

# Greening Dementia

**A literature review of the benefits and barriers facing individuals living with dementia in accessing the natural environment and local greenspace**

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# Foreword

Natural England commission a range of reports from external contractors to provide evidence and advice to assist us in delivering our duties.

## Background

In 2012 Natural England commissioned Dementia Adventure (a Community Interest Company which connects people living with dementia, with nature and a sense of adventure) to review the existing evidence of the benefits and barriers facing people living with dementia in accessing the natural environment and their local green space. The report will be used as the basis to develop a partnership project to address the barriers, enable more people living with dementia to enjoy the benefits of the natural environment and therefore advance policy and practice in Natural England's Outdoors for All programme.

Dementia is a major current concern for government and policy makers as reflected in a range of recent initiatives and strategies, including the Prime Minister's Dementia Challenge (Department of Health, 2012) and the National Dementia Strategy (Department of Health, 2009). Dementia directly affects around 800,000 people and a further 670,000 carers. With an ageing population the number of people living with dementia in the UK is estimated to double in the next 30 years. Costs to the health service, local government and families are currently £23 billion, and estimates suggest this may treble by 2040 (Alzheimers Society, 2012), so there is a clear need for concerted and urgent action to be taken. This work has implications for addressing health inequalities and economic growth.

## Context

The Government's Natural Environment White Paper (2011) aims to strengthen connections between people and nature. However it 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. So the Government's ambition, set out in the White Paper, is that 'everyone should have fair access to a good quality natural environment'.

Natural England is committed to increasing the number and range of people who can experience and benefit from the natural

environment. Natural England also champions Outdoors for All on behalf of Government, the natural environment, greenspace, volunteering and heritage sectors, by working with partners to help improve the quality of everyone's experience of natural places and increase the number and diversity of people inspired by and enjoying the natural environment.

Through the Outdoors for All programme Natural England is working closely with a range of partners to help deliver projects which seek to ensure that people living in deprived areas, the elderly, those with physical disabilities, mental health illness, learning difficulties and people from black, Asian and minority ethnic communities all have opportunities to access high quality natural environments.

As part of the Outdoors for All programme, Natural England is keen to help improve engagement in the natural environment amongst the elderly and in particular people living with dementia. This report should help to better understand the benefits and barriers facing people living with dementia in accessing the natural environment and their local green space, the effectiveness of current practice and the challenges of scaling up delivery.

This report should be cited as:

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**Further information**

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Many project stakeholders have also recommended studies and journals and directed us to local projects and initiatives that may have a bearing on this review and the wider “Greening Dementia” project and our thanks goes to them for this helpful input.

## Executive Summary

The purpose of this report is to review the evidence of the benefits and barriers facing people living with dementia in engaging with the natural environment. Dementia is a major concern for government and policy makers as reflected in a range of recent initiatives and strategies, including the Prime Minister's Dementia Challenge (Department of Health 2012) and the National Dementia Strategy (Department of Health, 2009). Dementia directly affects more than 800,000 people and a further 670,000 carers. With an ageing population the number of people living with dementia in the UK is estimated to double in the next 30 years. Costs to the health service, local government and families are currently £23 billion, and estimates suggest this may treble by 2040 (Alzheimers Society, 2012), so there is a clear need for urgent action to be taken. Dementia costs the economy annually, more than the economic cost of cancer and heart disease combined (Luengo-Fernandez, Leal, & Gray, 2010). This work has implications for addressing health inequalities and economic growth.

Dementia is a progressive illness moving through various stages with damage to the brain and associated symptoms that will gradually get worse over a period of time. There are many different types of dementia, but they are characterised by a set of symptoms including loss of memory, mood changes, and problems with communication and reasoning. Dementia has direct impacts on the person living with the condition but it also has other impacts both in terms of the general health of the person living with dementia and the associated effects on the quality of life of family members and care-givers (De Bruin, 2009).

Access to the natural environment benefits people's mental and physical health and sense of well-being and contributes to their quality of life. Local authorities have a key role to play in the health and wellbeing of their population, including the provision of high quality green space. The Health and Social Care Act 2012 gave local authorities new responsibilities to improve the health of their populations and specifically to reduce health inequalities. The potential costs savings to the health service from improved access to green space are significant. For example, if every household in England were provided with good access to quality green space an estimated £2.1 billion in healthcare costs could be saved (Stone, 2009).

There is also emerging evidence of the benefits of engagement with the natural environment for those living with dementia, however the evidence is fragmented. There is a need to raise awareness within specialist dementia organisations and the wider health community of the demonstrable benefits, value and opportunities for engagement with the natural environment as often their focus lies with health and social care solutions. There is also an interest from the natural environment, greenspace and volunteering sectors to better service the needs of people living with dementia, but it is not clear where or what the greatest needs are, what the barriers are or the best practice delivery solutions.

The Greening Dementia project set out to:

1. Review and synthesise the existing evidence of the benefits and barriers facing people living with dementia in accessing the natural environment. This also includes a short narrative on the gaps in our existing knowledge.

In addition to this review, a qualitative stakeholder consultation was undertaken using a combination of face to face and telephone semi-structured interviews, a stakeholder "workshop" and a short online survey. The findings of this activity are found in Appendix A.

2. This evidence was 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.



## Key Findings

1. Evidence 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.
2. Evidence of benefits for people living with dementia from access to the natural environment is limited and often qualitative. However, general findings can be grouped into:
  - Improved emotional state: reduced stress, agitation, anger, apathy and depression
  - Improved physical health: skin health, fitness, sleeping patterns, eating patterns
  - Improved verbal expression
  - Improved memory and attention
  - Improved awareness: multi-sensory engagement and joy
  - Improved sense of well-being, independence, self-esteem and control
  - Improved social interaction and a sense of belonging
3. Evidence of the benefits of access to specific types of natural environment (i.e. woodlands, coastal, mountains) and the effect of specific activities on people living with dementia, is generally poor. The benefits for people living with dementia from access to the natural environment is generally short term, stopping once the activity ceases and it is not known what the potential benefits and cost savings could be from a longer term more regular connection with nature.
4. There is little evidence that links the severity of the dementia condition to the benefits from access to the natural environment. That is, there have been no studies that compare those people at different points along the continuum of the dementia condition (i.e. those people with early onset compared to those with advanced dementia) that would help to better inform the type and timing of interventions more appropriately to the needs of the client. This gap in our current understanding makes the targeting and design of interventions very difficult.
5. On-going studies within care home settings suggest a variety of interventions such as developing dementia friendly garden spaces and facilitating organised park and woodland walks have positive benefits for people living with dementia. As approximately two-thirds of people living with dementia currently live in their own homes and tend to be at the earlier end of the onset of dementia it could be argued that it is the interaction of this group with nature that should be the focus of any future intervention.
6. There is limited evidence focusing of specific barriers facing people living with dementia in accessing the natural environment, though these findings are supported by studies looking at the barriers for people more generally. The evidence shows that barriers particularly affecting people living with dementia include: concerns about how they will be perceived; a lack of awareness of the needs of people living with dementia among greenspace organisations and their staff; the costs of resourcing visits, including transport and carer costs; and the impact of risk aversion among people living with dementia, their carers and service providers.
7. There are potentially huge health and social care cost savings as well as wider societal and economic savings to be made by investing in alternatives to medication that enable people to live well early on in the disease process.
8. Stakeholder engagement suggests that there is a strong willingness to develop and support partnership solutions to the barriers facing people living with dementia in engaging with nature.

## Key Recommendations

The key recommendations from this review are:

1. There is a clear need for large scale research and evaluation studies to quantify the benefits of engaging with nature for people living with dementia, particularly with regard to the mental and physical health benefits and the cost benefits of different intervention types involving nature against more traditional medical treatments.
2. The barriers facing people living with dementia in accessing the natural environment need to be investigated further through large scale quantitative insight studies, along with better evaluation and review of existing and proposed projects working with people living with dementia.
3. As well as asking their families, supporters, advocates and professional health and social care staff, it is critical that future research work is user led and actively involves people living with dementia in helping to shape projects and initiatives that seek to better enable them to benefit from access to the natural environment. As traditional consultative processes are not appropriate for many people living with dementia, particularly as onset progresses, creative approaches to engaging with people living with dementia including walking interviews and participatory appraisal approaches need to be further explored.
4. Two thirds of the 800,000 people living with dementia live in their own home; the majority of these people have mild dementia. To meet the challenge of enabling people to live well with dementia in their own homes for as long as possible and thereby delay costly health and social care interventions, evaluating the benefits and barriers to nature on this specific group is potentially the most effective use of resources.
5. It is proportionally more cost-effective to support people in the earlier or mild stages of the condition, particularly given the lack of suitable activities and services for the group.

# 1. Introduction

## 1.1 Background

Dementia is a major current concern for government and policy makers as reflected in a range of recent initiatives and strategies, including the Prime Minister's Dementia Challenge (Department of Health, 2012) and the National Dementia Strategy (Department of Health, 2009). Estimates suggest that over 800,000 people are currently living with dementia and that a further 670,000 are acting as informal or family carers for people living with dementia (Alzheimers Society, 2012).

Every one of the 821,884 people in the UK with dementia costs our economy £27,647 per year which is more than the UK median salary. Estimates suggest that dementia costs the UK economy £23 billion per year which is more than cancer (£12 billion per year) and heart disease (£8 billion per year) combined, with long term institutional social care and informal care costs making up the majority of this figure. Most of the cost of dementia, £12.4 billion per year, is met by unpaid carers. Social care costs are estimated at £9 billion, health care £1.2 billion and productivity losses £29 million (Luengo-Fernandez, Leal, & Gray, 2010).

In addition to the economic costs, with around a quarter of hospital beds now occupied with people living with dementia, the combined health and social care costs of dementia were estimated at £10.3 billion in 2008. Using UK prevalence data, the health and social care cost per person with dementia was estimated at £12,521 for dementia as opposed to £2,559 for stroke and £2,283 for cancer (Luengo-Fernandez, Leal, & Gray, 2010).

With an ageing population the number of people living with dementia is estimated to double in the next 30 years with costs to the health service, local government and families rising to £27 billion by 2018 and current costs potentially trebling by 2040 (Alzheimers Society, 2012). *"...yet this significant spend is often not being deployed effectively and is not delivering good outcomes for people with dementia and carers"* (Alzheimers Society, 2012).

Dementia is a progressive illness with damage to the brain and associated symptoms that gradually get worse over a period of time. There are many different types of dementia, but they are characterised by a set of symptoms including loss of memory, mood changes, difficulties with communication and reasoning. Dementia is often described as early onset, middle stage and late stage dementia, or mild, moderate and severe, though some symptoms may occur earlier or later in individuals and there are no clear cut offs between these various stages. In 2007, 370,283 (55.4%) of people living with dementia had mild dementia, with 214,638 (32.1%) having moderate dementia and 83,801 (percentage 12.5%) having severe dementia (Alzheimers Society, 2007).

The costs per person living with dementia differ both according to their stage of dementia and their care settings; with the report Dementia UK (Alzheimers Society, 2007) estimating the following annual costs per person:

- People in the community with mild dementia £16,689
- People in the community with moderate dementia £25,877
- People in the community with severe dementia £37,473
- People in care homes £31,296

Dementia has direct impacts on the person living with the condition, but it should be noted that it also has other impacts both in terms of the general health of the person living with dementia and the associated effects on the quality of life of family members and care-givers (De Bruin, 2009).

The positive role of nature in terms of health and other benefits is being increasingly accepted across different departments and sectors (Marmot, 2010). The recent Natural Environment White

Paper “*The Natural Choice: securing the value of nature*” (Department for Environment, Food and Rural Affairs 2011) recognises a range of physical and mental health benefits to be derived from access to nature and the Government’s *Healthy lives, healthy people: our strategy for public health in England* (Department of Health, 2011) accepts the link between availability of green and open spaces and people’s general health and wellbeing.

*“Evidence...supports what many feel instinctively: regular opportunities to experience nature have positive impacts on mental and physical health, learning and relationships between neighbours. Nature can benefit us at all stages in our lives”* (Department for Environment, Food and Rural Affairs 2011).

At the same time there is some emerging evidence of the benefits of engagement with the natural environment for those living with dementia (Mapes 2011a; Mapes 2011b) but this evidence of benefits and the barriers that prevent people from accessing them has not previously been drawn together in one document. Given the numbers of people involved and the increasing costs indicated it is important to understand the extent of this evidence and how it can help to define the most effective actions needed to improve the lives of people living with dementia.

*“Good quality of life for people with dementia cannot be achieved in isolation or by a few. We must work in partnership, focusing on all outcomes that are important to people with dementia, including health and social care but also developing dementia friendly communities* (Alzheimers Society, 2012). There is a need to raise awareness within specialist dementia organisations and the wider health community of the demonstrable benefits, value and opportunities for engagement with the natural environment as often their focus lies with health and social care solutions. There is also an interest from the natural environment, greenspace and volunteering sectors to better service the needs of people living with dementia, but it is not clear where or what the greatest needs are, what barriers exist in achieving this or what the best practice delivery solutions are.

