A review of nature-based interventions for mental health care

NATURAL
ENGLAND

Foreword

Background

The Natural Environment White Paper "The Natural Choice: securing the value of nature" (Department for Environment, Food and Rural Affairs, 2011) sets out the need to strengthen the connection between people and nature. However, the White Paper also acknowledges that the opportunities to benefit from spending time in the natural environment are currently not open to everyone, which can contribute to health and other inequalities. Natural England is committed to increasing the number and range of people who can experience and benefit from access to the natural environment, and through the Outdoors for All Programme is leading the Government's ambition that 'everyone should have fair access to a good quality natural environment'.

The prevalence of mental ill-health is on the rise in the UK with an estimated one in four people experiencing a 'significant' mental health problem in any one year. With the prescription of anti-depressants at record levels and a huge demand for Cognitive Behaviour Therapy and other psychological therapies, health and social care commissioners are examining and commissioning different options for cost effective services for mental health. At the same time there is increasing recognition of the importance of nature and place as a determinant of individuals' mental health. Nature-based interventions are operating throughout the UK, working with a wide range of vulnerable groups helping to positively benefit health and wellbeing outcomes.

These nature-based interventions (also called green care and ecotherapy) could be part of a new solution for mental health care. However increasing awareness and access to these interventions is challenging given the number of organisations delivering nature-based projects and services, the variety of terms and language used to describe their activity and benefits and the variation in delivery models which use different impact measures. This research seeks to explore these issues and set out the steps required to enable a greater number of nature-based interventions to be commissioned in mental health care.

This report should be cited as:

Contents

Acknowledgements

List of Abbreviations

AAI	Animal Assisted Interventions	NBI	Nature- Based Interventions
AARS	Apparent Affect Rating Scale	NHS	National Health Service
AFI	Attentional Function Index	NOMS	National Offender Management Service
ART	Attention Restoration Theory	ONS	Office for National Statistics
ASTHP	Association of Social and Therapeutic Horticulture Practitioners	PAL	Pool Activity Level
BDI	Beck Depression Inventory	PANAS	Positive and Negative Affect Schedule
BI	Barthel Index	PET	Psycho-Evolutionary Theory
BTCV	British Trust of Conservation Volunteers	PHE	Public Health England
BWP	Bradford Well-Being Profile	POMS	Profile of Mood States
CBT	Cognitive Behavioural Therapy	PSS	Perceived Stress Scale
CCG	Clinical Commissioning Group	PSS	Physical Stress Scale
C-CMAI	Chinese version of the Cohen-Mansfield Agitation Inventory	PWI	Personal Well-being Index
DASS21	Depression, Anxiety and Stress Scale	PWI-C	Personal Wellbeing Index China version
DEN	Dementia and Engagement with Nature	QBA	Qualitative Benefit Analysis
DoH	Department of Health	RCT	Randomised Control Trial
ERFS	Elements of a Recovery Facilitating System	RSES	Rosenberg Self Esteem Scale
ESS	Emotional State Scale	RSPB	Royal Society for the Protection of Birds
GSE	General Self-Efficacy Scale	SF-12	Short-Form Health Survey 12
HT	Horticultural Therapy	SF-36v2	Short-Form Health Survey 36 Version 2
IAPT	Improving Access to Psychological Therapy	STH	Social and Therapeutic Horticulture
IDDD	Interview for Deterioration in Daily living in Dementia	SWEMWBS	Short Warwick Edinburgh Mental Wellbeing Scale
IES-R	Impact of Events Scale	TCV	The Conservation Volunteers
IPAQ-S	International Physical Activity Questionnaire-Short	TFI-CS	The Therapeutic Factors Inventory Cohesiveness Scale
LA	Local Authority	VQ	Volitional Questionnaire
LACLS	Large Allen Cognitive Level Screen	WBA	Work Behavioural Assessment
LEC	Life Experiences Checklist	WEIS	Work Environment Impact Scale
LRI-R	The Life Regard Index - revised	WEMWBS	Warwick Edinburgh Mental Wellbeing Scale
MMSE	Mini Mental State Examination	WHOQuoL	World Health Organization Quality of Life
MPES	Menorah Park Engagement Scale	WSAS	Work and Social Adjustment Scale
MSS	Mental Stress Scale	ZDI	Zung Depression Inventory

Executive Summary

Background

With the prescription of antidepressants at record levels and a high demand for psychological therapies, health and social care commissioners are interested in examining and commissioning new treatment interventions for mental health. There are now numerous local and national organisations offering a range of nature-based interventions as specifically designed and structured health or social care treatment interventions for vulnerable groups in society, including those with mental illness. Could these nature-based interventions (termed 'Green Care' or 'Ecotherapy') be part of a new solution for mental healthcare?

Part of the challenge to increasing the availability of green care interventions on a wider scale, is that there are numerous organisations delivering nature-based programmes and services in this field, using different language to describe their activity and benefits, operating different delivery models and using different measurements of impact. Many green care organisations have expressed the need for service providers to work better together to improve the coherence of these services and streamline access to these services for health commissioners. In order to address the issues and limitations associated with differing language within the green care field, a questionnaire survey was conducted to explore the current use of the terms 'ecotherapy' vs 'green care' vs 'nature-based interventions'.

In addition, in order to gain an overview of impacts and mental health improvements stemming from green care, a literature review of all evidence relating to the three largest and most commonly occurring forms of green care - social and therapeutic horticulture, environmental conservation interventions and care farming - was also conducted. This review focused on nature-based interventions where improving an individual's mental health was a primary goal of the service and where services were treatment for people with an existing mental health problem.

This study examined the benefits, commonality and outcomes of these three green care approaches, to help raise awareness, understanding and value placed on these services by mental health commissioners, thereby helping to increase the number of projects commissioned. Finally, this study also examined the scale of the three types of green care interventions across the UK and the current commissioning routes for green care to help inform potential new nature-based service providers.

Key Findings

Green care language consultation
- There is consensus for consistency in the language used to describe the sector.
- No preference for a collective name emerged, however some negative comments were received about ecotherapy and concerns were raised about not continuing to use the term green care.
- One possible solution may be 'Green care: Nature-based interventions for vulnerable groups'.
- In order to provide clarity and to aid promotion of the green care sector, participants felt that it is necessary to make the distinction between commissioned interventions for the vulnerable and public health initiatives for the general population.
- There was consensus that green care providers should work together to provide a larger 'offer' to commissioners such as Clinical Commissioning Groups.

- Although the three approaches of social and therapeutic horticulture (STH), care farming and environmental conservation as an intervention are contextually different, in practice the approaches often feature similar activities and have a similar ethos. These interventions involve a deeper interaction with nature than some of the other forms of green care, allowing service users to engage with and shape nature. The results of the literature review for these three types of green care highlight a range of mental wellbeing benefits for participants derived from a combination of three key components: i) the natural environment; ii) the meaningful activities; and iii) the social context; which characterise all three approaches.

- The mental health benefits for social and therapeutic horticulture, environmental conservation interventions and care farming were similar and include:
  o Psychological restoration and increased general mental wellbeing
  o Reduction in depression, anxiety and stress related symptoms
  o Improvement in dementia-related symptoms
  o Improved self-esteem, confidence and mood
  o Increased attentional capacity and cognition
  o Improved happiness, satisfaction and quality of life
  o Sense of peace, calm or relaxation
  o Feelings of safety and security
  o Increased social contact, inclusion and sense of belonging
  o Increase in work skills, meaningful activity and personal achievement

- Social and therapeutic horticulture evidence base: quantitative and qualitative studies, quasi – experimental and several Randomised Controlled Trials (RCTs); evidence base largest and most established; many studies focusing on people with various mental health conditions, particularly for those with depression and with dementia.

- Environmental conservation interventions evidence base: many of the studies are qualitative but there is an increasing number which adopt a mixed methods approach; the majority of studies feature the general population, with only a minority specifically assessing the effects on those with mental illness.

- Care farming evidence base: there is a mix of quantitative and qualitative evidence, with studies frequently taking a mixed methods approach; some of these studies are quasi-experimental, a few are RCTS. The majority of the care farming research studies focus on those with mental illness, with diagnoses ranging from depression to schizophrenia.

- There is considerable variation in results between studies of the same type of nature-based intervention and between the studies of different types of intervention. Outcome measures used in studies vary widely.

Scale of green care
- There are a number of organisations in the UK that either directly provide green care services or provide support for green care projects and practitioners. Although there is no complete picture or definitive data for the scale of green care services in the UK, there is some data on the scale of social and therapeutic horticulture, environmental conservation interventions and care farming service provision.

- Data from 2003 suggested there were over 1,000 social and therapeutic horticulture projects catering for over 21,000 service users each week, with some 40% supporting people with mental

health problems. Using these figures, an estimated 8,400 people with mental health problems receive STH services per week. However, this is likely to be an underestimation as both the number of STH projects and the number of weekly service users are likely to have increased over the past decade.

- Although the key organisations providing environmental conservation as a treatment collate some data on their own activities, this data varies in format from organisation to organisation making it difficult to estimate a total number of projects providing services or of numbers of service users. There are therefore no definitive, national or UK-based data on the numbers of environmental conservation sessions provided as green care treatment interventions.

- There are approximately 230 care farms in the UK with an additional 25 care farms in the Republic of Ireland. 230 care farms provide services for an estimated total of 7,820 service users per week across the UK. As 75% of care farms provide green care services for people experiencing mental health problems, at least 5,865 service users on 173 care farms receive services for mental ill-health per week.

- There is limited information on current commissioning routes for green care services generally, but green care services such as STH, environmental conservation and care farming are commissioned by a wide range of different organisations for a wide range of different service user groups. However available anecdotal evidence suggests there is growing interest and demand for these services though overall referrals from Clinical Commissioning Groups or from GPs for green care services remains patchy and relatively uncommon. As a consequence there is significant unused capacity across all three green care services.

Recommendations

There are 9 recommendations stemming from this report.

Collaboration within the green care sector
1. **There is a need for the green care sector umbrella organisations to: i) work together in partnership - in order to promote the sector more widely to policymakers, commissioners and potential service users; and ii) to raise awareness *within the green care sector* of the need for developing common messages for clear communications with commissioners.**

Streamlining communications with health and social care commissioners
2. **In order to provide clear communication from the sector to commissioners, the term 'Green Care' should be used to describe the range of activities that fall within the scope of nature-based interventions for individuals with a defined or diagnosed need.**
    - Using the strapline is recommended to increase clarity – e.g. ***"Green care – nature-based interventions for individuals with a defined need"*** [1]
    - **Through partnership, a core group of national organisations should widely adopt the term 'green care' to demonstrate leadership** and to facilitate clarity.

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[1] There was much debate over the use of the term 'vulnerable' so the definition was adapted to 'for individuals with a defined need'.

3. **It is crucial to make a distinction between i) specifically designed and commissioned interventions for individuals with a defined need (green care), and ii) public health programmes for the general population.**
   - **This will ensure that nature-based service providers will use the appropriate language** (and evidence) **in order to talk to the right commissioners** – i.e. green care providers will target health and social care commissioners (Clinical Commissioning Groups and Local Authorities (social services)) and more general nature-based programmes will target commissioners of Public Health (PHE and Local Authority public health departments).

4. **The green care partnership should publish an annual status report ('state of the nation'), providing a comprehensive picture of the scale and nature of green care for mental healthcare in the UK.**

5. **Providers of green care services should be encouraged to register with local online directories of services** (or consortia of service providers) **and have representation on their local hubs to advertise their services to potential service users.**

The green care evidence base for mental health

6. **The green care sector needs to better promote and share the evidence of the effectiveness of nature-based interventions for people experiencing mental health problems:**
   - **within the sector** to enable service providers to use the information i) to design more effective interventions and ii) to communicate outcomes to service users and commissioners.
   - **to commissioners** and other bodies of mental healthcare professionals to raise awareness and build greater understanding, and
   - **to existing and potential service users and their families** to improve awareness, confidence and access to services;

7. **The green care partnership needs to provide members with relevant information and guidance on the use of standardised, reliable and validated measures of effectiveness, to assess changes in mental health and wellbeing condition.**
   - **This guidance must highlight the importance of using control or comparator groups** (where possible and appropriate) **in order to demonstrate that the green care intervention is causing the impact** (i.e. causality); and
   - **Cost-benefit or cost-effectiveness measures should also be included** (where possible)**.**

Increasing the scale of green care commissioning in mental health

8. **The green care partnership should support and encourage members to participate in large-scale demonstration trials to test and evaluate new approaches to scaling up delivery.**

9. **The green care partnership organisations should work with their members to facilitate access to, and development of, larger scale health and social care contracts.**

1. Introduction

1.1. Background

Mental illness is a leading cause of disability in the developed world and is associated with much personal suffering, significant economic cost and several social problems (Mental Health Foundation, 2010). The prevalence of mental ill-health is on the rise in the UK; anxiety and depression are commonplace and in England it is estimated that in any one year, at least one in four people will experience a 'significant' mental health problem (ONS, 2009; Mental Health Foundation, 2013). With this increase in the prevalence of mental illness and associated increasing costs, currently estimated to be £105.2 billion (The Centre for Mental Health, 2010), it is now acknowledged to be a major public health issue.

With the prescription of antidepressants at record levels and a huge demand for Cognitive Behavioural Therapy (CBT) and other psychological therapies, health and social care commissioners are interested both in examining and commissioning cost-effective services for mental health. At the same time, there is increasing recognition of the importance of nature and place as a determinant of an individuals' mental health. Nature-based interventions are operating throughout the UK, working with a wide range of vulnerable groups in society helping to positively benefit mental health and wellbeing outcomes. Recently programmes like Ecominds[2] have raised the awareness and visibility of projects ranging from Social and Therapeutic Horticulture (STH), care farming and Green Gyms, to wilderness or animal assisted therapies. These nature-based interventions (termed 'Green Care' or 'Ecotherapy') could be part of a new solution for mental healthcare.

Although some nature-based interventions are commissioned by their local CCG (Clinical Commissioning Group) or Public Health teams, the vast majority are funded via grants and community fundraising. From research carried out by Mind in 2013[3], we know that the majority of CCG commissioners and GPs are interested in learning more (56%) about these nature-based interventions. However increasing awareness and access to green care interventions is challenging given the number of organisations delivering nature-based projects and services, the variety of terms and language used to describe their activity and benefits, and the variation in delivery models and in measurements of impact.

So, with this challenge in mind, a review of nature-based interventions in mental healthcare was commissioned by Natural England to explore the issues further. For more details of the team involved in the study see Appendix A.

1.2. Scope and Aims of the study

1.2.1. Scope of research

Following on from the findings from Mind's Ecominds programme and building upon the increasing evidence from a range of reviews of ecotherapy or green care, this review explores the steps required to enable a greater number of nature-based interventions to be commissioned in mental healthcare.

The breadth of nature-based interventions relating to mental health is extensive. Therefore the scope of this review has been targeted to ensure it remains manageable and realistic. This research

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[2] See http://www.mind.org.uk/ecominds

[3] nfp Synergy report

focuses on contexts where there is currently the most evidence of effectiveness and the presence of supportive, regional networking organisations. The methodology used in this review, could however be applied in the future to interventions that sit outside the current remit.

The review draws upon previous reports and published evidence, and narrows the focus in the following three ways:

1. Wherever possible, only nature-based interventions where improving an individual's mental health was a *primary goal* of the project/service are examined (as opposed to those that address broader wellbeing, whether as a primary or secondary outcome)

2. Projects and services that are treatments for people with existing mental health problems are included but public mental health interventions are not. This allows the review to focus on a limited set of commissioners, namely those in mental healthcare commissioning such as Clinical Commissioning Groups (CCGs) and Local Authorities.

3. Three key types of nature-based intervention are included in this review – namely Social and Therapeutic Horticulture (STH), Environmental conservation (as an intervention) and Care farming.

   These three nature-based intervention approaches have been chosen because:
   i) Commonality of approach – All three involve *active interaction* of participants with nature (as opposed to just being in, or viewing nature), In addition, all three often involve aspects of the others and may superficially look very similar.
   ii) Commonly occurring – It is estimated that the majority of nature-based interventions in the UK are one of these three types.
   iii) National organisations – Each type is covered to varying degrees by a national organisation, infrastructure or network, facilitating upscaling and replication.

1.2.2. Aims and objectives

The aim of this review is to bring together three key nature-based interventions (Social and Therapeutic Horticulture, environmental conservation treatment interventions and care farming), in order to clarify existing services provided and to better demonstrate their benefits, commonality and mental health outcomes to commissioners, with a view to increase the scale of commissioning.

Key objectives:
   a) To examine the key evidence of effectiveness of the three approaches in improving mental health outcomes for people experiencing mental ill-health.
   b) To clarify the language used in categorising green care services and to classify services that fit into social and therapeutic horticulture, environmental conservation interventions and care farming.
   c) To demonstrate the scope and value of existing provision in order to provide a pathway for potential nature-based service providers to move towards a place where they may be commissionable in future.
   d) To explore how to better demonstrate the benefits, commonality and outcomes of these approaches to mental health commissioners, with the aim to increase the number of projects commissioned.

1.3. The structure of this report

Chapter 2 highlights the current mental health challenges facing the Nation; gives an overview of mental health services and commissioning routes; outlines the health benefits of nature. It introduces the debate on the language of the sector and whether to use green care, nature-based interventions or ecotherapy as a collective term for describing the range of nature-based interventions in this sector.

Chapter 3 addresses the first part of objective b) - *"to clarify the language used in categorising green care services".* This chapter highlights the findings of a questionnaire survey which aims to help clarify some of the inconsistencies in language used in the green care sector.

Chapter 4 addresses the second part of objective b) - *"to classify services that fit into social and therapeutic horticulture, environmental conservation interventions and care farming"* and covers objective a) - *"to examine the evidence of effectiveness of the three approaches in improving mental health outcomes for people experiencing with mental ill-health".* This chapter defines green care, outlines the main types of green care and features a review of the key published literature of the mental health and wellbeing benefits of three types of nature-based intervention, STH, environmental conservation interventions and care farming.

Chapter 5 covers objective d) - *"to explore how to better demonstrate the benefits, commonality and outcomes of these approaches to mental health commissioners, with the aim to increase the number of projects commissioned".* This chapter examines the commonalities and differences in the evidence between the three types of green care and gives an overview of outcome measures used in the studies in the review before giving a summary of the state of the evidence base in terms of mental health outcomes for the three types of green care.

Chapter 6 addresses objective c) – *"to demonstrate the scope and value of existing provision in order to provide a pathway for potential nature-based service providers to move towards a place where they may be commissionable in future".* This chapter gives an idea of the scale of the three types of green care interventions across the UK and an overview of the current commissioning routes for green care.

Chapter 7 outlines the key findings of the study and makes recommendations to increase the commissioning of nature-based interventions for mental healthcare.

2. Mental health and nature

2.1. Challenges facing the Nation's health

Several health and wellbeing issues face the UK (both at an individual and population level). The prevalence of many mental and physical health conditions is increasing, the UK is in a period of recession and subsequent efficiency savings are impacting on health and social care budgets. This is creating real challenges for Government, and for voluntary and private sector organisations tasked with health promotion and providing health and social care services.

These health issues are related to a number of factors such as: increasingly sedentary lifestyles, poor diets, the prevalence of mental illness, physical disability, an ageing population and social isolation, making the care of vulnerable people in the UK an increasing challenge. In England, growing numbers of people rely on social workers and other support staff for help (Millar, 2003; DoH, 2007b; Health and Social Care Information Centre, 2013c). Vulnerable groups of people requiring support and social care include: children or families who are under stress; many older people; people with disabilities; people with emotional or psychological difficulties; with problems related to drugs or alcohol; with financial or housing problems; and people who need help with daily living activities.

In 2012-13, 1.3 million people were receiving care services, comprising 1.1 million people receiving community-based services, 209,000 in residential care and 87,000 receiving nursing care (Health and social care information centre 2013c). However, people who pay entirely for their own care are not included in these figures: an additional 340,000 people either self-fund in care homes or pay for care in their own home (Health and social care information centre, 2013c).

2.1.1. Mental illness

In England it is estimated that in any one year, at least one in four people will experience a 'significant' mental health problem (ONS, 2009; Mental Health Foundation, 2013) ranging from anxiety or mood related disorders and depression to schizophrenia and psychosis. Mental illness often co-occurs with poor physical health and those experiencing mental illness are also more likely to have poorer diets, be less active, have higher rates of smoking, drug and alcohol misuse and have increased risk of long-term physical conditions (Allen and Balfour, 2014). The Joint Commissioning Panel for Mental Health (2012, 2013a) states that the presence of mental illness can also complicate the management of a physical illness and can sometimes worsen the prognosis (JCPMH, 2013a). For example, depression is associated with a 50 per cent increase in mortality from all disease and reduces life expectancy by 11 years for men and seven years for women.

The total cost of mental health problems in England is estimated at around £105.2 billion[4] (The Centre for Mental Health, 2010). The majority of these costs relate to those who experience mental health problems and their families, but mental ill-health also generates sizeable costs for taxpayers and for business, estimated at £1,000 per employee per year (NHS Choices, 2013). However, the NHS share of budget for mental health care is far lower proportionally when the significant mental health burden of disease is considered: poor mental health accounts for 23% of the burden of disease whilst only accounting for 13% of the NHS budget in England (Centre for Economic Performance's Mental Health Policy Group, 2012). With poor mental health often carrying more of a financial burden to society than crime (Sainsbury Centre for Mental Health, 2003) it is therefore a major public health issue (See Box 2.1).

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[4] in 2009-10

Box 2.1 The burden of mental illness in the UK

- *At least **1** in **4** individuals are affected in any one year*
- ***1** in **10** children and young people aged 5-15 yrs suffer from a mental disorder*
- *Instances of common mental disorders such as depression and anxiety in people aged 6-64 yrs rose from **15.5%** in 1993 **to 17.6%** in 2007*
- *Numbers of people participating in Improving Access to Psychological Therapies (IAPT) services in the UK have increased from **182,000** in 2009/10 to **950,000** in 2013/14*
- *There was a **165% increase** in the prescribing of antidepressant drugs in England between 1998 and 2012 - an average increase in items prescribed of 7.2% p.a.*
- ***£53.6** billion represents the human cost of mental illness due to reduced quality of life, suffering, pain, disability and distress*
- ***£30.3** billion is the cost of output losses in the economy due to peoples inability to work*
- ***£21.3** billion is the annual cost of health and social care provided by the NHS and Local Authorities and informal care given by family and friends*
- ***£1.9** billion is spent on GP consultations yearly*
- ***£1.2** billion per year is spent on drug prescriptions*

Sources: Mental Health Foundation, 2013 (points 1 - 2); NHS Information Centre, 2009 (3); NHS Choices, 2013 and Health and Social Care Information Centre, 2015a (4); The Health Foundation and the Nuffield Trust, (Spence et al.) 2014 (5); Centre for Mental Health, 2010 (6-8); The Centre for Economic Performance, 2012 (9-10);

2.1.2. Depression

One form of mental illness which is becoming increasingly prevalent is depression. It is predicted that by 2020 depression will be a major cause of disability in the developed world (World Bank, 1993; Murray and Lopez, 1996; Marcus et al., 2012; WHO, 2012). The World Mental Health Survey found that on average, 1 in 20 people had an episode of depression in the previous year (Marcus et al., 2012) and for women in 'low and middle' and 'high' income countries in 2004, depression was the leading cause of the disease burden (WHO, 2008).

Public spending on anxiety and depression is continually rising and the cost of anti-depressants has grown dramatically. In 2010, the number of anti-depressant prescriptions dispensed in England was 42.8 million and by 2011 this number had risen to 46.7 million. This represents a cost of £270.2 million and implies an increase in cost of 22.6% in just one year (NHS Information Centre, 2012b). Between 2010 and 2011, anti-depressant drug prescriptions and their costs saw the largest increase of any drug category (Centre for Economic Performance's Mental Health Policy Group, 2012) and this trend has continued in 2014[5] (Health and Social Care Information Centre, 2015b).

The government is currently investing more on training therapists to co-ordinate talking or psychological therapies such as cognitive behavioural therapy (CBT) as part of Improving Access to Psychological Therapies (IAPT). In 2013-14, almost 950,000 people were referred into IAPT services for common mental health problems such as depression and anxiety disorders (Health and Social Care Information Centre, 2015a). Talking therapies such as CBT are recommended as one of the first options for the treatment of mild to moderate depression, and are recommended together with anti-depressant drugs for more severe cases(NICE, 2009b).

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[5] Includes prescriptions in the community for depressive illness, generalised anxiety disorder (GAD), obsessive-compulsive disorder, and panic attacks.

However, there have been problems with access to CBT services and long waiting times in the past, with only one in three people receiving CBT within six months of being referred and some having to wait over two years. Increased waiting times result in reduced treatment effectiveness and for many, the recommended number of sessions required for psychological therapies were also failing to be met[6] (We need to talk coalition, 2010). The Improving Access to Psychological Therapies (IAPT) programme set up by the Department of Health, aimed to tackle these issues by increasing significantly the availability of psychological treatments for depression and anxiety disorders within the NHS (DoH, 2012). Some of the initiatives of IAPT included providing funding towards training more people to deliver CBT services and making online CBT available.

Evidence suggests that online CBT is as effective as face-to-face delivery for depression (McCrone et al., 2004; Kessler et al., 2009; Gerhards et al., 2010; Hollinghurst et al., 2010; Sharry et al., 2013; Krusche et al., 2013), and is cost-effective compared to face-to-face CBT whether it be internet-delivered or therapist-delivered (McCrone et al., 2004; Gerhards et al., 2010; Hollinghurst et al., 2010). One organisation delivering internet-enabled CBT to nearly 1,000 NHS patients a month via computer, smartphone or tablet[7] claims that 52% of patients achieve recovery compared to the 46% average across IAPT therapies; and that often patients need fewer sessions (Ieso Digital Health, 2015). However it is not clear what effect the availability of online CBT has had on waiting times.

2.1.3. Dementia

Dementia is an umbrella term for a number of physiological symptoms caused when the brain is affected by certain diseases or conditions, such as thyroid problems or by the disease Alzheimer's (Alzheimer's Society, 2014a). Although dementia is a physiological rather than psychological condition, it affects cognitive function, overlaps with many of the symptoms of mental health problems, and is often related with depression.

The number of people living with dementia worldwide today is estimated at 44 million people (Alzheimer's disease International, 2014). In the UK, some 800-850,000 people currently have dementia and projections suggest this is likely to rise to one million by 2021 and to two million by 2051(Alzheimer's Society, 2014b). The total costs of dementia are estimated at £26 billion per year (Alzheimer's Society, 2014b) more than the costs of cancer, heart disease or stroke, and projections predict a rise to £27 billion by 2018 (Kane and Cook 2013). In addition being cared for by the state, there are an estimated 540,000 people in the UK who are the primary carers for people with dementia (Alzheimer's Society, 2014c). Given the costs of providing care, it is estimated that these carers save formal health and social care providers £11 billion per year (Alzheimer's Society, 2014b).

