodology	Metric (measuring scale / instrument)	Pros and cons	Guide to methodology	Potential data available / required for SWCP	Notes / issues
Quality Adjusted Life Years (QALYs)	**EQ-5D** (recommended in NICE 2019) or other validated QALY metric	**Widely used health metric** measuring overall health outcomes from intervention; values reduction in costs of mental illness; but **more robust for physical health than mental health; doesn't measure wellbeing**	See Saraev *et al*. 2020. Recommended willingness-to-pay (WTP) value for a QALY: £60,000 (HM Treasury, 2018); (N.B. White et al. 2016 used £20,000)	Survey data required; can be compared with UK level data	EQ-5D less sensitive to changes in mental health than WEMWBS; QALYs more suitable for detecting changes in physical health. QALYs more often used to determine cost-effectiveness. Can incorporate biophysical data.

| Wellbeing indicators - measure feelings and functional aspects of mental wellbeing | The Warwick-Edinburgh Mental Wellbeing Scale WEMWBS / SWEMWBS - short version | **Captures value for wellbeing and mental health / ill-health; can be used in cost-benefit analysis**; but not as statistically robust at lower end of scale (i.e. very poor mental health); **more suited for application to local interventions** (not large datasets) (Saraev *et al* 2020: 5;31) | Use Fujiwara et al. (2017: 5-6) to convert SWEMWBS to monetary value (see table 14.6) | Survey data required (ideally **before and after**) - limited data available (e.g. CAN programme); ideally need before and after data for valuation & to compare with general UK population. Limited snapshot data available from CAN and England Coast Path report (ICF *et al*. 2019a) | Tend to give **higher values** compared to QALYS and avoided cost approaches. Valuation through SWEMWBS is **more difficult than life satisfaction and may require further work**, but a 'robust pathway for monitoring changes via this scale could provide the **best outlet for valuing mental health applicable to the general public'** (Saraev *et al*. 2020: 53) |

Life satisfaction scores	Life satisfaction question (survey) e.g. 'Overall, how satisfied are you with your life nowadays?' To be answered on a scale of 0 to 10, where 0 is "not at all" and 10 is "completely".	Flexible method - valuation directly correlated with income. Life satisfaction is a broad measure of wellbeing which encompasses wider benefits apart from mental health; captures value for mental health and ill-health; but likely to overlap with recreational benefits (as wellbeing may be a motivation for visits). It may also overlap with amenity values (e.g. when using hedonic price methods).	Measure of subjective wellbeing (see Krueger and Schkade, 2008). Changes can be directly monetised using a causal model of income as a determinant of life satisfaction; see Fujiwara 2014; Fujiwara et al. 2014; see also Greenkeeper project (Vivid Economics 2017). The method estimates the monetary amount an individual would need to be compensated with per annum to keep their mental health or wellbeing levels at a constant level in the absence of a particular good (e.g. SWCP) (Saraev *et al*. 2020: 15-16)	Survey data required; can be compared with UK level data	Is flexible for any context, local or large-scale and for any kind of intervention using life satisfaction as a metric. Draws on data from e.g. British Household Panel Survey - life satisfaction and income. Tend to give higher values compared to QALYS and avoided cost approaches Life satisfaction question source: https://yougov.co.uk/topics/science/trackers/life-satisfaction-measured-weekly

Costs avoided (health incl. mental health, at workplace etc)	GP visits (mental health reasons)	All avoided cost methods value reduction in costs of mental illness; but **likely to underestimate value to wellbeing - narrow; focus on mental-ill health only**; & many people avoid going to GP. Usage of **avoided cost methods tends to avoid double counting** re. recreational value (natural capital approach); **can combine** cost estimates; **avoided cost methods often simplest to do** (e.g. with limited data)	Saraev *et al.* 2020; 2021. For valuation based on reduced GP visit frequency associated with an intervention or interaction see Fujiwara, Lawton and Mourato (2015); see also Vivid Economics 2017	Data required?	Data difficult to obtain; needs ethics approval for this e.g. for local data; plus is 'challenging to disentangle from other reasons for visiting a GP (unless NHS data can be used)' (Saraev *et al.* 2020: 5). Some cost estimates available for GP visits (see Saraev *et al*. 2021); £3.16 per person per year is reduction in GP visit costs (all greenspaces; UK) (Fields in Trust 2018).