## 1.2 Aims

This literature review forms the first part of a two-stage project called “Greening Dementia” which is a partnership project between Dementia Adventure, Natural England and the Woodland Trust, aimed at raising awareness of the benefits of the natural environment to people living with dementia and making clear recommendations for future work to ensure people living with dementia are able to access these benefits.

The Greening Dementia project set out to:

1. Review and synthesise the existing evidence of the benefits and barriers facing people living with dementia in accessing the natural environment and their local green space. This also includes a short narrative on the gaps in our existing knowledge.
2. Use the above evidence to help shape the design, targeting and costing of large scale interventions to enable people living with dementia to access the benefits associated with the natural environment.

The output from the second stage of the project, including interviews and group work with stakeholders and the results of a short online stakeholder survey is summarised in Appendix A.

## 1.3 Methodology

This review synthesises the existing literature relating to the benefits and barriers facing people living with dementia in accessing the natural environment in its different forms.

This review focused on the key findings from literature and evidence from a wide range of sources. The review was divided into three stages:

1. Stage 1: to identify relevant research reviews on the benefits and barriers;
2. Stage 2: to identify any reliable and significant primary research studies relevant to the subject areas.
3. Stage 3: to look at the grey literature: smaller, qualitative studies, articles and project evaluations, and to assess the learning that can be gained from these. This made up the bulk of the literature, particularly concerning the barriers to people living with dementia.

In addition to this review some qualitative stakeholder consultation was undertaken using a combination of face to face and telephone semi-structured interviews, a stakeholder “workshop” and a short online survey. The findings of this are referenced in this report and a full account is found in Appendix A.

No restriction was placed on the type of publication to be reviewed though, where possible, peer reviewed, published literature was prioritised. The review therefore included a search of published and/or peer reviewed literature by accredited academics and researchers plus a range of grey material, held in reports or unpublished project reviews and evaluations. The review used an iterative process starting with an evidence review of bibliographic databases and library resources, followed by internet searches and searches of relevant journals and publications.

Internet searches were undertaken on the Natural England, Woodland Trust, Forestry Commission, Age UK, Alzheimer’s Society, Department of Health, Dementia Adventure and Innovation in Dementia websites.

The review initially involved literature contained in the Dementia Adventure research database. The review also included searches of several bibliographic databases published since 2005 (Centre for Policy and Ageing, Kings Fund, Worcester University). Two systematic reviews of the evidence (Thompson Coon, Boddy, Stein, Whear, Barton, & Depledge, 2011) (Bowler, Buyung-Ali, Knight, & Pullin, 2010), around the respective differences between the effects of indoor and outdoor exercise were included and proved useful additional sources.

The original start date for the review was 2005, as this was the publication date for Dr Garuth Chalfont’s extensive bibliography (Chalfont 2005) which contains references to the key studies relating the benefits of access to nature for people living with dementia. However, due to the lack of studies within those time limits meeting the search criteria and in an attempt to search as widely as possible, literature from prior to 2005 was subsequently included.

## 1.4 Definitions

### **The natural environment**

For the purposes of this review, a broad definition of the natural environment was used including: different types of green space such as allotments, urban and country parks, wilderness areas, open countryside, woodlands, waterways and canals and wildlife reserves.

### **People living with dementia**

The Alzheimer’s Society describes dementia as:

*“...an umbrella term used to describe a group of brain disorders that involve a progressive deterioration in cognitive function resulting eventually in severe cognitive impairment. The individual with dementia experiences a gradual decline in their ability to understand, remember, reason, communicate and use learned skills; mood changes are also common as the part of the brain that controls emotion is affected by the disease .“*

(Alzheimer’s Society, 2010).

Dementia is a progressive illness with damage to the brain and associated symptoms will gradually get worse over a period of time. There are many different types of dementia but they are characterised by a set of symptoms including loss of memory, mood changes, and problems with communication and reasoning.

Though different symptoms may occur at different stages, it is useful to describe the onset of dementia in three stages: early stage, middle stage and late stage. People living with dementia are not a homogeneous group. For the purpose of this review the various settings of people living with dementia are defined as:

1. Those people still living independently (in their own or sheltered accommodation) who have not had a formal diagnosis, but who show signs of a deterioration in their cognitive functions.
2. Those people living independently who have been diagnosed as having a form of dementia.
3. Those who have reached such a stage in their dementia care journey where they need access to extended care, residential or specialist residential dementia care provision.

### **Green exercise**

Green exercise is taken in an outdoors environment and may include activities such as walking, cycling, running, gardening and conservation. Activity can take place in green spaces near to where people live or further afield in the open countryside.

## 2. Main Findings

The focus of the evidence review was on two research questions:

1. What are the benefits to people living with dementia in engaging with the natural environment?
2. What are the barriers facing people living with dementia in accessing the natural environment?

### 2.1 Benefits of engagement with the natural environment – general population

The case for the benefits of access to the natural environment and the outdoors for the general population are well established and there is now a substantive level of credible evidence in this area. *“The natural environment plays an important part in promoting and maintaining health and wellbeing. It can also aid recovery from ill health”* (Social Care Institute for Excellence 2010). The Marmot Review (2010) sets out the positive impact that nature has on people’s physical and mental health: *“High-quality natural environments foster healthy neighbourhoods; green spaces encourage social activity and reduce crime. The natural environment can help children’s learning, whilst low engagement is likely to lead to impacts such as lower involvement in wider issues of sustainability.”* (Marmot, 2010).

We instinctively enjoy interaction with nature in its many forms (Wilson, 1984) (Bird, 2007). The theory of Biophilia (Wilson, 1984) suggests that we are attracted to and feel most comfortable in natural environments as this is where we function most effectively. As Bird suggests, this instinctive need for contact with the natural world is perhaps unsurprising, given that we have spent “10,000 generations” having to survive in it (Bird, 2007).

These benefits include a restorative role of nature (Kaplan, 1995) (Chalfont, 2005), improved self-esteem and mood (Barton & Pretty, 2010) (Pretty, et al., 2005) (Mind, 2007) and increased verbal expression, social interaction and engagement (Bragg, et al., 2011).

Nature may have a role to play in alleviating mental fatigue. In his Attention Restoration Theory (ART) Kaplan (1995) proposes that exposure to nature has a restorative value as it enables us to restore our ability to concentrate through what he calls indirect attention. Kaplan proposes that as cognitive function and capacity for attention are affected early on in the onset of dementia that nature can have a restorative or beneficial role to play in alleviating these symptoms. In his book “Natural Thinking” Bird (2007) found a large number of studies to support this theory.

Pretty (Pretty, Peacock, Sellens, & Griffin, 2005) describes positive interactions between people and nature as occurring in three ways: viewing nature; being nearby to nature; or through actively taking part in and engaging with nature and these interactions can lead to various physical and psychological health benefits. So benefits can be derived from looking through a hospital window (Ulrich, 1984), from just being in a natural environment like a garden (Chalfont 2007; MIND 2007) or exercising in natural environments (Pretty, Peacock, Sellens, & Griffin, 2005).

Research looking at the connection between nature and exercise or “Green Exercise” shows that this form of exercise has added benefits over traditional exercise and/or activity programmes; with a number of studies showing green exercise results in both short term and long term physical and mental health benefits (Heyn P, 2004) (Pretty, Peacock, Sellens, & Griffin, 2005). Interviews with 108 people involved in gardening, walking and other outdoors projects supported by MIND found that 90% of participants felt the combination of nature and exercise is most important to how they felt; with 94% saying that green exercise had mental health benefits to them (Mind, 2007). The Natural England funded Green Exercise programme (Hynds, 2010) identified various physical, social and wellbeing benefits of engagement of hard to reach groups in green exercise activity.



Two recent systematic reviews by (Thompson Coon, Boddy, Stein, Whear, Barton, & Depledge, 2011) and (Bowler, Buyung-Ali, Knight, & Pullin, 2010) assessed a number of studies that sought to test the benefits of indoor and outdoor activity. Both studies found some evidence that physical activity in natural environments brings additional benefits to mental well-being on cessation of the exercise, though the longer term effects were not tested. Thompson Coon et al (2011) found that compared with exercising indoors, exercising in natural environments was associated with greater feelings of revitalization and positive engagement, decreases in tension, confusion, anger and depression, and increased energy.

A number of studies focussed particularly on the benefits of outdoor and nature based activities on older people, though they did not focus directly on those people living with dementia. Rappe and colleagues found a strong association between self-reported health and frequency of outdoor visits among 45 female nursing home residents (Rappe, Kivelä & Rita 2006). Work by Hartig (2003) showed that people's bodies are restored when they walked in an area with natural amenities as opposed to an urban environment where their blood pressure rose.

Proximity of local green spaces in walkable distance has a positive effect on longevity regardless of age and socio-economic status according to a longitudinal study in Japan. This investigated the association between older people's longevity and the existence of nearby green spaces in which they could walk (Takano, Nakamura, & Watanabe, 2002). The five-year survival percentage of older people who lived in an area with walkable green spaces was significantly higher than that of people living in an area without such spaces.

## **2.2 Benefits of engagement with the natural environment for people living with dementia**

The benefits to the general population are sufficiently well documented but the evidence of benefits for people living with dementia from access to the natural environment is limited by a number of factors.

Though there is evidence and an increasing number of studies are arising from the growing interest in dementia and natural solutions, the evidence base is still relatively small and this affects the robustness of the conclusions that can be drawn from this evidence.

In addition, there are methodological issues regarding the existing evidence characterised by the short timeframes of the studies involved, relatively small sample sizes and the qualitative nature of the research. A further issue is the complexity of dementia. "When you've met one person with dementia, you've met one person with dementia" Professor Tom Kitwood (Local Government Association, 2012). People living with dementia have many factors that are likely to influence their engagement with the natural environment and the benefits that they derive. Likewise the natural environment itself has many different dimensions and engaging with nature can take place in various ways and settings.

- Dementia has a variety of forms and does not have one single effect or symptom.
- Individuals living with early onset, mild, medium and severe dementia are likely to involve different interactions with nature and different barriers.
- Interaction and engagement with nature can take place in a number of different ways including viewing nature; being nearby to nature; or through actively taking part in and engaging with nature.

Recent work by Mapes (2011a, 2011b) has sought to fill some of the evidence gaps around dementia and access to nature and green exercise, and at the same time highlighting some key future areas for research. In 2010 Mapes undertook a multi-method research study called "*Living with dementia and connecting with nature – Looking Back, Stepping Forwards*" which included a review of the evidence to date linking green exercise with people living with dementia. This provides



a useful overview of the subject and helped to inform subsequent research by the Mapes (2011a) that sought to fill some of the evidence gaps identified by the review. The benefits tend to be either described as an increase in a symptom, such as better mood or more sleep, or a decrease in a symptom, such as a reduction in agitation.

Alongside a review of the literature Mapes included a review of anecdotal evidence and case studies from the author's own lengthy experience of working with people living with dementia in natural settings, a walking interview with a person living with dementia and their family carer and an experts' survey (N=32) looking at potential future research needs around green exercise and dementia.

The benefits indicated in this review broadly fit under three categories of physical, psychological and social benefits, though additional benefits in terms of general well-being and prevention are also indicated.

The following section gives an overview of the evidence of benefits from the grey literature and small scale studies. Few studies seek to draw the link between particular stages of dementia and the benefits of engagement with the outdoors and the natural environment or the impact of different engagement. Though inferences might be drawn about the stage of dementia for people living with dementia in a care home as opposed to a community setting, this is far from a robust approach. We have therefore only referred to the specific stage of dementia concerned where the authors have identified this is their research.

### **General well-being**

Older people generally value the ability to get out and about and remain active (Joseph Rowntree Foundation, 2005) and a number of small scale studies support this assertion.