With an ageing population, addressing dementia is therefore a growing challenge within our society, with increasing numbers of people living with the condition (Knapp et al., 2007, Alzheimer's Society, 2012, 2014a). The importance of promoting dementia care and enabling sufferers to live 'well with dementia' was highlighted with the publication of the Government's National Dementia Strategy (DoH, 2009) which raised the profile of dementia within health and social care sector. Following on from this, the Prime Minister's Challenge on Dementia was launched in 2012 (and updated in 2015) with an aim to significantly improve the treatment and care of those with dementia (DoH, 2012, 2015). A state of the nation report on dementia care and support in England was published in 2013 (DoH, 2013). The Public Health England and Alzheimer's Society also launched a major TV and online

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[6] For mild to moderate mental illness for example, six sessions of CBT are recommended, whilst for severe mental illness up to 20 sessions are recommended. Currently, according to leading mental health charities, some people with severe mental illness are receiving as few as three sessions of CBT (We need to talk coalition, 2010).

[7] using online, text-based conversations

campaign in 2014 calling for 'Dementia friends' to change people's perceptions of the disease and to help create a more dementia-friendly society[8].

2.1.4. Social isolation

Mental wellbeing is affected by how connected to other people we feel, the links to, and support from families, friends, local communities and the wider society. This social capital has a positive effect on our health and happiness (Cooper et al., 1999; Pevalin and Rose, 2003; Morgan and Swan, 2004; Bird, 2007; Searle, 2008; Robitaille, 2010; Helliwell et al., 2013). Modern lifestyles have resulted in social isolation (Layard, 2005; James, 2007, 2008; Windle et al., 2011) and sadly, many adults and children are currently disconnected from other people, experiencing loneliness and isolation (Hall-Lande et al., 2007; Windle et al., 2011; Wood et al., 2012a). This isolation is frequently associated with older people, people with mental health problems, people with a disability, and impoverished and disaffected members of society (Mental Health Foundation, 2010; Windle et al., 2011). In a recent survey, people with dementia and their carers also said that they often feel lonely (44%) and not part of their community (34%) (Alzheimer's Society, 2014b). Social isolation has been shown to result in a reduced quality of life, depression and low self-esteem and can also predict mortality and morbidity (Uchino et al., 1996; Seeman, 2000; Brummett et al., 2001; Heikkinen and Kauppinen, 2004; Cornwell and Waite, 2009; Pearce and Pickard, 2012; Steptoe et al., 2013).

2.2. Mental health services and commissioning routes

Mental healthcare services address the treatment of the symptoms of mental illness and can take place in the community or in a more specialised setting. Social care services refer to care and support services for help with day-to-day life which may be necessary as a result of an individual's mental health needs (for more information on the distinctions between health and social care see Appendix B).

Health and social care in England is in a period of significant structural and financial change. Integration between health and social care has recently become a particular priority. Integrating physical and mental health has also been identified as a priority to ensure that both are given equal importance (DoH, 2014; NHS England, 2014a). Integrated approaches to local commissioning also have an important role to play in promoting mental wellbeing and preventing mental illness, as part of the local Health and Wellbeing Strategy.

Secondary and community healthcare service commissioning (including that of mental healthcare services) is now the responsibility of newly formed clinically-led organisations called Clinical Commissioning Groups (CCGs) (Bragg et al., 2014a). CCGs are responsible for managing the majority of NHS England's budget (£65.6 billion out of a total of £95.6 billion) and for commissioning a range of health services, including community health and rehabilitation care. When CCGs became responsible for managing the majority of the NHS budget, the remaining commissioning functions that had previously been the responsibility of the Primary Care Trusts (PCTs) were split between two organisations (Naylor et al., 2013a,b). Public health commissioning budgets were transferred to the 152 top-tier Local Authorities in England (county councils and unitary authorities) and NHS England (formerly the NHS Commissioning Board) became responsible for commissioning primary care and specialist services through its 27 area teams. These area teams also have a role in holding CCGs to account and providing them with support (Bragg et al., 2014b).

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[8] See https://www.dementiafriends.org.uk/

In addition, as part of the Health and Social Care Act (2012), a network of regional Health and Wellbeing Boards (HWBs) has been established in England. Each top tier and unitary local authority has its own HWB. The role of these HWBs is to improve health, mental health and social care provision and delivery by facilitating partnership between the CCGs and LAs and thus increasing the integration between the two services (Local Government Association, 2014). Public mental health is also a central part of the work of Health and Wellbeing Boards (JCPMH, 2013a). By conducting a joint health and social care needs assessment of their area population and subsequently developing a health and wellbeing strategy, the aim is to encourage coherent, joined-up and more effective commissioning, prioritise local activity and influence commissioning behaviour (Allen and Balfour, 2014; Ham et al., 2015). HWBs therefore consist of strategic commissioners of both health and social care from CCGs and LAs respectively. It was intended that the newly developed HWBs, convened by local authorities, would co-ordinate the activities of these various commissioning groups (Naylor et al., 2013a,b).

2.2.1. Public mental health

Public health specialists have been brought together into a single public health service under the newly formed Public Health England (PHE) (PHE, 2014) which sets out the strategic priorities for public health. Much of the responsibility for implementing public health however has now been passed to local authorities (LAs). The aims of bodies tasked with addressing public mental health, such as PHE, are to provide intelligence, inform the delivery of interventions and to contribute towards improved health and wellbeing and reduced mental disorder at a population level through a partnership of organisations (JCPMH, 2013b). Public health involves: i) assessing the risk factors for mental disorder and the levels of mental disorder and wellbeing; ii) the delivery of preventative mental health interventions in the general population; and iii) ensuring the prioritisation of services for people at 'higher risk' of developing mental disorder (JCPMH, 2013b).

2.2.2. Mental healthcare services

Mental healthcare services address the treatment of the symptoms of mental illness and can take place in the community or in a more specialised setting. Social care services refer to care and support services to help with day-to-day life which may be necessary as a result of an individual's mental health needs are structured under a tiered system in England, as shown in Figure 2.1.

Tier 1. Primary mental health
The first tier of mental healthcare services is primary mental health care, defined by the World Health Organisation as *"first line interventions that are provided as an integral part of general health care, and mental health care that is provided by primary care workers who are skilled, able and supported to provide mental health services"* (Funk and Ivbijaro, 2008). Primary mental healthcare comprises the identification, assessment and treatment of common mental health problems and in the UK, GPs are generally the first port of call for common mental health problems, such as anxiety and mild to moderate depression and about one in four of a GP's patients will need treatment for mental health problems (JCPMH, 2013a). Primary mental health also involves the monitoring the healthcare needs of people with a severe and enduring mental health problem, along with the provision of good quality information and sign posting services. NHS England is the statutory commissioner for primary mental healthcare in England.

Tier 2. Secondary mental health services
The second tier of mental healthcare services comprises secondary care. Community Mental Health Teams (CMHT) are central to secondary care service and they receive referrals from GPs and others in primary care. CMHTs typically make screening assessments before allocating patients to more

specialist assessments and interventions. In many areas, however the traditional CMHT is being re-structured into new specialist teams (RCPSYCH, 2015)[9]. CCGs commission tier 2 and tier 3 services.

Tier 3. Specialist mental healthcare services
In tier 3, community mental health services are supported by multi-disciplinary teams with a range of more specialised services including out-patients, specialist inpatient beds and crisis teams. At tier 3, the patients have more serious mental health issues and have more challenging behaviours; the therapeutic intervention is more intensive, and has higher levels of support and more contact time between service user and service provider; and the required support may include hospital admission (WAG, 2010).

Tier 4. Complex specialist mental healthcare services
Tier 4 mental healthcare comprises highly specialist inpatient, secure and residential services, such as those in prisons, high-secure units and Tier 4 Children and Adolescent Mental Health Services (CAMHS). NHS England is the statutory commissioner for tier 4 mental healthcare services in England.

Details of the links between the various health and social care organisations and the tiered mental health service provision in England are shown in Figure 2.1. The framework outlined in Figure 2.1 is for England only, as the structures and mechanisms for health and social care commissioning in Scotland, Wales and Northern Ireland are different. More details of the health and commissioning systems in the devolved nations can be found in Ham et al (2013) and in 'Understanding the new NHS' (NHS England, 2014b) and an overview is provided in Appendix C.

2.2.3. Commissioning for dementia care[10]

People affected by dementia may receive services commissioned by both health and social care providers, depending on the stage of onset and severity of symptoms. Dementia is often described in three stages (early, middle and late) and is a complex condition. People with dementia may experience problems communicating, may struggle to express their preferences and needs and may display behavioural and psychological symptoms of dementia.

In the pre-diagnosis or early stage of dementia, the patient may be living independently or being cared for by family and not receiving any health or social care. Once a diagnosis has been given (typically after a visit to the GP) the patient is likely to receive health care from the NHS via GPs, nursing teams or hospitals and social care services (such as day care, support services, home care, residential care, meals on wheels etc.) from Local Authorities, private businesses or the voluntary sector. This 'care' can constitute personal care, helping the person with everyday tasks such as getting washed or dressed, or can consist of medical or nursing care. When a person with dementia needs extended care, residential or specialist residential dementia care provision, they are likely to be receiving a care plan of services commissioned by both social and health care. Which services are available and who is providing them often varies locally.

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[9] or as in the case of North Essex for example into an 'Assessment and Access team' which after an initial assessment will then signpost the patient to other more specialist teams.
[10] Information from this section taken from Clark et al., 2013; Alzheimer's Society 2015.

Figure 2.1 Links between the various health and social care organisations and mental health services in England
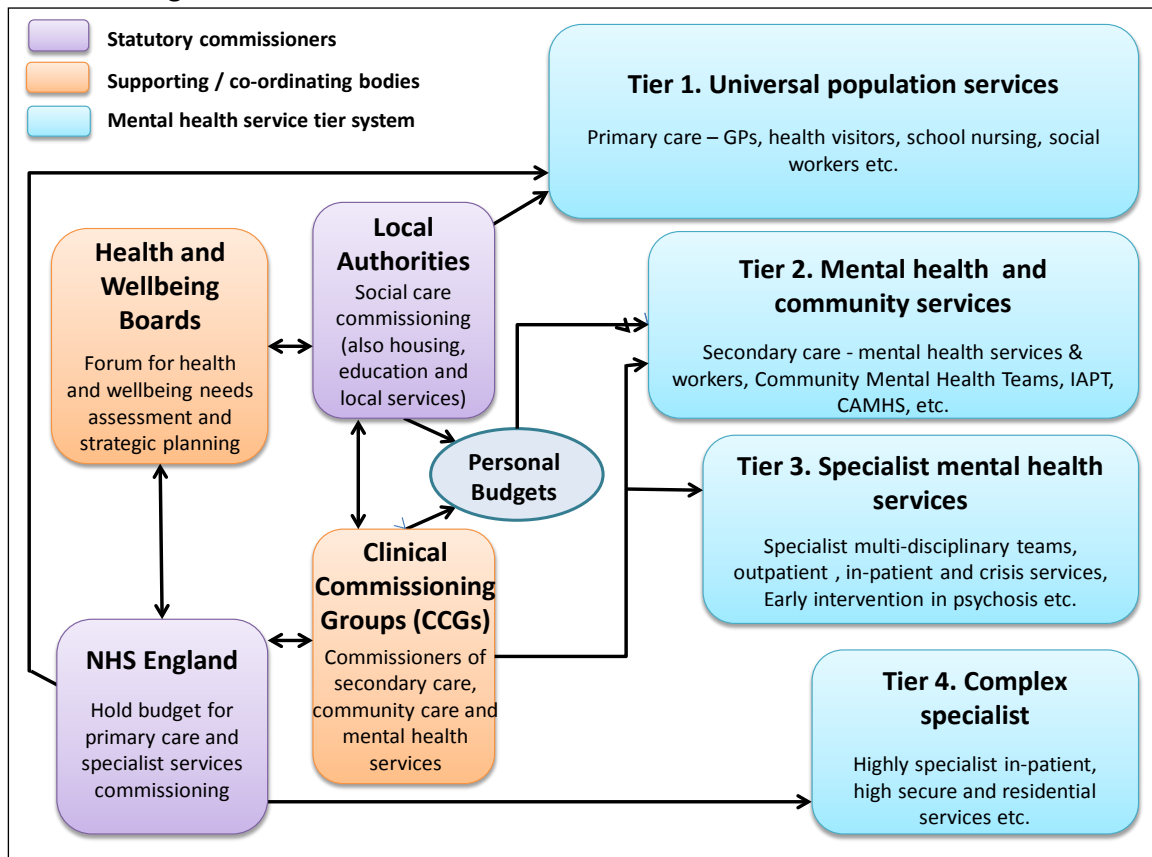
Source: Adapted from Bragg et al., 2014b; NHS England, 2014; and Surrey County Council http://www.surreyi.gov.uk/get/ShowImageVB.aspx?file=MH_figure14.jpg; Notes: Some CCGs also co-commission with NHS England some of the GP services; Patients in receipt of a personal health or social care budget can commission their own services (but currently only a very small proportion of service-users do so); Commissioning structures for dementia are different, see section 2.2.3;

2.3. Health benefits of contact with nature

2.3.1. Evidence of the health benefits of contact with nature

There is currently a convincing evidence base to show that exposure to the natural environment positively affects physical health and mental wellbeing. Originating from the much-quoted and widely cited studies of Moore (1982) and Ulrich (1984) on 'viewing' nature, later studies have demonstrated significant corroborative findings from a variety of 'natural' settings[11] and different levels of engagement with nature (St Leger, 2003; Tabbush & O'Brien, 2003; Pretty et al., 2004,2005a,b,2007; Louv, 2005; Driver et al., 2006; Van den Berg et al., 2007; Barton et al., 2009; Hansen-Ketchum et al., 2009; Thompson Coon et al., 2011; Ward-Thompson et al., 2012; White et al., 2013; Brown et al., 2013; Gladwell et al, 2013; Bragg, 2014; Alcock et al., 2014). There have also been a number of comprehensive reviews of this published nature, health and wellbeing literature (Rohde & Kendle, 1994; Seymour, 2003; Frumkin, 2003; De Vries et al., 2003; Health Council of the Netherlands, 2004; Maas et al., 2006; Pretty et al., 2005a, b; Pretty et al., 2006; Bird, 2007; Barton

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[11] from the open countryside, fields and forests, remote wilderness, parks and open spaces, to street trees, urban greenspaces, allotments and gardens.

and Pretty, 2010; Pretty et al., 2011; O Brien and Morris, 2013; Allen and Balfour, 2014), with interest in this field of research from a cross-section of disciplines[12].

2.3.2. Mental health benefits of contact with nature

The value of natural, open spaces to our psychological health has long been recognised (Jackson, 1979; Taylor, 1979; Altman & Zube, 1989; Rubinstein, 1997) and more recent studies have explored the effects of nature on mental health, wellbeing and happiness more closely (Hartig et al., 2003; de Vries et al., 2003; Grahn & Stigsdotter, 2003; Ottosson & Grahn, 2005; Berman et al., 2008; Maas et al., 2009; Weinstein et al., 2009 van den Berg et al., 2010; Nisbet & Zelenski, 2011; Ward-Thompson et al., 2012; White et al., 2013, Bragg, 2014; Alcock et al., 2014)[13]. In a recent report looking at the microeconomic evidence for the benefits of investment in the environment (Rolls and Sutherland, 2014), the evidence for the natural environment contributing to mental health is considered as 'strong'. Rolls and Sutherland conclude that as much of the published research is cross-sectional[14] or longitudinal[15], when combined this evidence is convincing.

Ward Thompson et al. (2012) identify three main pathways that the natural environment provides that contribute to mental health benefits: i) directly through the restorative effect of nature; and then in two indirect ways, ii) through providing opportunities for positive social contact; and iii) through providing opportunities for physical activity. Much of the evidence of the health and wellbeing benefits of nature does indeed highlight the 'restorative' effect that natural environments can have on humans. From the published literature three key theories offering explanations relating to the relationship of man with nature have emerged: i) the Biophilia hypothesis (Wilson, 1984); ii) the Attention Restoration Theory (ART) (Kaplan and Kaplan, 1989); and iii) the Psycho-evolutionary stress reduction theory (PET) (Ulrich, 1981), and these all focus on this restorative effect of nature (Barton et al., 2009, Wood, 2012). An overview of these three theories can be found in Appendix D.

Specific psychological benefits highlighted in research include reduced stress and anxiety, improvements to mood, increased perceived wellbeing, improved concentration and attention and cognitive restoration. Other implications from research are that gardens and nature in hospitals enhance mood, reduce stress and improve the overall appreciation of the health care provider and quality of care (Cooper Marcus and Barnes, 1999; Whitehouse et al., 2001; Sempik et al., 2003). The design of landscaped grounds is also of great importance to elderly residents in retirement communities (Chalfont and Rodiek, 2005; Chalfont, 2007). The incorporation of natural elements within the setting enhances psychological, social and physical wellbeing among residents and almost all people living in retirement communities say windows facing green landscapes contribute to wellbeing (Browne, 1992; Pretty et al., 2003). The benefits of activities in nature for older people (often suffering with dementia), in care homes has also been highlighted (Chalfont, 2007, 2008).

A significant relationship between the proximity of urban open green spaces, visiting frequency, duration of stay and the level of self-reported stress experienced has also been reported (Grahn and Stigsdotter, 2003) and the quantity of available greenspace has been correlated with longevity; a

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[12] including psychology, environmental health, environmental conservation, ecology, horticulture, landscape planning, urban design, leisure and recreation, public health policy and medicine.

[13] The concept of the links between health and the natural world, particularly in terms of mental wellbeing and emotional attachment to nature, also forms the basis of ecopsychology, which considers *"a connection between ourselves and the rest of nature to be essential to mental, and thus, ecological health"* (Amel et al.,2009, p14).

[14] examining differences in mental health across groups of individuals.

[15] examining differences in the mental health of individuals across time.

reduced risk of mental ill health and lower levels of income-deprivation related health inequality (Takano et al., 2002; De Vries et al., 2003; Mitchell and Popham, 2008; Alcock et al., 2014). Throughout this published evidence base, there is therefore consensus that nature contributes to enhanced wellbeing, mental development and personal fulfilment. Natural, green environments are places to relax, escape and unwind from the daily stresses of modern life; places to socialise and be physically active, thus having a positive effect on our wellbeing.

2.3.3. Benefits of contact with nature for people living with dementia

There is also emerging evidence of the benefits of engagement with the natural environment for those living with dementia. Research suggests that social interaction and access to the outdoors and nature is important for people living with dementia and that these activities have an important role in their quality of life (Mapes and Hine, 2011; Chalfont, 2007; Clark et al., 2013). In a recent review of the literature relating to dementia and contact with nature, Clark et al (2013) found the benefits of nature contact for people with dementia included: improved emotional state: reduced stress, agitation, anger, apathy and depression; improved sleeping and eating patterns; improved verbal expression, memory and attention; improved awareness, sense of well-being, independence, self-esteem and control; as well as improved social interaction and a sense of belonging. The study found that the benefits for people living with dementia from access to the natural environment is generally short term and that there is little evidence that links the severity of the dementia condition to the benefits from access to the natural environment.

Recommendations from this research suggest that as approximately two-thirds of people living with dementia currently live in their own homes and tend to be at the earlier stages of dementia, the interaction of this group with nature should be the focus of any future intervention. Finally the report highlights the potentially large health and social care cost savings to be made by investing in alternatives to medication that enable people to live well early on in the disease process.

This work (Clark et al., 2013) is being used to help shape the design, targeting and costing of a large scale demonstration project to enable people living with dementia to access the benefits associated with the natural environment. Dementia and Engagement with Nature (DEN) is being run by Dementia Adventure working with Innovations in Dementia, the Mental Health Foundation and Natural England[16].

2.4. Green care, Nature-based interventions or Ecotherapy?

The evidence for the general population suggests that activities in natural settings can have therapeutic properties, with greater benefit often experienced by those starting with lower wellbeing (e.g. lower levels of self-esteem and mood) (Pretty et al., 2007; Barton and Pretty, 2010). Therefore, when these activities in nature are delivered as facilitated interventions, they can provide a range of applications for less healthy or vulnerable groups within society. Individually these interventions vary in context, client group and mode of delivery and comprise approaches such as Social and Therapeutic Horticulture, Animal Assisted Therapy, Care Farming and many more. Collectively however, such nature-based interventions have been termed 'green care' (Pretty, 2006; Hine et al., 2008a, c; Sempik et al., 2010; Sempik and Bragg, 2013), 'ecotherapy' (Mind 2007, 2013; Bragg et al, 2013) or simply 'nature-based interventions'.

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[16] See http://www.mentalhealth.org.uk/our-work/research/dementia-engagement-nature/, http://www.dementiaadventure.co.uk/consultancy/den-project and https://www.gov.uk/government/news/research-project-surveys-views-on-dementia-nature-and-outdoor-activity for more details.

There are now numerous local and national organisations offering a range of these nature-based interventions as specifically-designed and structured health or social care treatment interventions for particular vulnerable groups in society. Currently these projects are using different language to describe their activities and benefits, both on an individual and a collective level, which has led to some confusion amongst health and social care commissioners.

As a result, many of these 'nature-based' organisations have expressed the need for service providers to work together to improve the coherence of these services and streamline access to these services for healthcare commissioners. The next chapter in this report (Chapter 3) addresses the study undertaken to clarify the language and simplify the message to commissioners. Then in chapter 4, nature-based interventions are defined and the evidence of effectiveness is presented.

3. Towards a common language for nature-based interventions

Historically nature-based interventions have been collectively termed 'green care, more recently some organisations have preferred 'ecotherapy' as a collective term, whilst others have found the term 'nature-based interventions' to be an effective way of describing these approaches. As previously mentioned, many green care organisations have expressed the need to work together to improve coherence of these services, to simplify the 'message' for commissioners, and to streamline access to these services for health commissioners. Therefore as part of this research, people working in the field of green care were asked via an online questionnaire for their opinions regarding the development of a common language in order to communicate more effectively with commissioners. Key results are highlighted in this section, the green care language questionnaire can be found in Appendix E and more details and further results can be found in Appendix F.

3.1. Methodology

As part of the action to remove the issues and limitations associated with previous language within the green care field, a questionnaire survey was conducted to explore the current use of the terms 'ecotherapy' vs 'green care' vs 'nature-based interventions'. The questionnaire asked participants various questions about the terms that they currently use; whether they recognised the need to encourage adoption of a common language to promote clarity within the sector; and whether they think it is necessary to make a distinction between specifically designed and commissioned interventions for the vulnerable and public health initiatives for the general population.

The questionnaire was available in hardcopy and online (via Survey Monkey) and was disseminated across various green care networks and at conferences and other events where nature-based interventions were promoted. The aim was to reach a range of participant from practitioners to commissioners in order to be as representative as possible.

3.2. About the respondents to the survey

There were a total of 252 respondents to this green care language questionnaire and around half (52%) were providers of some kind of treatment intervention for vulnerable groups; a quarter provide nature-based health promotion activities for the general population and others were researchers, interested parties, health or social care practitioners, support workers or those who described themselves as 'other' (Figure 3.1).

Figure 3.1 Respondents to the survey

Health or social care practitioners 5%

Other 7%

Researchers and interested parties 12%

Providers of nature-based activties for the general public 23%

Providers of nature-based interventions for vulnerable groups 53%
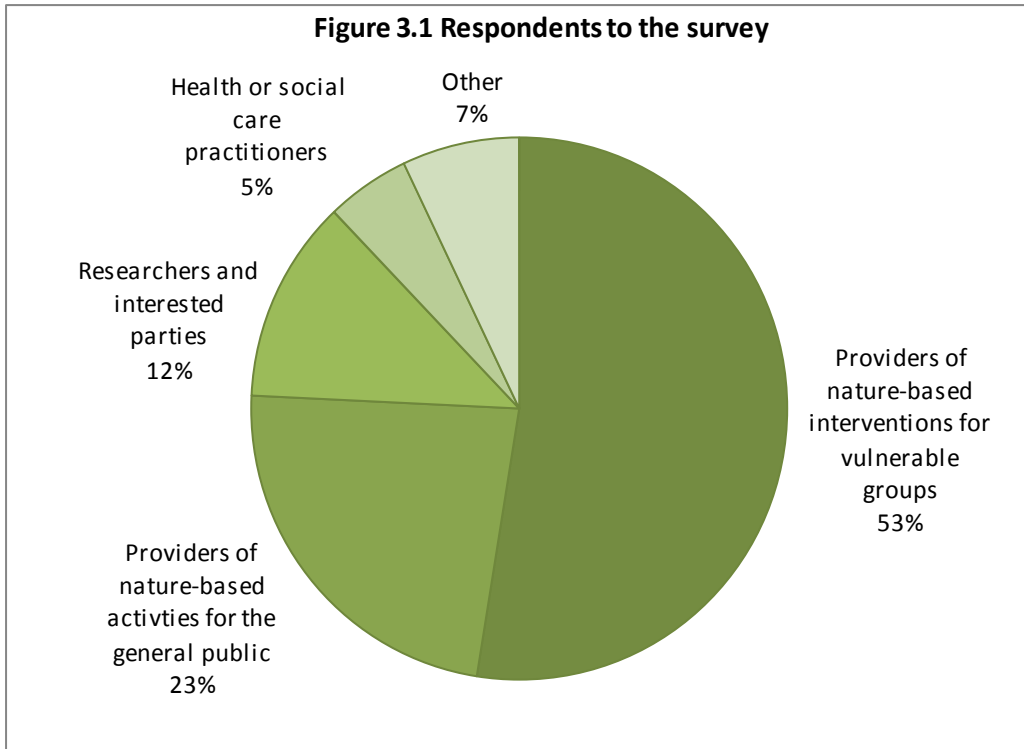
In terms of the type of nature-based treatment intervention that respondents were engaged in, 40% were delivering Social and Therapeutic Horticulture (STH), 36% were providing care farming services, 6% were providing environmental conservation programmes as an intervention, and 8% were providing two or more different types of nature-based treatment intervention. For those providing nature-based projects for the general population, the majority (60%) were providing gardening, food growing or horticultural activities, and others were providing environmental conservation, green exercise or farming based activities (see Figure 3.2).

Figure 3.2 Type of nature-based service provided by respondents

■ Nature-based interventions for vulnerable groups
□ Nature-based activities for the general public

Percent of respondents

STH | Environmental conservation | Green exercise | Care farming | AAI | Nature arts and crafts | Other | 2 or more types

3.3. Views on green care terminology

The majority of participants in the survey agreed that:
  i) it is important that the different types of nature-based treatment intervention use one name to collectively promote the sector (63%);
  ii) there is a need to present a clear message to commissioners (60%);
  iii) the sector should choose one collective term for these interventions and encourage everyone to use it (59%)
  iv) participants would be willing to use the collective term for the sector that the majority of people chose even if it is not the term they preferred (80%).

However when respondents were asked which term they currently use to describe the whole range of nature-based interventions[17], approximately the same number of people chose each of the three main options green care, nature-based interventions and ecotherapy[18]. Further comments are shown in Box 3.1 and more details of collective name preferences of the different groups are as follows:

Preferences grouped by type of participant -
  • providers of nature-based treatment interventions for vulnerable people - prefer green care/ ecotherapy / nature-based interventions
  • providers of nature-based health promotion activities for the general population - prefer nature-based interventions /green care
  • health practitioners and other support staff prefer nature-based interventions followed by green care
  • Researchers, interested parties and 'others' all prefer nature-based interventions

Preferences grouped by nature-based intervention provided -
  • STH – prefer green care /ecotherapy
  • Care farms - prefer green care /ecotherapy
  • Environmental conservation interventions– prefer nature-based interventions /ecotherapy
  • GE interventions - prefer green care
  • Everything else - green care / nature-based interventions

Other key comments relating to a collective term for the sector can be found in Appendix F.