Mental illness drug prescriptions	As above	See Saraev *et al.* 2020; 2021; see also Viavattene and Priest (2020); Taylor *et al.* 2015.	Data required?	Data difficult to obtain; needs ethics approval for this e.g. for local data. Viavattene and Priest (2020) calculates NHS antidepressant drug costs per patient per year of between £7,820 and £9.36; mid-value estimate £23 per patient per year (2017 prices) (associated with moderate and mild depression and anxiety; not severe). But this figure only represents a fraction of the overall direct costs associated with living with a mental health condition (see Saraev *et al.* 2021:7).
Costs of poor mental health (productivity losses)	As above; **difficult to estimate / quantify** e.g. separate from other reasons for productivity losses	See Saraev *et al.* 2020; 2021.	Accurate / survey data required?	Simplest way of measuring productivity is by self-report - ask 'How productive have you been over the last month on a scale of 0-100' (see Saraev *et al.* 2020: 37). But doesn't differentiate mental health & wellbeing aspects. Rough estimate of £36 million (output losses) for England for 2018/19 (e.g. O'Shea and Bell 2020).
Workplace absenteeism (mental health reasons)	As above; may be **difficult to separate from other reasons** for absenteeism	See Saraev *et al.* 2020; 2021. [Could use e.g. estimates for England (O'Shea and Bell 2020) and adjust for SWCP population (rough estimate)?]	Accurate data required?	Estimated at £1,140 per person per year for depression or anxiety (Saraev *et al.* 2021:8); additional value of annual excess working days lost due to common mental health disorders (not specified) estimated at £570 (2020 prices) (Saraev *et al.* 2021:8).

	Costs to NHS / local government (mental health) (treatment costs)	As above; **equivalence re. environment difficult to estimate** e.g. tends to use NHS spending on mental health provision	See Saraev *et al*. 2020; 2021. [Could use e.g. estimates for England (O'Shea and Bell 2020) and adjust for SWCP population (rough estimate)]	Accurate data required?	Value of avoided cost benefits for reduced mental illness may be higher for more accessible and urban parts of SWCP than less accessible / more remote rural sections (see Saraev *et al*. 2020:21). Estimate from Saraev *et al*. (2021:8) of average annual costs for treatment per person - £1640 for depression and £705 for anxiety (2020 prices). Additional costs for common mental health disorders (not specified) for cost of treatment estimated at £574 (2020 prices) (Saraev et al. 2021:8).
	GHQ-12 - self-reported mental health metric	As above; GHQ-12 has focus on identifying minor psychiatric disorders as hindrances to normal day-to-day processes (individual). But are issues with producing valuation using this method (estimation & transferability). **Separating mental / physical health aspects difficult.**	Changes to GHQ-12 can be associated with cost savings to the NHS's expenditure on mental health treatment (see Saraev et al. 2020: 22) and overall costs of poor mental health (Vivid Economics, 2017).	Survey data required; can be compared with UK level data	Separating out mental and physical health related savings is often tricky - potential overlap

Table 14.2: SWCP valuation - avoided costs based on method used in Saraev et al. 2021

What figure represents	Relevant value to be applied	Valuation workings
No. of visits to SWCP (SWCPA 2019 figures)		8971562
No. of visitors (7.56%)	0.0756	678250.0872
Working age population (72.1%)	0.721	489018.3129
Proportion that walk at least once a week 36%	0.36	176046.5926
Proportion that walk 2+ miles 84%*	0.84	147879.1378
Rate of occurrence of depression (McManus *et al.*, 2016): 3.3%	0.033	
Rate of occurrence of anxiety (McManus *et al.,* 2016): 5.9%	0.059	
Rate of occurrence of CMD-NOS (McManus *et al.,* 2016): 7.8%	0.078	
Average annual costs for treatment per person - for depression (applied to 3.3% of walkers)	£1,640	£8,003,218.94
Average annual costs for treatment per person - for anxiety (5.9% of walkers)	£705	£6,151,032.74
Average employment-related costs for depression or anxiety (3.3+5.9 = 9.2% of walkers)	£1,140	£15,509,563.97
Annual cost of treatment for CMD-NOS per person (2020 prices) (7.8% of walkers)	£574	£6,620,844.76
Excess working days lost from CMD-NOS (2020 prices) (7.8% of walkers)	£570	£6,574,706.47
Total costs		£42,859,366.87
Adjusting for co-occurrence factor for multiple MHCs	0.744	£31,887,368.95
Reduction in depression-related costs due to spending time outdoors (Shanahan et al. 2016)#	0.07	£2,232,115.83
Discounted figure	1.5%	£2,198,634.09
Lower range figure 5% (discounted by 1.5%)	0.05	£1,570,452.92
Higher range figure 9% (discounted by 1.5%)	0.09	£2,826,815.26

#Based on Shanahan *et al.* 2016 – nature dose framework. This used the Depression and Anxiety and Stress Scales (study carried out in Australia).