- Evidence from people living with dementia indicates that they value nature and the outdoors as a way of remaining engaged in the wider community and not getting "shut away" (Mapes, 2011b).
- Interviews with 44 people living with dementia indicate that their environment, physical health, independence and the ability to take part in activities are all important aspects in their quality of life (Alzheimer's Society, 2010).
- A study by Duggan et al (2008) used interviews with 22 carers and people living with dementia and found that people living with dementia appreciate and value the outdoors and nature for a range of different reasons including social encounters, emotional well-being, exercise, fresh air and an appreciation of the countryside.
- This value placed on nature and the outdoors by people living with dementia is supported by other studies (Bragg, Wood, Barton, & Pretty, 2011) (Mapes 2011a. 2011b). As one person living with dementia put it: "*I love walking and I always feel better for getting out and getting a bit of fresh air*" (Mitchell & Burton 2010).
- Engagement with activity and the natural environment for people living with dementia can have a positive effect on people's sense of well-being. Research by Brooker (2001) looked at a group of people living with dementia in an 'extra-care' setting, and observational evidence found that their well-being was higher having undertaken a programme of outdoor activity than beforehand, though no lasting effects were shown.
- A study of 55 elderly people with dementia living in institutional care in Helsinki (Rappe, 2005) showed that people living with dementia gave improved self-ratings of well-being after outdoor visits.
- Anecdotal evidence and quotes gathered by Mapes (2011a) suggests that walking is important to people living with dementia and that they recognise its impact on their health and well-being.
- Stakeholder feedback from the Greening Dementia project provides further anecdotal evidence that getting out and about has positive benefits on people living with dementia:

*“...there is a huge need to get people with dementia out from their care homes and provide them with access to the natural world. It has a profound impact which I have witnessed first hand...”* Care Farm Proprietor (Appendix A).

The evidence suggests that people living with dementia appreciate opportunities to engage with and take part in activities in the natural environment.

### **Preventative benefits**

Though not the focus of this review, which seeks to address the evidence relating to people already living with dementia, there is some evidence that exercise and physical activity such as walking and gardening may have a delaying affect on the onset of dementia ( (Abbott, White, Ross, Masaki, Curb, & Petrovitch, 2004) (Bradley, 2010) (Department of Health, 2011) (Larson, Wang, & Bowen, 2006) (Erickson, 2010) (Fabrigoule, Zarrouk, Commenges, & Barberger-Gateau, 1995).

A study of 469 participants by Verghese and colleagues found that participation in a variety of leisure activities is associated with a reduced risk of dementia, even after adjustments for baseline cognitive status and after the exclusion of subjects with possible preclinical dementia, and surmised that these activities may have a preventative effect on the onset of dementia (Verghese, et al., 2003). Whether these positive effects last beyond the period at which someone is diagnosed with dementia remains unclear however and this could be the focus of future studies.

A study of over 2,000 older people living in the Gironde area of France by Fabrigoule et al (1995) indicated that people who engaged in a variety of activities including travelling and gardening were about half as likely to develop dementia, than those people who did not engage in these activities.

### **Physical benefits**

A range of physical benefits are cited in a number of studies including a meta-analysis undertaken by Heyn et al (2004), which included 30 studies involving 2020 participants and concluded that exercise has a number of benefits for people living with dementia in terms of increased fitness, physical function, cognitive function, and positive behaviours. More recent studies (Kemoun, et al., 2010) support these conclusions indicating relatively greater physical and cognitive improvements among people living with dementia engaging in a 14 week exercise programme, over a control group who took part in other activities.

During a number of woodland visits for people living with dementia, a pilot study by Mapes (2011b) used participatory appraisal techniques to gather qualitative evidence of a number of potential physical benefits of engagement with the natural environment. Working with 28 participants (four staff, fifteen care home residents living with dementia and nine family carers) during three separate woodland visits, Mapes categorised the benefits identified by the participants as:

- Improved sleep
- Improved dietary intake
- Improved activity and exercise levels
- Improved awareness - Multi-sensory engagement and associated joy
- Increased verbal expression
- Improvement in memory

Improved sleep patterns are observed in other studies involving nature or exercise and people living with dementia (Connell, Sanford, & Lewis, 2007) (Brooker DJ, 2007) and in anecdotal evidence (Bragg, Wood, Barton, & Pretty, 2011) and stakeholder feedback from the Greening Dementia project offers further anecdotal confirmation that improved sleep patterns can arise from engagement with nature and exercise (Appendix A).

Calkins, Szmerkovsky, and Biddle (Calkins, Szmerkovsky, & Biddle, 2007) used staff feedback forms to map the behaviour of 17 people living with dementia to test the effect of time spent outdoors on participant's levels of agitation and sleep patterns. Some small improvements in sleep were recorded as were some night-time behaviours such as reductions in grabbing and making loud noises. Though this gives some indication that the outdoors may be beneficial to people living with dementia, the small sample size and other methodological concerns, such as using staff to provide feedback, means that it is indicative at best.

In another study, Connell et al (2007) observed behaviour in a group of 20 people living with dementia. Participants were randomly assigned to two groups of 10: one group undertook a programme of indoor activity (control group) and the other undertook some outdoor activity. Both groups showed improvements in total sleep as a result of the activities, but sleep duration and a decline in "verbal agitation" were observed more strongly in the outdoor activity group. This suggests that sleep duration may be positively affected by activity programmes, but with outdoor activity programmes potentially having greater benefits.

Simone de Bruin's (2009) study compared the experiences of 30 older people on regular visits to care farms with those of a control group of 25 who stayed in regular day care facilities. De Bruin noted a range of benefits including improved nutrition, physical exercise, social interaction and variety. The study did not notice any improvements in emotional well-being, cognitive function or behavioural problems over the period of the study in either the people visiting the care farms or those staying in regular day care centres. As concerns about nutrition and intake of fluids are important considerations for people living with dementia this is a potentially important finding.

In a recent evaluation of the "Let Nature Feed Your Senses" programme (Bragg et al, 2011) a range of care farms and other farm and wildlife visits were assessed and a range of benefits found, including increased health scores and greater confidence in visiting the outdoors. Though this large scale study did not specifically focus on people living with dementia a number of specific benefits to this group were identified in a number of case studies and interviews with group leaders. These included better sleep patterns, the calming and therapeutic effect of the visits, enhanced communication and attention and evidence of reminiscence. Though different people were observed to benefit in different ways one group leader from a care home suggested that all the residents attending one care farm visit behaved in the different way from when they were in the care home setting.

### **Psychological benefits**

There is some evidence of psychological and emotional benefits for people living with dementia in engaging with nature. Mapes (2011b) observes several emotional benefits of walking in the woods including mood enhancement, spiritual uplift, having more control and a stronger sense of self.

A number of studies in a variety of natural settings and activities including gardens (Vuolo, 2003) , country walks (Mapes 2011b) and farm visits (Bragg, Wood, Barton, & Pretty, 2011) also indicate the role of nature and exercise in dampening down the physical and non-physical symptoms of dementia such as aggression and agitation.

A recent small research project in a care home in Australia mapped levels of usage and improvements in agitation and depression among people living with dementia both prior to the design and installation of a therapeutic garden and atrium and in the period after the garden was completed (Edwards, McDonnell, & Merl 2013) A small sample of 10 residents, whose dementia ranged from mild to severe were involved and all showed reduced agitation with most also having reduced depression. Eight of the 10 residents improved their quality of life scores during the time of the study. Staff and family feedback confirmed the positive effect on people's quality of life and also indicated that they had reduced stress as a result.

Stakeholder feedback (Appendix A) suggests that improved mood is one of the main benefits of people living with dementia engaging with the natural environment with over 90% of respondents (N=21) to an online survey citing this as a benefit, and face to face and interview evidence offering various anecdotal examples of mood enhancement through nature and exercise.

### **Social benefits**

Many of the studies reviewed concern people living in a care home setting. However, the Alzheimer's Society report "Dementia 2012" contains evidence from a large scale survey of people living with dementia in the early stages of the condition and living in their own homes. 306 people responded to the survey with the majority of these (77%) being people living with dementia. Though not concerned with nature the report does contain some findings that are relevant to this study. In particular 61% of respondents indicated that they were lonely some or all of the time and suggests that work needs to be done to address this lack of social interaction.

The natural environment could have a role to play in this as a number of studies (Duggan, Blackman, & Martyr, 2008) (Mapes 2011b) indicate there are social benefits to be derived from engaging in outdoor and natural activities. Mapes' work with fifteen people at various stages of living with dementia and a wider group of family and professional carers on woodland visits (Mapes 2011b) highlighted a number of observed social benefits to engagement with nature including a sense of belonging, a sense of friendship and kinship, community benefit and activity and co-incident positive social encounters. Duggan et al (2008) found that the importance of social interaction in an outdoor environment featured in their semi-structured interviews undertaken with people with early to moderate dementia and their carer's and that the inability to go out, which results from the onset of dementia has a negative effect on people's mental well-being.

Interview evidence undertaken to support a lottery funding application on behalf of the Wye Valley AONB suggests that relieving isolation and making new friends is a primary motivation for people living with dementia in taking part in outdoor events and activities such as the Wye Valley AONB's Mindscape project (awaiting publication).

An evaluation study of projects within the Let Nature Feed Your Senses programme by Bragg et al (Bragg, Wood, Barton, & Pretty, 2011) found that 78% of participants said they would be more likely to visit the countryside and 74% said their visit would make them more likely to visit local green-spaces and parks as a result of taking part in the programme. Although this evaluation programme was not specific to people living with dementia and therefore involved a wide range of people, this study along with Mapes' work (Mapes 2011b) suggests that facilitating activities for people living with dementia in enabling them to access the natural environment can also have positive benefits in changing their attitudes to outdoor and nature visits. Clearly this needs to be backed up by more robust research engaging the views of people living with dementia themselves, but there does appear to be a role for facilitated activities in increasing people's awareness of the benefits to them of outdoor exercise and nature.

### **Benefits to carers, service providers and the wider community**

There are also wider societal benefits of people living with dementia in engaging with the natural environment that have yet to be explored, such as the positive impact of their ability to remain active citizens for longer, the potential for outdoor activities and engaging with nature to reduce medication, hospital admissions and long term care admissions when implemented fully and the knock on benefits to all through reduced costs.

Economic evaluation work undertaken by the NHS Institute for Innovation and Improvement in 2011 suggests that though the costs of behavioural interventions, in this case cognitive stimulation therapy, may be higher than antipsychotic drug use, these behavioural interventions generate nearly £70.4 million in health care cost savings that indicate implementing behavioural interventions is an efficient use of public money. In addition to health care cost savings, behavioural interventions generate nearly £12 million due to quality of life improvements due to reduced incidence of stroke

and falls. These savings are based on a total population of 133,713 dementia patients currently using antipsychotic drugs in England. This suggests that other similar interventions such as natural exercise may also deliver cost savings if a holistic view of these savings is adopted.

### **Limitations of the available evidence**

Research by Mapes (2011a) identifies some key gaps in the current evidence base around the benefits of green exercise for people living with dementia. These include a lack of peer reviewed studies and lack of large randomised control studies. Through analysis of 32 “expert surveys”, Mapes identifies some useful priorities for future research in this area, though it is unclear which sector or interest group prioritised which information and research needs. The priorities identified were:

1. To ask more people living with dementia, and their carers how they live their lives, how to live a good life and the impact of green exercise on their lives (this could easily be expanded to include the impact of nature and outdoor spaces).
2. Clarity on which forms of green exercise are the most effective with different levels of ability including the costs and benefits of these forms of green exercise.
3. Impact of green exercise programmes in care homes.

In addition to the scale and methodology of the studies a number of further limitations can be identified that indicate priorities for future research in this area. These limitations are:

- The evidence of any benefits derived from the research is generally short term and we therefore do not know what the potential benefits and cost savings could be from a longer term programme which enables a more regular connection with nature for people living with dementia.
- The evidence of specific benefits of certain natural environments and different activities on people living with dementia, is better developed in some areas than others. The relative merits of different activities and the varied aspects of the natural environment in benefitting people living with dementia, is unknown.
- The majority of the studies included in this review concern the benefits of engaging with nature for people living with dementia in a care home setting. Though many of the benefits might be applied to people living with dementia in their own homes and people with early onset dementia, the evidence to date does not adequately indicate which sub-groups of people living with dementia benefit most from which types of activity and why.

The literature shows that nature can have a range of cognitive, social, psychological and physical benefits for people living with dementia and has a range of positive effects on sleep, mood, nutrition and certain behaviours such as agitation. However, sample sizes are small and the specific benefits of interventions, or activities, on people at different stages of living with dementia and in different circumstances (e.g. living at home on their own or living in a day care setting) are unclear and further research studies are required.

## **2.3 The barriers facing people living with dementia and those who support them, in engaging with the natural environment?**

Within the health and care sectors and greenspace organisations the understanding that access to and engagement with nature is an inherently positive activity, with multiple benefits for people living with dementia, is seemingly undeveloped. Activity to encourage access and participation among people living with dementia is confined to the margins rather than being a key part of mainstream provision.

This is partly because of the many barriers facing those living with dementia and the people and organisations supporting them, in engaging with and accessing the natural environment. These barriers are not always unique to people living with dementia, with many barriers such as transport and accessibility affecting other groups and the wider community. Assumptions cannot be made that the general barriers to engagement with the natural environment that might have existed prior to the onset of dementia go away when someone begins to develop symptoms.

This chapter briefly summarises the general barriers affecting access to the natural environment and considers the specific evidence relating to people living with dementia. In both cases people are likely to face a combination of barriers at the same time (Weldon & Bailey, 2007) rather than one single barrier.