3.4. Distinctions and working together

The majority of participants in this survey (64%) felt that it is important and necessary to make a distinction between i) specifically designed and commissioned interventions for the vulnerable, and ii) public health type initiatives for the general population. When asked whether green care prov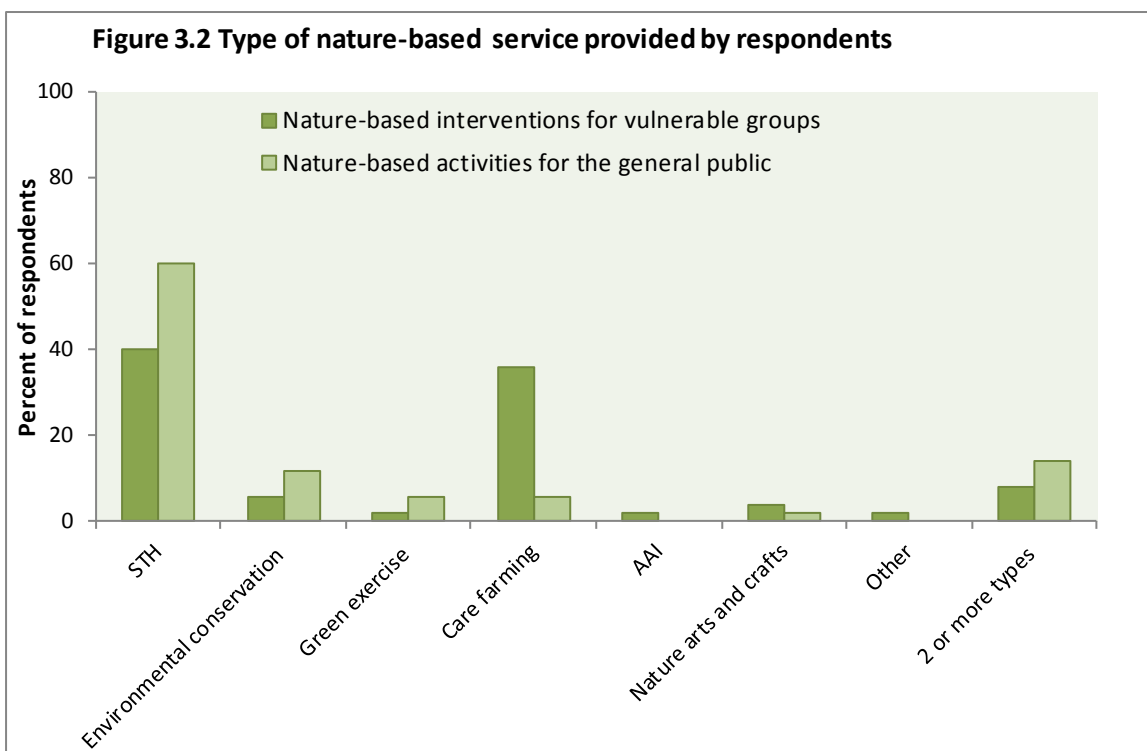iders should work together to provide a larger 'offer' to commissioners such as Clinical Commissioning Groups for example, 72% of participants agreed. However not everyone was convinced that regional groupings were the right approach and that by client group or type of care may be more appropriate.

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[17] *The following question refers to nature-based interventions which are specifically designed for particular vulnerable groups in society as a commissioned treatment, therapy or care intervention and does not refer to nature-based activity sessions that are run for the general population– i.e. activities, initiatives or events for people of all abilities, which are inclusive and non-specific.*
[18] Unfortunately, 90 people (40%) gave a name for their individual type of intervention rather than a collective name for the sector, leaving 141 people who answered the question.

3.5. Key Findings

There were five key findings of this consultation:

- There is consensus for consistency in the language used to describe the sector.

- No clear preference for a collective name emerged, but some negative comments were received about ecotherapy and concerns about not continuing to use the term green care.

- In order to provide clarity and to aid promotion of the green care sector, participants felt that it is necessary to make the distinction between commissioned interventions for the vulnerable and public health initiatives for the general population.

- Green care providers should work together to provide a larger 'offer' to commissioners such as CCGs.

3.6. Outcome

- Possible solutions to the language debate based on the key findings of this chapter could be 'Green care: Nature-based interventions for vulnerable groups' or 'Green care: Nature-based interventions for individuals with a defined need[19]'

- In this report the terms 'Green care' and 'nature-based interventions' will be used interchangeably to collectively describe these approaches.

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[19] 'Individuals with a defined need' was suggested as an alternative to the term 'vulnerable' by some respondents to the survey.

4. Evidence of effectiveness for green care – A review of the literature

This chapter gives an overview of green care and highlights the main types of green care currently operating in the UK, before clarifying the distinctions between 'green care' and 'nature-based projects used in health promotion and health prevention'. The methods used in the literature review are then outlined, together with an overview of assessing standards of evidence and finally the results of the literature review are given for three types of green care - Social and Therapeutic Horticulture, environmental conservation treatment interventions and care farming.

4.1. Overview and definitions of green care

Sempik and Bragg (2013) concluded that: *"Green care utilises plants, animals and landscapes to create interventions to improve health and wellbeing (i.e. it does not represent a casual encounter with nature)"* (p 14)[20]. As discussed in Chapter 3, green care is a collective term used to describe a variety of nature-based treatment interventions for individuals with a defined social or medical need rather than nature-based health promotion activities for the general population. The definition has therefore subsequently been refined to: *"Green care: nature-based therapy or treatment interventions - specifically designed, structured and facilitated for individuals with a defined need"*.

Using nature to nurture good health is not a new idea, as prisons and hospitals for example have historically been associated with having different outdoor therapeutic spaces (see Appendix G). Green care interventions still take place in a number of different natural contexts and consequently involve various landscape types, all of which allow slightly different approaches. This results in a wide range of interventions, enabling the choice of the most appropriate treatment option for a specific individual as 'bespoke' care (Hine et al., 2008c). Although there is much diversity, the different approaches share commonalities, including:

i) The contact with nature – i.e. using a coherent and deliberate strategy to generate health, social or educational benefits using nature.
ii) Provision of facilitated, regular and specific interventions for a *particular* participant (or group of service users), rather than simply a 'natural' experience for the general public (Sempik et al 2010; Sempik and Bragg, 2013).
iii) Services which are commissioned by a variety of different commissioning bodies and individuals.

These nature-based interventions are usually 'therapeutic' in nature although some (a minority) also include formal therapy (e.g. counselling sessions, CBT, psychotherapy etc.) as an integral part of the programme (Bragg et al., 2013). Currently, a wide range of vulnerable groups benefit from such nature-based interventions, including (but not restricted to): people with mental health problems, people experiencing from mild to moderate depression, people with dementia, adults and children with learning disabilities, adults and children with ASD, those with a drug or alcohol addiction history, disaffected young people, and adults on probation.

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[20] Green care also provides care and support to enable people to maintain a better quality of life (i.e. although many of the approaches are termed 'therapies' or 'therapeutic', they may be concerned with providing care, support, training and other opportunities rather than 'curing' conditions – e.g. in the case of people with learning difficulties, or dementia for example).

4.2. Types of green care

There are many different types of green care intervention currently in use in the UK (see Figure 4.1) including: i) Social and Therapeutic Horticulture (STH) (including Horticultural Therapy (HT) and Food growing as an intervention; ii) Care farming; iii) Environmental conservation (as an intervention); iv) Animal Assisted Interventions (AAI); v) Green exercise as an intervention; vi) Ecotherapy[21]; and vii) Wilderness Therapy.

Short summaries of the most common green care interventions follow in section 4.2.1, but the three main types of green care -social and therapeutic horticulture, care farming and environmental conservation as a treatment intervention - are discussed in more detail in section 4.4.

4.2.1. Main types of green care in the UK

Social and Therapeutic Horticulture (STH), Horticultural Therapy (HT) and food growing as an intervention
Essentially, STH is using gardening and plants to help individuals develop wellbeing and this can be done through spending time in gardens, participating in gardening activities or doing something more active such as growing food (Mind, 2013). HT has been used as a more formal therapy or as an add-on to therapy for many years and there has been a steady rise since the 1980s in the numbers of garden projects in the UK that offer both STH, HT (Hine et al., 2008a, c) and more recently Food growing as a treatment intervention (Schmutz et al., 2014).

Care Farming
Care farming (sometimes called social farming) is defined as the therapeutic use of agricultural landscapes and farming practices (Hassink, 2003; Haubenhofer et al., 2010; Care Farming UK, 2015). On care farms, components of either the whole or part of the farm are used to provide health, social or educational care through a supervised, structured programme of farming-related activities.

Environmental conservation (as an intervention)
Facilitated environmental conservation work has increasingly been used as a means of delivering various health, wellbeing and social benefits for a variety of marginalised groups (Bragg et al., 2013a), and as commissioned programmes these are considered a form of green care. In these initiatives structured, facilitated activities take place, specifically designed both for the conservation and management of natural places; and for the health and wellbeing of participants.

Animal-Assisted Interventions (AAI)
Animal-Assisted Interventions is the general term used for a variety of ways of utilising animals in the rehabilitation or social care of humans (Kruger and Serpell, 2006; Muñoz et al., 2011). AAI includes both i) AAA - activities in which animals are present and are considered to have a therapeutic effect (e.g. feeding livestock, petting animals, collecting eggs etc.) and ii) the more formal Animal Assisted Therapy (AAT) - a specific goal-directed intervention where an animal is an integral part of the treatment process which is directed, documented and evaluated by professionals (e.g. equine assisted therapy, pet therapy, and dolphin therapy) (Sempik and Bragg, 2013).

Green exercise as a treatment intervention
Green exercise has previously been defined as engaging in physical activities whilst simultaneously being exposed to nature. Green exercise therapy as a treatment option typically involves

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[21] Ecotherapy (in its specific rather than generalised meaning) is a psychological nature-based approach that is rooted in the experience of nature, which acknowledges the interdependence of human health with the health of the environment (Chalquist, 2009).

participating in green exercise activities (such as walking) which are facilitated and led by an instructor (Sempik et al., 2010). Therapeutic green exercise initiatives can include those organised as groups specifically (and solely) for a particular client group; and those who integrate vulnerable people with group members from the general population.

Ecotherapy
Ecotherapy (as a specific rather than generic term) uses activities and exercises that emphasise the notion of "*mutual healing and growth*" (Chalquist, 2009) where the reciprocity between human and nature enhances an individual's wellbeing, which then promotes positive action towards the environment, which in turn improves community wellbeing (Pedretti-Burls, 2008). Ecotherapists develop and deliver or facilitate specific experiential nature-based activities designed specifically to connect people with individual environmental action (and collective responsibility for the planet) (Burls and Caan, 2005; Burls, 2005, 2007).

Wilderness therapy
Immersion in natural, wild and wilderness settings has increasingly been used to provide a range of health and development opportunities, known as wilderness therapy. Wilderness therapy is defined as *"an experiential programme that takes place in wilderness or a remote outdoor setting"* (Conner, 2007), where a range of personal development and wellbeing opportunities are provided, through immersion in natural, wild, and wilderness settings. Wilderness therapy programmes are usually supervised by trained health care professionals and tend to comprise two elements, i) using nature as 'co-therapist'; and ii) using therapeutic activities (including formal therapy) in a wilderness location.

Figure 4.1 The range of nature-based interventions in the green care sector

Source: Adapted from Hine et al., 2008; Bragg et al., 2013 and Bragg 2014
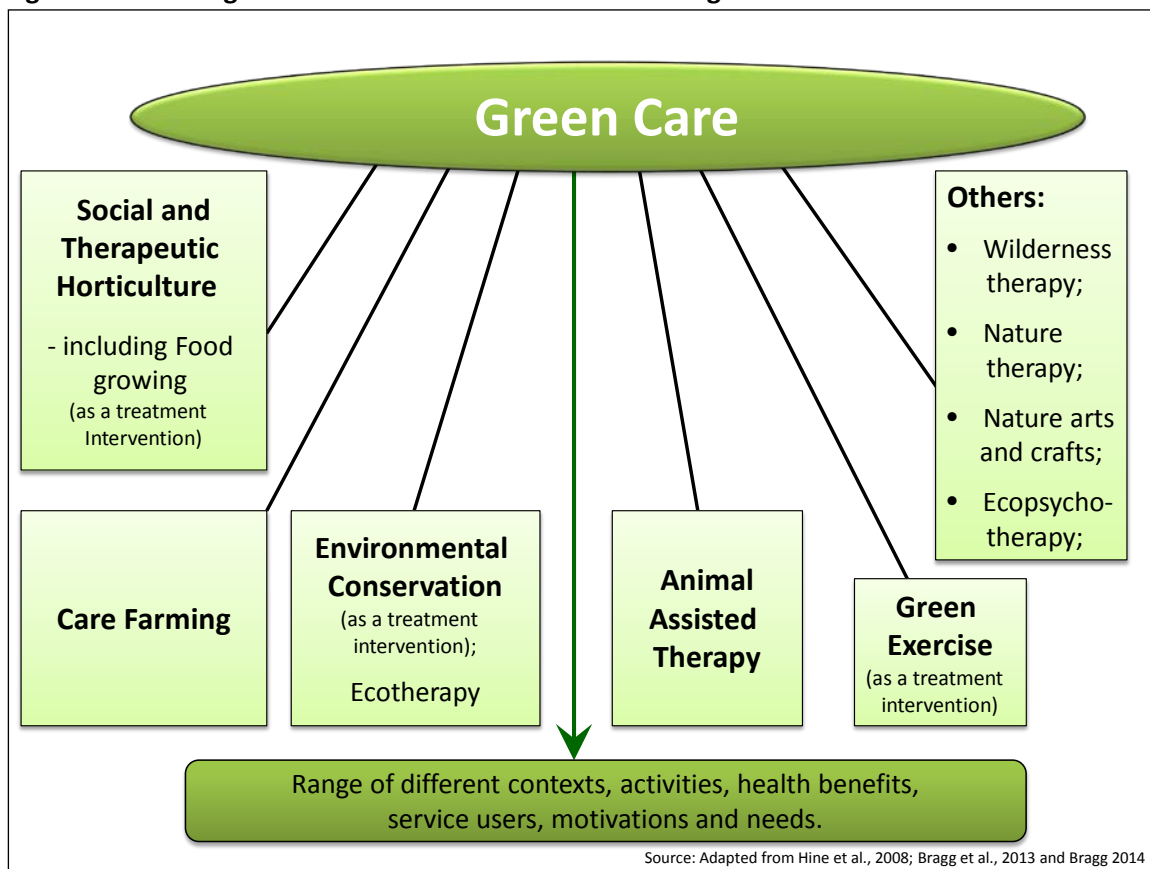
Notes: Social and Therapeutic Horticulture, Care Farming, and Environmental conservation as a treatment option are the main types of green care currently available in the UK, followed by Green exercise interventions

(such as walking programmes) and Animal Assisted Therapy (including equine-assisted therapy). Other green care interventions exist but are on a smaller scale and so have been grouped together in the 'Other' box. Food growing as a treatment intervention has been grouped with STH as the activities are largely identical and Ecotherapy (in its specific sense) has been grouped with environmental conservation as the activities are largely identical and the ethos similar.

4.2.2. Distinctions between 'green care' and 'nature-based projects in health promotion'

In addition to commissioned nature-based interventions designed for use as a treatment, care or therapy intervention for those with a defined need – green care, there are also many nature-based projects aimed at ill-health prevention through promoting healthy lifestyles in the general population.

These health promotion projects are typically initiatives run in natural spaces (such as community gardens, nature reserves, woodlands etc.) or projects offering nature-based activity sessions (community food growing, bushcraft, healthy walks etc.). Nature-based health promotion initiatives are often run in partnership with land management organisations, community groups and schools. Participants usually self-refer to these types of projects although they are often promoted and recommended by health professionals as opportunities for people to spend time outdoors and to become more physically active and socially included.

However, as these initiatives are usually designed for the general population or specific groups within the general population rather than as part of a treatment or care package for a particular individual with a defined need, they therefore fall under the realms of public health.

In reality however, these distinctions are sometimes less clear. Some green care providers also offer nature-based activities for the general population and vice versa, so inevitably there is some overlap within and between individual projects. In addition, people from the general population attending health promotion initiatives may also be vulnerable but are not attending the project as part of their care package, and some projects work with participants who are 'well' and those who are 'ill' simultaneously.

Figure 4.2 further clarifies the distinctions between green care and health promotion by identifying 3 key levels in which a person may engage with nature:
- i) nature as part of **everyday life**, including both nature-based employment and recreational activities;
- ii) nature activities as part of **health promotion**, healthy lifestyles or ill-health prevention; and
- iii) nature as a therapeutic intervention – **green care**.

Figure 4.2 The different contexts in which an individual may engage with nature

Everyday life – *General population*	Health promotion – Nature-based activities *General population*	Green Care – Nature-based therapy or treatment intervention *People with a defined need*
Experiencing nature		
View from window (at home or work)	Restorative landscapes and gardens	
Green exercise (e.g. walking, running cycling in nature etc.)	Green exercise initiatives (e.g. Walking for Health)	Green exercise (as a treatment intervention) Nature therapy; Wilderness therapy
Interacting with nature		
Gardening/Horticulture (at home or work)	Social and Therapeutic Horticulture (STH) Community food growing Community gardening	Social and Therapeutic Horticulture (STH) Community food growing (as a treatment intervention) Horticultural Therapy (HT)
Forestry, environmental conservation (at work or at home)	Environmental conservation groups	Environmental conservation (as a treatment intervention) Ecotherapy
Farming	Community farming; city farms; one-off care farm visits	Care Farming
Human Animal Interactions Animal-based recreation (e.g. dog walking, horse riding etc.)	Animal Assisted Activities (AAA)	Animal Assisted Therapy (AAT)

Source: Adapted from Haubenhofer, Bragg et al., 2010; Sempik and Bragg, 2013; Bragg 2014

Explanatory notes: The 3 columns represent the different contexts in which an individual may engage with nature. On the left, the *'Everyday life'* column highlights various situations in which an individual engages with nature as part of their normal lifestyle, including everyday leisure or work activities. People usually make a conscious choice to incorporate these nature-based activities into their lifestyle and have the ability and opportunity to do so.

The middle column *'Health promotion'* outlines a variety of existing group projects and initiatives which aim specifically to encourage individuals, communities and disadvantaged groups to benefit from nature-based activities in order to become more active, to have more social contact, to increase wellbeing or in the case of community food growing, to eat more healthily. People who attend these initiatives may not have the opportunity or ability to engage with nature as part of their 'usual' lifestyle and can attend these health promotion projects on either a regular or ad hoc basis. They may or may not be 'vulnerable' and will have joined the project on their own volition, or have been advised or suggested to join by a health, social or community worker, by a family member or friend. Funding is usually for the project as a whole and may come from public health, local authority grants or from the voluntary or private sector.

On the right, the *'Green care'* column represents the various nature-based interventions which have been specifically commissioned for an individual with a defined health or social need as part of their care or treatment package. People attending these interventions will follow a facilitated and structured programme, on a regular basis; will have defined needs and outcomes; and the service is usually commissioned by health or social care (although service users in receipt of a personal budget may commission their own services). Funding is paid per individual for the care/ treatment service provided by the intervention.

The green arrows suggest that these three columns are actually stages on a continuum. As one moves from left to right from everyday life to green care (top arrow), the needs of the individual become more acute, the support/care required is more intensive and the cost of the service increases. However what makes nature-based interventions so unique is the ability to reverse the trend and move from right to left (bottom arrow) as the individual's wellbeing improves. The existence of associated projects can (where appropriate) help an individual move on from needing the services of a green care intervention, to maintaining their improved wellbeing state by attending a health promotion initiative, and then to progress further by choosing to incorporate nature-based activities and healthier behaviours into their everyday lives, thus creating a habit for life.

4.3. Methodology

In order to gain an overview of impacts and mental health improvements stemming from green care, a review of evidence relating to social and therapeutic horticulture, environmental conservation interventions and care farming was conducted. This review represents a literature review rather than a systematic review of the literature[22] and involved a purposive search of the literature. Studies which involved care farming, STH and environmental conservation interventions for people with mental ill-health were sought, where mental health outcomes were being assessed and where positive improvements were found. This literature review used the Nesta standards of evidence approach (see section 4.4) as it was considered appropriate for innovative green care interventions and for the remit of this study. The published literature for the three types of green care was classified by the first three of the five levels identified by Nesta.

Searches used online tools like Google Scholar and publicly available search engines as well as suggestions made from academics and experts working within green care. Peer-reviewed scientific papers[23] were accessed were appropriate and available but the review did include more robust studies from the grey literature base. Searches included the terms: green care, ecotherapy, nature-based interventions, STH, environmental conservation, care farming, social farming, nature-assisted therapy, mental healthcare etc.

4.4. An overview of assessing standards of evidence

There are a number of methods that have been developed to 'grade' the standard of evidence used to show impact and effectiveness and various structures and frameworks have emerged to indicate how this evidence is collected, interpreted and assessed (Puttick and Ludlow, 2013).

Systematic reviews are one way to critically appraise studies in a particular field. A systematic review addresses a clearly formulated question – such as the effectiveness of an intervention for a particular patient group or condition and follows an established protocol. Once this question has been developed *"All existing primary research published on a topic that meets certain criteria is searched for and collated, and then assessed using stringent guidelines, to establish whether or not there is conclusive evidence about a specific treatment"* (Cochrane Library, 2015). All reviews are then held in a library and are available to use for informing policy and practice. In primary healthcare research and policy, Cochrane Systematic Reviews[24] are internationally recognised as being of high standard and in social welfare research it is the Campbell Systematic Review[25].

Although systematic reviews of the literature are considered the gold standard these are often time and resource heavy and as a result are often beyond the reach of many evidence gathering projects. There are also arguments that these reviews are not always appropriate for non-clinical or innovative interventions or that they only consider a 'narrow', primarily quantitative type of evidence[26]. Other types of review have subsequently been developed and are often used (including

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[22] A literature review qualitatively summarises evidence on a topic using informal or subjective methods to collect and interpret studies and a systematic review is a high-level overview of primary research on a specific question that identifies, selects, synthesises and appraises all high quality research evidence relevant to the question (Kysh, 2013).

[23] Written in English

[24] See: http://uk.cochrane.org/

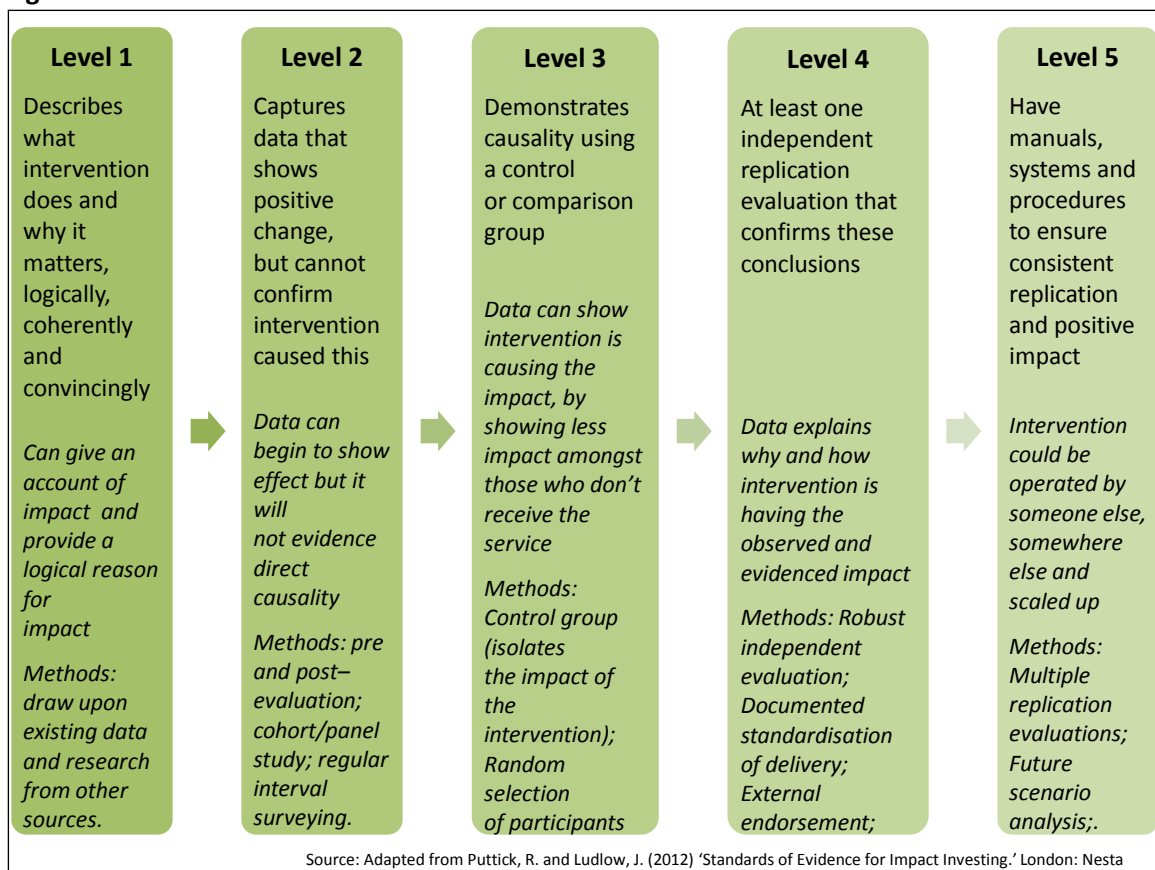[25] See: http://www.campbellcollaboration.org/c2_systematic_reviews/

[26] For more information see: Puttick, R. 'Day 2: Enabling innovation and evidence to co-exist.' in 'The Ten Steps to Transform the Use of Evidence.' London: Nesta. Available at: http://www.nesta.org.uk/library/documents/TenStepsBlog.pdf

literature reviews, meta-analyses and mixed-method reviews for example) and although they adopt a different approach to the more formal Cochrane type review process, they also employ a logical approach to assessing standards of evidence. For more information on the differences between a literature review and a systematic review, see Appendix K.

Nesta[27] is an innovation charity which has been exploring alternative ways of assessing the quality of evidence amid concerns that the collection of evidence may actually hinder innovation. In the standard of evidence system that they use, Nesta aims *"to find alignment with academically recognised levels of rigour, whilst managing to ensure impact measurement is appropriate to the stage of development of a variety of different products, services and programmes"* (Puttick and Ludlow, 2013, p1).

As highlighted in section 4.3, in this study the Nesta standards of evidence approach is used and the published literature for the three types of green care is classified in section 5.1 by the first three of the five levels identified by Nesta (in Puttick and Ludlow, 2013) - see Figure 4.3.

