Landscape Institute Technical Information Note

Tranquillity – An overview

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Contents

The aim of this Technical Information Note is to provide an overview of what is understood by the term 'tranquillity' within the landscape profession and to inform any future discussions and actions on the topic.

1. Introduction

1.1 This technical note has been prepared for the purposes of providing an overview of what is understood by the term 'tranquillity' within the landscape profession and to inform any future discussions and actions on the topic. From the outset it is evident that the subject has a number of facets. The term has been used for varying purposes across the countries of the UK and there is no objective guidance on the subject or a consistent application of approach. The subject area is also evolving, with interest in how it might relate to aspects of health and wellbeing.

1.2 There are clear links between landscape and tranquillity and thus it is entirely appropriate for the landscape profession to provide an overview and take a lead in the development of the subject. It is envisaged that this Note forms the first stage in a process which might ultimately lead to the publication of further guidance or a policy position.

1.3 Tranquillity is a subject that is already well established as a concept in the public understanding. Thus rather than the promotion of a new topic or theme in the public realm, this commonplace concept requires clarification for the purposes of professional use in writing and applying policy.

1.4 The paper is divided into the following sections:

Section 2 - Etymology

Section 3 - Research

Section 4 - Policy Background

Section 5 - Tranquillity in Practice

2.0 Etymology

Published Definitions

2.1 For clarity it is the Oxford English spelling of *'tranquillity'* that is used throughout this paper and not the American English variation *'tranquility'.*

2.2 The Oxford English dictionary definition of tranquillity is *'the quality or state of being tranquil, calm'.* The term tranquil is then defined as *'free from disturbance, calm'.*

2.3 The Cambridge Dictionary describes tranquillity as *'a peaceful, calm state without noise, violence, worry etc.'*

2.4 The term is also defined in the glossary of the third edition of the Guidelines for Landscape and Visual Impact Assessment (GLVIA) (LI and IEMA 2013) as *'a state of calm and quietude associated with peace, considered to be a significant asset of landscape'.*

2.5 The Campaign to Protect Rural England's (CPRE's) definition of tranquillity is more strongly related to their 'countryside mandate' namely *'the quality of calm experienced in places with mainly natural features and activities, free from disturbance from manmade ones'*. (CPRE 2006)

2.6 In Wales, the definition of tranquillity that has been adopted by both Welsh Government (Welsh Government 2012) and Natural Resources Wales (NRW 2016a) is *"An untroubled state, which is peaceful, calm and free from unwanted disturbances. This can refer to a state of mind or a particular environment. Tranquillity can be measured in terms of the absence of unwanted intrusions, or by a balancing of positive and negative factors. These include the presence of nature, feeling safe, visually pleasing surroundings and a relaxing atmosphere."*

2.7 Following from this 'tranquil areas' have been defined in experiential terms as '*areas with the characteristics most likely to induce a state of tranquillity for people who are there*' (Jackson et al 2008).

2.8 Tranquil areas should not be confused with 'quiet areas' which are defined by the European Environmental Noise Directive (END; 2002/49/EC) as '*those areas delimited by national authorities that are undisturbed by noise from traffic, industry or recreational activities*'.

2.9 The interpretation of tranquillity is often linked to an association or engagement with the natural environment and it is this interpretation that places the term within the realms of landscape related study and research. Tranquillity is commonly associated with 'wildness' and 'remoteness' but it is widely recognised that none of these terms is synonymous.

2.10 Consistent with the definitions provided above, tranquillity cannot readily be defined as an environmental characteristic or quality as it is a state of mind that is being described and thus human perceptions as well as factual evidence must be considered in any studies relating to the term. Tranquillity is, in effect, an umbrella term used to refer to the effect of a range of environmental factors on our senses and our perception of a place.

2.11 A distinction is made between absolute tranquillity and relative tranquillity. When we refer to tranquillity in the UK, it is therefore almost always relative tranquillity that we are referring to, but in differing degrees. For instance, the tranquillity promoted by a summer sunrise on a calm day on top of a high mountain may be close to absolute, with almost no disturbance of any kind detracting from that state of mind. Yet the benefit to people of the relative tranquillity in an

urban greenspace may be very high, despite intrusion from background traffic noise or the presence of many other people. Both sorts are important to recognise and value, but for different reasons, the commonality being the achievable state of mind rather than the environmental setting.

3 Research

Research Overview

3.1 A review of research on the subject of tranquillity has identified a broad range of specific studies and related research, some of which has contributed to policy and guidance on the subject in recent years. This section is divided into research by topic and provides a broad overview of key studies that have been conducted in relation to tranquillity which have influenced thinking and practice on the subject over the past twenty years or so.

3.2 The most high profile research to-date, has been commissioned by the CPRE to support its campaign to protect tranquil areas, culminating in the Tranquillity Map for England which was first published in 2006 and then updated with refinements in 2011. The background research to the mapping project (Jackson et al 2008) is discussed in more detail in Section 3.6 below.

3.3 The Environmental Research and Consultancy Department (ERCD) of the Civil Aviation Authority produced a report in 2011 entitled 'Tranquillity: An overview' which provides an excellent reference document for tranquillity research up to that time and is noted here as a key reference for this section of the report.

Tranquillity as an 'Environmental Indicator'

3.4 As indicated in the etymology section, tranquillity is defined as a 'state of mind', something that is not readily measurable. However, for the purposes of research and in particular for the purposes of identifying a methodology for defining, recording and mapping tranquillity, it has often been regarded as an environmental quality that can be assessed by reference to a series of appropriate indicators and a factor that many regard as contributing to health, well-being and the quality of life. This may seem a little confusing but represents where the subject is and this cannot be ignored.