### **General barriers to engagement with the natural environment (not specific to those living with dementia)**

Weldon and Bailey undertook an literature review and action research study in 2007 (Weldon & Bailey, 2007) which outlined a series of barriers affecting the general population in accessing woodlands in Scotland, much of which is corroborated by evidence from Natural England's Monitoring of Engagement with the Natural Environment (MENE) data as analysed by Burt et al (2013). MENE collects a range of information about people's visits to the natural environment including length of stay, duration of the visits, transport used and distance travelled and also collects data on why people do and do not visit the natural environment. As such this is useful data for anyone seeking more information on how people engage with the natural environment and their motivations for doing so.

The evidence base regarding the barriers to engagement in the natural environment is strong. Whatever the reasons, the evidence shows that the benefits of access to the natural environment are unevenly distributed and that many groups of people are noticeably absent or failing to reap these benefits. It is therefore important to bear in mind the barriers to the general population when also considering the specific needs of people living with dementia.

These general barriers outlined by Weldon and Bailey can be summarised as follows:

#### **Availability of information**

Lack of information is a potential deterrent to people engaging with the natural environment. This can include lack of awareness of the opportunities available to people in engaging with the natural environment. People can be unaware of where the green spaces are. This can also include a lack of information about what services to expect at a given location including information on access, terrain, paths and information about facilities such as parking and toilets.

#### **Negative perceptions**

Negative perceptions, fears and safety concerns can exist which determine people's willingness to access the natural environment and/or public green spaces.

#### **Time**

A lack of spare time to plan and prepare for a visit to the natural environment can stop the visit from taking place. In addition, people can feel that to gain any benefit, they need to give up more time for exercise or visits than in reality they do.

#### **Motivation**

There are easier, less challenging things to do in which case there can be a lack of motivation to engage with the natural environment.

#### **Physical accessibility**

Access to cheap, reliable transport is an issue especially in more deprived communities given the relatively lower levels of car ownership than other groups.

### **Lack of physical fitness**

This can deter people from wishing to engage with the natural environment, particularly if the activity involved is perceived to require a degree of fitness.

### **Lack of reasonable or accessible local green spaces**

A key barrier and potential inequality is the availability of accessible green spaces near where people live with the appropriate facilities.

### **Expense**

This is a particular issue for people from deprived communities and lower socio-economic groups where cost is cited in some research as a primary reason for not accessing the natural environment.

## **2.4 Barriers to people living with dementia accessing the benefits of engaging with the natural environment**

This review focuses on the barriers to engaging with the natural environment that are specific to people living with dementia and whether the stage of dementia or the personal circumstances had an impact on these barriers. For example, are the barriers and therefore potential solutions different for someone living independently with early onset dementia, to someone in a care home setting?

There is some evidence from the wider literature and small scale studies that indicate specific barriers may exist for people living with dementia in accessing the benefits of access to nature.

Research by Mitchell and Burton (2006) provides some useful evidence of barriers to people living with dementia in getting “out and about” and also provides some design principles for dementia friendly neighbourhoods that could be applied to some aspects of the natural environment. Using a combination of semi-structured interviews, focus groups, observation and accompanied walks, Mitchell and Burton worked with 20 older people living with dementia (and a dementia free control group of 25 older people) and observed a number of factors that restrict the ability of people living with dementia in engaging with the outdoor environment, including availability of transport and the ability to use and understand signage and maps. Based on their work with people living with dementia, Mitchell and Burton proposed six design principles for Dementia Friendly Neighbourhoods that are relevant to green space providers:

1. Familiarity
2. Legibility
3. Distinctiveness
4. Accessibility
5. Comfort
6. Safety

Some small scale qualitative research with people living with dementia in the early stages has looked into the practical barriers facing people living with dementia (Innovations in Dementia, 2009) and this supports many of the findings from the Mitchell and Burton research and cites design issues such as signage and information sheets, navigation aids and labels as being important in addressing the complexity that begins to act as a barrier to people. This broadly correlates with work undertaken, in a woodland setting, by the Woodland Trust and Dementia Adventure (Mapes 2012) with fifteen care home residents living with dementia.

Research by Brorsson and colleagues (2011) sought to better understand the cognitive as well as physical barriers affecting access by people living with dementia. They provide a helpful definition of accessibility in this context as “...*the encounter between the demands and design of the physical*

*environment and a group's or person's capacity*". Working with a group of 7 "informants" with early onset dementia over a 15 month period, Brorsson et al used a series of in-depth interviews to discover how people living with dementia perceive accessibility. This study broadly supports the findings of the earlier Mitchell and Burton research, but also suggests that familiarity becomes more important with the onset of dementia and that people living with dementia are therefore less fond of "adventures" and unfamiliar activities. A further finding not replicated in other studies was that people living with dementia have increased feelings of vulnerability and insecurity and had concerns about being taken advantage of. Both these findings have potential implications for interventions that seek to engage people living with dementia in outdoor and nature based activities and further studies are required to see whether these findings are replicated.

Another finding was that public space was important to people living with dementia whereas busy places led to increased stress and difficulty. The study also supports the conclusions made by Innovations in Dementia and Mitchell and Burton in suggesting that landmarks become increasingly important to people living with dementia whereas the *"use of signs, maps and timetables had become difficult"* (Mitchell & Burton, 2010).

Though not specifically relating to the natural environment, these studies do suggest that by addressing a number of design features in the natural environment some of the specific barriers potentially facing people living with dementia in accessing these environments can be overcome.

The Greening Dementia project undertook a series of semi-structured stakeholder interviews (N=15), a stakeholder workshop and an online survey to gauge the views of a range of stakeholders on the barriers facing people living with dementia at its various stages and those people supporting them in accessing the benefits of engagement with the natural environment. (Appendix A) Although this was more of a consultative process than a methodologically robust research study, the engagement work does give some useful indications of expert opinion with regards to the barriers people living with dementia face.

Broadly these barriers can be summarised into six general headings:

1. Environmental Issues
2. Education and awareness
3. Resources
4. Access - Physical barriers
5. Attitudes and perceptions
6. Risk aversion

### **Environmental issues**

Access is clearly a potential barrier to people living with dementia in engaging with the natural environment as they are a predominantly older part of the population with the associated health and mobility issues. *"Mobility and orientation for people with dementia can be severely hampered by the physical environment"* (Local Government Association, 2012). Chalfont's (2006) research with people living with dementia in care homes, suggests a number of factors that act as barriers to people's participation in "nature related activities", such as garden spaces. Personal challenges include continence concerns and worries about falling, finding their way around and getting too far away.

Practice based observations and participant feedback collected by Mapes suggest that facilities in parks, woodland and other potential dementia friendly venues require a range of features and facilities to make them dementia friendly including accessible toilets, rest areas and suitable benches and pathways (Mapes & Vale 2012).

Mapes suggests a complication in making green spaces dementia friendly is that features aimed at improving access for other potentially excluded groups, such as signage and wheelchair accessible paths may not always be appropriate for people living with dementia (Mapes 2011) and this is



supported by other sources (Innovations in Dementia, 2009) (Brorsson, A, S, & L, 2011) (Mitchell & Burton, 2010). One example is use of raised edges on wheelchair accessible paths which may prove an additional trip hazard to people living with dementia.

Although further research is required to define the nature of these, the use of way-finding aids in some green spaces, such as dementia friendly signage, would be regarded positively by people living with dementia (Innes, Kelly, & Dincarslan, 2011) and could overcome some of their concerns about getting lost.

Checklists and other tools developed by organisations such as Dementia Adventure ([www.dementiaadventure.co.uk](http://www.dementiaadventure.co.uk)) and Innovations in Dementia [www.innovationsindementia.org.uk](http://www.innovationsindementia.org.uk) are useful in helping greenspace organisations to ensure that their sites are dementia friendly.

### **Education and awareness**

The factors that affect people's quality of life are defined primarily by the person and their circumstances (Alzheimer's Society, 2010) and therefore misunderstanding, making assumptions about or having a lack of concern for the motivations of people living with dementia in accessing the natural environment is clearly an issue if adopting the desirable person-centric approach.

### Carers and family carers

Anecdotal evidence suggests that when people living with dementia find situations difficult they tend to ask friends or relatives for information rather than accessing it directly themselves (Innovations in Dementia, 2009). In addition there is some evidence from the literature that family carers in particular play an important role in supporting their relatives in accessing activities (Tsunaka, 2012) (Chalfont 2006) (Mapes 2011a). This is supported by stakeholder feedback (Appendix A) that suggests that future initiatives to promote the benefits of access to nature for people living with dementia need to raise awareness of these potential opportunities with this group of people.

### Greenspace organisations

People living with dementia say they would like to get out more, but they will only continue to engage in activities *"if they are welcomed and encouraged"* (Local Government Association, 2012). Evidence suggests that improving awareness of and knowledge about dementia among a range of people is viewed as important by people living with dementia (Alzheimer's Society, 2012). This is important as there is a clear link between the extent to which people living with dementia feel involved and valued and with them staying healthy and feeling positive about their lives (Local Government Association, 2012).

One of the recurring themes in participant feedback about care farms was the positive interaction between staff and visitors (Bragg, Wood, Barton, & Pretty, 2011). Whereas negative reactions to a person living with dementia may have a negative effect on their total experience of visiting the natural environment (Alzheimer's Society, 2012). Based on his experiences of organising trips and visits for people living with dementia (Mapes 2012) suggests that some staff at venues which have natural resources and green environments currently lack the knowledge and expertise to both engage effectively with people living with dementia and also to meet their needs. This need to improve awareness of the requirements of people living with dementia and their carers is supported in the stakeholder engagement work undertaken as a part of the Greening Dementia project, including feedback from greenspace organisations themselves.

### **Resources**

The issue of resources applies to the person living with dementia, carers and family members and support organisations. It does not just relate to financial resources, though these are an issue for people with care requirements, particularly the provision of care and support during visits.

- The availability of support for people living with dementia has a potential impact on the extent to which they are able or willing to participate more widely in activities including

walking (Innovations in Dementia, 2009) and other activities in the natural environment and green spaces.

- Dementia friendly activities tend to require staff input in addition to the support of carers and other volunteers and this can have an impact on staff ratios and limit the numbers of people living with dementia able to access activities at any one time (Mapes, 2011b).
- Other resources such as time are important and can act as barriers, particularly where visits need to be planned and prepared (Mapes 2011b) (Chalfont 2006) and staff and family carers face time constraints.

There is currently a lack of cost effective planned dementia friendly nature based activities (Chalfont 2006) (Appendix A) and this is an issue for people living with dementia. There is a need to ask people living with dementia more about what they are able to pay for and what they expect in return.

### **Access - Physical barriers**

Anecdotal evidence suggests that physical factors such as location, distance, the availability of transportation and the design and accessibility of green spaces can be significant barriers to people living with dementia. Though these might also apply more generally, there is evidence that the costs and availability of transport and the ability to access or use it is an important barrier to people living with all stages of dementia:

- Feedback from group leaders suggested that this can be an issue in supporting people to access care farms and other green spaces (Bragg, et al., 2011).
- The inability to drive and/or use public transport (Mitchell & Burton, 2010) provides a restriction on people's ability to travel far and can require the input of family members or other carers and transport, although there are some people living with dementia who are still independently driving.
- Current consultation being undertaken by Wye Valley AONB has highlighted this issue; with dependence on transportation by a carer or family member a likely factor in people living with dementia being able to access a local project.
- In a pilot horticultural project for people with early onset dementia undertaken by Thrive in 2009/10, 2 of the original 12 participants chosen for the project had to decline due to "transport difficulties" (THRIVE, 2011).

### **Psychological and social barriers**

A barrier facing people living with dementia and their carers is concern about the behaviour of the person themselves, or others towards them while out in the natural environment. There is evidence that people still feel stigmatised by their dementia and although there is some evidence that attitudes and awareness are improving, there is an on-going need to address this as an issue.

The attitude and reaction of others can deter people living with dementia participating in society (Local Government Association, 2012). Anecdotal evidence from Dementia Adventure Community Interest Company suggests that is one of the reasons people living with dementia wish to use organisations specialising in dementia, as they feel everyone is in the same situation and understands.

### **Risk**

Evidence suggests that risk, or perceived risk, of engaging with nature and the outdoors is a concern both from the perspective of the person living with dementia and those providing care or services to them. Risk aversion is an issue that requires attention as it can be both disempowering for the individual and act as a barrier to them engaging in everyday activities (Department of Health, 2007) that otherwise may have associated benefits.

Stakeholder feedback (Appendix A) suggests that risk aversion among carers is a significant barrier to people living with dementia in accessing the natural environment.