Figure 4.3 Standards of evidence

Level 1	Level 2	Level 3	Level 4	Level 5
Describes what intervention does and why it matters, logically, coherently and convincingly	Captures data that shows positive change, but cannot confirm intervention caused this	Demonstrates causality using a control or comparison group	At least one independent replication evaluation that confirms these conclusions	Have manuals, systems and procedures to ensure consistent replication and positive impact
Can give an account of impact and provide a logical reason for impact	*Data can begin to show effect but it will not evidence direct causality*	*Data can show intervention is causing the impact, by showing less impact amongst those who don't receive the service*	*Data explains why and how intervention is having the observed and evidenced impact*	*Intervention could be operated by someone else, somewhere else and scaled up*
Methods: draw upon existing data and research from other sources.	*Methods: pre and post–evaluation; cohort/panel study; regular interval surveying.*	*Methods: Control group (isolates the impact of the intervention); Random selection of participants*	*Methods: Robust independent evaluation; Documented standardisation of delivery; External endorsement;*	*Methods: Multiple replication evaluations; Future scenario analysis;.*

Source: Adapted from Puttick, R. and Ludlow, J. (2012) 'Standards of Evidence for Impact Investing.' London: Nesta

Notes: Standards of Evidence are on a 1 to 5 scale with Level 1 being the minimum -representing a low threshold, appropriate to very early-stage innovations. As the levels progress, data is collected to isolate the impact to the intervention, that findings are validated externally, and then at Level 5, demonstrable evidence that the service can be delivered at multiple locations and still deliver a strong, positive impact (Puttick and Ludlow, 2013).

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[27] For more information see: http://www.nesta.org.uk/

4.5.   Green care interventions

There is a growing and reliable evidence base relating to the health and wellbeing effects of nature-based interventions (Annerstedt and Wahrborg, 2011), which highlights benefits ranging from improvements to physical health and mental wellbeing, increases in social and cognitive functioning and reductions in social isolation, through to increases in coping ability, empowerment and work skills.

In a systematic review of the green care evidence base in 2011, Annerstedt and Wahrborg analysed 35 studies and found that the literature *"supports the effectiveness and appropriateness of NAT [nature-assisted therapy] as a relevant resource for public health. Significant improvements were found for varied outcomes in diverse diagnoses, spanning from obesity to schizophrenia"* (p.15).

The following sections outline the published evidence of the mental health, wellbeing and social benefits of the three green care interventions in this study: i) Social and Therapeutic Horticulture (STH) and Horticultural Therapy (HT); ii) Care farming; and iii) Environmental conservation (as an intervention).

4.5.1.   Social and Therapeutic Horticulture (STH) and Horticultural Therapy (HT)

Overview
Horticulture in a variety of contexts has proved itself to benefit health and wellbeing, rehabilitation, and in enabling vulnerable and disadvantaged individuals to reach their true potential. Essentially, STH is using gardening and plants to help individuals develop wellbeing and this can be done through spending time in gardens, participating in gardening activities or doing something more active such as growing food (Mind, 2013). HT has been used as a therapy or as an add-on to therapy for many years and in the UK there has been a steady rise since the 1980s in the number of garden projects that offer both STH and HT (Hine et al., 2008a, c). In addition there is a rise in popularity of community food growing projects and increasingly these are being used as treatment interventions in addition to their role in public health and health promotion. Owing to the diversity of activities associated with horticulture and the settings in which it can be carried out, horticulture can be adapted to suit a wide range of clients and it has been used to achieve physical, social and psychological benefits for people with mental health problems, learning difficulties, physical disabilities, survivors of stroke, drug and alcohol problems, social problems and others (Sempik et al, 2005; Sempik and Bragg, 2013; Thrive, 2015).

A wide range of activities are involved in the association between people and plants. HT is a therapy with pre-defined clinical goals (rather like occupational therapy), whereas STH often has a more general focus on wellbeing improvements through horticulture (Sempik 2007). Sempik et al. (2003) define HT as *"the use of plants by a trained professional as a medium through which certain clinically defined goals may be met"* (p3); whereas Thrive[28] defines STH as: *"the process by which individuals may develop wellbeing using plants and horticulture..... achieved by active or passive involvement"* (Thrive, 1999, p4). Increasingly however the distinctions between STH and HT are becoming blurred (Sempik and Adevi, 2013; Sempik et al., 2014) and so in this study, the term social and therapeutic horticulture will be used to include: i) the more 'formal' horticultural therapy applications, ii) Social and Therapeutic Horticulture and iii) community food growing projects (when used as a treatment intervention).

Nearly half of the STH projects in the UK provide services for people with learning difficulties; while 40% support people with mental health problems and increasingly STH is being utilised for dementia

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[28] the national charity representing STH in the UK

care (Sempik et al., 2003; Luk et al., 2011). The associated health benefits to those who participate in STH are well documented and several studies focus on the benefits for those who are experiencing mental health problems.

Reviews of the published STH literature
In the *"Growing Together"* study, Sempik et al. carried out one of the first comprehensive surveys of STH literature and discovered a wealth of descriptive literature on horticulture, health and wellbeing. However the review also identified significant gaps in the evidence base, with many subjective studies, studies with either poor or ill-defined research designs and a lack of coherence between published studies (Sempik et al., 2003). Similarly in 2007, Quale reviewed the research on the general benefits of community gardens and city farms for the UK and found most of the evidence to be qualitative and with only a few studies examining the direct mental health benefits (Quayle, 2007).

In a subsequent critical review of the literature relating to the benefits of gardening, York and Wiseman (2012) found four further high quality, qualitative studies which showed wellbeing benefits such as improved mood (Fieldhouse, 2003); a sense of peace or calm (Fieldhouse, 2003; Sempik et al., 2005; Bowker and Tearle, 2007); a sense of connection and belonging - both to nature and to other people (Fieldhouse, 2003; Sempik et al., 2005); fascination (Fieldhouse, 2003; Gonzalez et al., 2009); and feelings of safety and security within a neutral environment (Fieldhouse, 2003; Sempik et al., 2005; Bowker and Tearle, 2007; Jonasson et al., 2007). Both Fieldhouse and Sempik et al. also found that by nurturing plants, participants were also better able to understand the concept of looking after themselves. The consensus however was the STH and gardening studies still lacked synthesis and they (together with Wiseman and Sadlo (2015)) also highlighted the need for more research focusing on psychosocial interaction.

Clatworthy et al. (2013) also carried out a review of the literature relating to gardening interventions for mental health and concluded that: i) a substantial body of evidence exists that demonstrates benefits to mental health from gardening interventions; ii) there had been much improvement in the quality of research into STH since the Sempik et al. (2003) review; and iii) there was still a need for more good quality research, particularly for controlled trials.

In 2014, Schmutz et al. conducted a literature review of the benefits of community gardening and food growing[29] and concluded that STH and food growing can contribute to improved social interaction and community cohesion, reduce stress and associated depression, alleviate symptoms of dementia and Alzheimer's disease and improve alertness, cognitive abilities and social skills. Lovell et al. (2014) have expressed the need and developed a proposal for a systematic review of the published literature on the health and wellbeing impacts of community gardening for adults and children (Lovell et al. 2014).

STH for mental ill-health
A quantitative study in 2009 by Gonzales (et al) examined the effect of a 12-week HT intervention on a group of patients with a diagnosis for clinical depression. The primary hypothesis was that the fascination derived from the HT would reduce the amount of rumination (over-thinking) and thus lead to a reduction in depression severity and an improvement of perceived attentional capacity (as in the ART). Testing using the Perceived Restorativeness Scale (PRS) to measure 'fascination' and 'being away'; the Attentional Function Index (AFI) to measure perceived attentional capacity; and Beck's depression Index (BDI) to measure depression; Gonzales et al found that fascination levels did indeed increase over the intervention. This implied a reduction in rumination (although rumination was not specifically measured) and both severity of depression reduced and attentional capacity

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[29] for the 'Growing Health' project

increased significantly over the programme, thus proving their hypothesis. Two later and similar studies by the same team also found a reduction in depression severity over a 12-week HT intervention (Gonzalez et al., 2011a) and an increase in social cohesion and activity - as measured using the Therapeutic Factors Inventory–Cohesiveness Scale (Gonzalez et al., 2011b).

Studies by Hawkins et al. (2011) and van den Berg and Clusters (2011) have both shown promise for reducing physiological stress through STH (using salivary cortisol level analysis and various psychometric scales) although with the general population rather than with participants with diagnosed mental illness. In the Ecominds study, Bragg et al. (2013) highlighted significant improvements in mental wellbeing and social inclusion after STH programmes for people experiencing mental ill-health (using the Warwick Edinburgh Mental Well Being Scale, the Rosenberg Self-esteem Scale, the Profile Of Mood States and bespoke measures for social engagement and belonging). Similarly, Sempik et al. (2014) found significant increases in social interaction in a study with people with mixed mental health diagnoses. Although these studies did not include control groups for comparison, both featured relatively high numbers of participants in the study at 297 and 94 respectively.

Wiseman and Sadlo (2015) and Fieldhouse and Sempik, (2014) write on the use of STH as an occupational therapy intervention and conclude that it is useful in stress reduction, increasing motivation to participate, providing enjoyment and creating a connection to the natural world.

STH for dementia
STH projects are widely used for patients affected by Alzheimer's disease and a study of over 2000 older people living in the Gironde area of France (Fabrigoule et al., 1995) found that it is also possible that regular participation in gardening may offer some protection against the development of dementia. This longitudinal[30] study showed that those who took part in gardening (or who travelled, carried out odd jobs or who took part in knitting) were significantly less likely to develop dementia than those who did not. Later studies have shown that the exercise provided by gardening activities is beneficial and may also be significant in delaying the onset of dementia and Alzheimer's disease (Rovio et al., 2005; Day et al., 2000; Chalfont, 2006; Larson et al., 2006; Park et al., 2008; Somerfield et al., 2010; Hawkins et al., 2011). HT-based activities are also considered viable in dementia care because they successfully engage groups of participants who are often difficult to engage in activities that elicit high levels of adaptive behaviour (Jarrett and Ggliotti 2010). In a study assessing the impact of therapeutic gardening for people with early-onset dementia, Hewitt et al. (2013) found that a 12-month programme of HT also had a positive impact on the wellbeing, cognition and mood of participants. The Welsh Assembly in its framework action recognises that services such as gardening clubs are vital within the dementia strategy as they reduce the need for more intrusive and costly care solutions (Kane and Cook, 2013).

Literature reviews regarding STH and dementia care (Detweiler et al., 2012; Gonzalez and Kirkevold, 2014) have concluded that these types of HT interventions have resulted in the reduction of pain, stress, agitation, disruptive behaviours and falls; fewer 'as need' medications and antipsychotics; and improvements in attention and wellbeing. Additionally, functional levels, sleep and sleep patterns also seem to improve (Gonzalez and Kirkevold, 2014). However, in terms of quality of evidence, Detweiler et al. (2012) identify a need for more controlled clinical trials and quantitative analysis in this area.

Conclusions
These studies all show considerable promise for STH in the treatment of mental ill-health, particularly for those with depression and Alzheimer's, although limitations of the research include:

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[30] Longitudinal prospective study

i) relatively small sample sizes (typically n=10-50); ii) few randomised control studies (RCTs); iii) many studies that do not include a control group; and iv) limited follow-up evidence.

Further associated mental health and wellbeing benefits of STH are shown in Table 4.1, details of benefits shown by study are shown in Appendix H and Table 5.1 gives a summary of the standard of evidence).

4.5.2. Environmental conservation (as an intervention)

Environmental organisations in the US, Australia and the UK have long used groups of volunteers to carry out various environmental activities (land clearing, maintaining natural or woodland areas and restoring habitats for wildlife etc.) to preserve, manage and protect natural places (Lovell et al., 2013). Over the last ten years, environmental conservation interventions have increasingly been used as a means of delivering various health, wellbeing and social benefits for a variety of marginalised groups (Bragg et al., 2013a), and as commissioned programmes these are considered a form of green care. In these initiatives (which are frequently run in association with environmental organisations) structured, facilitated activities take place, specifically designed both for the conservation and management of natural places; and for the health and wellbeing of participants.

Environmental conservation intervention approaches are similar to those of ecotherapy (in its original form rather than when used as a collective term) in that they are run for the mutual benefit of both nature and human health[31]. In the UK, therapeutic applications of environmental conservation activities are typically organised in partnership with environmental organisations and health or social care providers. Land-based organisations such as the Forestry Commission, TCV, Groundwork, The Wildlife Trusts, the RSPB and the National Trust etc. often with health or social care providers from the NHS, local mental health teams or local authorities. Examples of such initiatives include: i) Green Gyms - a collaboration between BTCV and Dr William Bird (an Oxford-based GP) which are now widespread nationally and run by TCV (BTCV, 2008; TCV, 2013a); and ii) Offender and Nature schemes – a collaboration between the Forestry Commission and the prison service (Carter and Hanna, 2007).

GPs can now prescribe Green Gym sessions to patients to encourage them to improve their health and wellbeing. Green Gym groups often attract individuals experiencing mental illness and early evaluations of the scheme reported significant increases in mental health state scores, a reduction in depression and a trend towards weight loss (Reynolds, 1999, 2002). A further national evaluation of the health benefits of participating in Green Gyms was conducted by the School of Health and Social Care at Oxford Brookes University during 2006 and found that the functional health and wellbeing of participants, (measured by the SF-12), improved significantly and those with the lowest physical and mental health scores on the introductory questionnaire were between three and nine times more likely to be the ones improving the most (Yerrell, 2008). TCV continue to collate wellbeing data from participants to Green Gym programmes with a further evaluation carried out in 2012 (CAG, 2012). A subsample of Green Gyms in the Ecominds funded Wellbeing comes Naturally programme were evaluated by Bragg et al. (2013a,b) who found significant improvements in wellbeing (measured by WEMWBS), self-esteem (measured with RSES) and overall mood (POMS), in addition to social

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[31] Many green care programmes also seem to incorporate an element of caring for nature within them, or as Sempik and Bragg (2013) put it, *"whilst many green care practitioners may be unaware of ecotherapy, they may well be using its philosophy within their practice"* (p19). many ecotherapy programmes consist of environmental conservation activities anyway, for the purposes of clarity, the current research will focus on 'environmental conservation interventions' rather than ecotherapy initiatives.

benefits, for participants who took part[32]. TCV is currently undertaking a study to develop a robust methodology for measuring health and wellbeing benefits of its Green Gym programme in order to provide high quality evidence of effectiveness.

The European Centre for Environmental and Human Health have recently conducted a theory-led systematic review (Husk et al., 2013) of the diverse types of evidence relating to the health and wellbeing benefits of conservation activities[33]. The research examined papers pertaining to 23 interventions, (10 quantitative, 10 qualitative and three mixed-method) and found from the quantitative studies that participation in conservation activities was associated with positive mental health and wellbeing, increased quality of life and positive social functioning; but also found that much of the evidence was inconclusive (Lovell et al., 2013; Husk et al., 2013). The majority of participants perceived that their physical health and mental wellbeing improved after taking part in environmental enhancement activities (Lovell et al., 2013). Positive effects on psychological health and wellbeing cited included lower stress levels, greater feelings of self-worth, feeling calmer and enhanced resilience, with the activities being described as therapeutic (Lovell et al., 2013).

Conclusions
Unlike for STH, the majority of the studies examining the benefits of environmental conservation activities feature the general population, with only a minority specifically assessing the effects on those with mental ill-health and no studies looking at the effect on dementia patients. In addition, many of the studies are qualitative but there is an increasing number which adopt a mixed methods approach. Limitations to the research identified in this area include: i) limited ability to determine causal relationships between activities and outcomes due to the chosen study designs; ii) outcome measures not appropriate to show small-scale or transient health changes; iii) often poor levels of reporting; and iv) inconsistencies in reporting results even when the same outcome measures were used (Lovell et al., 2013).

Table 4.2 and Appendix I highlight the main studies associated with key psychological and social benefits of environmental conservation intervention activities and Table 5.1 outlines a summary of the standard of evidence.

4.5.3. Care farming

Care farming (also social farming or green care farming) is defined as the therapeutic use of agricultural landscapes and farming practices (Hassink, 2003; Haubenhofer et al., 2010; Care Farming UK, 2015). On care farms, components of either the whole or part of the farm are used to provide health, social or educational care through a supervised, structured programme of farming-related activities. Many care farms offer therapeutic contact with farm livestock, some provide specific animal assisted therapies and others also offer STH and environmental conservation activities.

Care farms provide services for a wide range of people, including those with defined medical or social needs (e.g. psychiatric patients, those experiencing from mild to moderate depression, people with learning disabilities, people with ASDs, those with a drug history, disaffected youth or elderly people) as well as those experiencing from the effects of work-related stress or ill-health (Hine et al.,

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[32] TCV is currently undertaking research into developing a new methodology to improve evaluation practices in order to produce stronger and more robust evidence on the effectiveness of the Green Gym programme for health and wellbeing.
[33] There is also a mixed-method extension to the research (Lovell et al., 2013). Interestingly, both Husk and Lovell have included studies of Green Gyms, Offender and Nature schemes and ecotherapy programmes within the review suggesting still further that these forms of green care are often hard to separate.

2008a; Pederson et al., 2011; Iancu et al., 2013a; Bragg, 2013). All care farms offer some elements of *farming* (involving crops, horticulture, livestock husbandry, use of machinery or woodland management etc.); but there is much variety across care farms in terms of the context, the client group and the type of farm (Relf, 2006; Hine et al., 2008a ; Sempik et al., 2010; Bragg, 2013). Published research on care farming is relatively recent (within the last 10 years), largely originates from The Netherlands and Norway and is comprised of both qualitative and quantitative data from various client groups visiting different types of care farm. Generalised findings imply that many participants benefit from the relationship between the farmer (and their family and other staff); being part of a social community; engaging in meaningful activities in a green environment; and for some the possibility for work opportunities (Berget et al., 2007; Kam and Siu, 2010; Pederson et al., 2011, 2012; Elings, 2012; Iancu et al., 2013a,b). The fact that the farm provides an informal, non-care context which is closer to everyday life than a clinical setting is also valued (Hassink et al., 2007, 2010; Bragg et al., 2013a).

The literature identifies the following effects on the psychological and social health of participants: including an increase: in i) social inclusion; ii) social and work skills; iii) empowerment; iv) social functioning; v) coping ability; vi) social rehabilitation; vii) cognitive functioning and wellbeing; viii) self-esteem; and ix) reductions in mood; and x) depression and anxiety related symptoms (see Table 4.3 and Appendix J for studies by benefit type; and Table 5.1 for a summary of the standard of evidence).

As with many other forms of green care, there are limited quantitative studies supporting care farming, despite the large amounts of positive anecdotal and qualitative data. There are three published randomised control trials (RCTs) in care farming, two in Norway (both using AAAs with cows) and one involving HT in China, and an RCT feasibility study currently underway in the UK (Elsey et al., 2014a).

The first Norwegian RCT (Berget et al., 2007, 2008a, 2011) involved 69 participants with a variety of common and severe mental disorders, taking part in an intervention which involved working with cows in a cowshed. Results showed no significant improvements in clinical status during the intervention but significant improvements in anxiety symptoms and general self-efficacy in the treatment group at follow up. The limits of this study were the mixture of mental health diagnoses and a non-standardised programme of activities, which may have influenced results.

The second Norwegian RCT (Pederson et al., 2011, 2012b,) was conducted with participants diagnosed with clinical depression (n=24 in two groups) also working with cows in a cowshed. The study found significant improvements in depression severity (measured with the BDI-IA) and general self-efficacy (measured using the General Self Efficacy Scale) over the intervention duration compared to the waiting list control. However, the study had a small sample size and participants were able to choose the tasks and level of physical contact which may have biased results.

The third RCT study (Kam and Siu, 2010) involved largely STH activities on a Chinese care farm. This study found a decrease in anxiety, depression and stress (as measured with the Depression, Anxiety and Stress Scale) in schizophrenic participants over the course of the intensive programme, compared with the control group. Limitations for this study include: a small sample size (n=12 in each group); multiple mental health diagnoses; and an unusually intensive and short intervention (10 sessions in a two-week period) compared to most care farm programmes in the UK.

A systematic review of the literature on care farming and mental health effects in 2013 concluded that the quality of existing research was 'moderate' (Iancu et al., 2013a) and there was a need for further research, particularly focusing on social and occupational functioning and in determining the

contributions made from the 'social' and the 'farm' elements individually. From the analysis of the five studies included in their review, Iancu et al (2013a) suggest that care farming is not a viable option in the treatment of moderate to severe depressive disorders but is 'promising' for the treatment of schizophrenia, co-morbid anxiety and for treatment of resistant depressive disorders. Another systematic review of the health and wellbeing effects of care farming is currently being undertaken in the UK (Elsey et al., 2014b) with expected publication in late 2015.

Care farming and dementia
Evidence for the effectiveness of care farms on mental health parameters for older people with dementia, is relatively limited (de Bruin et al., 2010). A Dutch pilot study by Schols and Van der Schriek-Van Meel (2006) was the first study which compared the beneficial effects of care farms with those of regular day care activities for people with dementia. This small 2006 study found that older people with dementia participating in day care on care farms showed fewer behavioural problems, used fewer drugs (including psychotropic drugs) and were more actively involved in normal daily activities than those participating in nursing home day care (Schols and Van der Schriek-van Meel, 2006).

Two later cross-sectional studies by de Bruin in 2009 examined a number of physical health parameters together with cognitive functioning, emotional well-being, behavioural symptoms, and functional performance for older people with dementia, again comparing day care on a care farm with regular day care activities in a clinical setting. On the care farm, participants were found to be physically more active and participated in more diverse activities outdoors and had significantly higher intakes of energy, carbohydrate, and fluid than those attending regular day care services. With regard to the mental health parameters, care farms were found to be 'equally effective' in preventing a significant decrease of cognitive functioning, emotional well-being, and functional performance and in preventing a significant increase of the number of behavioural symptoms (de Bruin et al., 2009)[34].

Conclusions
These studies all show the benefits of care farming, particularly for those experiencing mental ill-health. There is a mix of quantitative and qualitative evidence, with studies frequently taking a mixed methods approach. As is the case with STH evidence, there are some limitations of the research including: i) relatively small sample sizes (compared to clinical interventions); ii) few studies that include a comparator group (such as randomised control studies (RCTs)); and iii) limited follow-up evidence.

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[34] Further details on the benefits of care farms for older people with dementia see literature review by Simone de Bruin (et al., 2010).

Table 4.1 An overview of published evidence relating to Social and Therapeutic Horticulture and mental health (post 2003)

Study	Population studied - Sample characteristics	Sample size and location	Intervention/ activities	Type of study and outcome measures used	Psychological or social benefits
Sempik et al., 2014	Age range: 14-78 Diagnosis: mixed mental illness e.g. schizophrenia and depression	143 (61 with mental illness), UK	STH	Daily observational assessments using score sheets with single item scores on a 10 point scale covering aspects of: social interaction, communication, motivation and task engagement.	• Sig. increase in social interaction
Adevi and Mårtensson, 2013	Age range: Not stated Diagnosis: stress exhaustion	5, Sweden	STH	Qualitative: interviews	• Participants state how STH gives positive sensory experiences, physical and psychological well-being, and facilitate beneficial social interactions with other participants and caregivers
Bragg et al., 2013	Age range: 14-78 Diagnosis: mixed mental illness	287, UK	STH (22%), care farming (16%) or environmental conservation (62%) interventions	Questionnaires, repeated measures; pre/post activity: • Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) - trait • Rosenberg Self Esteem Scale (RSES) – state and trait • Profile of Mood States (POMS) – state • Questions on social inclusion	• Sig. increase in wellbeing over programme • Sig increase in self-esteem both over programme and pre/post activity • Sig. improvement in overall mood • Sig. increase in participant social engagement and support
Hewitt et al., 2013	Age range: 43-65 Diagnosis: early-onset dementia	12, UK	STH	A mixed methods study (interview and methods below): • Mini Mental State Examination (MMSE), • Bradford Well-Being Profile, • Large Allen Cognitive Level Screen (LACLS) • Pool Activity Level (PAL)	• positive impact on wellbeing, cognition and mood • participants experienced a renewed sense of purpose and increased well-being, despite cognitive functioning continuing to decline
Hawkins et al., 2011	Age range: 50-88 Diagnosis: general population	94, UK	STH	Questionnaire based study: Physiological health measures and psychometric scales of self-rated health: • perceived stress scale (PSS) • Social provisions scale • IPAQ-S • SF-36v2	• Allotment gardeners reported significantly less perceived stress than participants of indoor exercise classes

Van den Berg and Clusters, 2011	Age range: 38-79 Diagnosis: general population	30, Netherlands	STH	Field study – stressful task followed by allotment gardening • Salivary cortisol levels • Positive and Negative Affect Schedule (PANAS) Dutch version	• Gardening and reading each led to decreases in cortisol during the recovery period, but decreases were significantly stronger in the gardening group • Positive mood was fully restored after gardening, but further deteriorated during reading
Luk et al., 2011	Age range: over 65 Diagnosis: dementia with agitation	14, Hong Kong	Twice-weekly STH conducted in garden for 6 weeks.	Single-blinded, pre- and post-test design • Mini-Mental State Examination scores (C-MMSE). • Agitation assessed with Chinese version of the Cohen-Mansfield Agitation Inventory (C-CMAI)	• no sig. reduction of agitation but a decrease in aggressive behaviour
Gonzalez et al., 2011a	Age range: 25-65 Diagnosis: depression	46, Norway	12-week STH intervention	Questionnaires – repeated measures: • Beck Depression Inventory (BDI) • The Life Regard Index – revised (LRI-R)	• Sig. reduction in depression • No sig increase in existential outcome measure (LRI-R)
Gonzalez et al., 2011b	Age range: 25-65 Diagnosis: depression	46, Norway	12-week STH intervention	Questionnaires – repeated measures: • Beck Depression Inventory (BDI) • The State-Trait Anxiety Inventory–State Subscale (STAI-SS) • Perceived Stress Scale (PSS) • Positive and Negative Affect Scale (PANAS-PA) • The Therapeutic Factors Inventory Cohesiveness Scale (TFI-CS)	• Sig. reduction in depression, anxiety and stress • Increase in positive affect • Social aspects deemed important
Parkinson et al., 2011	Age range: 20-70 Diagnosis: mixed mental illness	50, UK	STH projects	Interviews and observations; • Work Environment Impact Scale (WEIS) • Volitional Questionnaire (VQ)	• Key motivations for participants to engage with the STH comprised: personal appeal, meaningfulness of activity and social context
Eriksson et al, 2011	Age range: 36-52 Diagnoses: women with stress-related ill-health including depression	5, Sweden	STH	Qualitative study: • Interviews	• Protective environment of the therapeutic garden created a base for relaxation and appreciation of the moment and served as a positive foundation for the engagement in enjoyable activities in rehabilitation
Song et al., 2010	Age range: not stated Diagnosis: depression	30, Korea	HT intervention	Questionnaires, HRV (with control group) Computer-based heart rate variability (HRV) was compared with self-report scale (SRS) – included: • mental stress scale (MSS), • physical stress scale (PSS), • Beck anxiety inventory (BAI), • Beck depression inventory (BDI)	• Sig improvement in MSS, BAI, and BDI • results also implied that HT was efficient in the mental and physical regeneration of the depressed patients in both subjective and objective evaluation methods