3.5 As set out in Tranquillity Mapping: Developing a Robust Methodology for Planning Support (Jackson et al 2008) environmental indicators typically show the quality and/or availability of desirable environmental characteristics that relate to sustainability or quality of life. The overlap between quality of life, environmental quality and economic and development progress is recognised in this research with countryside quality and landscape quality identified as sub-sets of these broader themes.

3.6 In 1999, the Government's 'Quality of Life Counts' (QoLC) publication identified 150 indicators for sustainable development in the UK, providing a baseline assessment against which progress could be monitored. This document was updated in 2004 when it included the results of a 2001 DEFRA commissioned survey investigating the reasons for visits to the countryside for the purposes of the 'access to the countryside' indicator. Tranquillity was cited as the most commonly mentioned reason for visiting the countryside by 58% of respondents in this survey.

3.7 At the time of the QoLC 2004 publication, the 'countryside quality' indicator was still being developed. Later in 2004, the Countryside Agency published their Research Paper CRN85 'Countryside Quality Counts' which reported on research to develop a countryside quality indicator based on landscape character. Tranquillity was included under the theme of

'experiential aspects' in the list of 'potential indicators defining character and quality'. Notably it was listed as Tranquillity/Noise and not as a separate entity to 'noise'.

Tranquillity as a Perceptual Aspect of Landscape Characterisation and Evaluation

3.8 Tranquillity has consistently been associated with the 'perceptual aspects' of landscape since the 'landscape character assessment process' and the LANDMAP approach in Wales, as developed and refined.

3.9 Tranquillity is mentioned in Natural England's "*An Approach to Landscape Character Assessment*" published in 2014. In the 2002 publication 'Landscape Character Assessment' guidance for England and Scotland (Swanwick and Land Use Consultants) – upon which "*An Approach…*" was based, perceptual aspects of characterisation are discussed (para 5.14) as follows:

'Other aspects of landscape perception may be more subjective and responses to them might be more personal and coloured by the experience of the individual. Such factors include a sense of wildness, sense of security, the quality of light and perceptions of beauty and or scenic attractiveness. There are also some factors that can be perceived or experienced by senses other than sight, such as noisiness or tranquillity and exposure to the elements.

Judgements about all these, and other relevant perceptions need to be incorporated into surveys in a transparent way, acknowledging the extent of subjectivity that is involved. Both checklists and written descriptions can be used to record responses in the field. It should be noted that even in these areas of perception, an element of objectivity can inform such judgements. Remoteness for example, which is an important dimension of wildness, can be assessed by measurements of accessibility and absence of settlement, while the Tranquil Areas Maps in England, available from the CPRE are based on the application of a range of criteria which can be measured. Any consensus views gained through the involvement of stakeholders can also play an important part in indicating the importance of these perceptions of landscape which make a key contribution to character.'

3.10 This acknowledgement of tranquillity and how it could potentially be measured and accounted for has led to further research and improvements to the tranquillity mapping exercises as noted in the Tranquillity Mapping section below.

3.11 The Guidelines for Landscape and Visual Impact Assessment (LI and IEMA 2013) also identifies a range of factors that can help in the identification of valued landscapes as described in Box 5.1. Perceptual aspects are included in that list of factors, it being noted that *'A landscape may be valued for its perceptual qualities, notably wildness and/or tranquillity'.*

3.12 It is of note, however, that no further advice or guidance is given as to how tranquillity should be measured or considered as part of that valuation exercise.

Participatory Appraisal Consultation – Public Understanding of Tranquillity

3.13 In 2004 the Countryside Agency commissioned a consultation exercise which used an approach to consultation known as Participatory Appraisal' (PA). The Project, known as PEANuT (Participatory Evaluation and Appraisal in Newcastle upon Tyne) focussed on people's perceptions, values and beliefs in relation to tranquillity and was designed to allow participants

to express these in their own words. The research was initially carried out in Northumberland National Park and West Durham Coalfield in 2004 (MacFarlane et al. 2004) and then later extended to include consultations in the Chilterns Area of Outstanding Natural Beauty (AONB) in 2005. The results of the project are reported in the Countryside Agency's Research Paper CRN92 (2005) and were used to inform the methodology for the CPRE's Tranquillity Mapping.

3.14 The PA consultation revealed a great deal about public perceptions and understanding of tranquillity which is summarised below.

3.15 Participants were asked a series of questions to allow a picture of the public understanding of tranquillity to be developed.

- What is tranquillity?
- What makes an area tranquil?
- If an area were described as tranquil, what features would it have?
- Where are tranquil areas you know of?
- What factors cause tranquillity?
- What makes an area more tranquil?
- What makes an area less tranquil?
- When you are in what you consider to be a tranquil area what do you feel?
- What does a tranquil area look like?
- Do places become more/less tranquil over time?

3.16 The answers to these questions were understandably varied but a number of themes emerged which were consistent across many of the participants as follows:

- **Perceived links to nature and natural features** - seeing, hearing and/or experiencing nature and natural features.
- **Landscape** - experiencing (particularly in visual terms) the landscape or elements of it including wild landscapes and rolling countryside as well as characteristics such as fields, moors, woodlands, flora and fauna, natural colours and open views and the sound of water.
- **The importance of wildlife** – seeing wildlife behaving naturally, hearing birdsong.
- **Peace, quiet and calm** – the absence of noise and the feeling of 'getting away from it all', including a need for solitude.