Popham and Orrell's 2012 focus group and interview study of 60 care home staff, carers and residents and, interviews with five managers, found that there is a mismatch between the priorities of care home staff and managers, whose primary concerns tend to be around comfort and health and safety and the concerns of residents whose main priority is the ability to make choices. In a care home environment this can lead to residents feeling bored and frustrated. Popham and Orrell (2012) state that despite all the care homes in their study having "...safe secure gardens, residents were disappointed that they couldn't use them unless accompanied". This risk aversion by carers may also have an impact on the self-esteem and retention of autonomy and independence (De Bruin et al 2010) among people living with dementia.

Nature is itself "living, complex, real and unpredictable" (Chalfont, 2008) and as such there is always an element of risk attached and there is a need to change mind-sets and as one stakeholder in the Greening Dementia project said, "*We should balance the risks of not taking someone out into nature, rather than the risks of doing so*" (Appendix A). The evidence indicates there needs to be a balance between choice and control in assessing risk and ensuring people living with dementia do not take unnecessary risks.

Concerns about risk are not isolated to carers and family members. Research and anecdotal feedback (Appendix A) reveals another aspect of risk aversion that can affect people living with dementia themselves and can cause them to restrict their outdoor activities. Duggan and colleagues study of 22 people living with dementia and their carers found that that the frequency of outdoor activity and the distances people are willing to travel decreases with early onset dementia (Duggan, et al., 2008). Chalfont's work with people living with dementia reinforces these findings as well as outlining concerns about continence and falling (Chalfont 2006).

There is a danger that people living with dementia become more and more isolated with the onset of their dementia and that this can act as a barrier to them participating in natural and outdoor activities which means they can be excluded from the positive mental and physical health and social benefits that the natural environment may offer them (Chalfont, 2007).

### **Tailored dementia friendly activities**

People living with dementia, like any other group within the wider population, are diverse and have a range of different factors that define them such as gender, life history, health, socio-economic grouping and geography. Therefore, when considering how to maximise the benefits and overcome the barriers facing individuals living with dementia in accessing the natural environment, these variations need to be taken into account and an assumption should not be made that there is a 'one size fits all' solution.

There is a clear link between inactivity, boredom and sensory deprivation and inappropriate or challenging behaviour for people living with dementia (Cohen Mansfield, 2001). Evidence shows that focusing on activities that are linked to the abilities of the person both leads to better engagement and a decrease in behavioural problems (De Bruin, Oosting & van der Zijpp 2010). The urban dimension is important here as a significant number of people living with dementia are likely to live in urban or semi-urban settings. If, as in the case of deprived communities, most of someone's experience of green spaces has been in a local, urban environment such as parks or even gardens, it is likely they will want to engage with this familiar environment with the onset of dementia. But again we are by no means sure of this assumption. For greenspace organisations and other organisations working with people living with dementia this requires a change in thinking to enable them to utilise all green spaces better for people living with dementia and other potential visitors (Weldon & Bailey, 2007).

### **Summary**

There is evidence that barriers particularly affecting people living with dementia in accessing the natural environment include: concerns about how they will be perceived; a lack of awareness of the needs of people living with dementia among greenspace organisations and their staff; the costs of

resourcing visits, including transport and carer costs; and the impact of risk aversion among people living with dementia, their carers and service providers.

It is clear from the evidence that exists that even simple days out can potentially entail a range of potential hazards and issues for people living with dementia and their carers and that a range of potential solutions need to be considered in addressing these barriers and ensuring that people living with dementia can access the benefits that contact with nature can potentially offer. Some of these barriers are common to other groups, such as physical access issues and cost, whereas others are specific to people living with dementia, such as risk aversion among carers and a lack of information about dementia friendly spaces.

However evidence focusing on the specific barriers facing people living with dementia in accessing the natural environment is extremely limited and there is a need to fill this evidence gap in order to ensure that future projects seeking to engage people living with dementia in the natural environment are able to target their activities appropriately.

### 3. Key Findings

- The benefits to people of access to the natural environment are increasingly accepted and there is growing evidence of the impact of nature on our physical and mental health. These benefits can be derived in a number of ways: by viewing nature; just being near to nature; or through actively taking part in and engaging with nature.
- Specific evidence of benefits for people living with dementia from access to the natural environment and the outdoors is limited in scope and often qualitative and/or anecdotal. However, general findings include:
  - a. Improved emotional state: reduced stress, agitation, anger, apathy and depression
  - b. Improved physical health: skin health, fitness, sleeping patterns, eating patterns
  - c. Improved verbal expression
  - d. Improved memory and attention
  - e. Improved awareness: multi-sensory engagement and joy
  - f. Improved sense of well-being, independence, self-esteem and control
  - g. Improved social interaction and a sense of belonging
- Evidence of the benefits of access to specific types of natural environment (i.e. woodlands, coastal, mountains) and the effect of specific activities on people living with dementia, is generally poor. The evidence of benefits for people living with dementia from access to the natural environment is generally short term once the activity ceases and we do not know what the potential benefits and cost savings could be from a longer term programme which enables a more regular connection with nature for people living with dementia.
- The evidence also 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 the quality of life for this group of people.
- On-going studies within care home settings suggest a variety of interventions such as developing dementia friendly garden spaces and facilitating organised park and woodland walks have positive benefits for people living with dementia. In addition, facilitation of access to nature for people living with dementia through provision of therapeutic gardens and horticultural programmes and facilitation of visits to parks, woodlands, care farms and other green spaces shows both benefits in terms of people's health and well-being and in terms of changing attitudes to exercise and nature and their potential benefits for people living with dementia.
- There is little evidence that links the severity of the dementia condition to the benefits from access to the natural environment. There have been no studies that compare those people at different points along the continuum of the dementia condition (e.g. those people with early onset or mild and medium dementia compared to those with advanced dementia) that would help to better inform the type and timing of interventions more appropriately to the needs of the client. This gap in our current understanding makes the targeting and design of interventions very difficult.
- As approximately two-thirds of people living with dementia currently live in their own homes and tend to be at the earlier end of the onset of dementia it might be argued that it is the interaction of this group with nature and the outdoors that requires the focus of our future research efforts.
- Due to the nature of dementia and the methodological issues involved in engaging with people living with dementia, particularly those with later onset dementia, there has been very little research conducted into the experience of individuals living with dementia and their

views on nature based activities, and the benefits and barriers to engaging with the natural environment. People living with dementia, like any other group within the wider population, are diverse and have a range of life histories, and personal health, and come from a range of socio-economic backgrounds and living conditions. Therefore, when considering the benefits and barriers facing individuals living with dementia in accessing the natural environment, this needs to be taken into consideration and assumptions not made that 'one size fits all' solutions are appropriate.

- There are potentially huge health and social care cost savings as well as wider societal and economic savings to be made by investing in alternatives to medication that enable people to live well early on in the disease process.
- There is a strong willingness to develop and support partnership solutions to the barriers facing people living with dementia in engaging with nature as illustrated in the many ideas and potential projects that have been identified during the short period of stakeholder engagement undertaken as part of the Greening Dementia project.

## 4. Key Recommendations

The key recommendations from this literature review are:

1. There is a clear need for large scale research and evaluation studies to quantify the benefits of engaging with nature for people living with dementia, particularly with regard to the mental and physical health benefits and the cost benefits of different interventions involving nature against more traditional medical treatments.
2. The barriers facing people living with dementia in accessing the natural environment need to be investigated further through large scale quantitative insight studies, along with better evaluation and review of existing and proposed projects working with people living with dementia. There is a growing interest in the role of nature and exercise in improving the health and quality of life of people living with dementia and it is important that projects and initiatives that seek to harness these benefits are robustly tested and evaluated in order to generate evidence to help target future interventions.
3. As well as asking their families, supporters, advocates and professional health and social care staff, it is critical that future research work is user led and actively involves people living with dementia in helping to shape projects and initiatives that seek to better enable them to benefit from access to the natural environment. As traditional consultative processes are not appropriate for many people living with dementia, particularly as onset progresses, creative approaches to engaging with people living with dementia including walking interviews and participatory appraisal approaches need to be further explored.
4. The largest group of the 800,000 people living with dementia are those who live in their own home (approximately two-thirds) with about a third of all these people living at home alone. If we are to meet the challenge of enabling people to live well with dementia in their own homes for as long as possible, then evaluating the benefits and barriers to nature on this group is potentially the most effective use of resources at this time.
5. It is proportionally more cost-effective to support people in the earlier or mild stages of the condition, particularly given the lack of suitable activities and services for the group.
6. The Greening Dementia Research and Project Officer role has played an important part in raising the profile of Greening Dementia and in facilitating stakeholder engagement across a range of partners. There is an appetite for this work to continue and consideration needs to be given to how stakeholders can continue this facilitation role now that the project has ceased.

## 5. References

- Abbott, R., White, L., Ross, G., Masaki, K., Curb, J., & Petrovitch, H. (2004). Walking and dementia in physically capable elderly men. *JAMA - Journal of the American Medical Association* , 292 (12), 1447–1453.
- Alzheimers Society. (2012). *Dementia 2012 - a national challenge*. London: Alzheimers Society.
- Alzheimers Society. (2007). *Dementia UK - A report into the prevalence and cost of dementia*. London: Alzheimers Society.
- Alzheimer's Society. (2010). *My name is not Dementia* . London: Alzheimer's Society.
- Barton, J., & Pretty, J. (2010). What is the best dose of nature and green exercise for improving mental health? A multi study analysis. *Environmental science and technology* , 44 (10).
- Benbow, S., Tsaroucha, A., Ashley, M., Morgan, K., & Kingston, P. (2011). Patients and carers views on dementia workforce skills. *Journal of mental health training, education and practice* , 6 (4), 195-202.
- Bird, W. (2007). *Natural Thinking*. RSPB .
- Bowler, D., Buyung-Ali, L., Knight, T., & Pullin, A. (2010). A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC Public Health* , 10, 456-465.
- Bradley, C. (2010). Risk factors for dementia. *Journal of Dementia Care March 2010* .
- Bragg, R., Wood, C., Barton, J., & Pretty, J. (2011). *Let Nature Feed Your Senses: Engaging people with nature food and farming. Evaluation report for LEAF and Sensory Trust*. Chelmsford: Department of Biological Sciences and Essex Sustainability Institute, University of Essex.
- Brooker DJ, W. R. (2007). Enriching opportunities for people living with dementia in nursing homes: an evaluation of a multi level activity based model of care. *Aging and mental health* , 11 (4), 361-370.
- Brooker, D. (2001). Enriching lives: evaluation of the ExtraCare activity challenge. *Journal of Dementia Care* , 9 (3), 33-37.
- Brorsson, A., A, O., S, L., & L, N. (2011). Accessibility in public space as perceived by people with Alzheimer's disease. *Dementia: the international journal of social research and practice* , 10 (4), 587-602.
- Burt, J., Stewart, D., Preston, S., & Costley, T. (2013). *Monitor of Engagement with the Natural Environment Survey (2009 -2012): Difference in access to the natural environment between social groups within the adult English population*. Number 003: Natural England Data Reports.
- Calkins, M., Szmerekovsky, J., & Biddle, S. (2007). Effect of increased time spent outdoors on individuals with dementia residing in nursing homes. *Journal of Housing for the Elderly* , 21 (3), 211-228.
- Chalfont, G. (2005). *Architecture, nature and care: the importance of connection to nature with reference to older people and dementia*. Independent paper G Chalfont.
- Chalfont, G. (2008). Charnley Fold: A Practice Model of Environmental Design for Enhanced Dementia Day Care. Sheffield.