Jarrett and Gigliotti, 2010	Age range: mean age 80 Diagnosis: dementia	129, US	HT intervention	Observations and questionnaires (with control group): • mini mental status exam (MMSE) • modified version- Apparent Affect Rating Scale (AARS) • Menorah Park Engagement Scale (MPES)	• The HT-based group demonstrated higher levels of adaptive behaviours such as active, passive, and other engagement and lower levels of maladaptive behaviours such as self-engagement than the comparison group
Gonzalez et al., 2010	Age range: 25-64 Diagnosis: depression	28, Norway	12-week STH intervention	Questionnaires – repeated measures: • Beck Depression Inventory (BDI) • Attentional Function Index (AFI) • The Brooding Scale- subscale of revised Ruminative Response Scale • Perceived Restorativeness Scale	• Sig. reduction in depression and brooding • Sig. increase in perceived attentional capacity
Gonzalez et al., 2009	Age range: 27-65 Diagnosis: depression	18, Norway	12-week STH intervention	Questionnaires – repeated measures: • Beck Depression Inventory (BDI) • Attentional Function Index (AFI) • Perceived Restorativeness Scale	• Sig. reduction in depression (pre/post); • Trend for increased attentional capacity
Yasukawa, 2009	Age range: elderly Diagnosis: dementia	Japan	3 months of HT activities	• Interview and Mini mental state examination (MMSE)	• improvements in communication, engagement, behaviour and cognitive abilities
Rappe et al., 2008	Age range: 41-64 Diagnosis: mixed mental health - outpatients	5, Finland	STH (on allotment)	Questionnaires, diaries, photos: • bespoke questionnaire	• Participants said that they felt calmer and better able to concentrate after the STH
Lee et al., 2008	Age range: not stated Diagnosis: depression – 'battered women shelter'	12, Korea	HT	Pre/post 12 week treatment study, control group: • Rosenberg Self Esteem Scale (RSES) • Zung Depression Inventory (ZDI)	• Sig. increase in self-esteem scores • Sig. decrease in depression scores • Change in levels of self-esteem and depression in the experimental group were significantly better from those in the control group
Parr, 2007	Age range: Details Diagnosis: mental illness - mental health 'clients'	15, UK	STH (gardening projects)	Interviews, ethnography	• Participants reported enhanced mood, sense of belonging, meaningful work
D'Andrea et al., 2007	Age range: elderly Diagnosis: Alzheimer's disease	37, US	HT intervention in nursing home for 12 weeks	Control/comparison group, 20 in each group: • Mini-mental Status Exam (MMSE)	• HT group had an overall higher functional level than the control group

Stepney and Davis, 2004	Age range: 32-50 Diagnosis: mixed mental illness - receiving mental healthcare from social services	10, UK	STH	Mixed-methods – quasi-experimental: - Hospital and Anxiety Scale HAD) - Interviews and focus groups	- Reduction in anxiety and depression - In interviews participants reported improvements to mental health
Szofran and Myer, 2004	Age range: not specified Diagnosis: mixed mental illness - psychiatric	13, US	HT	Qualitative and observation: Self-esteem, stress reduction, mood	Subjectively report improvements in all three parameters
Son et al., 2004	Age range: not specified Diagnosis: Schizophrenia	50, Korea	Horticultural Therapy	Controlled trial: Various scales associated with self-esteem, relationship change, sociality, symptom checklist-90 revision (SCL-90R)	- Sig. increase in self-esteem, intrapersonal relationships and social behaviour - Decrease in depression and anxiety
Gigliotti et al., 2004	Age range: 70-97 Diagnosis: dementia	14, US	HT intervention	Mainly observational study with bespoke tool to capture both the affect (mood) and behaviours of the participants; also indicator of cognitive function (Mini-mental Status Exam -MMSE)	- High levels of positive affect and engagement were observed during all categories of HT activities - Percentage of time spent doing nothing was lower; and affect was more positive during HT than traditional activities
Fieldhouse, 2003	Age range: 24-61 Diagnosis: Serious mental health problem- schitzophrenia, depression, psychosis	9, UK	STH -allotment gardening	Interviews and focus groups	Participants reported improved mood, concentration, enhanced sense of personal agency, improved functioning, increased social inclusion and networking

Source: Original papers; also adapted from York and Wiseman, 2012; Clatworthy et al., 2013; Bragg, 2014; Notes: Sig. - statistically significant; STH – Social and Therapeutic Horticulture; HT – Horticultural Therapy.

Table 4.2 An overview of published evidence relating to environmental conservation intervention programmes and mental health

Study	Population studied - Sample characteristics	Sample size and location	Intervention/ activities	Type of study and outcome measures used	Psychological or social benefits
TCV, 2015	Age range: 14-74 Diagnosis: mixed including some mental illness	182 (max), UK	environmental conservation (also some gardening and walking)	Mixed methods, questionnaires, interviews: • Short version of the Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS)	SWEMWBS pre/post n=124, No stats. tests reported: • SWEMWBS increased for 54% of participants Participants reported: • Feeling more positive • Increased social interaction
Bragg et al., 2013a	Age range: 14-78 Diagnosis: mixed mental illness	287, UK	STH (22%), care farming (16%) or environmental conservation (62%) interventions	Questionnaires, repeated measures; pre/post activity: • Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) - trait • Rosenberg Self Esteem Scale (RSES) – state and trait • Profile of Mood States (POMS) – state • Questions on social inclusion	• Sig. increase in wellbeing over programme • Sig increase in self-esteem both over programme and pre/post activity • Sig. improvement in overall mood • Sig. increase in participant social engagement and support
Bragg et al., 2013b	Age range: 17-78 Diagnosis: mixed mental illness	74, UK	environmental conservation (subsample of Bragg et al., 2013a study) Wellbeing comes naturally)	Questionnaires, repeated measures; pre/post activity: • Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) - trait • Rosenberg Self Esteem Scale (RSES) – state and trait • Profile of Mood States (POMS) – state • Questions on social inclusion	• Sig. increase in wellbeing over programme • Sig increase in self-esteem pre/post activity • Sig. improvement in overall mood
CAG, 2012; TCV, 2013b	Age range: 16-65+ Diagnosis: mixed mental health	UK, 697	environmental conservation – Wellbeing comes naturally – Green Gym	Mixed methods approach –questionnaires and qualitative interviews, scrapbooks: • Adapted SF12	• SF12 – changes in scores not stated, and no stats. tests reported • at 'pre', 10% scored over 60 (the highest banding) and at 'post' (T4), had risen to 22% • 63% recorded an improved mental health 'score' after 7 sessions Participants reported: • Reduced tension and stress • Easier to cope with mental health difficulties • Improving mood • Greater confidence and sociability • enhanced personal motivation

O'Brien et al., 2011	Age range: not stated Diagnosis: general population	10, UK	environmental conservation	Qualitative – ethnographic, interviews	Participants reported: • Increased social contact or inclusion • Personal achievement • Psychological restoration
BTCV, 2010.	Age range: Not stated Diagnosis: general population and some referrals	136, UK	environmental conservation – Wellbeing Comes Naturally (Green Gym)	Mixed methods, pre/post activity and qualitative– semi-structured interviews	Participants reported: • Increased social contact or inclusion • Personal achievement • Psychological restoration
O'Brien et al., 2010	Age range: 16-76, Mean 43 Diagnosis: General population - volunteers	88, UK	environmental conservation	Mixed methods: qualitative interviews and Pre/post activity measurement: • Emotional State Scale (ESS) questionnaire adapted from the Osgood Semantic Differential Scale • Personal Well-being Index (PWI)	• Sig. increase in ESS pre/post activity • Majority of participants reported increased social contact, and said that meeting new people and developing social networks were key benefits • Reported mental wellbeing improvements: reductions in stress and mental fatigue, making a meaningful contribution to society or local communities
Small Woods Association, 2010	Age range: not stated Diagnosis: referred – female offenders	7, UK	environmental conservation	Pre/post activity: • Short Form 36 Health Survey (SF-36)	• Positive comments and trends; improvements not sig.
Pillemer et al., 2010	Age range: Mean 45 Diagnosis: General population	2630, Canada	environmental conservation	Population-based cohort study: • 18 item depression scale • Bespoke measures for functional impairment, social isolation and perceived health	Positive association between environmental volunteering and health and well-being outcomes: • environmental volunteering was significantly associated with increased physical activity and self-reported health, and reduced depressive symptoms • positive effects of environmental volunteering in the second half of the life course
Eastaugh,et al., 2010	Age range: not stated Diagnosis: Mixed mental illness - referred from CMHT and self-referred	8, UK	environmental conservation	Mixed methods, case studies and other measures: • SF36 • Qualitative Benefit Analysis (QBA)	• Increase in SF36 scores; and for mental health and social functioning QBA aspects for 6 of 8 participants after 3 months (Sig. not checked)

Wilson, 2009.	Age range: 21-61; Mean 41 Diagnosis: Mixed mental illness – Referred from Mental Health Services	77, UK	environmental conservation	Mixed methods: Qualitative and pre/post activity Short Form 12 Version 2 Health Survey (SF-12v2) Warwick Edinburgh Mental Well-being Scale (WEMWBS) Semi-structured interviews, focus groups, journals	• Increases in mental health, general health of SF12, but not sig. • WEMWBS increases but again just below sig. Improvements to mental wellbeing were noted: • Increased confidence • Increased self-esteem • Also reported increase in social inclusion
Yerrell, 2008	Age range: 25-64 Diagnosis: mixed - some referred, some general population	194, UK	environmental conservation – Green gym	Questionnaire, Pre/post activity: • *SF12: version 2*	• Green gym participants reported increased sense of personal achievement and positive self-worth • Sig. increases in SF-12 Green Gym participants scoring low on SF12 at pre were 'improving' the most e.g. participants with Mental Component Summary Scores with the SF12 mean score of 50 at pre, were 2.5 times more likely to get an equal or higher SF12 score at post
Burls, 2007	Age range: not stated Diagnosis: general population	11, UK	environmental conservation	Qualitative -ethnographic design using mixed methods	Reported increases in: • Personal achievement, • social contact, • psychological restoration
Pretty et al., 2007	Age range: 31-84 Diagnosis: General population	19, UK	environmental conservation	Mixed methods: Questionnaires, Pre/post activity: • Rosenberg Self Esteem Scale (RSES) – state • Profile of Mood States (POMS) – state	• Increase in SE but not sig. • Sig. improvement in mood subfactors
Moore et al., 2006	Age range: Mean age 55 Diagnosis: General population	102, Australia	environmental conservation	Case control study; Mixed methods: • adapted version of Buckner's (1988) Community Cohesion Scale	Sig. improvements for members of the land management groups compared to control group: • rated their general health higher, • reported visiting the doctor less often, • felt safer in the local community Also reported improvements to mental wellbeing
Townsend, 2006	Age range: not stated Diagnosis: General population	35, Australia	environmental conservation	Mixed methods: Qualitative interviews, control study on sub-group: • An adaptation of Buckner's Neighbourhood Cohesion Scale	• Sig. increase in community belonging Reported increases in: • Personal achievement, • social contact, • psychological restoration • meaningful occupation

Birch, 2005	Age range: 36-62 Diagnosis: Mixed mental illness - (depression, PTSD)	3, UK	environmental conservation-green gym	Qualitative -ethnographic design using mixed methods	Reported increases in: • Personal achievement, • social contact, • psychological restoration
Gooch, 2005	Age range: not stated Diagnosis: general population	85, Australia	environmental conservation	Qualitative interviews	Reported increases in: • Personal achievement, • social contact, • psychological restoration
Christie, 2004	Age range: Mean 30 Diagnosis: general population	18, Australia	environmental conservation	Qualitative interviews	Reported increases in: • Personal achievement, • social contact, • psychological restoration
Townsend and Marsh, 2004	Age range: Mean 65 Diagnosis: general population	18, Australia	environmental conservation	Qualitative interviews, focus groups	Reported increases in: • Personal achievement, • social contact, • psychological restoration
Halpenny and Cassie, 2003	Age range: Mean 40 Diagnosis: general population	10, Canada	environmental conservation	Qualitative interviews	Reported increases in: • Personal achievement, • social contact, • psychological restoration
Reynolds, 2000	Age range: 40-73 Diagnosis: general population	15, UK	environmental conservation – green gym	Mixed methods: Questionnaires, Pre/post activity: • Short Form 36 Health Survey (SF-36)	• Sig. increase in QoL - General Health Perception • Qualitative interviews - volunteers experienced various social and mental health benefits.

Source: Original papers; also adapted from Lovell et al., 2013; Husk et al., 2013; and Bragg 2014; Notes: Sig. - statistically significant; QoL – Quality of life.

Table 4.3 An overview of published evidence relating to care farming and mental health

Study	Population studied - Sample characteristics	Sample size and location	Intervention/ activities	Type of study and outcome measures used	Psychological or social benefits
Hegarty, 2014	Age range: 20-63 Diagnosis: mixed mental illness (depression, schizophrenia, bi-polar)– most referred by mental health services	25, UK	Care farming	Qualitative -Questionnaire based, pre/post, no control: • Recovery Star • Personal Outcomes Record (Study ongoing)	• STAR assessment records - specific gains for most clients in their mental health recovery • clients have been able to progress to volunteering work in the project or outside Participants reported: • increase in - social confidence, wellbeing and confidence in life skills • increased expectation of achieving things
Granerud and Eriksson, 2014	Age range: 22-55 Diagnosis: mixed mental illness and some severe psychotic disorders	20, Norway	Care farming	Qualitative study – grounded theory - interviews	Participants reported: • Sense of community and belonging increased coping leading to increased self-esteem • Meaningful activity • Increased social contact
Leck, 2013; Leck et al, 2015	Age range: 18-60 Diagnosis: mixed including mental illness	137, UK	Care farming	Mixed methods, longitudinal and qualitative questionnaires: • WEMWBS • Two items from Connor Davidson resilience scale • Other questions from ESS covering happiness and life satisfaction	Longitudinal pre post: • Sig. increase in wellbeing (WEMWBS) • Sig. increase in happiness • Sig. increase in satisfaction with life • Sig. increase in positive about self Participants reported: • Increased social interaction • Increased confidence, happiness and mood • Improved mental wellbeing
Bragg et al., 2013a; Bragg, 2014	Age range: 14-78 Diagnosis: mixed mental illness	287, UK	STH (22%), care farming (16%) or environmental conservation (62%) interventions	Questionnaires, repeated measures; pre/post activity: • Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) - trait • Rosenberg Self Esteem Scale (RSES) – state and trait • Profile of Mood States (POMS) – state • Questions on social inclusion	• Sig. increase in wellbeing over programme • Sig increase in self-esteem both over programme and pre/post activity • Sig. improvement in overall mood • Sig. increase in participant social engagement and support

Bragg et al., 2013c,d; Bragg, 2014	Age range: 14-78 Diagnosis: mixed mental illness	45, UK	Care farming – (subsample of Bragg et al., 2013a study)	Questionnaires, repeated measures; pre/post activity: • Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) - trait • Rosenberg Self Esteem Scale (RSES) – state and trait • Profile of Mood States (POMS) – state • Questions on social inclusion	• Sig. increase in wellbeing over programme (2013d) • Sig increase in self-esteem both over programme and pre/post activity (2013d) • Sig. improvement in overall mood (2013d) • Increase in participant social engagement and support (both studies)
Maynard, 2013	Age range: not stated Diagnosis: mixed mental illness – some referred from mental health services others self-referred	25, UK	Care farming – STH and vegetable production activities	Mixed methods approach, using both qualitative and quantitative methods, longitudinal, no control Warwick Edinburgh Mental Well-being Scale (WEMWBS)	• Sig. increase in wellbeing Participants reported: • Enjoying social interaction • Positive feelings of self • Understanding other people • Understanding self – increased confidence, resilience and self-esteem • managing self & panic attacks • increased social interaction
The North Essex Research Network, 2013	Age range: 20-60 Diagnosis: Mixed mental illness – referred from mental health services	7, UK	Care farming	Mixed methods - thermometer-style measure, Interviews • Six standardised questions from the Elements of a Recovery Facilitating System (ERFS) measure	• Non sig. improvement in mood over time • Positive ratings for ERFS Participants reported: • social interaction, activities of daily living and mental wellbeing
Iancu, 2013b	Age range: Mean 40 Diagnosis: Mixed mental illness (moderate to severe)	14, The Netherlands	Care farming	Qualitative (comparison between 3 different types of intervention – one being care farming)	Participants reported: • Increased personal meaning and sense of personal responsibility • Increased community integration and social inclusion
Pederson et al., 2012a	Age range: 25-54 Diagnosis: Clinical depression	8, Norway	Care farming – farm animal assisted interventions	Qualitative study -phenomenological-hermeneutical perspective	Participants reported: • Distraction to their illness. • Increased coping • Increased wellbeing
Pederson et al., 2011, 2012b	Age range: 23-58 Diagnosis: Clinical depression	29, Norway	Care farming – farm animal assisted interventions	RCT study: • Becks Depression Index (BDI-IA) • Speilberger state anxiety inventory (STAI-SS) • general self-efficacy measured using the General Self Efficacy Scale(GSE)	• Sig. improvements in depression severity and general self-efficacy over the intervention duration compared to the waiting list control

Wilson and Agnew, 2011	Age range: 20-55 Diagnosis: learning disabilities	13, N. Ireland	Care farming	Mixed methods, longitudinal, comparison group and qualitative questionnaires: • Rosenberg Self Esteem Scale (RSES) trait • Vineland Adaptive Behaviour Scale • The Quality of life - Life Experiences Checklist (LEC)	• Sig. increase in Self-esteem over the six month period of the evaluation • No sig. change in LEC scores but service users reported greater culturally relevant life experiences • Improvements in: 'problems associated with mood changes' and 'problems with relationships' • Improvements behaviours; the most notable was in behavioural problems associated with mood changes followed by behavioural problems – directed to self: anxiety, phobias, obsessive, compulsive behaviours and problems with relationships
Elings et al., 2011, 2012	Age range: not stated in translation Diagnosis: mixed mental illness – psychological / addiction problems	149, The Netherlands	Care farming	Quasi-experimental research, comparison group and qualitative: • Mental Health Inventory and • Quality of life – WHOQuoL • Satisfaction with life – (GGZ)	• Increase in satisfaction levels compared with control (non sig.) Participants reported: • Increase in self-esteem • Increase in self-respect • Increased social behaviours and contact
Kam and Sui, 2010	Age range: Mean 44 Diagnosis: Schizophrenia	24, China	Care farming – STH activities	RCT study and qualitative questionnaire: • Depression, Anxiety and Stress Scale (DASS21) • Personal Wellbeing Index China version (PWI-C) • Work Behavioural Assessment (WBA)	• Sig. difference in depression anxiety and stress changes between intervention and control group • PWI improved for both groups • No sig. changes in WBA
Hegarty, 2010	Age range: 18-74 Diagnosis: mixed mental illness	89, UK	Care farming	Descriptive, mixed-method - quantitative and qualitative. Pre/post, no control • WEMWBS	• Increased wellbeing for majority (all but 3) of participants Participants reported: • Increased social interaction, confidence and self-esteem • Feelings of belonging • Sense of achievement

Hine et al., 2009	Age range: not recorded Diagnosis: mixed mental illness - depression and severe PTSD	20, UK	Care farming – STH and psycho-education	Mixed methods; Longitudinal and Before and after study (no control); and qualitative Participatory Action Research (PAR): • Beck Depression Inventory (BDI-II) • Impact of Events Scale (IES-R) • Work and Social Adjustment Scale (WSAS) • Self-esteem – Rosenberg Self-Esteem Scale (RSES) • Mood – Profile of Mood States (POMS)	Longitudinal: • A non sig. reduction in depression • A slight non sig. reduction in PTSD • A non sig. decrease in PTSD subfactors of Intrusions and Hyperarousal • A non sig. reduction in functional impairment Before after study: • Sig. improvement in mood and self-esteem before/after session Participants reported: • Benefits from natural farm setting and 'non-medical' location. • Sense of belonging and increased social contact
De Bruin, 2009; De Bruin et al., 2012	Age range: Mean 77 Diagnosis: older people with dementia	41, The Netherlands	Care farming	Mixed methods: longitudinal pre post study (with control) and qualitative: • Cognitive functioning – Mini Mental State Examination (MMSE) • Functional performance – Barthel Index (BI) and Interview for Deterioration in Daily living in Dementia (IDDD)	No sig. differences between care farming group and control – suggests care farm equally effective as regular day care services in this study
Hine et al., 2008a,b; Bragg, 2014	Age range: 16-65 Diagnosis: mixed some mental illness	72, UK	Care farming	Mixed methods: before after study, qualitative: • Self-esteem – Rosenberg Self-Esteem Scale (RSES) • Mood – Profile of Mood States (POMS)	Before and after study: • Sig. improvement in self-esteem, overall mood and subfactors of anger, confusion, depression, fatigue and tension Participants reported: • Increased social contact • Feeling confident as a result of learning new skills
Elings and Hassink, 2008	Age range: not stated Diagnosis: mixed mental illness and / or addiction problems	42, The Netherlands		Qualitative study: focus group interviews	Participants reported: • feeling of satisfaction , self-respect, self-confidence, self-esteem • belonging, social wellbeing • meaningful activities • distraction form illness

Berget et al., 2007, 2008a, 2011. Berget and Braastad, 2011	Age range: 18-58 Diagnosis: Mixed severe psychiatric diagnoses	69 (41 in treatment group), Norway	Care farming – farm animal assisted interventions	RCT study and qualitative questionnaire: • Becks Depression Index (BDI-IA) • Speilberger state anxiety inventory (STAI-SS) • general self-efficacy measured using the General Self Efficacy Scale(GSE)	• Sig. decrease in depression at end • Sig. improvements in anxiety symptoms and general self-efficacy in the treatment group at end and at follow up • Those with largest reductions in depression reported the largest increase in coping ability, mood, self-esteem and extroversion
Schols and Van der Schriek-Van Meel, 2006*	Age range: Mean 74 Diagnosis: Older people with dementia	13, The Netherlands	Care farming – mixed activities	Pilot study, control group: • Functional performance – Barthel Index (BI) • Other measures (see notes)	• Older people with dementia participating in day care on green care farms showed fewer behavioural problems, used fewer drugs (including psychotropic drugs) and were more actively involved in normal daily activities than older people with dementia participating in nursing home day care

Source: Original papers; also adapted from Bragg 2014; Notes: Sig. - statistically significant; *Difficulty accessing full paper so full results and measures not reported.

5. The mental health benefits from three types of green care: Commonalities, differences and outcome measures

This chapter examines the commonalities and differences in the literature between the three types of green care; gives an overview of outcome measures used in the studies in the review; before giving a summary of the state of the evidence base for STH, environmental conservation interventions and care farming in terms of mental health outcomes.

5.1. Commonalities

5.1.1. Benefits

The results of the review of the literature for three different types of green care convincingly highlight a range of mental wellbeing benefits derived by participants. Although the three approaches of STH, environmental conservation and care farming are contextually different, in reality the approaches often feature similar activities and have a similar ethos. These interventions involve a deeper interaction with nature than some of the other forms of green care, allowing service users to really engage with and shape nature. It is perhaps not surprising that the benefits highlighted for the three types of green care are very similar and include:

- Psychological restoration and increased general mental wellbeing
- Reduction in depression, anxiety and stress related symptoms
- Improvement in dementia-related symptoms
- Improved self-esteem, confidence and mood
- Increased attentional capacity and cognition
- Improved happiness, satisfaction and quality of life
- Sense of peace, calm or relaxation
- Feelings of safety and security
- Increased social contact, inclusion and sense of belonging
- Increase in work skills, meaningful activity and personal achievement

The mental health and wellbeing benefits from these 'hands-on' nature-based interventions appear to be derived from the combination of the three key elements; i) the natural environment; ii) the meaningful activities; and iii) the social context, which characterise these approaches (see Figure 5.1).

5.1.2. Limitations

Although there is much evidence of benefits to mental health and wellbeing derived from green care interventions there are inevitably some limitations present (to varying degrees). These limitations or weaknesses have been outlined for each of the three types of green care in Table 5.2.   General limitations of the green care literature base have been highlighted in other reviews (see Davis-Berman & Berman, 1994; Sempik et al., 2005; Willis and Liesl, 2005; Peacock et al., 2007; Barton, 2008; Hine et al., 2008a,b; Annerstedt and Wahrborg, 2011; Detweiler et al., 2012; Husk et al., 2013; Lovell et al., 2013; Iancu et al., 2013a; Clatworthy et al. 2013; Gonzalez and Kirkevold, 2014; Bragg, 2014) and several of these are mirrored to a certain degree in some (but not all) of the studies in this review. These include:

- Lack of standardised, reliable and validated measures assessing changes in mental health and wellbeing condition;

- Absence of a control group;
- Relatively small sample sizes;
- Vaguely defined methods and interventions;
- Varied degrees of subjectivity in the interpretation of results; and
- uncontrolled confounders.

Figure 5.1 The interaction of the three key elements within green care

STH – Social and Therapeutic Horticulture; ECI – Environmental Conservation Interventions
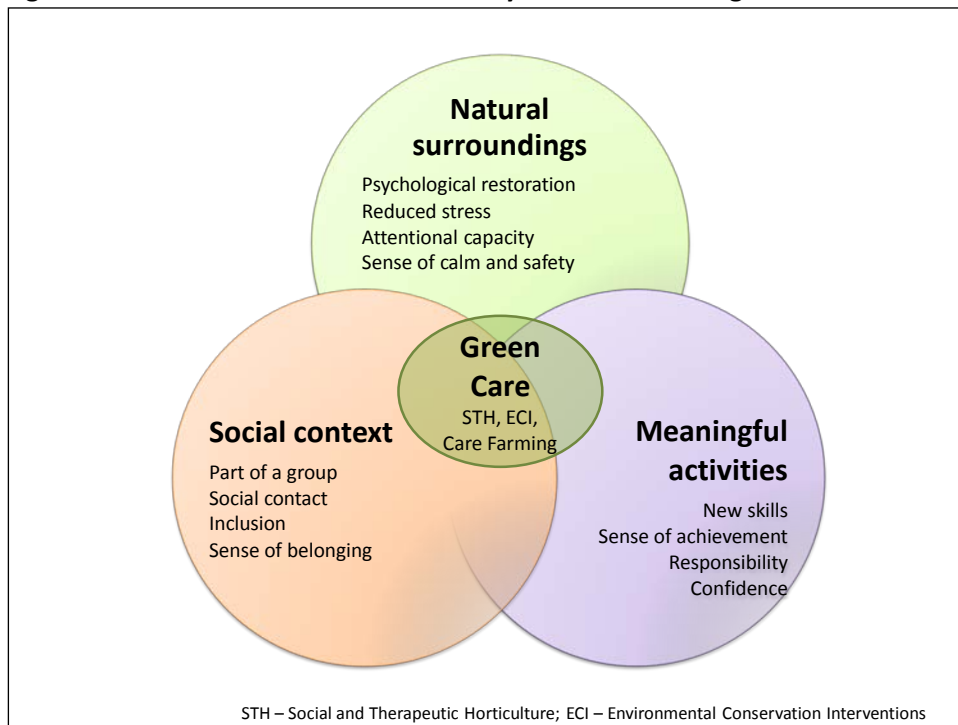
5.2.   Differences

There are a number of differences in the published literature for the three types of nature-based intervention in this study:

- The evidence base is comparatively long-standing for Social and Therapeutic Horticulture as the intervention is more established and widely known. Programmes and research in this area have been conducted for people with various mental health conditions, but particularly for those with depression and with dementia.
- The environmental conservation intervention evidence has largely featured studies with the general population, although more recent studies have included interventions for those with mixed mental health diagnoses, typically those which are mild to moderate in nature.
- The bulk of the care farming research literature is post 2006, as the field is relatively new. The majority of the care farming research studies focuses on those with mental ill-health, with diagnoses ranging from depression to schizophrenia.