3.17 Similarly when asked "What is not tranquillity?", there was a degree of consistency in the detractors that were listed as follows:

- Presence of humans/too many people - Certain behaviour/activities undertaken by people which created unwanted noise and disturbance.
- Negative impacts of various forms of transport including vehicle noise.
- Negative impact of various forms of development including commercial and industrial development.

3.18 It is clear from the relative consistency in responses that there is a broad public consensus as to the meaning of the term. Thus the results of these consultations were used as a basis to develop

a more robust methodology for mapping tranquillity as described in the Tranquillity Mapping section below and detailed in Jackson et al (2008).

Assessing Landscapes for Designation in England

3.19 When considering landscapes for AONB and National Park designation, they are assessed against the Natural Beauty Criterion. Making judgements about natural beauty requires a systematic evaluation process to ensure as much rigour and transparency as possible. Thus, Natural England developed a practical framework for the assessment process, establishing a list of factors that contribute to natural beauty which are clearly set out in Table 3 of Natural England's 'Guidance for assessing landscapes for designation as National Park or Area of Outstanding Natural Beauty in England' (Natural England 2011). Six factors are listed including 'Relative Tranquillity' which is defined as 'the degree to which relative tranquillity can be perceived in the landscape'.

3.20 It is of note that 'Relative Wildness' is also listed as a separate factor, in this instance defined as 'the degree to which relatively wild character can be perceived in the landscape and makes a particular contribution to sense of place.

3.21 The Evaluation Framework for Natural Beauty contained in Appendix 1 of the Guidance details the sub-factors and associated indicators that should be regarded in the assessment process and includes the following under 'Relative Tranquillity':

- Contributors to Tranquillity – Presence and/or perceptions of natural landscape, birdsong, peace and quiet, natural-looking woodland, stars at night, stream, sea, natural sounds and similar influences
- Detractors from Tranquillity – Presence and/or perceptions of traffic noise, large numbers of people, urban development, overhead light pollution, low flying aircraft, power lines and similar influences.

3.22 These factors relate to the results of the Countryside Agency's Participatory Appraisal consultation exercise, described above and, although not expressly referenced in the 2011 Guidance, it is assumed that the evaluation framework has been derived from that research.

Tranquillity Mapping

England

3.23 The Campaign to Protect Rural England (CPRE) has been raising the profile of 'tranquillity' and 'tranquil areas' since the 1990's, commissioning research and mapping.

3.24 The first mapping exercise was undertaken by Rendel and Ash Consulting in 1991, mapping 'undisturbed countryside' in an exercise devised to establish the effect of a new transport corridor in Bedfordshire and Hertfordshire. For the first time 'undisturbed countryside' was mapped as a specific resource separate from previous studies which mapped landscape quality.

3.25 This original study led CPRE and the Countryside Agency to commission a more comprehensive set of 'Tranquil Area' maps of England. Published in 1995, these 'tranquil areas' were defined as 'places which are sufficiently far away from the visual or noise intrusion of development or

traffic to be considered unspoilt by urban influences.' The maps were drawn at a regional level based on calculating distances from various disruptive factors but with no consideration of local effects, being drawn at a scale of 1:250,000 and to a minimum radius of 1km.

3.26 The mapping exercise was completed as a comparative study which demonstrated the reduction in tranquil areas over the 30 year period from 1960 to 1990 and was designed to assist in the CPRE Campaign.

3.27 In 1999 Bell carried out further tranquillity mapping for the Forestry Commission. This exercise developed the methodology beyond a simple assessment of distance from disturbances, introducing the positive screening effect of woodland on visual intrusion and perceived noise levels and considering the cumulative effects of several lesser disturbances, which it is noted requires a degree of professional judgement and local adjustment.

3.28 Levett produced a critique of the ASH Consulting Group work on behalf of CPRE in 2000, detailing a number of shortcomings which later mapping projects attempted to overcome.

3.29 These shortcomings included the following:

1. A single threshold or binary system of tranquil/non-tranquil areas or high/medium low tranquillity which does not account for variation in levels of disturbance or relative degrees of tranquillity.
2. No account of varying conditions such as topography, vegetation and weather.
3. Limitations of mapping and what is/is not included.
4. Limitations of the data sources.
5. No account of interactions between factors and how they may affect the perception of tranquillity.

3.30 The 2004 Mapping Project aimed to address Levett's criticisms and in particular to include an assessment of subjective factors in evaluating relative tranquillity such as perceptions, effect of cultural values and individual experiences on descriptions and variation of experience (MacFarlane et al. 2004).

3.31 Prior to 2004, a body of research relating to 'wilderness' and wildlands', made reference to the importance of subjective factors, recognising that a wilderness 'means different things to different people' (Kliskey 1998) and 'a wilderness experience is a state of mind'. Others recognised that this also applied to tranquillity and thus a mapping methodology was developed that attempted to take account of subjective factors as is described below.

3.32 The tranquillity mapping research (Jackson et al 2008) included the results of the participatory consultation exercise to inform the creation of relevant data sets for the mapping. Three themes were identified in the research as being inextricably linked to tranquillity and central to the understanding of the term, namely **people, landscape and noise.** The mapping exercise, used these themes to identify factors that could be used to create appropriate raw data sets for map including:

Remoteness from people, habitat type, presence and visibility of rivers and woodlands, presence and visibility of unnatural features as detractors, openness of the landscape, overhead skyglow and identification of noise sources.