- Chalfont, G. (2006). *Connection to Nature at the Building Edge: towards a therapeutic architecture for dementia care environments*. Sheffield: University of Sheffield.
- Chalfont, G. (2008). *Design for nature in Dementia Care*. Jessica Kingsley Publishers.
- Chalfont, G. (2007). The dementia care garden: part of daily life and activity. *Journal of Dementia care* .
- Cohen Mansfield, J. (2001). Nonpharmacologic interventions for inappropriate behaviors in dementia: a review, summary, and critique. *Am J Geriatr Psychiatry* , 9 (4), 361-81.
- Connell, B., Sanford, J., & Lewis, D. (2007). Therapeutic effects of an outdoor activity program on nursing home residents with dementia. *Journal of Housing for the elderly* , 21 (3/4), 195-209.
- De Bruin, S. (2009). *Sowing in the autumn season*. Wageningen: Wageningen University.
- De Bruin, S., Oosting, S., & van der Zijpp, A. (2010). The Concept of green care farms for older people with dementia. *Dementia* , 9 (1), 79-128.
- Dementia Advocacy Network. (2010). *Nothing Ventured, Nothing Gained: Risk Guidance for people with dementia*. London: Advocacy Plus.
- Department for Environment, Food and Rural Affairs. (2011). *The Natural Choice: securing the value of nature*. London: HMG.
- Department of Health. (2011). *Healthy Lives, Healthy People*. London: Department of Health.
- Department of Health. (2009). *Living well with dementia: A National Dementia Strategy*. London: HM Government.
- Department of Health. (2011). *Start active, stay active: A report on physical activity for four home countries' Chief Medical Officers*. DOH.
- Duggan, S., Blackman, T., & Martyr, A. (2008). The impact of early dementia on outdoor life - a shrinking world? *Dementia - the international journal of social research and practice* , 7 (2), 191-204.
- Edwards, C., McDonnell, C., & Merl, H. (2013). *Does a therapeutic garden environment influence the quality of life of aged care residents with dementia?* Retrieved March 8th, 2013, from [www.dementiasensorygardens.co.uk/2012/10/16/colin-mcdonnell/](http://www.dementiasensorygardens.co.uk/2012/10/16/colin-mcdonnell/)
- Edwards, C., McDonnell, C., & Merl, H. (2010). *Edwards CA, McDonnell C, Merl H. Does a therapeutic garden environment influence the quality of life of aged care residents with dementia?* Retrieved February 11th, 2013, from [www.dementiasensorygardens.co.uk/2012/10/16/colin-mcdonnell/](http://www.dementiasensorygardens.co.uk/2012/10/16/colin-mcdonnell/)
- Elings, M. (2012). *Effects of Care Farms - Scientific research on the benefits*. Wageningen UR: Plant Research International, .
- Erickson, K. (2010). *Exercise training increases size of hippocampus and improves memory*. PNAS.
- Fabrigoule, C. L., Zarrouk, M., Commenges, D., & Barberger-Gateau, P. (1995). Social and leisure activities and risk of dementia: a prospective longitudinal study. *Journal of American Geriatrics Society* , 43, 485-490.
- Heyn P, A. B. (2004). The effects of exercise training on elderly persons with cognitive impairment and dementia: A meta-analysis. *Archives of physical medicine and rehabilitation* , 85 (10), 1694-1704.

- Hynds, H. (2010). *Green Exercise Programme Evaluation*. Peterborough: Natural England Research Reports No. 039.
- Innes, A., Kelly, F., & Dincarslan, O. (2011). Care home design for people with dementia - what do people with dementia and their family carers value? *Ageing and Mental Health* 16 (5), 548-556.
- Innovations in Dementia. (2009). *Start Making Sense*. Exeter: Innovations in Dementia.
- Joseph Rowntree Foundation. (2005). *The Older People's Enquiry*. York: Joseph Rowntree Foundation.
- Kaplan, S. (1995). *The restorative benefits of nature: Toward an integrative framework*.
- Kemoun, G., Thibaud, M., Roumagne, N., Carette, P., Albinet, C., Toussaint, L., et al. (2010). *Effects of a Physical Training Programme on cognitive function and walking efficiency in elderly persons with dementia*. Poitiers: University of Poitiers.
- Larson, E., Wang, L., & Bowen, J. (2006). Exercise is associated with reduced risk for incident dementia among persons 65 years of age and older. *Annals of internal medicine* , 144, 73-81.
- Local Government Association. (2012). *Developing dementia friendly communities*. London: LGA.
- Luengo-Fernandez, R., Leal, J., & Gray, A. (2010). *Dementia 2010 – The economic burden of dementia and associated research funding in the United Kingdom*. Oxford: Health Economics Research Centre, University of Oxford.
- Maller, C., Townsend, M., St Leger, L., Claire Henderson-Wilson, P. A., Prosser, L., & Moore, M. (2009). Healthy Parks, Healthy People: The Health Benefits. *The George Wright Forum* , 26, 51-83.
- Mapes, N. (2012). *Fit as a Fiddle with Age UK London: Involving People Living with Dementia - insights*. London: Age UK London.
- Mapes, N. (2012). Have you been down to the woods today. *Working with Older People* , 16 (1), 7-16.
- Mapes, N. (2010). It's a walk in the park: exploring the benefits of green exercise and open spaces for people living with dementia. *Working with Older People* , 14 (4), 25-31.
- Mapes, N. (2011a). *Living with Dementia and Connecting with Nature - Looking Back and Stepping Forwards*. Chelmsford: Dementia Adventure.
- Mapes, N. (2011b). *Wandering in the Woods - A Visit Woods Pilot Project*. Chelmsford: Dementia Adventure.
- Mapes, N., & Vale, T. (2012). *Wood if we could: A practical guide to leading group adventures and visits to woodlands*. Chelmsford: Dementia Adventure.
- Marmot, M. (2010). *Fair Society, Healthy Lives: The Marmot Review : strategic review of health inequalities in England post-2010*. London: UCL.
- Mayer, F., McPherson, F., Bruehlman-Senecal, E., & Dolliver, K. (2009). Why Is Nature Beneficial?: The Role of Connectedness to Nature. *Environment and Behaviour* , 41 (5), 607-43.
- Mind. (2007). *Ecotherapy - the green agenda for mental health*. London: Mind.
- Mitchell, L., & Burton, E. (2010). Designing dementia-friendly neighbourhoods: helping people with dementia to get out and about. *Journal of integrated care* , 18 (6), 11-18.

- Natural England. (2010). The cost of doing nothing [www.wfh.naturalengland.org.uk](http://www.wfh.naturalengland.org.uk). Natural England.
- Peacock, J., Hine, R., & Pretty, J. (2007). *Got the Blues? Then find some greenspace: The mental health benefits of green exercise activities and green care.*. Chelmsford: University of Essex.
- Popham, C., & Orrell, M. (2012). What matters to people with dementia in care homes. *Ageing and Mental Health* , 16 (1-2), 181-188.
- Pretty, J., Peacock, J., Hine, R., Sellens, M., South, N., & Griffin, M. (2007). Green exercise in the UK countryside: Effects on health and psychological well-being, and implications for policy and planning. *Journal of Environmental Planning and Management* , 50, 211-231.
- Pretty, J., Peacock, J., Sellens, M., & Griffin, M. (2005). The mental and physical health outcomes of green exercise. *International journal of environmental health research* , 5 (319-337), 15.
- Rappe, E. (2005). The Influence of a green environment and horticultural activities on the subjective well-being of the elderly living in long-term care. Helsinki: The University of Helsinki.
- Reid, S., & Curtice, J. 2. (2010). *Scottish Social Attitudes Survey 2009: Sustainable Places and Greenspace*. Scottish Government Social Research.
- Schwarz, B., & Rodiek, S. (2007). Outdoor environments for People with Dementia . 21 (1-4).
- Social Care Institute for Excellence. (2010). Sustainable social care: the natural environment. London: SCIE.
- Takano, T., Nakamura, K., & W. M. (2002). Urban residential environments and senior citizens longevity in megacity area: the importance of walkable green spaces. *Journal of Epidemiology and Community Health* , 56, 913-918.
- Thompson Coon, J., Boddy, K., Stein, R., Whear, J., Barton, M., & Depledge, H. (2011). Does Participating in Physical Activity in Outdoor Natural Environments Have a Greater Effect on Physical and Mental Wellbeing than Physical Activity Indoors? A Systematic Review. . Exeter: PenCLAHRC.
- THRIVE. (2011). *Therapeutic gardening for young onset dementia*. Reading: THRIVE.
- Tsunaka, M. &. (2012). Care givers perspectives of occupational engagement of persons with dementia. *Ageing and Society* , 3 (4), 543-560.
- Ulrich, R. (1984). View through a window may influence recovery from surgery. *Science* , 224, 420-421.
- Verghese, J., Lipton, R., Katz, M., Hall, C., Derby, C., Kuslansky, G., et al. (2003). Leisure activities and risk of dementia in the elderly. *The new england journal of medicine* , 348, 2508-2516.
- Vuolo, M. (2003). *Horticulture Therapy in Dementia Care Impact on Behavioral*. New York: New York State Department of Health Dementia Grants Program.
- Weldon, S., & Bailey, C. (2007). *New pathways for health and well-being in Scotland - Research to understand and overcome*. Forestry Commission Scotland.
- Whall, A., Black, M., Groh, C., Yankou, D., Kupferschmid, B., & Foster, N. (1997). The effect of natural environments upon agitation and aggression in late stage dementia patients. *American Journal of Alzheimer's Disease* , vol. 12 (5), 216-220.
- Wilson, E. (1984). *Biophilia: The Human Bond with Other Species*. Harvard University Press: Cambridge.

Zeisel, J. (2009). *I'm Still here – a breakthrough approach to understanding someone living with Alzheimer's*. New York: Penguin.

# Appendix A

## Stakeholder engagement

The appendix details the results of the stakeholder engagement activity undertaken by Patrick Clark, Greening Dementia Research and Project Officer. Stakeholders were drawn from greenspace organisations, the health and social care sectors, the voluntary and community sector, dementia specific organisations and people living with dementia and their carers. The purpose of the stakeholder engagement was threefold:

1. To engage people in the project and to ask for help and guidance with signposting sources of evidence for the evidence review.
2. To gauge the views of a range of stakeholders of the benefits of and barriers facing people living with dementia in engaging with the natural environment
3. To draw on the experience of stakeholders to influence the development of project ideas and initiatives to maximise these benefits and overcome the barriers

The project did not set out at this stage to directly engage with people living with dementia, though clearly this is a vital step in ensuring that any proposed interventions are fit for purpose and meet people's various needs. However, through the evidence review and discussions and interviews with stakeholders, many of whom work with people living with dementia, these views have to some degree been covered.

The stakeholder engagement activity was delivered in a number of stages. These were:

1. Stakeholder analysis
2. Initial email and phone contact with stakeholders (December / January )
3. Telephone and face to face semi-structured interviews (January – March)
4. Stakeholder workshop (February)
5. On-line self-completion survey (February / March).

### Initial contact

Initial contact was made via email with over 70 stakeholders from a variety of greenspace, dementia specific and health and social care organisations, with each stakeholder being sent an outline project brief and the offer of involvement in Greening Dementia. This stakeholder list was drawn up by Patrick Clark, lead consultant in consultation with the Greening Dementia project steering group. This initial contact resulted in email or telephone dialogue with over 25 stakeholders with more detailed face to face or telephone discussions planned with many of these stakeholders.

### Semi-structured interviews / conversations

Following the initial stakeholder contact, a wider group of stakeholders was identified and this resulted in 24 telephone and face to face discussions being undertaken with a range of stakeholders between January and March 2013. Due to time constraints, not all stakeholders were able to be contacted through this method but these stakeholders were kept informed of progress through an email update and were invited to take part in an online stakeholder survey.

The discussions covered a number of key discussion topics including:

- Briefing people on the aims and objectives of Greening Dementia
- The role of the person in relation to dementia and/or the natural environment
- Views on the benefits of people living with dementia in engaging with the natural environment
- Views on the barriers facing people living with dementia in engaging with the natural environment
- Signposting to existing evidence and/or projects and initiatives that might support the Greening Dementia literature review and project development activity

- View on potential projects and initiatives that will enable more people living with dementia to engage with the natural environment

Conversations / interviews were tailored to the knowledge and role of the person being interviewed and therefore not all interviews covered all discussion topics. All interviews were written up in summary form against the key discussion topics.

### **Stakeholder Workshop**

A Stakeholder Workshop took place at the offices of Attend at Cavendish Square, London on Wednesday 13<sup>th</sup> February 2013 and was attended by a range of stakeholders in the Greening Dementia project. 15 people attended from a variety of greenspace, health and care and dementia specific organisations.

### **Online Self-completion survey**

In order to raise the profile of Greening Dementia and to get the views of a wider group of stakeholders, a short self-completion survey was designed and a web-link distributed to the Greening Dementia stakeholder list and through the Dementia Action Alliance (DAA) and stakeholder's own networks.

To date, 23 people have completed the survey with 18 of these people expressing an interest in remaining involved in Greening Dementia. Respondents came from Greenspace (9), Health and Care (6), Dementia specific (6) and academic (2) backgrounds and included four respondents with direct caring experience.

It has not been possible within the project timescales to follow up all these stakeholder leads and this would be a key step in the next stages of the project.

### **Key findings**

The purpose of the stakeholder engagement was to engage organisations and individuals in the wider aims of Greening Dementia rather than to build on the evidence base. However there was a consultative element to the project and this has resulted in a number of findings that help in understanding the benefits and barriers facing people living with dementia in engaging with the natural environment and making suggestions for the next steps for this work.

### **Benefits**

Feedback from the stakeholder interviews and the stakeholder workshop offered strong support for the benefits as outlined in the Greening Dementia literature review, though much of the evidence of this was anecdotal and observational rather than being based on any robust academic evidence.