5.3.   Outcome measures

Details of the outcome measures used in each of the studies assessed as part of this review are shown in Tables 4.1 to 4.3, and an overview of the standardised validated measures and associated outcome is given in Table 5.1. Perhaps unsurprisingly (given green care interventions are complex and frequently deliver multiple outcomes simultaneously), there is much variety in outcome measures both within studies of the same type of green care and between the different approaches.

Outcome measures chosen also vary depending on a wide range of other factors including: abilities of the service user; study design; length of programme; preferences, skills and licences of the researcher; and financial or time resources.

Table 5.1 Outcome measures used in the published research

Wellbeing	Generic health or efficacy
• Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) • Short version of the Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) • Personal Well-being Index (PWI) • Personal Wellbeing Index China version (PWI-C)	• SF-36v2 • Adapted SF12 • Short Form 36 Health Survey (SF-36) • General Self Efficacy Scale(GSE) • IPAQ-S (physical health – activity)
Depression	**Anxiety**
• Beck Depression Inventory (BDI) • Attentional Function Index (AFI) • The Brooding Scale- subscale of revised Ruminative Response Scale • Perceived Restorativeness Scale • Zung Depression Inventory (ZDI) • Depression, Anxiety and Stress Scale (DASS21)	• The State-Trait Anxiety Inventory–State Subscale (STAI-SS) • Beck anxiety inventory (BAI), • Hospital and Anxiety Scale HAD) • Speilberger state anxiety inventory (STAI-SS)
Stress	**Self- esteem or mood**
• Salivary cortisol levels • Perceived Stress Scale (PSS) • mental stress scale (MSS) • physical stress scale (PSS)	• Profile of Mood States (POMS) – state • Positive and Negative Affect Schedule (PANAS) Dutch version • Rosenberg Self Esteem Scale (RSES) – state and trait
Dementia - various	**Other or specialist mental health**
• Mini Mental State Examination (MMSE), • Bradford Well-Being Profile, • Large Allen Cognitive Level Screen (LACLS) • Pool Activity Level (PAL) • Agitation assessed with Chinese version of the Cohen-Mansfield Agitation Inventory (C-CMAI) • modified version- Apparent Affect Rating Scale (AARS) • Menorah Park Engagement Scale (MPES) • Barthel Index (BI) • Interview for Deterioration in Daily living in Dementia (IDDD)	• Emotional State Scale (ESS) questionnaire adapted from the Osgood Semantic Differential Scale • Two items from Connor Davidson resilience scale • Mental Health Inventory • Impact of Events Scale (IES-R)
Meaning or Quality of life	**Recovery**
• The Life Regard Index –revised (LRI-R) • The Quality of life - Life Experiences Checklist (LEC) • Quality of life – WHOQuoL • Satisfaction with life – (GGZ)	• Six standardised questions from the Elements of a Recovery Facilitating System (ERFS) measure • Recovery Star
Other	**Social**
• Work Behavioural Assessment (WBA) • Work Environment Impact Scale (WEIS) • Work and Social Adjustment Scale (WSAS • Volitional Questionnaire (VQ) • Personal Outcomes Record • Vineland Adaptive Behaviour Scale	• Questions on social inclusion • Social provisions scale • The Therapeutic Factors Inventory Cohesiveness Scale (TFI-CS) • adapted version of Buckner's (1988) Community Cohesion Scale
Qualitative	
• Interviews • focus groups • Qualitative Benefit Analysis (QBA)	• observations • diaries, scrapbooks • photos

5.4. Summary of the evidence of effectiveness of green care for mental health outcomes

Table 5.2 summarises the types of evidence, the standard of evidence (according to Nesta's standards of evidence approach), the strengths and weaknesses of the evidence (and specific future research need) and the scale of research for each of the psychological or social benefits, for the three types of green care.

Table 5.2 Strengths and weaknesses of the evidence base for three types of green care

Green care intervention	Proportion of studies in each standard of evidence			Strengths	Weaknesses	Specific future research needs
	Level 1	Level 2	Level 3			

STH (n=27)	30%	33%	37%	• Evidence base is comparatively long-standing as the intervention is more established and widely known
				• Relatively good number of studies which show positive change
				• Highest proportion of studies that demonstrate causality
				• Studies show:
				  o Reduction in depression
				  o Improved mood
				  o Improved psychological wellbeing
				  o Improvement in dementia-related symptoms
				• Plausible evidence of effectiveness particularly for people with depression and with dementia
					• Relatively small sample sizes in studies
					• Limited follow-up studies
					• Large variety of outcome measures used
						• More level 2 (longitudinal, repeated measures, pre/post activity)and level 3 research (studies with a control or comparator group, randomisation) needed
						• More follow-up longitudinal research
						• Standardisation of outcome measures for use in evidencing effectiveness for various mental health conditions

Environmental conservation (n=22)	32%	59%	9%	• Relatively high sample sizes in research
				• Relatively good number of studies which show positive change
				• Studies show:
				  o Psychological restoration
				  o Improved mental wellbeing
				  o Increased social interaction
				  o Sense of personal achievement
					• Majority of studies in general population rather than MH.
					• Shortage of studies that demonstrate causality
					• Limited follow-up studies
					• Large variety of outcome measures used
						• More level 2 (longitudinal, repeated measures, pre/post activity) for participants with specific mental health diagnoses
						• More level 3 research (studies with a control or comparator group, randomisation)
						• More follow-up longitudinal research
						• Standardisation of outcome measures for use in evidencing effectiveness for various mental health conditions

Care farming (n=20)	15%	50%	35%	• Relatively good number of studies which show positive change for people with MH conditions diagnoses ranging from depression to schizophrenia
				• Some studies that demonstrate causality (specifically for depression)
				• Studies show:
				   o Improvements in self-esteem and confidence
				   o Increased social contact and inclusion;
				   o Improved mental wellbeing
				   o Reduction in depression and anxiety related symptoms
					• Limited research pre-2006 as relatively new field
					• Relatively small sample sizes in studies
					• Limited follow-up studies
					• Large variety of outcome measures used
						• More level 2 (longitudinal, repeated measures, pre/post activity)and level 3 research (studies with a control or comparator group, randomisation) needed
						• More follow-up longitudinal research
						• Standardisation of outcome measures for use in evidencing effectiveness for various mental health conditions

Notes: n=number of specific studies involved in the review (based on studies shown in Tables 4.1-4.3; MH = mental health

6. Scale of Social and Therapeutic Horticulture, environmental conservation interventions and care farming in the UK

This chapter gives an idea of the scale of the three types of green care interventions across the UK and an overview of the current commissioning routes for green care.

6.1. Social and Therapeutic Horticulture

6.1.1. Key National or UK-based STH organisations

There are a number of organisations in the UK that either directly provide STH green care services or support STH projects and practitioners. The following section highlights the key organisations and outlines the role and scale of projects of each[35].

Thrive[36]
Thrive is the leading charity in the UK using gardening to *"bring about positive changes in the lives of people living with disabilities or ill health, or who are isolated, disadvantaged or vulnerable".* Thrive's horticultural therapists and volunteers delivered 9,989 gardening sessions during 2014/15 across four centres in Reading, London, Birmingham and Gateshead and helped around 441 client gardeners (Thrive, 2015a,b).

Thrive primarily operates from the 4 centres but some of the programmes are run at schools, community centres, parks or care homes in the surrounding areas. Programmes can operate for fixed periods (e.g. an 8 week course, a term or up to 2 years for those with a qualification) or can be open-ended allowing access for as long as needed (or for as long as funding allows) (Thrive, 2015b). A session at Thrive can vary in length from 2 hours to a whole day. Very few of the programmes run by Thrive are specifically targeted at mental ill-health but all will cater for this (mental ill-health is rarely an isolated issue) as a large proportion of service users have mental ill-health or disability issues (Thrive, 2015b).

Association of Social and Therapeutic Horticulture Practitioners (ASTHP[37])
ASTHP is the recently formed representative body for Horticultural Therapists and practitioners of Social and Therapeutic Horticulture in England, Wales and Northern Ireland (ASTHP, 2015) and aims to i) develop and promote the profession and ii) promote, maintain and improve the theory, practice and benefits of Social and Therapeutic Horticulture. The ASTHP does not deliver STH projects but instead supports the practitioners who are providing STH services.

Trellis[38]
Trellis (Scottish Therapeutic Gardening Network) is a charity which supports a network of over 300 therapeutic gardening projects in Scotland and runs training workshops, an information service and supports research and development in therapeutic gardening.

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[35] Where information is collected and available
[36] For more information see: http://www.thrive.org.uk/ and http://www.carryongardening.org.uk/
[37] For more information see: http://asthp.org.uk/
[38] For more information see: http://www.trellisscotland.org.uk/

Growing Health[39]

Growing Health is a national project run by Garden Organic and Sustain to see how community food growing can be routinely used by the health and social care services as a way of promoting health and wellbeing (Growing Health, 2015). Growing Health encompasses all forms of community food growing in both urban and rural settings including any of the following types of projects: STH, community spaces, community supported agriculture and care farms, residential and care homes and shared gardens. Growing Health supports both nature-based health promotion projects for the general population and green care treatment interventions. The Growing Health project aims to explore how food growing can be integrated into the new NHS commissioning and public health structures; to develop case studies with projects that use food growing for a health benefit or in a healthcare setting, especially those who have direct links with the NHS and healthcare professionals who use it as part of their practice; and to provide information that will allow food growing to be routinely commissioned and patients to be referred to community food growing as an effective form of health and social care.

Federation of City Farms and Community Gardens (FCFCG)[40]

The Federation of City Farms and Community Gardens is a charity which has been supporting and representing city farms, community gardens and other green spaces across the UK for over 35 years (FCFCG, 2015a). There are 63 city farms and over 1,000 community gardens in the UK (FCFCG, 2015b). All city farms and community gardens provide nature-based, health promotion activities for the general population and many also provide green care services for people with mental health problems (and other vulnerable groups) in the form of STH or care farming. Figures for those city farms providing care farming services are included in the care farming section (section 6.3).

6.1.2. Scale of STH in the UK

Social and Therapeutic Horticulture is one of the most successful and popular green care options in the UK, with over 1,000 projects catering for over 21,000 service users each week (Sempik et al., 2003). Nearly half of the STH projects in the UK provide services for people with learning difficulties; while 40% support people with mental health problems (Sempik et al., 2003). Using these figures, an estimated 8,400 people with mental health problems receive STH services per week.

However, this is likely to be an underestimation given that these figures were from over a decade ago and so it is reasonable to assume that both the number of STH projects and the number of weekly service users have since increased. STH projects are also widely used for patients experiencing Alzheimer's disease (Bragg, 2014) but no information on the numbers is currently available.

In addition whilst there are many horticultural and community food growing projects in existence, many provide nature-based activities as health promotion or health prevention for the general public as well as or rather than STH as a treatment intervention for individuals with a defined or diagnosed need. Understanding the scale of commissionable STH services compared to health promotion initiatives is therefore a challenge.

In conclusion there seems to be a lack of current data relating to the scale of STH across the UK, in terms of numbers of projects, numbers of sessions, number of service users, numbers of sessions classified as 'green care' and the breakdown of service user 'type'.

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[39] This section is taken from the Growing Health website which gives more information on the project: http://www.sustainweb.org/growinghealth/

[40] For more information see: https://www.farmgarden.org.uk/

6.2. Environmental Conservation as a treatment intervention

6.2.1. Key National or UK-based environmental conservation organisations

There are a number of key national or UK based organisations which either directly provide environmental conservation programmes as a treatment intervention or support a network of projects that provide the services. The key environmental conservation organisations known to be offering green care services to varying extents are highlighted in this section.

The Conservation Volunteers (TCV)[41]
The Conservation Volunteers are a long-established charitable organisation[42] which has been supporting thousands of people each year to reclaim local green places, both through their own environmental projects and through a network of 2,000 community groups. In addition to enabling thousands of people to take part in environmental conservation volunteering, TCV also has a nationwide programme of 141 Green Gyms (endorsed by local health practitioners), which have encouraged participation in local nature conservation activities specifically to improve health and well-being (TCV, 2014). Green Gyms can be used as nature-based initiatives in health promotion for the general public but are also used as green care treatments for individuals with a defined need. In many cases, GPs can now prescribe Green Gym sessions to patients to improve physical activity levels, tackle obesity or as a treatment option for mental ill-health.

Groundwork[43]
Groundwork is another leading environmental regeneration charity. It is organised as a federation of independent charities, where each Groundwork Trust signs up to a series of common aims, objectives and processes. Groundwork UK acts as the coordinating body, supporting, championing and representing the work of the organisation at the national level. From small community schemes to major regional and national programmes, its network of 17 local Trusts work in partnership with local people, local authorities and business to deliver economic and social regeneration through improvements to the local environment.

Many of Groundwork's projects deliver some health and wellbeing outcomes for participants. In a recent survey of Groundwork Trusts (Groundwork, 2015), 27 projects specifically designed to deliver health and wellbeing projects were identified, the majority of which were nature-based health promotion activities for the general population. However there were 7 projects that can be considered green care interventions for individuals with a defined need, varying from those with mental health diagnoses or a physical disability to ex-offenders, young people at risk of offending and people suffering with PTSD.

The Wildlife Trusts[44]
In the UK there are 47 Wildlife Trusts, each of which is an independent, autonomous charity whose primary concern is the conservation of nature within its own geographical area. The activities of the Wildlife Trusts are coordinated by the Royal Society of Wildlife Trusts (Wood and Bragg, 2015).The Wildlife Trusts have more than 800,000 members, manage more than 2,300 nature reserves (which are visited by more than seven million people annually) and directly engage more than 386,000 people in events and activities that bring them closer to nature.

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[41]For more information see: http://www.tcv.org.uk/greengym and http://www.tcv.org.uk/
[42] Formerly BTCV
[43] For more information see: http://www.groundwork.org.uk/
[44] For more information see: http://www.wildlifetrusts.org/

The Wildlife Trusts also run a number of projects in a variety of natural environments intended to improve the health and wellbeing of participants. These projects include a number of different activities, both for the general public and green care services for vulnerable people. For delivery of green care services, the Trusts often work in partnership with other organisations such as local NHS trusts, health charities and National Lottery funders. In a survey of health and wellbeing projects for a recent study[45], Wildlife Trusts run more than 14,400 health promotion activities for the general public and 2,965 sessions for vulnerable groups each year. 34 of the 47 UK Wildlife Trusts took part in the survey and reported running different types of nature-based activities (practical conservation, community gardening, green exercise, training/education, nature art and craft, wildlife surveying and bushcraft) for vulnerable people, but the majority were practical conservation activities (Wood and Bragg, 2015). The Wildlife Trusts' green care services primarily cater for those experiencing social disadvantage, people with mental ill-heath and the unemployed. Details of the number of and type of green care sessions for people with mental ill-health or dementia, run either directly by the individual Wildlife Trusts or in partnership with other organisations are shown in Table 6.1. An estimated total of 404 STH and environmental conservation green care sessions are conducted annually by the Wildlife Trusts for people with mental ill-health and 21 for people with dementia.

Table 6.1 The number of and type of green care sessions for people with mental ill-health or dementia run by Wildlife Trusts

Type of green care	Number of sessions per year		
	Mental ill-health	Dementia	Total
STH	142	0	142
Environmental conservation intervention	262	21	283
Green exercise intervention	89	42	131
Nature-based education/ training	47	0	47
Nature arts and crafts	21	0	21
Bushcraft	85	0	85
Wildlife surveying	28	0	28
Total	674	63	737

Source: Wood and Bragg, 2015.

The Royal Society for the Protection of Birds (RSPB)[46]
The RSPB is a charitable organisation which has been working to promote conservation and protection of birds and the wider environment through public awareness campaigns for over 125 years. The RSPB has over 200 nature reserves throughout the UK and is Europe's largest wildlife conservation charity - with more than a million members and over 10,000 volunteers (Bragg and Wood, 2015). The RSPB are also involved in a number of health and wellbeing projects, the majority of which are nature-based health promotion activities and initiatives to improve the wellbeing of children through connection to nature. The RSPB in Dorset are however contributing to green care through their involvement with a GP referral to nature programme for mild depression in Weymouth and Portland, which is in its early stages (see section 6.4.2).

The National Trust (NT) [47]
The National Trust was founded in 1895, and is a charity that works to preserve and protect historic places and greenspaces. The National Trust has 7 million members and 61,000 volunteers more than 17 million people visit their pay for entry properties (350 historic houses, gardens and ancient monuments), and an estimated 50 million visit their open air properties (NT, 2015a).

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[45] Wood and Bragg, 2015 – in press
[46] For more information see: http://www.rspb.org.uk/
[47] For more information see: http://www.nationaltrust.org.uk/

The National Trust is also involved in providing nature-based health promotion activities for the general population as well as a smaller number of green care interventions. In a recent in-house survey, 10 NT projects providing green care interventions were identified: 3 offering STH; 2 offering outdoor education for vulnerable individuals; 3 environmental conservation interventions and 2 care farms (NT, 2015b). These interventions are usually offered in partnership with other organisations (such as Growing Spaces, Mencap, Thrive and Mind) and include interventions for people with mental ill-health (5), people with learning disabilities (3) and disaffected or excluded young people (2) (NT, 2015b).

6.2.2. Scale of environmental conservation treatment interventions

Although the key organisations providing environmental conservation as a treatment collate some data on their own activities, this data varies in format from organisation to organisation making it difficult even to estimate a total number of projects providing services or number of service users. There are therefore no definitive, national or UK-based data on the numbers of environmental conservation sessions provided as green care treatment interventions or on numbers of projects, number of service users or on type of service user.

6.3. Care Farming

6.3.1. Key National or UK-based care farming organisations

There are a number of regional and national care farming organisations which provide supporting services for care farmers in the UK and Ireland and which promote and facilitate the development of care farming.

Care Farming UK[48]
Care Farming UK is a charity which supports care farmers across the UK, which is led by care farmers and supporters. Care Farming UK works to: support the quality and provision of services from care farms; enable care farming networks to develop across the UK; to increase the profile and awareness of care farming; and to develop the evidence-base for the effectiveness of care farming (Care Farming UK, 2015). Care farms in England cater for a wide range of vulnerable groups, but the majority of farms provide services for people with learning difficulties (93%), autism spectrum disorders (ASD) (84%), mental ill-health (75%) and disaffected young people (64%)[49] (Bragg et al, 2014a).

Care Farming UK has strong links with Care Farming Scotland, which supports care farmers in Scotland and the Social Farming Across Borders (SoFab) project, which supports care farmers in Northern Ireland and in Eire. Other more informal groups exist in Wales and regional and county groupings and networks are operating in some parts of England, all of which are supported by Care Farming UK (Bragg, 2013)

Care Farming Scotland[50]
Care Farming Scotland is a charity which aims to offer guidance, information and support to care farmers and to promote the development of care farming across Scotland so that its social, health and economic potential is understood and exploited by policymakers, land managers and providers of care and support services.

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[48] For more information see: http://www.carefarminguk.org/
[49] Most care farms in England are providing care farming services for at least five or more different participant groups.
[50] For more information see: http://www.carefarmingscotland.org.uk/

Social Farming Across Borders (SoFAB) and The Social Farming Support Office[51]
SoFAB was a highly successful EU INTERREG IVA funded project[52] which operated in the Border counties of Ireland and all of Northern Ireland in the period 2011-2014.The Social Farming Office was opened in April 2015 by the Leitrim Development Company with the assistance of the Department of Agriculture Food & the Marine and the CEDRA Fund. It has been re-established to continue the work of the SoFAB project.

6.3.2. Scale of care farming in the UK

There are approximately 230 care farms in the UK (194 of these in England) (Care Farming UK, 2015) with an additional 25 care farms in the Republic of Ireland[53] (SoFab, 2014). Given that in a 2014 survey care farms provide services for a mean number of 34 clients each a week, 230 care farms provide services for an estimated total of 7,820 per week across the UK[54] (Bragg et al., 2014a). The 2014 study found that 75% of care farms were providing green care services for people experiencing mental health problems, therefore at least 173 care farms provide services for people with mental ill-health. Furthermore, a significant amount of latent potential was revealed as the majority of care farmers in this research stated that their care farm was not currently running at full capacity, with the mean operating capacity standing at 58%. So if all the places at existing care farms were filled, care farms could provide up to 13,483 clients per week in the UK (Bragg et al., 2014a).

6.4. Commissioning of green care services

6.4.1. Overview

There are limited data available on current commissioning routes for green care services generally. Anecdotal evidence suggests that green care services such as STH, environmental conservation and care farming are commissioned by a wide range of different organisations for a wide range of different service user groups. There is however general agreement that health and social care referrals from Clinical Commissioning Groups or from GPs are in the minority (Wood and Bragg, 2015; Bragg et al, 2015).

A recent piece of research (Bragg et al., 2015) was commissioned by Natural England to examine the current commissioning of care farming services by providers of health and social care in England. Although the study focused purely on care farm services, parallels can be drawn for the commissioning landscape for Social and Therapeutic Horticulture and for environmental conservation interventions.

In the study, a wide range of commissioning organisations currently commission care farm services, with the majority of farms having clients referred to them by social services, Community Mental Health Teams and education services; together with clients who are self-referred, referred by family or from 'other' sources (Hine et al., 2008; Bragg, 2013). The research concluded by identifying three main routes to commissioning care farm services through health and social care, which are likely to be similar for STH and environmental conservation interventions:

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[51] For more information see: http://www.socialfarmingacrossborders.org/
[52]See: http://www.seupb.eu/programmes2007-2013/interregivaprogramme/interregoverview.aspx
[53] This number includes a very small number of farms in Northern Ireland, but as the focus of the research was on the ROI, a comprehensive survey of NI was not included in the study.

i) **Through commissioning bodies (CCGs and LAs) for small-scale or individual contracts**. These are contracts for small numbers or for individual service users; currently the most common contracts for care farming services from LAs; also sometimes derived from specific grant funding to support innovative practices such as social prescriptions.

ii) **Through commissioning bodies (CCGs and LAs) for large-scale contracts.** These are contracts/tenders for larger numbers of service users increasingly preferred by CCGs, highlighting a need for the development of partnerships and consortia to enable large-scale provision.

iii) **Through individual service users with personalised health or social care budgets.** These are contracts for care for an individual; currently some care farm services are provided for those in receipt of personal social care budgets; as yet, not many through personal health budgets; again highlighting the need for green care providers to engage with individuals, their families and their support workers to facilitate these contracts (Bragg et al., 2015).

There is some evidence of limited growth in the use of non-NHS providers for the provision of community and mental health services (Ham *et al.,* 2015), and although CCGs might not currently be commissioning significant numbers of placements, commissioners interviewed in the care farming study suggested that green care (and care farming specifically) has potential as an appropriate service in the future (Bragg et al., 2015). Given that contracts tendered by CCGs (and Local Authorities) generally focus on a specific client group with particular needs (Addicott, 2014; Bragg et al., 2015), any potential partnerships and consortia (formed to access the larger CCG contracts) are likely to be most effective if they comprise services that engage with particular client groups rather than those that provide similar services.

Nevertheless, there are examples of partnerships and consortia of green care services providers under development to provide nature-based health and social care services for CCGs. These are an example of what the NHS term as' Multispecialty Community Providers' in their 'Five year forward view' (NHS England, 2014a) and typically these use a 'hub and spoke' model. Two such examples are highlighted in the following section.

6.4.2. Examples of Natural Health Service consortia

Natural Health Service - Liverpool[55]
The Natural Health Service in Liverpool is a social enterprise that offers health commissioners a single point of access to a range of well-developed and evidence-based natural environment focused products specifically devised to help tackle a range of health and wellbeing issues (Natural Health Service, 2013). The Natural Health Service consortium consists of 21 organisations which came together in 2013 to create a focal point to enable health commissioners to contract green care services[56] that are evidence-based and cost-effective. The consortium aims to develop a sustainable business and well-resourced consortium that operates as a Social Enterprise that will become a centre of excellence for delivery of this type of health service by 2016. The Consortium is managed through a coordinating group with a nominated organisation that acts as a 'hub'. This Consortium, the coordinating group and hub are established as the 'Natural Health Service' and are managed by Community Forest Trust which provides accountability and also coordinates the website.

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[55] This section is taken from the website which also provides further information: http://www.naturalhealthservice.org.uk/
[56] And also health promotion activities

Natural Health Service for Weymouth and Portland (NHSWP) [57]

The Natural Health Service for Weymouth and Portland project has evolved from a GP-led initiative from the Natural Weymouth and Portland Partnership. Partners in the project include the Dorset Coast Forum, Natural England, Weymouth and Portland Borough Council, Dorset Countryside, the RSPB, The Dorset AONB, Dorset Wildlife Trust, Public Health Dorset, local GPs and Bournemouth University (Dorset for you, 2015). NHSWP aims to identify activities in the local natural environment that will widen the GP patient referral opportunities for patients with low risk physical and mental health issues. The NHSWP project conducted research to identify people's preferences for activities and the motivations and barriers to getting involved. The Dorset Coast Forum is leading this work, with funding from the Dorset Clinical Commissioning Group and Dorset County Council, RSPB and the Olympic Legacy Fund (Dorset Coast Forum and Natural Choices, 2015).

Sixty per cent of the respondents were aware of the programs already on offer through the GP referral system but only 14% (of these 60%) had actually been referred. The main condition for referral currently was obesity and weight loss while only six per cent of people had been referred for mental health issues. It was suggested by respondents that people with depression would benefit from the activities such as walking, swimming, outdoor exercise, yoga and wildlife watching (Dorset Coast Forum and Natural Choices, 2015). The NHSWP project plan to use the results of their research to shape the referral activities available across Weymouth and Portland.

6.5. Key findings

- There are a number of organisations in the UK that either directly provide green care services or provide support for green care projects and practitioners.

- Provider and support organisations for Social and Therapeutic Horticulture include: Thrive, Association of Social and Therapeutic Horticulture Practitioners, Trellis, Growing Health and the Federation of City Farms and Community Gardens; for environmental conservation interventions organisations include: The Conservation Volunteers, Groundwork, The Wildlife Trusts, the RSPB and the National Trust; and for care farming services organisations include: Care Farming UK, Care Farming Scotland and the Social Farming Support Office in Ireland.

- Although there is no complete picture or definitive data for the scale of green care services in the UK overall, there is some data on the scale of STH, environmental conservation interventions and care farming service provision.

- There is a lack of current data relating to the scale of STH across the UK, in terms of numbers of projects, numbers of sessions, number of service users and the breakdown of service user 'type'. However data from 2003 suggested there were over 1,000 projects catering for over 21,000 service users each week, with some 40% supporting people with mental health problems. Using these figures, an estimated 8,400 people with mental health problems receive STH services per week. However, this is likely to be an underestimation as both the number of STH projects and the number of weekly service users are likely to have since increased.