3.33 These raw data sets were used as source data from which the visual and noise impact of each option choice was modelled using a series of techniques as described in the report. The results produced a value of relative tranquillity for each 500m x 500m grid square for the whole of England in 2006. It is noted that the term 'relative tranquillity' is important for both conceptual and methodological reasons. The methodology produced a spectrum of tranquil areas rather than identifying 'absolutely tranquil areas'. This is particularly relevant in England where there are no absolutely natural areas left and thus, no areas are entirely free from the factors that detract from the 'experience of tranquillity'. The consultation exercise confirmed that perceptions of tranquillity and tolerance levels depend on what a person is used to and that is relative.

3.34 The maps do identify those areas with a high score as 'the most tranquil areas', defined as *'those areas nationally where a person has an increased chance of experiencing tranquillity within a rural environment'*, according to the Jackson et al methodology. These areas happen to coincide with the areas that are most remote from the centres of population given the nature of the methodology.

3.35 The limitations of the methodology are recognised with a number of criticisms being relevant including the fact that the methodology accumulates positive and negative scores but does not interpret the interaction. Thus it could be possible that the influence of a major road on an otherwise undisturbed area is not sufficiently negative to downgrade the area covered by the route but in reality it should be towards the lower end of the tranquillity spectrum. Other concerns over the methodology have been raised (Brashaw 2016) about:

- The difficulty of interrogating the underlying data
- The approximate nature of the score
- Verifiability
- Currency
- Underlying assumptions.

3.36 Additional limitations related to mapping resolution and the breadth and use of the datasets derived from the original participatory consultation exercises were addressed in the design of the most recent study conducted on relative tranquillity mapping in England, Broadly Engaging with Tranquillity Project (BETP) (Hewlett et al. 2016; British Academy 2017).

3.37 BETP acknowledges that whilst the breadth of stakeholders engaged in the 2004 and 2005 studies marked a key turning point in engaging with countryside user groups, the views of the wider community of local residents were not specifically included. Secondly, the project provided an opportunity to improve on the 250m resolution used for the mapping project to date.

3.38 The BETP focused specifically on a case study area in Dorset, in which views were collated from three research groups broadly categorised as organisations, residents (including those classed as hard to reach) and tourists/visitors. More than 15,000 views on tranquillity contributed to the production of GIS models of tranquillity/non tranquillity at a resolution of 5mx5m. As with previous studies, tranquillity was most commonly associated with seeing open landscapes and natural environments and non-tranquillity with traffic noise. Yet, key distinctions amongst these views were identified, including how tranquillity was interpreted according to gender and in relation to the three research groups identified above.

3.39 The project provides a tried and tested framework for collating, analysing and interpreting a broad range of stakeholder views and subsequently processing these on a GIS framework.

3.40 The findings have contributed to a number of projects during 2015/2016 and ongoing including the following:

- Dorset AONB- to inform the design and implementation of the AONB's management plans;
- Howardian Hills AONB – to inform the identification of visitors' views;
- Kent Downs AONB - as part of a suite of projects focused on enhancing the management of increased visitor use in, and development adjacent to, the AONB;
- Devon – for consideration by local authorities implementing NPPF paragraphs 77 and 123;
- The British Academy's 'place-based' policy making project 'Where We Live Now' (www.wherewelivenow.com)

3.41 As with all studies the BETP has limitations including the quality and currency of available datasets used in each case study area. In the case of BETP, the poorest dataset concerned two of the most important factors relating to non-tranquillity, numbers of vehicles on main roads and traffic noise. In addition, the models created are locally and case specific and not universally applicable to other areas. To address this limitation, the BETP team are currently developing a GIS based template that holds the potential for being universally applied to a range of green spaces in rural, peri-urban and urban areas.

Wales

3.42 The Countryside Council for Wales (CCW) commissioned ASH Consulting Group to develop and apply the mapping exercise to Wales, producing regional mapping at a scale of 1:50,000 and a minimum unit of 100m in 1997. This mapping exercise included an extra 'very remote' zone of tranquillity which was not used in England and represented complete removal from human activities. It was defined as 'an absence of all skyglow effects'.

3.43 In 2004, the Welsh Assembly developed criteria for defining 'Wildlands' in Wales which included a number of physical and perceptual qualities including tranquillity which was defined as 'no noise of human related activity'. However, to date no map of Wildlands has been produced for Wales.

3.44 In 2009 the Countryside Council for Wales commissioned LUC to carry out a further tranquil area assessment using the same 1996 approach in order to track change (Land Use Consultants, 2009). The headline result was that 55% of Wales was identified as tranquil in 2009 (11,600 km2), but 1,500 km2 of tranquil landscapes were lost in the preceding 12 years. Similar limitations apply to this work as stated for the Ash work in England, however the value of having the headline result is important for advocacy, noting that tranquillity is a non-renewable resource.

3.45 Although no further tranquil area assessment has taken place since the 2009 report, a number of different policies and assessments of factors that contribute to tranquillity have arisen, aided by increasing evidence and interpretation capabilities. They include:

- Policies and actions by local planning authorities and others in relation to reducing night light pollution. For instance the creation of an 'International Dark Skies Reserve' for the Brecon Beacons National Park (Brecon Beacons National Park Authority. 2014) and the mapping of night lighting from satellite imagery.
- Work by the Leeds Wild Land Research Institute (Carver 2015) to map the extent of 'wild land' across the UK. Although no specific commission has taken place for Wales, work at a European and UK level includes Wales and shows the relative wildness within those contexts.
- Recognition of the benefit to people that relative tranquillity brings within urban and peri-urban contexts and the recognition of this through approaches to managing accessible urban greenspace.
- The Welsh Government's implementation of a 'Noise action plan for Wales' (Welsh Government 2013) including mapping the spread of noise from key sources such as major roads.