These benefits included:

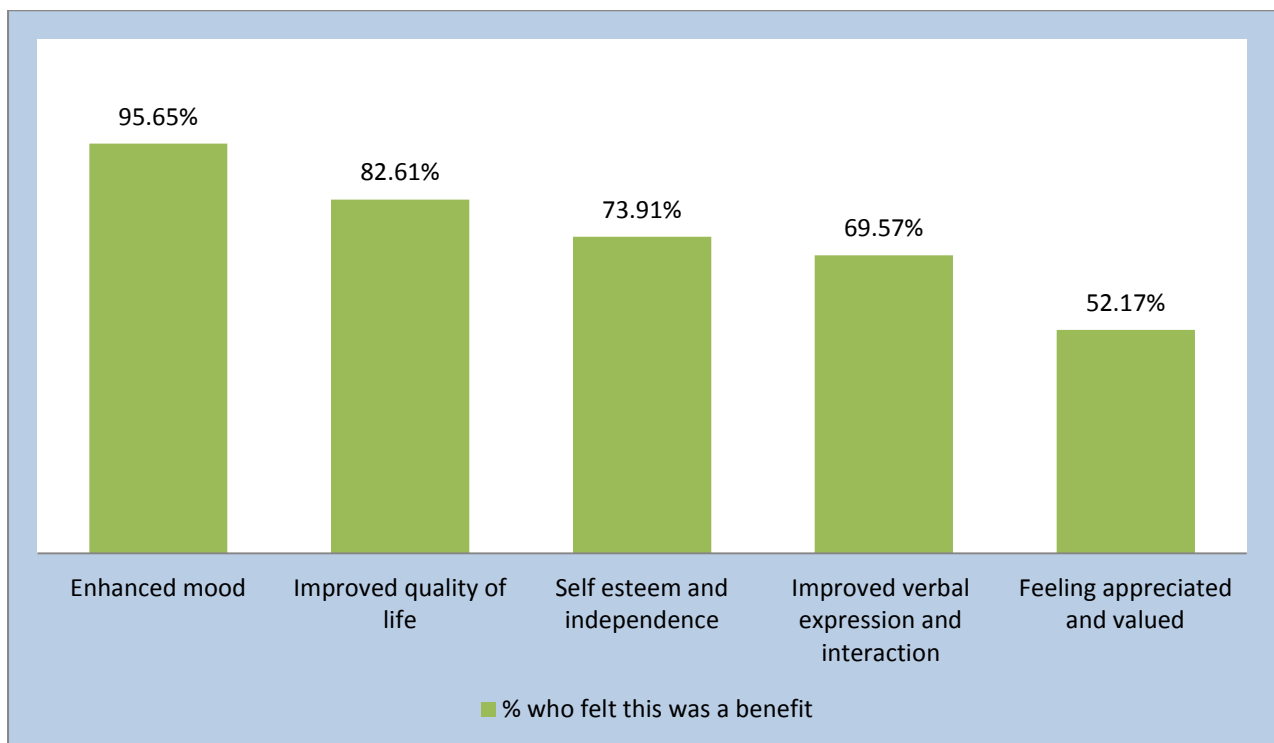
- Improved emotional state: reduced stress, agitation, anger, apathy and depression
- Improved physical health: skin health, fitness, sleeping patterns, eating patterns
- Improved verbal expression
- Improved memory and attention
- Improved awareness: multi-sensory engagement and joy
- Improved sense of well-being, independence, self-esteem and control
- Improved social interaction and a sense of belonging

In the online stakeholder survey respondents were asked to identify which of the benefits for people living with dementia in engaging with the natural environment they recognised from their experience (Figure 1). Feedback from the Stakeholder survey suggests that many of the benefits identified in the literature review and initial stakeholder involvement match the experience of people living with dementia, their carers and professionals working with people living with dementia.

There was particularly strong support for the role of access to nature in prolonging a sense of independence and promoting enhanced mood and improved quality of life.” ...*there is a huge need to get people with dementia out from their care homes and provide them with access to the natural world. It has a profound impact which I have witnessed first-hand...*” Care Farm Proprietor.

Feedback suggests that people living with dementia are not the only beneficiaries of access to nature and the outdoors. Carers and other staff working closely with people living with dementia also suggest that engaging in outdoor and nature based activities helps to improve their job satisfaction, breaks down barriers between people and offers respite to carers.

**Figure 1 Benefits of access to nature for people living with dementia – responses by %**

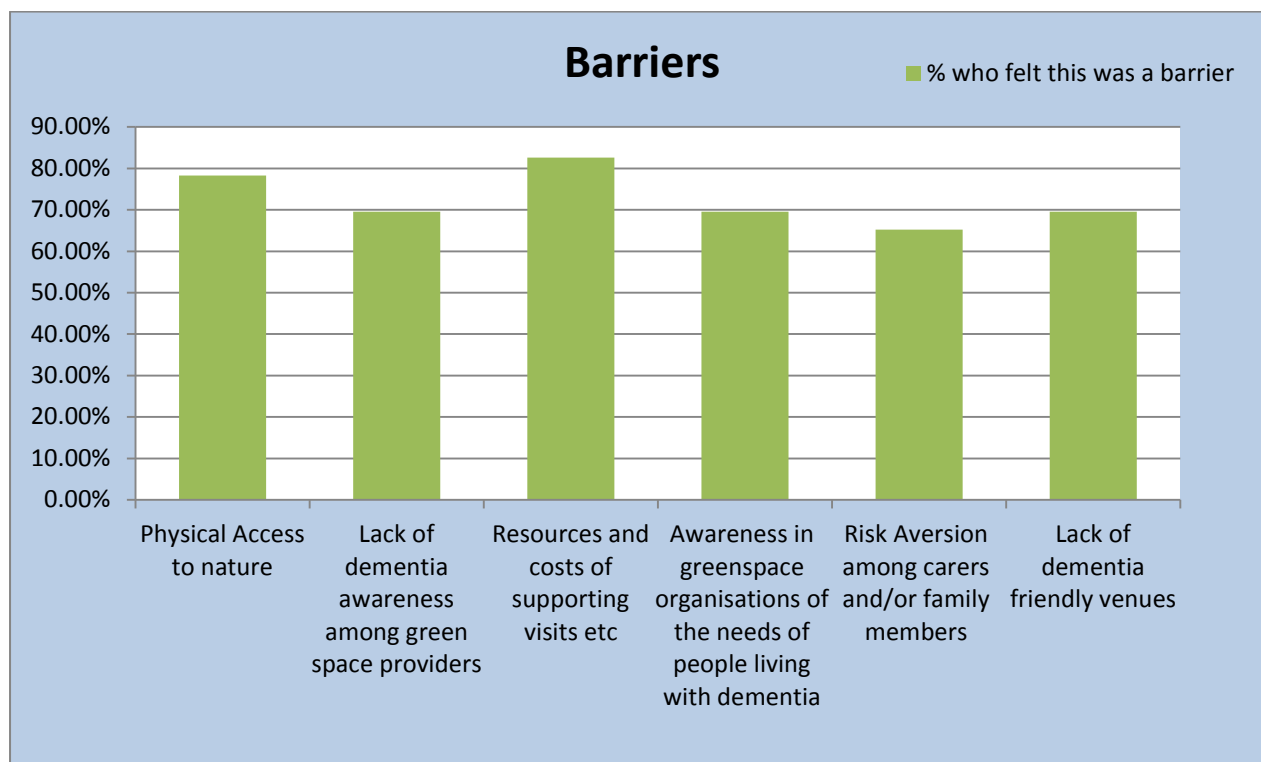


### Barriers

Respondents to the stakeholder interviews and online survey were asked to identify from their experience the main barriers facing people living with dementia face in accessing the natural environment. Feedback suggests that a number of key barriers exist and that these can be summarised as:

- Awareness of opportunities to engage with the natural environment
- Physical access issues such as transport.
- A lack of dementia friendly venues and a lack of awareness of what dementia friendly venues exist
- Awareness within greenspace organisations of the specific needs of people living with dementia
- Resources and cost
- Risk aversion among carers and/or family members

**Figure 2 Barriers facing people living with dementia in accessing the natural environment – responses by %**



Feedback suggests that risk aversion among carers and family members, as well as by people living with dementia themselves is a particular barrier and as one stakeholder said “we should balance the risks of taking someone out into nature against the risks of not doing so” (Dementia specialist).

Carers in particular supported the idea of developing more dementia friendly venues and self-help guides and of raising awareness of these among carers and family members of people living with dementia as a way of improving confidence and increasing reassurance regarding access to the natural environment.

A fear of being stigmatised was mentioned by a number of stakeholders as a barrier to people living with dementia. Some respondents suggested that people living with dementia would not want to take part in mainstream activities for this reason while other feedback said that this might also prevent people with early onset dementia from taking part in specific activities for people living with dementia. These motivations and barriers need to be explored more fully with people living with dementia if successful interventions are to be made.

### Other findings

The stakeholder engagement led to a number of key findings other than those relating to benefits and barriers.

A key voice missing from many studies covered in the literature and from the stakeholder engagement work undertaken for Greening Dementia is that of people living with dementia themselves. The views of people living with dementia and their carers needs to be sought in order to build our knowledge of what the best interventions are from their perspective and to tailor future activity to a variety of different needs.

Several carers warned of the danger of making assumptions that all people living with dementia will want to engage with the natural environment and of jumping to conclusions that organised activities



might be the best solution. As one carer said “not all people want to take part in organised activities – that in itself might be distressing”.

In addition there is a need to tailor provision to the specific needs of different people living with dementia and avoid ‘one size fits all’ solutions. One of the stakeholders in the Greening Dementia project, the Wye Valley Area of Outstanding Natural Beauty (AONB) cite an example from their MindScape project which offers people living with dementia opportunities to access creative activities in local woodland. They recently adapted their programmes to include different activities such as dry stone walling, in response to requests from male members of the group who felt that the existing creative activities weren’t appealing to them.

There is a clear need to build the evidence base for the benefits of people living with nature in engaging with the natural environment and many stakeholders suggested that this would be best achieved through better evaluation of existing and planned projects relating to this activity.

### **Solutions - Potential projects and initiatives**

A number of potential projects and initiatives have been proposed by stakeholders in response to the barriers identified during the Greening Dementia project. Several of these resulted from the Stakeholder Workshop held in February 2013 (Appendix A) and some of these have progressed since then as a part of the wider aims of the Greening Dementia project.

Initial project ideas included:

- Drawing the links between the Dementia Friendly Communities initiative and this wider work around engaging people living with dementia in the natural environment
- “Just Add Water” – working with care homes, national commercial sponsors and local greenspace organisations to bring nature into a care home setting
- Raising awareness among health walk leaders of the needs of people living with dementia and encouraging dementia friends and dementia champions to promote dementia friendly walks and walk groups
- Develop a programme of funded exemplar projects to enable more people living with dementia to access the natural environment and build the evidence base for what works
- Develop a self-help guide for accessing the natural environment
- Researching the cost benefits of people living with dementia accessing the natural environment
- Develop a portal of information to provide information on dementia friendly green space facilities and provision of services
- Influence commissioning bodies on the value of access to nature for people living with dementia. These might include Health and Wellbeing Boards and Local Nature Partnerships.
- Work with partners to develop a guide to adapting green spaces and facilities to be “dementia friendly”
- Develop a list of dementia friendly sites across all natural environment organisations such as wildlife trusts, the Woodland Trust, National Trust etc.
- Raise awareness among providers about the specific needs of people living with dementia

Respondents to the online stakeholder survey were asked to prioritise which project ideas from those already identified they felt were most important. The most supported projects were:

1. To develop a programme of funded exemplar projects to enable more people living with dementia to access the natural environment and build the evidence base for what works? 40.91%
2. Influence commissioning bodies on the value of access to nature for people living with dementia. 40.91%
3. Build natural exercise into supported living arrangements with Housing Associations and Extra Care organisations 27.27%

4. Develop local project trials through Dementia Friends and Dementia Champions and local Dementia Action Alliance membership 27.27%
5. Raise awareness among providers about the specific needs of people living with dementia 27.27%

Initial contact has been made with a number potential partners for these projects and initiatives and progress is being made in terms of project development and through exploring how different existing programmes can be brought together to meet the needs of people living with dementia in accessing the natural environment. A range of partners are involved in this including the Woodland Trust, Alzheimer's Society, Wye Valley Area of Outstanding Natural Beauty (AONB), Age UK (London), Worcestershire Wildlife Trust, the Ramblers, Worcestershire County Council, Housing 21 and a number of care farms; with many other stakeholders expressing an interest in supporting this work. Some of the project ideas, such as "Just Add Water" are continuing to be developed between partners and a number of local projects such as Wye Valley AONB's Mindscape project and are now seeking external funding to enable them to progress.

Many more stakeholders have expressed an interest in developing this work further and some of the project ideas are already in development but this work requires more time in order to fully engage potential partners, seek partnership and external funding where necessary and develop robust project plans for each.

## Conclusions

The aims of the project have been strongly supported by a wide range of stakeholders as illustrated in the response to the various stakeholder engagement opportunities and the time people have given to the project.