- Although the key organisations providing environmental conservation as a treatment collate some data on their own activities, this data varies in format from organisation to organisation making it difficult to estimate a total number of projects providing services or of service users. There are therefore no definitive, national or UK-based data on the numbers of environmental conservation sessions provided as green care treatment interventions.

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[57] For more information see: https://www.dorsetforyou.com/natural-health-service

- There are approximately 230 care farms in the UK (194 of these in England) with an additional 25 care farms in the Republic of Ireland. Given that in a 2014 survey care farms provided services for a mean number of 34 clients each a week, 230 care farms provide services for an estimated total of 7,820 per week across the UK. As the 2014 study found that 75% of care farms were providing green care services for people experiencing mental health problems, it can be concluded that at least 173 care farms provide services for people with mental ill-health.

- There is limited information on current commissioning routes for green care services generally, but green care services such as STH, environmental conservation and care farming are commissioned by a wide range of different organisations for a wide range of different service user groups. Health and social care referrals from Clinical Commissioning Groups or from GPs to green care are currently in the minority.

7. Key findings and recommendations

7.1.   Key findings

- The key findings from the consultation to explore the current use of the terms 'ecotherapy' vs 'green care' vs 'nature-based interventions' included:

  o There is consensus for consistency in the language used to describe the sector.
  o No preference for a collective name, however some negative comments were received about ecotherapy and concerns about not continuing to use the term green care.
  o One possible solution may be 'Green care: Nature-based interventions for vulnerable groups'.
  o In order to provide clarity and to aid promotion of the green care sector, participants felt that it is necessary to make the distinction between commissioned interventions for the vulnerable and public health initiatives for the general population.
  o There was consensus that green care providers should work together to provide a larger 'offer' to commissioners such as Clinical Commissioning Groups.

- Although the three approaches are contextually different, in reality the approaches often feature similar activities and have a similar ethos. These interventions involve a deeper interaction with nature than some of the other forms of green care, allowing service users to really engage with and shape nature. The results of the literature review for these three different types of green care convincingly highlight a range of mental wellbeing benefits for participants derived from the combination of three key attributes: i) the natural environment; ii) the meaningful activities; and iii) the social context, which characterise these approaches.

- The mental health benefits for social and therapeutic horticulture, environmental conservation interventions and care farming were similar and include:

  o Psychological restoration and increased general mental wellbeing
  o Reduction in depression, anxiety and stress related symptoms
  o Improvement in dementia-related symptoms
  o Improved self-esteem, confidence and mood
  o Increased attentional capacity and cognition
  o Improved happiness, satisfaction and quality of life
  o Sense of peace, calm or relaxation
  o Feelings of safety and security
  o Increased social contact, inclusion and sense of belonging
  o Increase in work skills, meaningful activity and personal achievement

- Social and Therapeutic Horticulture evidence base: quantitative and qualitative studies, quasi – experimental and several RCTs; evidence base largest and most established; many studies focusing on people with various mental health conditions, particularly for those with depression and with dementia.

- Environmental conservation interventions evidence base: many of the studies are qualitative but there is an increasing number which adopt a mixed methods approach; the majority of studies feature the general population, with only a minority specifically assessing the effects on those with mental ill-health.

- Care farming evidence base: there is a mix of quantitative and qualitative evidence, with studies frequently taking a mixed methods approach; some of these studies are quasi-experimental, a few are RCTS. The majority of the care farming research studies focuses on those with mental illness, with diagnoses ranging from depression to schizophrenia.

- There are a number of organisations in the UK that either directly provide green care services or provide support for green care projects and practitioners. Although there is no complete picture or definitive data for the scale of green care services in the UK overall, there is some data on the scale of STH, environmental conservation interventions and care farming service provision.

- Data from 2003 suggested there were over 1,000 projects catering for over 21,000 service users each week, with some 40% supporting people with mental health problems. Using these figures, an estimated 8,400 people with mental health problems receive STH services per week. However, this is likely to be an underestimation as both the number of STH projects and the number of weekly service users are likely to have since increased.

- Although the key organisations providing environmental conservation as a treatment collate some data on their own activities, this data varies in format from organisation to organisation making it difficult to estimate a total number of projects providing services or of numbers of service users. There are therefore no definitive, national or UK-based data on the numbers of environmental conservation sessions provided as green care treatment interventions.

- There are approximately 230 care farms in the UK with an additional 25 care farms in the Republic of Ireland. 230 care farms provide services for an estimated total of 7,820 service users per week across the UK. As 75% of care farms provide green care services for people experiencing mental health problems, at least 173 care farms provide services for people with mental ill-health.

- There is limited information on how and by which routes green care services are commissioned for people with mental ill-health, but generally green care services such as STH, environmental conservation and care farming are commissioned by a wide range of different organisations for a wide range of different service user groups. Currently health and social care referrals from Clinical Commissioning Groups or from GPs to green care are in the minority.

7.2. Recommendations

Recommendations stemming from this research have been organised under the following headings:
- Collaboration within the green care sector
- Streamlining communications with health and social care commissioners
- The green care evidence base for mental health
- Increasing the scale of green care commissioning in mental health

7.2.1. Collaboration within the green care sector

1. **There is a need for the green care sector umbrella organisations to: i) work together in partnership - in order to promote the sector more widely to policymakers, commissioners and potential service users; and ii) to raise awareness *within the green care sector* of the need for developing common messages for clear communications with commissioners.**

7.2.2. Streamlining communications with health and social care commissioners

Language

There are an increasing number of organisations offering a range of nature-based interventions as specifically-designed and structured health or social green care treatments for a range of vulnerable groups. However, the different language used to describe their activities and associated benefits, (both on an individual and a collective level) has resulted in some confusion amongst health and social care commissioners. There is therefore a need for green care service providers to work together to improve the coherence of these services and streamline access to these services for healthcare commissioners.

2. **In order to provide clear communication to commissioners from the sector, the term 'Green Care' should be used to describe the range of activities that fall within the scope of nature-based interventions for individuals with a defined or diagnosed need.**
   - Using the strapline is recommended to increase clarity – e.g. ***"Green care – nature-based interventions for individuals with a defined need"[58]***
   - **Through partnership, a core group of national organisations should widely adopt the term 'green care' to demonstrate leadership** and to facilitate clarity**.**

Key messages

The presence of both i) nature-based, green care treatment interventions to improve the health and wellbeing of individuals; and ii) public health initiatives designed for community health promotion through nature-based activities; has led to further confusion amongst commissioning bodies and service users with both types of project often seeming to offer similar activities.

3. **It is crucial to make a distinction between i) specifically designed and commissioned interventions for individuals with a defined need (green care), and ii) public health programmes for the general population.**
   - **This will ensure that nature-based service providers will use the appropriate language** (and evidence) **in order to talk to the right commissioners** – i.e. green care providers will target health and social care commissioners (Clinical Commissioning Groups and Local Authorities (social services)) and more general nature-based programmes will target commissioners of Public Health (PHE and Local Authority public health departments).

Scale

There is no definitive picture of the scale of green care services in the UK overall; and the scale of the use of green care in mental healthcare provision is also unknown. Although there is current data on the scale of care farms, data for the number of STH interventions is outdated and for environmental conservation (as a treatment intervention) data is variable.

4. **The green care partnership should publish an annual status report ('state of the nation'), providing a comprehensive picture of the scale and nature of green care for mental healthcare in the UK.** It could include:

   - numbers of service providers,
   - type of service provided,
   - number of service user places per week

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[58] There was much debate over the use of the term 'vulnerable' so the definition was adapted to 'for individuals with a defined need'.

- level of capacity
- commissioners of service
- mental health outcomes addressed
- type of evaluation/ evidence of effectiveness

Increasingly, Local Authorities, some Clinical Commissioning Groups and voluntary sector umbrella organisations are developing local online directories of services and service providers as a cost-effective way of publicising the local offer[59]. Using a 'hub and spoke' model these directories or consortia offer a single point of access to a range of different services (nature-based or otherwise).

Although these hubs are currently not being used to their full potential, it is likely that they will become effective mechanisms through which GPs can utilise 'social prescribing' and valuable tools for engaging with the small-scale or individual CCG/LA contracts as more CCGs become aware of green care; and for engaging with personalised health or social care budgets as numbers of individual service users with personal budgets increase.

4. **Providers of green care services should be encouraged to register with local online directories of services** (or consortia of service providers) **and have representation on their local hubs to advertise their services to potential service users.**

7.2.3. The green care evidence base for mental health

Disseminating existing evidence
Results of the literature review for Social and Therapeutic Horticulture, environmental conservation and care farming interventions show a range of mental wellbeing benefits for participants derived from the combination of three characteristic attributes: i) the natural environment; ii) the meaningful activities; and iii) the social context. Commissioners of mental health services need to be made aware of the existing international and national evidence base drawn together in this review in order that they may be convinced of the efficacy of green care for service users.

6. **The green care sector needs to better promote and share the evidence of the effectiveness of nature-based interventions for people experiencing mental health problems:**
   - **within the sector** to enable service providers to use the information to: i) design more effective interventions and ii) communicate outcomes to commissioners and service users.
   - **to commissioners** and other bodies of mental healthcare professionals to raise awareness and build greater understanding; and
   - **to existing and potential service users and their families** to improve awareness, confidence and access to services.

Outcome measures
Green care interventions are complex, frequently deliver multiple outcomes simultaneously and as a result often require several outcome measures to reflect this. A large number of different outcome measures have been used in the existing published evidence to assess mental health and wellbeing. This wide variation in outcome measures exists both in studies within the same type of green care and between different types. There is therefore a need for consistency and to standardise metrics across the sector wherever possible.

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[59] others are developing consortia to publicise and deliver services from the directory

7. **The green care partnership needs to provide members with relevant information and guidance on the use of standardised, reliable and validated measures of effectiveness, to assess changes in mental health and wellbeing condition.**
    - **This guidance must highlight the importance of using control or comparator groups** (where possible and appropriate) **in order to demonstrate that the green care intervention is causing the impact** (i.e. causality); and
    - **Cost-benefit or cost-effectiveness measures should also be included** (where possible).

7.2.4. Increasing the scale of green care commissioning in mental health

There was consensus in this study that green care providers should work together to provide a larger 'offer' to health and social care commissioners such as Clinical Commissioning Groups. Recent research has suggested that forming partnerships based on service user type or by forming 'natural health service' consortia would be beneficial.

8. **The green care partnership should support and encourage members to participate in large-scale demonstration trials to test and evaluate new approaches to scaling up delivery.**

9. **The green care partnership organisations should work with their members to facilitate access to, and development of, larger scale health and social care contracts.**

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9. Appendices

Appendix A – Research Team involved in the study

This Natural England commissioned research involves two key organisations: Mind and the Green Exercise Research Team at the University of Essex. Further details of the organisations can be found in the sections below.

1) Mind

Mind provides advice and support to empower anyone experiencing a mental health problem and campaigns to improve services, raise awareness and promote understanding of mental health problems. Mind's network of over 140 local Minds provides support to over 400,000 individuals across England and Wales and delivers services rooted in their local communities.

Between 2009 and 2013, Mind funded 130 ecotherapy projects across England with £7.5m support from the Big Lottery Fund. Over 12,000 people used the projects to look after their mental health by doing gardening, farming, food growing, exercise, art and craft, or environmental conservation work – supported by trained professionals. In October 2013 Mind launched their 'Ecotherapy Works' campaign at The King's Fund where they called upon the people who plan, commission and deliver health and social care services to look at the evidence for ecotherapy and consider how it can be provided locally to improve our health and wellbeing.

Mind remains active in promoting ecotherapy as a cost effective way to improve both physical and mental wellbeing, which is accessible and inclusive. Currently at least half of all local Minds provide some form of ecotherapy.

2) The Green Exercise Research Team at the University of Essex

The Green Exercise Research Team involved in this study forms part of the Essex Sustainability Institute (ESI) at the University of Essex. There is growing empirical evidence to show that exposure to nature brings substantial mental health benefits and at the same time, physical activity is known to result in positive physical and mental health outcomes. Over the last 11 years at the University of Essex, these ideas have been combined into a programme of research on 'green exercise' (activity in the presence of nature) and 'green care' (therapeutic applications of green exercise and other nature-based interventions). These address current concerns about the adverse health effects of modern diets, sedentary lifestyles and a disconnection with nature, along with growing evidence that stress and mental ill-health have become substantial health problems for many people in industrialised societies. This cross-disciplinary University of Essex project team is engaged in primary research on:

i)   the health benefits of green exercise – investigating the mental and physical health benefits of physical activities under exposure to different rural and urban environments;
ii)   measuring connection to nature; and
iii)   evaluating a wide variety of green care options in varying contexts (including care farming, facilitated green exercise, ecotherapy and wilderness therapy); and; and is currently leading research in this field.

The Green Exercise Research Team were also involved in conducting the original research that supported Mind's Ecotherapy campaign in 2007 and the Ecominds Programme from 2008-2013. More information on this research can be found at the Green Exercise Research Team website: www.greenexercise.org

Appendix B The distinctions between health and social care[60]

Community-based mental health and social care means any care or support you receive to help you manage a mental health problem while you are living in the community (i.e. not in hospital). Community-based services for people with mental health problems are divided into health care and social care.

Health care generally means any care you need to manage your mental or physical health. For example:

- treatments, such as medication or talking treatments (for example CBT, counselling or psychotherapy)
- crisis care, such as services in A&E
- support from a specialist mental health worker or team, such as a psychiatrist, community mental health nurse (CMHN) or community mental health team (CMHT)
- preventative, or public health services, that aim to help people look after their mental health and prevent mental health problems.

Social care generally means any care or support you need to manage your day-to-day life as a result of your mental health needs. For example:

- managing money, such as budgeting or paying the bills
- housework, such as cleaning, cooking or shopping
- using local services, such as peer support groups, employment services, or day centres
- transport, such as using a taxi, minibus or bus pass to attend appointments or services
- managing relationships, such as relationships with friends, family or neighbours
- aids and adaptations to your home or help with mobility issues
- personal care, such as washing or dressing
- benefits and housing, such as help with applications, attending appointments or getting advice or information
- accessing or staying in training, education or employment
- support from a specialist social worker or support worker.

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[60] This section is taken directly from Mind's *"What is community-based mental health and social care"* available at: http://www.mind.org.uk/information-support/guides-to-support-and-services/community-based-mental-health-and-social-care-in-england/what-is-community-mental-health-and-social-care/#.VeWj9flViko

Appendix C Health and social care commissioning structures in the devolved nations

Northern Ireland has had integrated health and social care commissioning structures since 1973. Health and social care commissioning is the concern of the Health and Social Care Board, and five large health and social care trusts responsible for the delivery of primary, secondary and community health care; and public health is the realm of the Public Health Agency.

Scotland is also working towards more integration between health and social care. Social care is commissioned by LAs, Territorial NHS Boards handle primary and community health care through the Community Health Partnerships.

In Wales, LAs are responsible for social care commissioning, Local Health Boards commission primary, secondary and community healthcare services and public health is the responsibility of three NHS Trusts. For more details see http://www.mentalhealthwales.net/mhw/nhs_wales.php and NHS England 2014

Appendix D Three key theories explained

The Biophilia hypothesis, which was proposed by Edward Wilson (Wilson, 1984), suggests that there is an innate evolutionary basis to the relationship of humans with nature; recognises man's fundamental dependence on nature and the desire to connect with it. Since the original proposition, Biophilia has been widely discussed by other authors and many studies appear to support the hypothesis (Kellert and Wilson, 1993; Kahn, 1997; White and Heerwagen, 1998; Gullone, 2000; Fawcett & Gullone, 2001; Joye, 2007; Grinde and Patil, 2009; Windhager et al., 2011). The hypothesis proposes that humans have an inherent, even genetic predisposition to seek contact with nature; and because man spent much of his history living closely with nature he has evolved to extract and analyse information and learn about natural processes (Wilson, 1984; Kahn, 1997). Essentially, the theory proposes that there may be an evolutionary competitive advantage in having superior knowledge about the natural world (White and Heerwagen, 1998) which contributes to improved wellbeing and mental development including emotional, cognitive, aesthetic and spiritual elements (Kellert, 1983; Fawcett and Gullone, 2001). Although much research seems to support this theory, what is still uncertain is exactly *how* this works (Wilson, 1993), the identity of genetic mechanisms at work and whether they are also affected by the living environment or patterns of behaviour.

Attention Restoration Theory (ART), introduced by Steven and Rachel Kaplan in 1989, focuses on the two different types of attention (directed and involuntary) and the cognitive changes associated with restoration from mental fatigue (Kaplan and Kaplan, 1989). Directed attention requires mental effort and concentration and the individual must focus hard to process information (Bird, 2007). This is tiring, and if prolonged can cause mental fatigue (Kaplan, 1995; Taylor et al., 2001; Berman et al., 2008; Herzog and Strevey, 2008; Ewert et al., 2011), leading to stress which then hinders the cognitive abilities required to perform everyday activities (Van den Berg *et al.*, 2007). Mental fatigue is more frequent in times of stress, illness or grief and is often heightened by overwork and insomnia (Barton, 2008). In contrast, involuntary attention or 'soft fascination' (Kaplan *et al.*, 1998) requires no effort and replenishes and restores an individual's capacity for directed attention (Kaplan, 1995; Taylor et al., 2001; Berman et al., 2008). Natural environments allow for much involuntary attention and so provide a 'restorative environment' (Kaplan, 1990; Hartig & Staats, 2006) through four key elements: i) fascination, ii) being away from day-to-day routines, iii) a feeling of extent (allowing for exploration), and iv) compatibility with our expectations (Kaplan, 1995; Herzog and Strevey, 2008; Natural England, 2009). Like Biophilia, ART has been widely discussed and again several studies support the theory (Kaplan *et al.*, 1998; Hartig *et al.*, 2001; Kuo & Sullivan, 2001a; Herzog *et al.*, 2002; Han, 2003; Henwood, 2003; Van den Berg *et al.*, 2003; Hartig & Staats, 2005; Ottosson & Grahn, 2005; Van den Berg *et al.*, 2007; Karmanov and Hamel, 2008; Aspinall et al., 2013). Furthermore, research on different types of natural environment and their associated restoration capacity has been conducted (Hartig *et al.*, 1991; Korpela & Hartig, 1996; Hartig *et al.*, 1997; Laumann *et al.*, 2001; Han, 2003; Herzog *et al.*, 2003; Bagot, 2004; Berto, 2005) with the general consensus that more natural environments are most beneficial (Berto, 2005; Bird, 2007). The European Centre for Environment and Human Health is currently conducting a systematic review of the empirical evidence of ART [61] which will allow for a clearer picture on the extent of the supporting (or conflicting) literature.

The third key theory is the **Psycho-Evolutionary Theory (PET)** promoted initially by Roger Ulrich in 1981, which argues that restorative effects of nature are derived from the reduction of stress through affective or emotional changes rather than purely through replenishing directed attention

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[61] See http://www.ecehh.org/publication/attention-restoration-theory-systematic-review for more information

as with ART (Ulrich, 1981, 1983). PET argues that natural environments promote all types of 'stress recovery' and promote positive affect over negative affect (Ulrich, 1981, 1983; Herzog and Strevey, 2008; Ewert et al., 2011), thus accounting for people's preferences for natural environments which represent places of safety or security and that initiate affirmative emotional responses. Ulrich maintains that viewing natural scenes provokes an immediate effect on an individual's brain and body, leading to a rapid reduction in stress (Bird, 2007). This theory has been supported by studies documenting physiological benefits in reduced stress such as reductions in blood pressure and heart rate and lower levels of stress hormones reported through natural environment exposure (Nakamura & Fujii, 1990; Ulrich et al., 1991; Nakamura & Fujii, 1992; Ulrich & Parsons, 1992; Ulrich, 1993; Hartig et al., 1996; Hartig et al., 2003; Laumann et al., 2003; Herzog and Strevey, 2008; Ward Thompson et al., 2012).

University of Essex

Green Care, Nature-based interventions or Ecotherapy?

There are now numerous local and national organisations offering a range of nature-based interventions (also known as green care or ecotherapy) as specifically designed structured health or social care treatment interventions for particular vulnerable groups in society, e.g. people with diagnosed mental illness, those with disabilities, adults and children with ASD, youth at risk, older people with dementia etc.

These nature-based interventions are varied and include interventions such as care farming, social and therapeutic horticulture, facilitated environmental conservation work, animal assisted interventions and many others. Although these interventions may vary in context, client group and approach, they all have several things in common:

- They use nature in a coherent and deliberate way to generate health, social or educational benefits, through a regular structured programme of activities
- Their services are commissioned by a variety of different commissioning bodies and individuals
- They are keen to increase awareness of the green care sector and to increase the level of commissioning

Currently these projects are using different language to describe their activities and benefits, have different delivery models, use different impact measurements and vary in level of quality. Many green care organisations have expressed the need to work together to simplify both the message and the 'offer' for commissioners, in order to increase the number of nature-based interventions being commissioned.

Natural England, Mind, the University of Essex and other partners are starting the discussion by asking people working in the field of green care for their opinions regarding the development of a common language in order to communicate more effectively with commissioners. We would be most grateful if you could spare the time to complete our short questionnaire. All the information given to us will be treated as anonymous and will not be passed on to a third party. Thank you!

1. **I agree to take part in this research by completing this questionnaire** *(Please tick)*

The following question refers to nature-based interventions which are *specifically designed* for particular vulnerable groups in society *as a commissioned* treatment, therapy or care intervention and *does not* refer to nature-based activity sessions that are run for the general population– i.e. activities, initiatives or events for people of all abilities, which are inclusive and non-specific.

2. **Which term do you currently use to describe the range of nature-based interventions?**

Green care

Ecotherapy

Nature-based interventions

Other *(please tell us)*

3. **Do you think there is a need to present a clear message to commissioners and choose one term for these interventions and encourage everyone in the sector to use it?**

Yes   No   I haven't really thought about it

4. **Would you be willing to use the term for this sector that the majority of people choose even if it is not the term you prefer?**

Yes [ ]   No [ ]

5. **Please tell us how much you agree or disagree with the following 3 statements:**

	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
It is important that the different types of green care mobilise under one name to collectively promote the sector					
It is necessary to make a distinction between specifically designed and commissioned interventions for the vulnerable and public health initiatives for the general population					
I think green care providers in should work together regionally to provide a larger 'offer' to commissioners such as CCGs (Clinical Commissioning Groups)					

6. **Please tell us which best describes you**

Provider of green care / ecotherapy services   [ ]

Commissioner of health or social care services   [ ]

Health/ social care practitioner (e.g. clinician, GP, member of mental health team, social worker etc.)   [ ]

Researcher   [ ]

Interested party   [ ]

Other *(please tell us)* [   ]

7. **If you or your organisation provides nature-based interventions for vulnerable groups, which type of green care/ ecotherapy are you mainly providing?** *(please tick only one box)*

Social and therapeutic horticulture [ ]   Care farming/ social farming [ ]

Facilitated environmental conservation [ ]   Animal assisted interventions [ ]

Facilitated green exercise [ ]   Nature arts and crafts [ ]

Other *(Please specify)* [   ]

8. **Any other comments?**

[   ]

Thank you very much for sparing the time to complete our questionnaire

Please hand the questionnaire back to the person that gave it to you or send freepost to Freepost RSSR-TZLH-UUSG, Rachel Bragg, Department of Biological Sciences, University of Essex, Wivenhoe Park, COLCHESTER CO4 3SQ.

If you would like more information about this questionnaire or the wider research that Natural England have commissioned Mind and the University of Essex to undertake, please contact the key researcher, Dr Rachel Bragg by email at: rebragg@essex.ac.uk

Appendix F – Green care language questionnaire detailed findings

About the respondents to the survey
There were a total of 252 respondents to this green care questionnaire, although not all responded to every question.

Around half (126, 52%) were providers of some kind of green care; 55 (23%) were involved in nature-based projects for the general population (which may also cater for some vulnerable participants); 30 (12%) were researchers or interested parties; 13 (5%) were health or social care practitioners or support workers; and 18 (7%) classified themselves as 'other'.

Box 1. 'Other' job titles included

supporter of providers	*Green Care broker*
Education sector	*Care Farming UK director & supporter*
schools gardening aid	*Charity sector town planner*
Policy Advisor (Communities and diversity)	*School and community provider*
farmer, former care worker	*Steiner School/Waldorf Education*
Trustee of Green Care providing charity	*Museum*
School	*Education Provider*
Umbrella group	*local authority*
Programme Manager for Environmental Charity	*Politician / community worker*
Charity	

A collective name for the sector
There were 231 responses to this question, but 90 people (40%) gave a name for their individual type of intervention rather than a collective name, leaving 141 people who answered the question about a collective name for the sector. Of these people, 41 people (29%) chose ecotherapy; 41 people (29%) chose nature-based interventions; 33 people (23%) chose green care and 26 people chose another term. These other terms for the sector included: green skills; green social care; green health; green activities and engagement; outdoor therapy; nature therapy; nature-based therapy; green therapy; green prescriptions; outdoors for health. Other comments relating to this question are shown in Box 2.

Box 2. Other comments relating to collective name for the sector

"we use different terms dependant on context, situation and audience"

"Don't like ecotherapy- ok with the others"

"happy to use green care or nature-based interventions but NOT Ecotherapy"

"Ecotherapy is too 'eco' but nature-based intervention second choice"

"we are all really unclear about what term to use"

"Happy with green care or nature-based interventions but NOT ecotherapy"

"Prefer green care though"

"Green care: nature-based interventions"

"I don't like, or wish to use the term 'green' or 'eco'."

"I am supportive of working together to promote the sector but if we were to adopt a generally used word for what we did, it would probably only be feasible in conversations with commissioners not for volunteers as some of the terms would alienate certain groups and one of the strengths of garden/ nature work is it's fairly universally understood."

> *"We are working on a mental health and wellbeing agenda with a high emphasis on prevention. Using the term 'ecotherapy' is highly off putting to people who come to our projects. It's the fact that it's therapeutic without looking like therapy that makes it work. How we refer to our activities to the public and to commissioners will not necessarily be the same thing."*

> *"Whilst there are similarities there are also significant differences between different forms of green care. As far as I am aware 'green care' is already an agreed umbrella term which refers to all of these and should be the one we use to talk about where our individual interventions sit in an overall framework"*

> *"I can't decide if there is a need for a generic term! It does make sense in terms of awareness raising etc. But I can't come up with something that fits the whole range of interventions - I'm not keen on the word 'green' and it doesn't sit well with animal based therapy... but then horticulture is too specific... It's problematic!"*

> *we use different terms dependant on context and situation*

> *Green Activities for Health & Wellbeing*

> *Learning support*

> *Outdoor experiential learning*

> *outdoor therapy*

> *Varies - therapeutic gardening, ecotherapy, biophilia, volunteering for wellbeing. Wouldn't use 'Nature' so blatantly as our work is very inner city*

> *linking care of the land with care of people*

> *Don't like ecotherapy- ok with the others*

> *I would name them individually not collectively*

> *Various - depending on audience - green care, ecotherapy, nature as therapist*

> *I use a description rather than a " phrase" though*

> *environmental education*

> *happy to use green care or nature-based interventions but NOT Ecotherapy*

> *Eco therapy is too 'eco' but nature-based intervention second choice*

> *all are ok*

> *we are all really unclear about what term to use*

> *Happy with green care or nature-based interventions but NOT ecotherapy*

> *Naturally Healthy*

> *prefer green care though*

> *Green care: nature-based interventions*

> *I don't like, or wish to use the term 'green' or 'eco'.*

Is there a need to present a clear message to commissioners and choose one term for these interventions and encourage everyone in the sector to use it?