Scotland

3.41 In 2000 the Association for the Protection of Rural Scotland (APRS) applied the original methodology to part of Scotland (Inverness to Aberdeen) but no further mapping was ever undertaken across the whole of the country.

3.42 Scottish Natural Heritage (SNH) has subsequently focussed on the concepts of 'wilderness' and 'wildlands' in Scotland with a Policy Statement on 'Wildness in Scotland's Countryside' in 2005 and the publication of a map of Wild Land Areas in 2014. As explained above, these concepts relate to what is wild and differ from tranquillity.

Northern Ireland

3.43 There does not appear to be any record of tranquillity mapping having been undertaken in Northern Ireland.

Tranquillity Rating Prediction Tool

3.44 As noted above, the CPRE's tranquillity mapping study, although a useful tool, is limited in its usefulness as a result of nature of the methodology which focussed on distance from detractors and in particular urban development, noise intrusion and manmade structures. Whilst it still records a measure of relative tranquillity, there is a bias towards tranquillity in rural environments when assessed in this way and presented at a national scale.

3.45 A research team at the University of Bradford has attempted to readdress this imbalance with a study which explored visual and auditory stimuli in open spaces in both urban and rural environments to allow the relative tranquillity of parks and gardens to be measured and the 'restorative value' more readily demonstrated.

3.46 An initial study was published in 2008 (Pheasant et al) and the research was further developed the following year with the publication of a paper discussing the validation of a Tranquillity Rating Prediction Tool (TRAPT), based on 2 equations relating to sound pressure levels and percentage of natural features.

3.47 The tool was refined as part of that validation process to include the percentage of contextual as well as natural features and to confirm the sound metric as the 'equivalent constant A-weighted sound pressure level' which can be either objectively measured or obtained from a noise prediction model.

3.48 The updated formula is:

TR = 9.68 + 0.041 NCF – 0.146 LA eq

(Where TR is Subjective Tranquillity Rating on a scale ranging from 0 (low) to 10 (high), NCF is the percentage of natural and contextual features visible and LA eq is the equivalent sound pressure level).

3.49 The tool was initially applied to complete a tranquillity audit of four major parks in Bradford. The results (Watts et al 2010) provided useful insights into the levels of tranquillity that can be achieved in urban conditions and the effects of moderating factors and led to some suggestions for improving the levels of tranquillity.

3.50 The tool has subsequently been applied to a study of remote wildland areas in the Scottish Highlands and Dartmoor National Park (Watts and Pheasant 2015) where perceived tranquillity was assessed using audio-visual stimuli on a range of experimental subjects. When the TRAPT was applied to the same controlled conditions, the results revealed a relatively close relationship between the predicted and the actual tranquillity rating thus validating its use within both urban and rural environments.

Characterisation of Tranquil Space

3.51 The inclusion of contextual features in the TRAPT was supported by earlier research by Herzog et al (1992) who identified five main visual factors in the characterisation of 'tranquil space', namely:

- Mystery – how much a location promises more to be seen.
- Focus – the extent to which a location offers one or more focal points.
- Coherence – the ease with which an individual can organise the components of a scene.
- Unstructured openness.
- Surface calm.

3.52 Later studies building on these five concepts (Herzog and Barnes, 1999) looked at the relationship between tranquillity and preference, studying participant responses to a range of natural settings and finding correlation between tranquillity and preference in all settings.

3.53 Indeed as Herzog et al (2011) found when studying the potential links between tranquillity and preference in places of worship, participants felt they could achieve tranquillity in most houses of worship, thus confirming that tranquillity can also be achieved within a building in an urban area.

Noise and Soundscapes

3.54 The European Noise Directive (END) (Directive 2002/49/EC) was implemented in England, Wales, Scotland and Northern Ireland in 2006 through the respective Environmental Noise Regulations for each country. In each case the Regulations require that Noise Actions Plans are prepared for major roads, major railways and major airports as well as 'agglomerations' (i.e. areas with a population in excess of 250,000 and a population density equal to or greater than 500 people per square kilometre). Noise mapping has been carried out in each country (Noise Mapping England, Wales Noise Mapping, Scottish Noise Mapping and Noise Mapping Northern Ireland) by calculating the level of noise arising from each noise source and these form the basis for recommendations in each of the respective Noise Action Plans, including monitoring, consultations, restrictions and improvements where required. To date such mapping has not always been inclusive in capturing all noise sources, so cannot be relied upon to provide a definitive map for noise.

3.55 However, it is well documented that the END's regulation of quiet areas is somewhat limited. Article 8 states that action plans for agglomerations with more than 250 000 inhabitants *'shall also aim to protect quiet areas against an increase in noise'.* This is followed up by the requirement in Annex V to report on actions or measures that the competent authorities intend to take to preserve quiet areas. Actions may include land use planning, systems engineering for traffic, traffic planning, and noise control of sources but the END does not specify any requirements regarding the protection of quiet areas in open country.

3.56 The impact of aircraft noise has been the subject of several studies, particularly in the United States over the past decade. In 2005 Miller produced a review of US national parks and management of park soundscapes, addressing the various issues and approaches to identifying, measuring and collecting data in relation to aircraft noise in particular. The conclusions stress the importance of expectation management, how it can help reduce annoyance, highlighting the need to identify different sensitivities for different areas.

3.57 In 2010, Environmental Protection UK was commissioned by the City of London to research best practice in protecting quiet spaces for a liveable city and to review methods that can be applied to open spaces in the City to reduce the impact of noise of users of open spaces.