* These two figures combined give a figure of 21.8% of the total visitors that walk at least once a week for 30mins; which is similar to the 19.5% as used in White *et al.* 2016 based on MENE data.

Table 14.3: Previous relevant cost valuations for mental health

What is being valued (costs avoided)	Valuation	Year valuation applies to	Spatial area valuation applies to	Source and notes
Total economic health and social costs of mental health problems - health only (England)	£21.3 billion	2009-10	England	Centre for Mental Health 2010 (total economic and social costs £105.2 billion per year (2010 figures) (O'Shea and Bell 2020)
Total economic health and social costs of mental health problems - health only (England)	£19.8 billion (health only)	2018-19	England	Centre for Mental Health (O'Shea and Bell 2020:1); updated costs (pre-pandemic); total economic and social costs of mental ill health are £119 billion a year - including health spending, output losses and human capital.
Cost to employers of mental health problems in the UK workforce	£34.9 billion	2016	UK	Parsonage and Saini 2017
Total cost of lost output due to mental health sickness absence in England	£30.3 billion	2009-10	England	Centre for Mental Health 2010
Societal costs of depression (employed people only)*	£17.67 billion	2010	England (equivalent figure for 2010 population based on figures for Australia)	Shanahan *et al.* 2016; based on equivalent estimates for Australia in LaMontagne, Sanderson & Cocker 2010 adjusted for higher population for England
Natural capital value of mental health benefits using Visits to Nature Pathway	£11 billion	2021	England (woodlands only)	Saraev *et al.* 2021; Shanahan *et al.* 2016

| Annual value of woodlands: avoided anxiety, depression and CMD-NOS related costs using Visits to Nature Pathway | £141 million | 2019 | England (woodlands only) | Saraev *et al*. 2021; Shanahan *et al*. 2016 |
| Annual value of visits made to all natural environments (estimate) using QALYs (physical & mental health) | £2.18 billion | 2016 | England | Saraev *et al.* 2021 based on White et al. 2016 (value of woodland visits estimated as roughly 8% of this); assuming a conservative QALY value of £20,000; based on MENE data |

Table 14.4: Estimation of reduction in mental health costs (economic health & social costs) for SWCP visitors (walking at least 30mins weekly) using Centre for Mental Health (O'Shea and Bell 2020) figures

What figure represents	Costs (health spending costs for mental health) (£)	Costs (overall health and social costs for mental health) (£)
Economic mental health costs for England (O'Shea and Bell 2020)	£19.8 billion	£119.0 billion
Whole SWCP visitor population costs (calculated as proportion of whole England population)	£0.237 billion	£1.426 billion
Estimated costs relating to the population of adult working age visitors walking SWCP at least 30mins per week	£0.052 billion	£0.311 billion
Cost savings (7%) (Shanahan *et al*. 2016)	£3.62 million	£21.8 million
Discounted cost savings (1.5%)	£3.57 million	£21.5 million
8% economic mental health cost savings directly attributable to SWCP (discounted)	£285,000	£1.72 million

Source: Based on Centre for Mental Health figures (O'Shea and Bell 2020) for economic and social mental health costs; and visitor number figures from SWCPA (2019) – see Petersen (2021) – and see table 14.2 above.

Table 14.5: NHS mental health spend 2020-21 (4 counties of SWCP) for all mental health conditions

County	Spend (£)	Spend (rounded, £)	% of total
Devon	303307864	303 million	40.2
Cornwall	148522000	149 million	19.7
Dorset	197207183	197 million	26.1
Somerset	105551000	106 million	14.0
Total NHS mental health spend 2020-21 (4 counties)	**754588048**	755 million	100.0

Source: Based on NHS Mental Health Dashboard figures (NHS Digital 2022). This includes NHS mental health spending on perinatal health, suicide prevention, justice/prison-related and children and young people, crisis care etc; so cannot be directly applied to the SWCP.