144 (59%) said 'yes'
31 (13% said 'no'
70 (29%) hadn't really thought about it

Conclusion: Majority think there is a need to present a clear message

Would you be willing to use the term for this sector that the majority of people choose even if it is not the term you prefer?
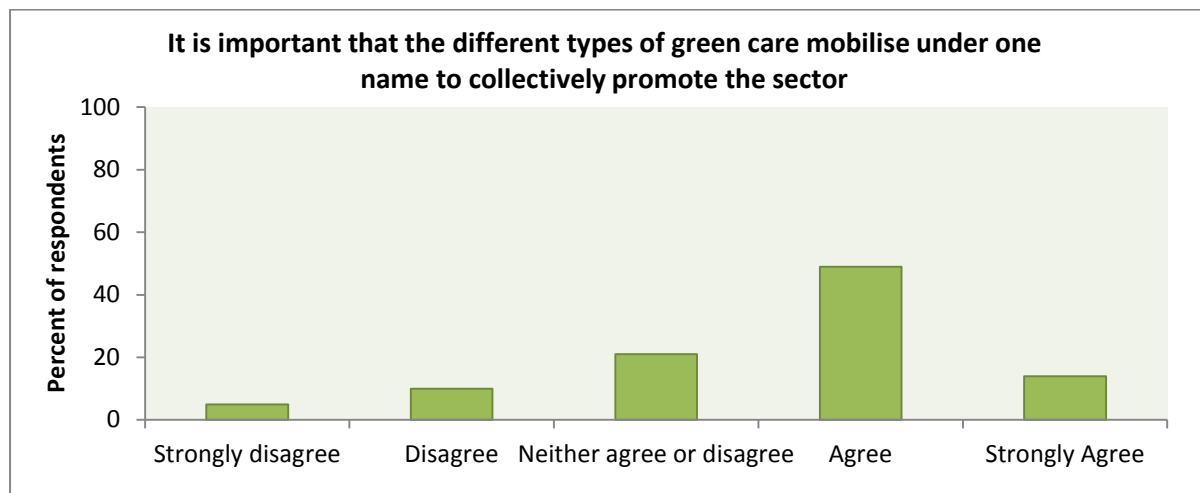189 (80%) said 'yes'
46 (20%) said 'no'

Conclusion: Majority will go with what we choose

Degree to which you agree with 3 statements

    A) *It is important that the different types of green care mobilise under one name to collectively promote the sector?*

63% or respondents agreed or strongly agreed with this statement – see figure

Box 3. Other comments regarding a collective name for the sector

"There is a need for the sector to be better represented but individual projects as separate entities can provide specialised services for service users and generalisation can be detrimental."

"I have real reservations about using standardised terms. These often do not cover the specific range of activities/care/support offered and can quickly become a cliché. The opportunities are usually locally based and it is important that they reflect local need and imbedded in the community they serve - which includes networks with local GP's, Public Health, Mental Health Services, etc."

"An interesting idea. A collective term would certainly help - to a certain extent this could bel inked with a model or a quality mark. I'm thinking about the success of 'Forest Schools' in reinventing understanding of environmental education. Maybe we need to be providing 'Garden Doctors' or a similar model that is very visual and easy to understand."

"we are working on a mental health wellbeing agenda with a high emphasis on prevention. Using the term 'ecotherapy' is highly off putting to people who come to our projects. Its the fact that its therapeutic without looking like therapy that makes it work. Green Care is the name of the local council grounds maintenance dept! Our sites are community wellbeing gardens but we are working in a different way to traditional models. How we refer to our activities to the public and to commissioners will not necessarily be the same thing."

"whilst there are similarities there are also significant differences between different forms of green care. As far as I am aware green care is already an agreed umbrella term which refers to all of these and should be the one we use to talk about where our individual interventions sit in an overall framework"

"We support Mental Health recovery in a work environment. This is significantly different to (for example) nature-based conservation activity, healthy walks or bushcraft. How can one term express the diversity of provision? All are valid; however all are different, and may well have different outcomes. I think simplification

in terminology to aid understanding is an excellent objective, but needs to be very carefully considered. Have you started with outcomes, to map which activities/types of nature-based interventions meet particular outcomes and see if natural groupings of activities occur?"

"Whilst I agree that the entire 'sector' needs more support and a greater profile I believe there are many varied and different initiatives that may be 'watered down' if they all fall under one term."

"I think as a sector serious thought should be given to the use of the word 'care' within health & social care, this word denotes regulated activities, and the green care sector could find it attracts scrutiny from regulators such as the Care Quality Commission. I suggest the word 'Welfare' is adopted or something similar that supports the ethos of 'green care' but is not seen to be a care service in the definition of the Health and Social Care Act 2008."

"I think this is a useful discussion to have"

"I think it would be a very good thing to have a common language. I don't want the individuality of provision to be lost by trying to throw everything together under one big banner, but I do feel the umbrella organisations should work more closely together on common themes."

"I don't like, or wish to use the term 'green' or 'eco'. Also, there are so many variations within this field I don't think one generic term can cover all."

"Whilst appreciating the need for a clear message, it is important that a provider's individuality is retained as this is the beauty of why they help the vulnerable folks they attract. Many providers are giving opportunity, not necessarily therapy; we are not trained therapists but helping people have the opportunity to be included as individuals rather than special needs."

"The term still needs to be broad"

"I think this is a good idea as I always struggle to find the right term that everyone will understand. It must also sound inviting (not too clinical) for participants. Ecotherapy is quite good, although we're always careful to say we aren't therapists so what we provide is therapeutic not therapy. Look forward to hearing further ideas."

"I think these areas have so much overlap with other policy areas that this needs to be recognised and named"

"I think that while it would be great to find commonalities and work collaboratively there is also a lot of diversity of activity and approach which is hard to cover with one term. I would not like to see the sector have the title of green or Eco as some of them really aren't (not environmentally sound to keep any pet really, non-organic farming etc) and I think people are becoming tired of 'greenwash'."

"It would be interesting to know how important differences between the different programmes (eg care farming, community gardening etc) is. Does the heterogeneity in outcomes, interventions specifics matter? Do more commissioners need to know more about the programme and would coming up with a collective term confuse this??"

"Re the clear message: I can see the appeal of some standardisation but am wary of too much emphasis on this. I think clear description of inputs required, activities and outcomes for particular groups is more important."

"I can't decide if there is a need for a generic term! It does make sense in terms of awareness raising etc. But I can't come up with something that fits the whole range of interventions - I'm not keen on the word 'green' and it doesn't sit well with animal based therapy... but then horticulture is too specific... It's problematic!"

"I find the need for this questionniare confusing - also find the array of 'terms' confusing also, we need to keep things simple - for example nature is nature - it doesn't need to be called biodiversity to get recognition surely? We are buying into the jargon industry by even doing this are we not?"

"most people understand Green Therapy as an activity, some people don't understand 'Care farm' as a descriptor."

"Different providers should not feel the need to call their provision by the same terms. There will be some differences and people will want to distinguish. It's normal and okay that people who aren't familiar with the distinctions can be confused. Once they make the effort to become familiar with the different activities, they will adopt appropriate terms for each. Meanwhile, it's inappropriate for us to find a term that lumps distinct

Conclusion: there is much debate but regardless of all the differing comments there was broad agreement for a collective term – so we probably need to decide on a name to promote the green care sector.

B) *It is necessary to make a distinction between specifically designed and commissioned interventions for the vulnerable and public health initiatives for the general population*

64% either agreed or strongly agreed with this statement

It is necessary to make a distinction between specifically designed and commissioned interventions for the vulnerable and public health initiatives for the general population
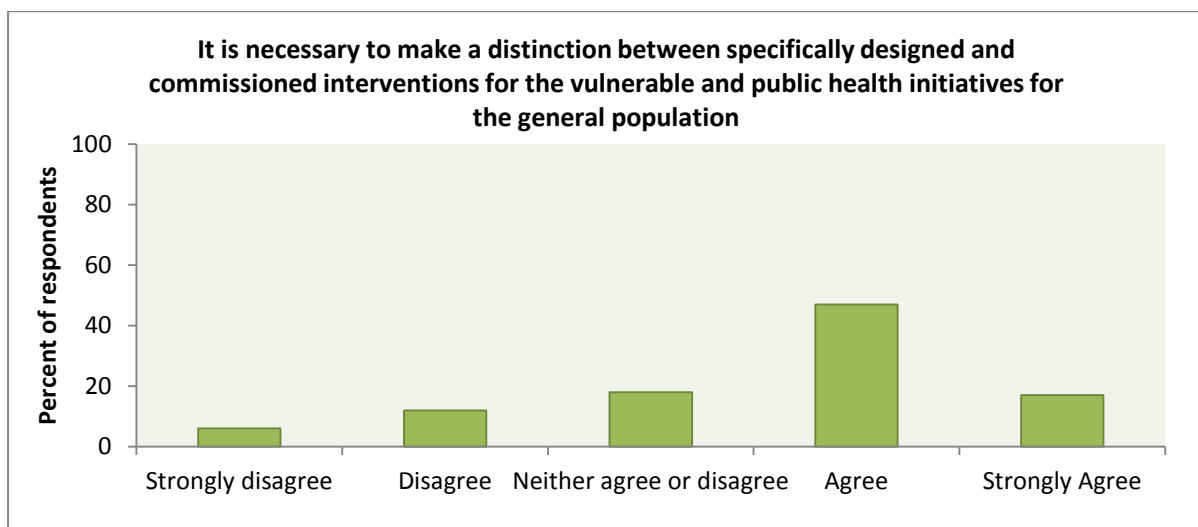
Box 4. Other comments relating to the distinction between these interventions for those with a defined need and those for the general population

Conclusion: we need to make the distinction for clarification and to aid promotion of the sector

C) *I think green care providers should work together (e.g. regionally) to provide a larger 'offer' to commissioners such as CCGs - Clinical Commissioning Groups*

72% of respondents agreed or strongly agreed with this statement

I think green care providers should work together (e.g. regionally) to provide a larger 'offer' to commissioners
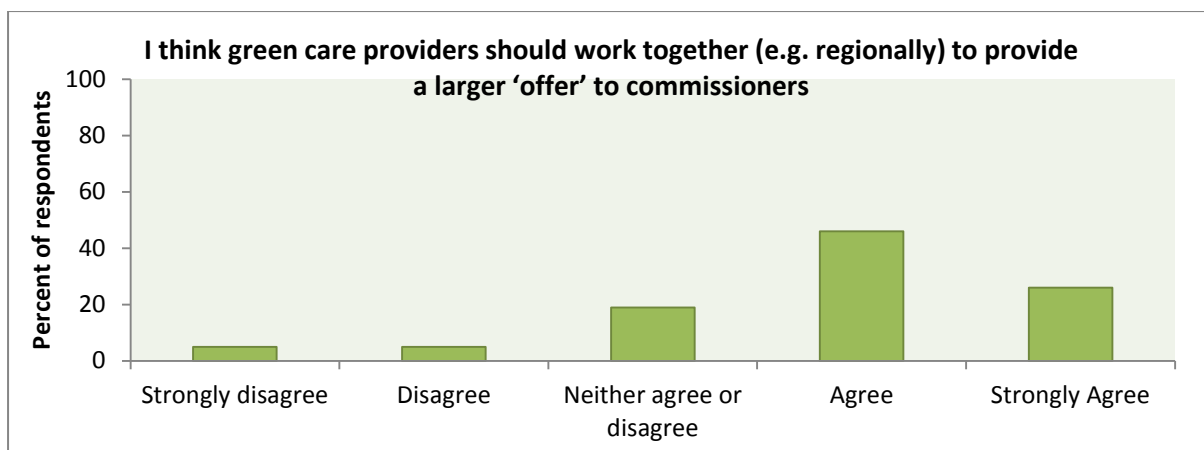
Box 5. Other comments relating to working together

"I agree with the ideal of working together in theory, because there are benefits to be gained for all concerned. However, I hesitate to say so as I also fear the addition of a level of bureaucracy which would decrease rather than increase the effectiveness of interventions. I think this should be borne in mind and steps taken to mitigate against the potential negative impact. A very worthwhile discussion overall though. Thanks again."

"Although I feel it would be a benefit to work together regionally, I do feel that the description needs to be appropriate to the activities carried out on site."

"I think it is vital that we standardise our offer so that CCGs and other healthcare professionals can 'trust' and understand our offer"

"I think there is a clear need for co-ordination in this area as CCGs deal with a number of competing groups. It would also be interesting to see how AGE UK can contribute."

"not sure regional grouping is right but certainly grouping in some way seems important"

Conclusion: green care providers should work together to provide a larger 'offer' to commissioners such as CCGs

Additional comments given by respondents:

Respondents were given the opportunity to give further comments regarding these issues

Box 6. Further comments

"I think that it would be excellent if there was more of a structure for activities that take place at care farms. A structure similar to Forest Schools would be good."

"Before retraining in Horticulture I worked for 28 years in the recruitment and training sector helping unemployed people back to work. Towards the end of this period Government contracts were moving towards and insisting on a few large nationwide Providers rather than many small local ones. The economic and financial reasons for this cannot be argued against. However, many small local providers with excellent track records and performance, like the one I worked for, had to tender with the new 'large providers' for a smaller share of the 'pot of money'. This led to the loss of many providers, TUPE, experienced staff having to reapply and renegotiate for their jobs and eventually redundancies. The new contracts issued locally essentially had the same targets but with much smaller financial support...leading to reduced hours, wages and the recruitment of inexperienced staff. How does this link to Horticulture? Many of the people I have dealt with over the last five years have had some contact with 'back to work' programmes. Increasingly they fall between intensive measures to remove them from State Benefits completely, they receive incorrect advice from their Advisor, or they get very little support. A move towards National Contracts with organisations that could offer all forms of Horticulture as therapy under a common name, would look attractive to the NHS, DCLG and other Government Departments. But before organisations such as FCFCG, Thrive and TCV get excited about this prospect. Consider the competition from organisations with no experience in this Sector that would be attracted by the size of the

contract for purely financial reasons. A possible repeat of what happened in the recruitment and training sector."

"Thanks for asking these questions. I found it interesting to be prompted to think about them."

"Care farming is too important differentiating from other services provided outdoors. Farms are well established rural enterprises which could provide meaningful intervention and solutions in rural areas."

"Had an interesting discussion on this today with someone from DWP. We genuinely have a role to play, those involved in helping, know that. It is worth the fight."

"There is such an extensive range of labels already in existence, it seems unrealistic to expect all practitioners to fall under one single label. For example, there are more than 40 labels for equine assisted services in the UK, alone. If it is all boxed under one label then it needs to be considered whether practitioners should evidence the standard that they're practicing to, if we are to avoid diluting expectations and perceptions of what exactly is on offer. For example, our team of facilitators all hold Masters Degrees, teaching and instructor qualifications as well as being qualified psychotherapists and possessing specialist animal assisted therapist qualifications. We are also insured in every direction we move. This is compared with an outlet a few miles away which is run by someone who used to serve in a retail outlet and has retired and bought two donkeys which they keep in a small paddock behind their house. Should we both adopt the same label?"

"For the last 5 years we have been providing weekly supported volunteering opportunities for vulnerable local adults at one of our nature reserves. This high quality service needs recognition from the social and health care sector of the important service it provides to local people and revenue funding to continue the much needed service"

"We should approach CCGs with relevant/ current evidence of in-budget cycle savings, based on individual/ collective health outcomes. There is another, urgent need for a coalition around 'early action'."

The focus of English National Parks is on encouraging visits/behaviour that is fun! And which supports delivery of physical/ mental health outcomes

"Care farming far too woolly a term, and sector too wide for one term to accurately cover all."

"I think the message needs to go out to commissioners who are looking at services that a number of people who use them see this is where they work. It leads to great self-esteem and self-worth if they see themselves as part of the national workforce"

I found the survey limiting in its approach.

"The whole mental health sector is starved of funding. It is not surprising regrettably that is almost impossible to get this type of work recognised."

"It would be good to get more constituency in terms of commission eco therapy - as currently it appear very random across the UK."

"We've piloted partnership between National Park and Easy intervention in psychosis team in Rotterdam - 10 week project engaging practical conservation, mindfulness and positive psychology, but didn't give it a name!"

Appendix G - Green care in history

Prisons have long maintained farms to provide meaningful work and physical exercise for inmates. Although the majority of prison farms have been closed or sold off in the last ten years (between 2002 and 2005, the Prison Service reduced its twenty-three farms down to five (NOMS, 2010)), recent years have seen an interest in creating horticultural units within prisons (Greener on the Outside, 2013).

Hospitals in the past have also often been associated with nature, *"hospitals have traditionally had gardens as an adjunct to recuperation and healing"* (Frumkin, 2001). Hospital gardens were initially developed in the Middle Ages, with many hospitals and monasteries looking after the sick, traditionally incorporating arcaded courtyards to provide outside shelter for patients and designing beautiful gardens in their surroundings (Nightingale, 1860, 1996; Gerlach-Spriggs et al., 1998; Bird 2007). The treatment of tuberculosis during the 18th and 19th centuries inspired a resurgence of interest in using fresh air and sunlight to treat tuberculosis (Bird, 2007; Sempik et al., 2010) with typical Victorian asylums including outside design features called 'Airing Courts', grounds for leisure and sports, fields and sometimes as estate farm. An ethos of asylum regimes featured exercise and work out of doors and remained so until the mid-20th century (Hickman, 2005). In the same vein, hospitals for patients with more general physical diseases or physical injuries were also designed at this time with grounds for aiding patient convalescence through gardening activities (Colson, 1944). The advancement of modern medicines and healthcare technologies has meant that the perception of the importance of nature in healthcare has lessened and many hospital gardens and farms have closed (Sempik et al., 2010). Unfortunately as a result many hospitals have evolved into stressful establishments which do not fulfil the emotional needs of patients, their families and staff (Lindheim and Syme, 1983; Ulrich et al., 1991; Horsburgh, 1995).

Therapeutic communities came into existence in the 1940s in the UK, when group-based treatment programmes were set up to treat psychological casualties of war. They now exist in a variety of settings, such as the National Health Service, the educational and criminal justice systems and the voluntary sector, such as the Camphill Communities (Whitely, 2004; Association of Therapeutic Communities, 2007; Camphill England and Wales, 2013). Many (but not all) therapeutic communities are in 'green' settings, in rural or agricultural settings and offer another historic example of green care. Here the benefits of nature are recognised as being integral to the therapeutic experience and their own horticulture and animal care initiatives have evolved (without consciously realising they were contributing to the field of green care) (Haigh, 2008).

Appendix H - Evidence for the key psychological and social benefits of Social and Therapeutic Horticulture initiatives

Psychological or social benefit of STH	Key studies showing these benefits (by author)
Reduction in anxiety	Son et al., 2004; Stepney and Davis, 2004; Song et al., 2010;
Reduction in depression	Son et al., 2004; Stepney and Davis, 2004; Lee et al., 2008; Gonzalez et al., 2009; Song et al., 2010; Gonzalez et al., 2010; Gonzalez et al., 2011a,b;
Increased self-esteem	Son et al., 2004; Szofran and Myer, 2004; Lee et al., 2008; Bragg et al., 2013; Bragg, 2014.
Improved mood	Fieldhouse, 2003; Szofran and Myer, 2004; Parr, 2007; Lee et al., 2008; Van den Berg and Clusters, 2010; Bragg et al., 2013; Hewitt et al., 2013; Bragg, 2014.
Increased attentional capacity and cognition	Rappe et al., 2008; Gonzalez et al., 2009; Gonzalez et al., 2010; Hewitt et al., 2013;
Improved psychological wellbeing	Stepney and Davis, 2004; Bragg et al., 2013; Adevi and Mårtensson, 2013; Hewitt et al., 2013; Bragg, 2014.
Fascination	Fieldhouse, 2003; Gonzalez et al., 2009;
Stress reduction	Szofran and Myer, 2004; Van den Berg and Clusters, 2010; Song et al., 2010; Hawkins et al, 2011; Gonzalez et al., 2011b;
Improvement in dementia-related symptoms	Gigliotti et al., 2004; D'Andrea et al., 2007; Yakusawa, 2009; Jarrett and Gigliotti, 2010; Luk et al., 2011; Hewitt et al., 2013;
Increase in positive affect	Gonzalez et al., 2011b;
Increased social contact or interaction	Fieldhouse, 2003; Gonzalez et al., 2011b; Adevi and Mårtensson, 2013;Bragg et al., 2013; Sempik et al., 2014;
Sense of peace, calm or relaxation	Fieldhouse, 2003; Rappe et al., 2008; Sempik et al., 2005; Bowker and Tearle, 2007; Eriksson et al., 2011;
A sense of connection, belonging or social inclusion	Fieldhouse, 2003; Son et al., 2004; Sempik et al., 2005; Parr, 2007; Parkinson et al., 2011;
Feelings of safety and security	Fieldhouse, 2003; Sempik et al., 2005; Bowker and Tearle, 2007; Jonasson et al., 2007;

Appendix I - Evidence for the key psychological and social benefits of environmental conservation interventions.

Psychological or social benefit of Environmental Conservation	Key studies showing these benefits (by author)
Psychological restoration	Halpenny and Cassie, 2003; Christie, 2004; Townsend and Marsh, 2004; Gooch, 2005; Birch, 2005; Townsend, 2006; Burls, 2007; Carter and O'Brien, 2008; Wilson, 2009; BTCV, 2010; O'Brien et al., 2011;
Improved self-esteem and/or mood	Pretty et al., 2007;Bragg et al, 2013a,b; CAG, 2012; TCV, 2013; Bragg, 2014.
Improved mental wellbeing	Reynolds, 2000; Moore et al., 2006; Yerrell, 2008; Pillemer, 2010; O'Brien et al., 2010; CAG, 2012; TCV, 2013b; Bragg et al., 2013a; TCV, 2015
Improved quality of life	Reynolds, 2000; Moore et al., 2006; Yerrell, 2008; BTCV, 2009; Pillemer, 2010;
Increased social contact or interaction	Reynolds, 2000; Halpenny and Cassie, 2003; Christie, 2004; Townsend and Marsh, 2004;Gooch, 2005; Birch, 2005; Townsend, 2006; Burls, 2007; Carter and O'Brien, 2008; Wilson, 2009; BTCV, 2010; O'Brien et al., 2010, 2011; CAG, 2012; TCV, 2013b; Bragg et al., 2013a; TCV, 2015
Increased community belonging	Townsend, 2006; Bragg et al, 2013a; Bragg, 2014
Improved personal and social identity	Christie, 2004; Gooch, 2005; Moore et al., 2006; Burls, 2007; Carter and O'Brien, 2008; Yerrell, 2008; Wilson, 2009; O'Brien et al., 2011;
Personal achievement	Halpenny and Cassie, 2003; Christie, 2004; Townsend and Marsh, 2004; Gooch, 2005; Birch, 2005; Townsend, 2006; Wilson, 2009; BTCV, 2010; Burls, 2007; Carter and O'Brien, 2008; Yerrell, 2008; O'Brien et al., 2011;
Increased safety in the community	Moore et al., 2006

Source: Adapted from Lovell et al., 2013; Husk et al., 2013; and Bragg 2014.

Appendix J - Evidence for the key psychological and social benefits of care farming

Psychological or social benefit of care farming	Key studies showing these benefits (by author)
Reduction in depression and anxiety related symptoms	Berget et al., 2007, 2008a, b; Hine et al., 2009; Kam and Sui, 2010; Wilson and Agnew, 2011; Berget and Braastad, 2011; Pederson et al., 2011, 2012a; Bragg et al., 2013a
Improved mental wellbeing	Kam and Sui, 2010; Hegarty, 2010; Pederson et al., 2012b; Leck, 2013; Bragg et al., 2013a-d; Maynard, 2013; North Essex Research Network, 2013; Bragg 2014; Hegarty, 2014; Leck et al., 2015;
Improvements in self-esteem and confidence	Berget et al., 2007, 2008a, b; Elings and Hassink, 2008; Hine et al., 2008a, 2009; Hegarty, 2010; Berget and Braastad, 2011; Elings et al., 2011, 2012; Wilson and Agnew, 2011; Bragg et al., 2013a-d; Maynard, 2013; Leck, 2013; Bragg 2014; Hegarty, 2014; Granerud and Eriksson, 2014; Leck et al., 2015.
Improvements in mood	Hine et al., 2008a, 2009; Wilson and Agnew, 2011; Bragg et al., 2013a-d; Leck, 2013, 2015; Bragg 2014.
Increased coping ability	Berget et al., 2008a; Pederson et al., 2012b; Maynard, 2013; Granerud and Eriksson, 2014
Improved cognitive functioning	De Bruin, 2009, 2010;
Improved happiness and satisfaction with life	Elings and Hassink, 2008; Elings et al., 2011, 2012; Maynard, 2013; Leck, 2013; Leck et al., 2015
Improved self-efficacy	Berget et al., 2007, 2008a, b; Pederson et al., 2011, 2012
Increased social contact and inclusion; sense of belonging	Elings and Hassink, 2008; Hine et al., 2009; Hassink et al., 2010; Hegarty, 2010; Elings et al., 2011, 2012; Bragg et al., 2013a-d; Maynard, 2013; Leck, 2013; North Essex Research Network, 2013; Iancu 2013b; Bragg, 2014; Granerud and Eriksson, 2014; Hegarty, 2014.
Increased social functioning and rehabilitation	Hassink et al., 2007; Hassink et al., 2010; Leck, 2013
Increase in work skills, meaningful activity, responsibility	Berget et al., 2007, 2008a, b; Elings and Hassink, 2008; Hegarty, 2010; Iancu 2013b; Granerud and Eriksson, 2014; Hegarty, 2014.

Source: Adapted from Bragg, 2014

Appendix K. The differences between a literature review and a systematic review

	Systematic Review	Literature Review
Definition	High-level overview of primary research on a focused question that identifies, selects, synthesizes, and appraises all high quality research evidence relevant to that question.	Qualitatively summarizes evidence on a topic using informal or subjective methods to collect and interpret studies.
Goals	Answer a focused clinical question Eliminate bias	Provide summary or overview of topic
Question	Clearly defined and answerable clinical question Recommend using PICO as a guide	Can be a general topic or a specific question
Components	Pre-specified eligibility criteria Systematic search strategy Assessment of the validity of findings Interpretation and presentation of results Reference list	Introduction Methods Discussion Conclusion Reference list
Number of Authors	Three or more	One or more
Timeline	Months to years Average eighteen months	Weeks to months
Requirements	Thorough knowledge of topic Perform searches of all relevant databases Statistical analysis resources (for meta-analysis)	Understanding of topic Perform searches of one or more databases
Value	Connects practicing clinicians to high quality evidence Supports evidence-based practice	Provides summary of literature on a topic

Source: Kysh, Lynn (2013): Difference between a systematic review and a literature review. Available at: http://dx.doi.org/10.6084/m9.figshare.766364