3.58 It was found that very little research had been undertaken to investigate measures which could protect or enhance quiet spaces such as measurable noise reduction or perceptions of quiet or tranquillity. The report highlighted the suggestion that people's perception of a space is an important factor in defining a 'quiet area' as well as actual noise levels and consequently non-acoustic measures can enhance a sense of tranquillity, including where noise reduction is not immediately possible.

3.59 In 2014 the European Environment Agency produced Technical Report No 4/2014 'Good Practice Guide on Quiet Areas which concluded that the issue of quiet areas remains under development, acknowledging that many different selection criteria are being explored, and it is too early to determine which are preferable in terms of good practice.

3.60 With regard to methods for identifying quiet areas, a combination of the four methods, namely, noise mapping, measurement of sound pressure levels, evaluation of user/visitor experiences and expert assessments is recommended.

3.61 The report also concluded that, in terms of the preservation of quiet areas, it is too early to determine if the noise action plans required by the END offer examples of good practice.

3.62 The need for further in-depth research into the field was recognised due to the different types of quiet areas, with diverse functions, situations, sound-pressure levels, access, as well as visual and other qualities which may require different criteria for selection and assessment. A range of topics for research were identified including 'practical methods to establish tranquillity in quiet areas'.

3.63 More recently Watts and Pheasant (2015) developed a study to investigate the importance of soundscapes and emotional factors in relation to tranquillity. The findings revealed that adding man-made sounds to a soundscape significantly degraded perceived tranquillity though ratings of wildness were not as affected. Further attempts to then improve the tranquillity rating by adding natural sounds were largely unsuccessful.

3.64 The findings of the study challenge the methods of landscape characterisation to date which largely rely on visual factors and suggest that soundscape quality should be considered as an integral part of this assessment process.

Health and Well-being

3.65 The benefits of tranquillity on health and well-being have been researched in some depth.

3.66 In 1991, Ulrich et al reported on the findings of a study that investigated the effects of viewing or experiencing natural or urban settings on indicators of stress. It was found that stress levels reduced significantly quicker if an individual was exposed to natural surroundings rather than busy urban scenes.

3.67 Kaplan (1995) holds that directed attention, the kind that requires an effort, can become fatigued from prolonged use, leading to the inability to focus attention voluntarily. This mental fatigue has several unfortunate consequences, including performance errors, inability to plan, social incivility, and irritability. Kaplan identified four components that help to mitigate the stress of 'directed attention in 'restorative environments' in his Attention Restorative Theory (ART) as follows:

- Being Away – the setting need not be distant, easily accessible natural environments were noted as an important resource.
- Fascination – 'soft fascination' elements such as clouds, sunsets and snow which hold the attention but allow for thinking about other things (as opposed to hard fascination which is very intense) .
- Extent – or a sense of extent – such as a path or trail. Historic buildings are noted as promoting a sense of being connected to the past and therefore to a larger world.
- Compatibility – the perception that there is a link between the natural setting and human inclination.

3.68 All four of these properties are essential for a successful restorative experience. ART notes that ordinary natural settings have all of the features necessary for a restorative experience.

3.69 Later work by Herzog et al (1997) provided empirical support for the distinction between recovery of directed attention and reflection as separate benefits. Herzog and Barnes (1999)

defined tranquillity as a term that describes the affective reaction evoked by soft fascination. This definition of tranquillity included the consideration that it may also involve the restorative requirement of being away. Tranquillity, in this context, is seen as an indicator of the perceived potential of a setting to provide a broad array of restorative benefits.

3.70 Researchers at the University of Essex have conducted a number of studies into the health benefits of green spaces including 'The benefits of activities in green places' (Pretty et al 2006), 'Got the Blues, then find some Greenspace: The Mental Health Benefits of Green Exercise Activities (Peacock et al 2007) and Green Care, Do People Feel Healthier in the Countryside? Understanding Public Attitudes and Beliefs Concerning the Relationship between Health and the Environment (Peacock et al 2007), Social, Psychological and Cultural Benefits of Large Natural Habitat & Wilderness Experience: A review of current literature (Hine et al 2009), Green Spaces: Measuring the Benefits. Report for the National Trust (Hine et al 2009), The health benefits of walking in greenspaces of high natural and heritage value (Barton et al 2009) and 'The Health Benefits of a Wilderness Experience' (Hine 2010).

3.71 These studies have not been reviewed in detail as they do not directly relate to tranquillity but are referenced given the strong relationship between tranquillity, health and green spaces.

More recently Watts et al (2016) have considered the influence of soundscape and interior design on anxiety and perceived tranquillity of patients in a health care centre at the University of Bradford where it was found that introducing natural sounds and large images of natural landscapes significantly improved the levels of reported tranquillity.

Economic Factors

3.72 A number of indirect links between tranquillity and economics can be made. The indirect nature of the connections, make quantifying the benefits of tranquillity in monetary terms very difficult although some bodies have attempted to do so as reported below.

3.73 The presence of tranquil areas is linked to rural tourism with DEFRA claiming that tranquillity was worth 186,200 jobs and £6.76 billion a year to the economy in 2000.

3.74 Others have suggested the positive economic benefits resulting from the reduced health care and social costs associated with quiet and tranquil areas. For example, the World Health Organisation report on Burden of Disease from Environmental Noise (2011) claims that at least one million healthy life years are lost every year in western Europe due to noise from road traffic alone and it is the second-worst environmental cause of ill health, next to ultra-fine particulate matter.