Table 14.6: Values to convert change in SWEMWBS score into monetary value (Fujiwara et al. 2017)

Category	Overall SWEMWBS score	Full Model Value
1	7-14	£0
2	15-16	£9,639
3	17-18	£12,255
4	19-20	£17,561
5	21-22	£21,049
6	23-24	£22,944
7	25-26	£24,225
8	27-28	£24,877
9	29-30	£25,480
10	31-32	£25,856
11	33-34	£26,175
12	35	£26,793

Source: Values from Fujiwara *et al*. (2017: 5-6) to convert SWEMWBS to monetary value (applied to a change in score)

Table 14.7: Key ingredients for successful and sustainable engagement with natural environments and to improve wellbeing of groups most at risk of mental health issues (Thomson et al. 2020:7)

Key ingredient	Details
Format	Being in a group - creating a sense of shared endeavour and experience; structure / regularity - taking people away from the day to day; informality; time for breaks and social opportunities to develop friendships
Dynamics	'Green literacy' and interpretation - with opportunities to acquire skills and learn from others; peer support - often including volunteers; safe, neutral space - including being with people who have had similar experiences; group facilitation skills - staff able to adapt and respond to people's preferences and needs

Features	Sense of purpose - the opportunity to do something practical and hands on; manageable tasks; sense of ownership - over a task or area of green space, and choice of activities; progression - pathways back to employment through volunteering, qualifications, signposting to other opportunities

Source: Adapted from Thomson *et al*. 2020:7.

Table 14.8: Summary of successful strategies to engage participants from at-risk groups (Thomson et al. 2020:14)

Type of engagement strategy	Details
What helps people get involved?	Normalise the natural environment; Reassure and build confidence; Start early – engage families.
Addressing practical barriers	Ensuring that spaces close to where people live have activities; Providing transport to help with the logistics of getting to more rural natural environment spaces; Providing activities for free; Providing any specialist equipment that might be required for those who cannot afford it.
Overcoming fears and preconceptions about the natural environment	Recognise the degree of 'hand holding' required; Directly inviting people into shared spaces for a shared activity; Offering taster sessions; Key workers or trusted friends coming along to the first sessions.
Assertive outreach to get beyond the usual suspects	Engaging through existing community groups, events and places of worship; Working with trusted role models; Employing project workers from different communities – helping to address diversity issues that many groups have.
Appropriate messaging	Ensure the images used are relatable (for example, avoiding all the pictures being from one demographic or age group); Tailoring materials to different audiences.

Source: Thomson *et al*. 2020:14.

15. Glossary

Access – refers to the ability to obtain an opportunity (e.g. walking in a natural environment) or a service (e.g. health service).

Accessibility – refers to the ability to reach and use paths (e.g. sections of the SWCP), incorporating aspects around the nature of the path and suitability of the surface for a range of people, etc.

Equity of access – incorporates ideas of equality of access with ideas about fairness – may include addressing historical or other injustices or diminished access.

Green space (or greenspace) – an area of grass, trees, or other vegetation set apart for recreational or aesthetic purposes in an otherwise urban environment (Oxford Languages).

Mental health - Good or positive mental health is more than the absence or management of mental health problems; it is the foundation for wellbeing and effective functioning both for individuals and for their communities (DoH 2011:87).

Mental illness - A term generally used to refer to more serious mental health problems that often require treatment by specialist services. such illnesses include depression and anxiety (which may also be referred to as common mental health problems) as well as schizophrenia and bipolar disorder (also sometimes referred to as severe mental illness) (DoH 2011:87).

Natural environment – encompasses all living and non-living things occurring naturally, i.e. not artificial / man made.

Recovery - A deeply personal, unique process of changing one's attitudes, values, feelings, goals skills and/or roles. It is a way of living a satisfying, hopeful and contributing life, even with limitations caused by the illness. Recovery involves the development of new meaning and purpose in one's life (DoH 2011:90).

Wellbeing - this has multiple conceptualisations but is broadly understood as 'an overall evaluation that an individual makes of his or her life in all its important aspects' and as a 'state of equilibrium or balance that can be affected by life events or challenges' (Valuing Nature 2018:5). It has also been described as a positive state of mind and body, feeling safe and able to cope, with a sense of connection with people, communities and the wider environment (DoH 2011:90).