Notwithstanding the need for a more robust evidence base for some of the claimed benefits of engagement with the natural environment for people living with dementia there is widespread acceptance and support among stakeholders for these benefits based on personal experience and anecdotal evidence. Furthermore, among people with less knowledge of dementia, such as staff from greenspace organisations, there is a clear desire to learn how they can ensure that their activities meet the needs of people living with dementia.

The stakeholder engagement has also identified a series of barriers potentially facing people living with dementia in accessing the natural environment and although this work needs reality checking with people living with dementia themselves, it does support some of the findings of the wider evidence review and gives some confidence that the solutions various partners are seeking to develop are addressing the right issues.

Although clearly the views of people living with dementia and their carers need to be sought in terms of the benefits and barriers of accessing the natural environment, and the evidence of the benefits of access to nature needs to be strengthened, stakeholder feedback suggests that there is also a need to start to develop and deliver projects and initiatives in order to test a variety of interventions and contribute to building the evidence base. *"It is important to try something rather than waiting for all the answers"* (Stakeholder Workshop participant).

There is a strong willingness to develop and support partnership solutions to the barriers facing people living with dementia in engaging with nature as illustrated in the many ideas and potential projects that have been identified during this short period of stakeholder engagement. Considerable progress has been made but there is more to be done. The Greening Dementia Research and Project Officer role has played an important part in raising the profile of Greening Dementia and in facilitating this activity and consideration needs to be given to how stakeholders can continue this facilitation role now that the project has ceased.

This is a summary of four months of stakeholder engagement activity undertaken on behalf of Greening Dementia. For further information about this activity and the resulting projects, please contact Dementia Adventure on 01245 230661 or email [info@dementiaadventure.co.uk](mailto:info@dementiaadventure.co.uk).

# Appendix B

## Stakeholder Workshop Report

### Introduction

This report is a brief summary of the Greening Dementia workshop held in February 2013.

Greening dementia was a partnership project between Dementia Adventure, Natural England and the Woodland Trust, the purpose of which was to produce an evidence report into the benefit and barriers to engagement with the natural environment for those living with dementia, and to develop project proposals to test a number of large scale interventions that improve access to the natural environment for those living with dementia.

The scope of the work was to synthesise in an electronic report all the evidence around benefits and barriers and use this evidence to engage with users and providers of dementia services, the wider health and social care sectors and the environmental sector to inform, prioritise and develop a suite of costed, prioritised project proposals to test a number of large scale, sustainable interventions that improve access to the natural environment for those living with dementia and enhances their lives.

The project ran from December 2012 to end March 2013 and the Greening Dementia workshop was an important step in engaging a range of stakeholders in the next steps of the project.

The literature review and initial discussions with a range of stakeholders has identified a number of key benefits to people living with dementia in engaging with the natural environment including improved sleep and diet, enhanced self-esteem and independence and better expression & interaction. We have also identified a series of barriers preventing people living with dementia in accessing nature including a lack of awareness of the needs of people living with dementia, risk aversion and cost. The full range of benefits and barriers identified to date are detailed below.

### The Workshop

The Workshop took place at the offices of [Attend](#) in Cavendish Square, London on Wednesday 13<sup>th</sup> February 2013 and was attended by a range of stakeholders in the Greening Dementia project. Our thanks go to Attend for allowing us to use their facilities for the day.

Many other people were interested but were unable to attend and their views on the next steps of the project were sought through a combination of face to face meetings, telephone interviews and an online stakeholder survey.

We would like to thank all the people who expressed an interest in attending the workshop and to those that worked together on the day including:

- Patrick Clark, Project Manager, Dementia Adventure
- Neil Mapes, Director, Dementia Adventure
- Sarah Preston, Senior Adviser, Natural England
- Alan J Howard MCIAT, Architect
- Claire Cordell, Little Gate Care Farm
- Michelle Sinden, Spitalfields City Farm
- Deva, Spitalfields City Farm
- Maizie Mears Owen, Dementia Lead, Care UK
- Simone Ashley-Norman, The Woodland Trust
- Natalie Turner, Age UK (London)
- Carol Octon, The Wildlife Trusts
- Ben Christie, Worcestershire Wildlife Trust
- Emma Costley-White, Scrubditch Care Farm Project
- Gail Graham, VisitWoods Project Manager, Woodland Trust
- Lorna Shawe (RRD) North Essex Partnership NHS Foundation Trust

Neil Mapes opened the session with a brief background to the Greening Dementia project and how it came about before passing on to Patrick Clark, the project lead for Greening Dementia.

Patrick gave a short presentation on progress with the project to date and the key findings from the literature review he had undertaken. These findings were broken down into the benefits and barriers facing people living with dementia in accessing the natural environment (See Appendix 1).

Using a round robin methodology, each member of the workshop was then invited to respond to the findings and add to the list of benefits and barriers outlined where necessary. This feedback included the following observations from participants:

- The need to view this through all the stages of dementia as needs may differ from stage to stage and depending on people's circumstances
- People living with dementia need to enjoy nature in a way that they want to – the approach must not be dictated.
- The availability and complexity of using (public) transport is a major potential barrier
- Encouraging opportunities close to people is important
- Stigmatising and stereotyping are barriers that need to be addressed
- It is important to look at bringing the outside in as much as taking people outdoors
- Need to show staff in care homes the benefits of engaging more meaningfully with people – walking together can change relationships
- It is important to give all groups and individuals care and attention
- Green spaces need to juggle catering for a variety of needs to avoid conflict of use
- Distance can be an issue with 45 minutes the maximum time many people will travel. Any more than that and the day has to be something very special.
- Carers are the key. "How do you persuade the carers?"
- The need to identify and promote the economic benefits of doing it well
- The need to identify champions and advocates and work through them
- How to upscale small ideas and projects to ensure more people benefit
- Dementia Friendly is good in theory but it is difficult in practice and has cost implications. Does Government intend to back this up with financial support?
- It is important to try something rather than waiting for all the answers:
  - Maintaining gardens
  - Bring nature to people
  - Promoting opportunities

This feedback in many cases reinforced the learning from the Greening Dementia project to date, however some additional ideas and issues were raised by this session and this is being used to help direct the next stage of the project.

Following this initial discussion, the participants were broken into three groups and the rest of the workshop was then structured around each group discussing the following topics:

#### **How do we overcome the barriers and increase access?**

- Projects, actions, ideas

#### **Refining the ideas**

1. Who needs to be involved?
2. What can you contribute?
3. Next steps

## Overcoming the barriers - project ideas

A wide range of project ideas and actions were identified by the participants in the three groups. These are listed below:

- Develop a programme of funded exemplar projects to enable more people living with dementia to access the natural environment and build the evidence base for what works.
  - Enable people living with dementia to shape these projects
  - Involve a range of partners and funders in supporting the programme
  - Further explore the barriers facing people living with dementia and those carers and organisations supporting them
  - Provide a variety of activities to suit a variety of needs and interests
  - Link with existing projects relevant to this study
  - Develop and implement a robust evaluation programme for all the projects
- Addressing the attitudinal barriers in some paid carers
  - Run taster sessions for them
  - Visit them to discuss ideas (outreach sessions from greenspace organisations)
- Pilot a GP referral process, where GPs can refer patients to Green Exercise programmes
- Build natural exercise into supported living arrangements with Housing Associations and Extra Care organisations
- Fund a regional community outreach post linked to research
  - Investigate funding for this?
  - Could this be an academically funded post (PhD)?
- Awareness raising:
  - Run a national awareness campaign with key partners (e.g. Care Farming, Wildlife Trusts, Natural England, Alzheimer's Society, Age UK etc) working through individual families to share best practise.
  - Approach TV companies and programmes such as Countryfile. Louis Theroux did a programme in the USA. Why not the UK?
  - Develop an awareness raising campaign to change the attitude to risk aversion among carers and support organisations.
- The Department of Health has funded campaigns. How about a more positive stance for direct action and support?
- Develop a self help guide for accessing the natural environment
- Develop dementia themed walks – earth walks with sensory stimulation
- Use outreach projects to bring nature “from the outside in”
  - Allotment and gardening projects
  - Wildlife projects

- Develop local project trials through Dementia Friends and Dementia Champions and local Dementia Action Alliance membership
- Research the cost benefits of people living with dementia accessing the natural environment
- Develop a portal of information (through the Alzheimer's society?) to provide information on facilities and provision of services
- Influence commissioning bodies on the value of access to nature for people living with dementia. These might include Health and Wellbeing Boards and Local Nature Partnerships. Adapt facilities to be "dementia friendly"
- Develop a list of dementia friendly sites across all natural environment organisations such as wildlife trusts, the Woodland Trust, National Trust etc
- Raise awareness among providers about the specific needs of people living with dementia
- Investigate harnessing community volunteer car schemes to help access activities such as health walks
- Linking with existing health walks schemes to explore special dementia friendly walks

### **Refined project ideas**

The workshop groups identified some interesting project ideas which will inform the next stage of the Greening Dementia project. However, as there was limited time available to discuss all the projects in more detail, each of the three groups were asked to pick one project that they felt was most workable and refine and develop the idea whilst in the workshop.

The three resulting ideas were (in no order of importance):

#### **Information portal**

##### Purpose:

To raise awareness of the needs of people living with dementia through:

- i Maps and locations
- ii Activity ideas
- iii Suitable facilities
- iv Organisations that can help
- v Resources available

##### Audience:

Carers, individuals, families and service providers

##### Stakeholders:

A wide range of stakeholders was identified from greenspace, health and funding organisations.

##### Next steps:

- Develop a pilot?
- Need to find a host to run and sustain the portal
- Bring partners in from existing networks

## **“Just add water” – growing food project**

### Purpose:

Bringing nature to people – working with window boxes, allotments, wormeries and gardens. It is a quick win?

### Audience:

Individuals, carers, families, service providers, partners (private, public and voluntary).

### Stakeholders

Care homes, wildlife trusts, Woodland Trust etc.

### Next Steps:

- Start small (with small pot of funding), research and evaluate and roll out
- Identify potential outside sponsors – bakeries, seed merchants, garden centres etc
- Contact celebrities such as Jamie Oliver to get their input
- Funder for the project – Woodland Trust?
- Use it to promote intergenerational working – work through schools?

## **Raising awareness programme**

### Purpose:

Raising awareness and the profile of the benefits of green space for people living with dementia, supported by a programme of exemplars and pilots which prove the extent of cost benefit. (These to be geographically spread and include urban and rural dimensions).

### Audience / Stakeholders

People living with dementia, carers and families plus greenspace and dementia specific organisations at national and local levels

### Next Steps:

- Get organisations to sign up to the project
- Jointly feed and design an information portal
- Look at how to link to or become a part of existing portals such as the Dementia Action Alliance
- Pull in people not at the workshop
- Get senior government sign-up
- Link to the work around Dementia Friendly communities
- Make links with the Department of Health

## **Next steps**

The next steps of the Greening Dementia project are to use the findings of the stakeholder workshop, the literature review and ongoing work with a wide range of stakeholders in the greening dementia agenda to refine a range of realistic and costed project ideas for discussion with partners in the Greening Dementia project. We will also be inviting a wide range of organisations and groups to take part in a short online stakeholder survey. Key steps during March 2013 included:

- Presentation of the “Greening Dementia” literature review
- Further stakeholder interviews to further refine the project ideas:
  - Face to face
  - Telephone
- Circulation of a self-completion online survey allowing a wide range of stakeholders to feed in their thoughts and ideas on how to enable more people living with dementia to access the natural environment



- Develop a suite of potential project ideas

Thank you for helping us progress and share the greening dementia work.

If you would like to find out more about the Greening Dementia project or to get involved, please contact Dementia Adventure on 01245 230661 or email [dementiaadventure.co.uk](mailto:dementiaadventure.co.uk).

## Appendix C

### Resources

A more complete list of web links and other useful resources sites are included in the main report.

However, below are the links that have been referred to in this work:

Alzheimers Society [www.alzheimers.org.uk](http://www.alzheimers.org.uk)

Care Farming UK [www.carefarminguk.org](http://www.carefarminguk.org)

Dementia Adventure CIC [www.dementiaadventure.co.uk](http://www.dementiaadventure.co.uk)

Ecotherapy [www.mind.org.uk/campaigns\\_and\\_issues/report.../835\\_ecotherapy](http://www.mind.org.uk/campaigns_and_issues/report.../835_ecotherapy)

Innovations in dementia CIC [www.innovationsindementia.org.uk/](http://www.innovationsindementia.org.uk/)

Let Nature Feed Your Senses (LEAF) [www.letnaturefeedyoursenses.org](http://www.letnaturefeedyoursenses.org)

MindScape [www.wyevalleyaonb.org.uk/index.php/projects/latest-projects/inside-out/](http://www.wyevalleyaonb.org.uk/index.php/projects/latest-projects/inside-out/)