3.75 In a report from the European Commission to the European Parliament and the Council on the implementation of the Environmental Noise Directive, the social costs of rail and road traffic noise across the EU was estimated as amounting to EUR 40 billion per year, of which 90 % was related to passenger cars and goods vehicles (EC 2011).

3.76 The benefits of quiet areas in agglomerations has also been related to an increase in property values, the direct effect of lower sound-pressure levels estimated to be ~ 0.5 %/dB (RIVM, 2007). Similarly, the Swedish Transport Administration has estimated that the social cost for noise in Sweden is EUR 2 billion per year. Of this, approximately 80 % corresponds to reduced value of properties located in noisy areas. The remaining 20 % corresponds to the cost to society owing to health effects of noise.

3.77 In the United Kingdom, the Intergovernmental Group on Costs and Benefits noise subject group and Department for Environment, Food and Rural Affairs (DEFRA) (2008) reported that the health impact of noise could be costing the economy as much as GBP 2 billion to 3 billion per year. Subsequently, DEFRA published a report in 2011 which indicated that protection of quiet areas in the major cities of England could be valued at as much as GBP 1.4 billion

4.0 Policy background

4.1 Tranquillity was first brought into Government policy in the UK in 2000 in England, when it was referenced as an asset of the countryside in the Rural White Paper. A summary of the rural white paper background and current references to tranquillity or related matters in Planning Policy in England, Scotland, Wales and Northern Ireland is provided below.

England

Rural White Paper, Our Countryside: The Future – A Fair Deal for Rural England

4.2 Tranquillity was first used by Government in the Rural White Paper, Our Countryside: The Future – A fair deal for rural England (DEFRA 2000) which, in setting out the then Government's vision for the countryside, recognised that the countryside is 'an enormous recreational asset, with its high quality landscapes, fresh air, open space and tranquillity'.

4.3 Lack of noise and visual intrusion, dark skies and remoteness from the visible impact of civilisation were cited alongside tranquillity as the less tangible features that give the countryside its unique character.

4.4 The paper set objectives and targets across a number of rural 'themes' and indicators were identified to monitor change. Change in countryside quality including biodiversity, tranquillity, heritage and landscape character was identified as an indicator related to the theme of 'protecting and enhancing the countryside'.

4.5 It was recognised that there was not an agreed method of measuring all of the things of value in the countryside but that a direction of change could be clearly identified. In relation to tranquillity the paper was clear that the Government wanted to see increased measures to promote tranquillity.

4.6 A national noise strategy was identified to include mapping the main sources and areas of noise and enable policy to take account more accurately of the implications of noise sources for rural areas and valued pockets of tranquillity. Similarly, the paper proposed that 'light pollution' was to be considered by all rural local authorities in planning and other decisions.

National Planning Policy Framework

4.7 The National Planning Policy Framework (NPPF) set outs the Government's Planning Policies for England and how these are expected to be applied.

4.8 Tranquillity is raised under two sections:

- Promoting Healthy Communities

  The designation of green areas of particular community importance as 'Local Green Space' is promoted at paragraph 76. However, advice at paragraph 77 makes clear that the designation should only be used when certain criteria are in place including *'where the green area is demonstrably special to a local community and holds a particular local significance, for example because of its beauty, historic significance, recreational value (including as a playing field),* ***tranquillity*** *or richness of its wildlife'.*

- Conserving and Enhancing the Natural Environment

  At paragraph 123, the NPPF states that planning policies and decisions should aim to: identify and protect areas of **tranquillity** which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason'

Scotland

National Planning Framework (NPF3) and Scottish Planning Policy (SPP)

4.9 These documents do not include any direct reference to tranquillity within their policy content. Related policy in the SPP includes Paragraph 197 under the section 'Development Plans' which seeks to encourage local authorities to limit non-statutory local designations to areas designated for their local landscape and nature conservation value. This policy includes the aim of safeguarding and enhancing the character and quality of a landscape. Similarly, paragraph 200 seeks to ensure development plans 'safeguard the character of areas of wild land as identified on the 2014 Scottish Natural Heritage (SNH) map of wild land areas. There are also several references to management and attenuation of noise in relation to the planning and management of new development.

Scottish Natural Heritage Landscape Policy Statement 2005

4.10 Tranquillity is recognised as a quality of the rural character of Scotland in Scottish Natural Heritage's (SNH) Policy statement. SNH's overarching aim for Scotland's landscape is broadly to safeguard and enhance the distinct identity, the diverse character and the special qualities of Scotland's landscapes.

4.11 To achieve this aim, SNH encourages, inter alia, the 'safeguarding of the rural character of Scotland's countryside from the effects of urban influences, recognising the quality of tranquillity'.

Wales

Planning Policy Wales

4.12 This document does not include any direct references to tranquillity. Related policy in Chapter 13 includes 'reducing noise and light pollution', which makes reference to the need to protect urban 'quiet areas' and 'development management and noise and lighting' which requires *'the effect of noise on protected species, statutorily designated area and the enjoyment of other areas of landscape, wildlife and historic value' to be taken into account'.*

4.13 Emerging legislation, i.e. Environment (Wales) Act 2016 and Well-being of Future Generations (Wales) Act 2015 may allude to tranquillity (Briggs 2016).

Northern Ireland

Strategic Planning Policy Statement (SPPS) for Northern Ireland

4.14 Again there are no specific references to tranquillity in Northern Ireland's SPPS. Related topics are similar with reference to the need to manage noise in relation to development in sensitive areas and to encourage local authorities to bring forward local policies and guidance to maintain the intrinsic landscape, environmental value and character of local landscape policy areas.

4.15 It is clear from the above, that there is inconsistency across the nations as to the inclusion of tranquillity in current planning policy. Moreover, where it does occur, there is limited evidence of how tranquillity is being measured and managed for change.

5.0 Tranquillity in practice

5.1 As noted above, tranquillity is identified as a consideration in planning policy, particularly in England's NPPF and is a recognised factor in the landscape characterisation process which the landscape profession uses as a basis for landscape assessment in the planning process.

5.2 However, how it is actually considered in practice is not at all clear and there is limited documented evidence to demonstrate how tranquillity assessment is carried out.

5.3 The CPRE's report 'Give Peace a Chance, Has Planning Policy contributed to Rural Tranquillity? (CPRE 2015) summarised the findings of a survey of planning authorities in England which sought to find out how many had tranquillity policies in place and of those that did not, what was preventing them establishing a tranquillity policy.

5.4 40% of the respondents had a tranquillity policy with most (80%) of these being in AONB Management Plans or National Park Local Plans- designated landscapes with higher protection and generally higher levels of tranquillity. Also many policies do not reflect the NPPF. Of local authorities covering urban and rural areas outside of 'designated' landscapes or the wider countryside, relatively few (14%) reported to have tranquillity policies in their Local Plans. A small number had developed an entirely new policy due to the NPPF and a similar number had adapted theirs to comply with the NPPF.

5.5 The survey demonstrated that NPPF appeared to be having a very limited effect on tranquillity policy making with only a small number of authorities reporting that they were planning to develop a policy. Notably, of the authorities without a policy, more than 75% said they weren't planning to develop one.

5.6 Reasons given that prevented the development of a tranquillity policy included:

- Little scope for identifying such areas (urban authorities).
- Local Plan too far advanced to change when the NPPF was published.
- Lack of a clear definition of tranquillity.
- Lack of detail in national policy.
- Lack of detail in planning practice guidance.
- Lack of a suitable evidence base.

5.7 When asked which tools the authorities would find useful for developing tranquillity-related policies, there was strong agreement that better data and guidance would help including:

- Access to a tranquillity GIS database.
- Access to a tranquillity mapping report.
- Legal advice on a definition.
- Examples of tranquillity-related policies from other planning authorities.
- Case studies of good practice in tranquillity protection and improvement.

5.8 Planning policy relating to tranquillity in local plans generally seeks *'to ensure that development will maintain or improve the existing level of tranquillity'* It is clear from the lack of documentation that any such policy is very difficult to enforce given there is no recognised method for measuring the baseline nor for assessing change. Whilst the CPRE's National Tranquillity Map is clearly a starting point, the national scale does not readily transfer to the local decision making process.

6.0 Looking Ahead

6.1 From the above, it is clear that there is a definite need for some form of guidance on the subject of tranquillity and further research and methods of measurement to assist with the assessment process.

6.2 At present it would appear that a lot of the academic research on the subject has not directly transferred to tranquillity assessment in practice and this knowledge transfer as well as knowledge development is essential if proper account is to be made in the future. It is noted that discussion of tranquillity has often been included under the remit of 'noise', particularly since the European Noise Directive was issued, 'quiet areas' and more measurable 'sounds' taking some of the research emphasis away from the less easily defined 'tranquil areas'.

6.3 Given that tranquillity is well established within the landscape assessment process, having been a consideration under the perceptual factors and 'sense of place' for many years, the landscape profession has a sound base on which to develop appropriate guidance on the subject.

6.4 To give a focus to further discussion, the following themes, previously used in the Landscape Institute's Position Statement on Green Infrastructure are suggested as an appropriate basis on which to consider the subject of tranquillity.

- **Leadership** – the Landscape profession can take the lead in developing a cross-disciplinary approach to tranquillity.

- **Planning** – landscape professionals have the background and experience to develop guidance to assist in the assessment of tranquillity against national and local planning policy

- **Design** – landscape professionals understand place making and collaborative working and can use their design skills in combination with others to create and enhance tranquillity in both urban and rural settings.

- **Implementation** – landscape professionals are used to project planning to achieve an end goal and could manage a project to achieve an objective, whilst being mindful of cost, quality control and timescale.

- **Management** – landscape professionals are well versed in considering short, medium and long term landscape management objectives which could readily transfer to the identification and management of tranquillity related objectives across varying time-scales.

6.5 Matters that might be considered in the development of any guidance document are suggested below:

1. Agreed definition of the term;
2. Guidance on factors to be considered as relevant to any measure of tranquillity and tranquil environments;
3. A methodology for measuring/identifying tranquil places and assessing effects of development on tranquil areas;

4. How to use the TRAPT to predict the perceived tranquillity of a place and therefore to classify the level of tranquillity in existing areas and how to determine the impact of a new build on the tranquillity level/rating;
5. Refinement and development of existing tranquillity mapping to include areas of relative tranquillity in urban areas, to remove emphasis on distance from population centres and to be more directly applicable at a local level; and
6. How to create tranquillity in a place and how to mitigate effects of development on tranquillity through design.

Collaboration

6.6 If guidance were to be developed, it is suggested that consultation may be sought from the following bodies:

- Natural England
- Scottish Natural Heritage
- Natural Resources Wales
- Institute of Acoustics
- RTPI
- The legal profession
- CPRE and CPRW
- The Bradford Centre for Sustainable Environments, University of Bradford
- BET Research, Applied Research & Knowledge Exchange, University of Winchester
- The Leeds Wild Land Research Institute.

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