

Visual Quality Assessment of Outdoor Settings for Nature-Based Interventions in Sweden Using the Contemplative Landscape Model

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This fact sheet introduces the Contemplative Landscape Model (CLM), a tool connecting neuroscience research and landscape design to identify environments that promote mental health (Olszewska-Guizzo et al., 2023). To illustrate its application, the CLM model was applied in the Swedish context to assess the restorative potential of outdoor landscape settings used in nature-based rehabilitation (NBR) within healthcare. This evaluation produced a case study focused on two regions in southern Sweden: Skåne and Halland.

Nature and public health

There is growing evidence that nature can have a positive influence on human health (Johansson et al., 2023; van den Bosch & Ode-Sang, 2017). Given the rise in mental health burden, designing and managing everyday outdoor spaces has become essential to optimise mental recovery, mainly through urban green infrastructure and natural settings (Lederbogen et al., 2011; OHW, 2022). Despite the abundance of diverse green spaces and natural elements, understanding the importance of high-quality, health-promoting green spaces remains a critical gap in knowledge (Fumkin et al., 2017).

Nature-based interventions for mental recovery

In the Skåne and Halland regions, nature-based rehabilitation (NBR) has been integrated into primary healthcare to support individuals recovering from stress-related mental illnesses. NBR is an approach grounded in outdoor environments, dominated by natural elements rather than construction or housing. It is a recovery intervention that complements traditional clinical treatments and rehabilitation. The NBR approach acknowledges the connection between humans and nature, offering salutogenic support for health and well-being. By incorporating multi-sensory stimuli, access to natural daylight, safe social spaces and moderate physical activities, NBR can enhance emotional, mental and physical health, while also supporting social well-being. Since its launch in 2014, three official procurements for NBR providers have been conducted (Kyrö Wissler & Pálsdóttir, 2024). For each procurement, the quality criteria were updated to reflect the latest scientific evidence on



health-promoting and restorative landscapes. Before the first official procurement, a quality assurance framework was established to guide the development of outdoor environments, facilities and programme standards. This framework emerged from extensive research and conceptual development on NBR at the Alnarp Rehabilitation Garden at the Swedish University of Agricultural Sciences (SLU), as well as a two-year study and conceptual development of a new NBR concept implemented into healthcare, the so-called Region Skåne Model (Kyrö Wissler & Pálsdóttir, 2021). Over the past decade, the quality assurance requirements for each procurement have been continuously updated based on evidence-based health design principles, i.e. internal

quality evaluations, current knowledge on psychological restoration and new research on the components of restorative landscapes. A key focus of these updates has been the incorporation of evaluation tools to assess supportive and restorative natural settings, guided by the concept of Perceived Sensory Dimensions (Pálsdóttir et al., 2018; Stoltz and Grahn, 2021). There is an ongoing need for comprehensive methods to evaluate the health-promoting potential of natural settings. This is to ensure that the natural setting supports health benefits. One such evaluation tool is the Contemplative Landscape Model (Olszewska-Guizzo et al., 2023).

The Contemplative Landscape Model

The Contemplative Landscape Model (CLM), introduced by Agnieszka Olszewska-Guizzo in 2016, supports the design of natural settings and spaces optimised for mental health benefits. It is based on robust research at the intersection of neuroscience and landscape design and provides a framework for evaluating and understanding the different aspects of a contemplative experience (Olszewska-Guizzo, Sia & Escoffier, 2023; Olszewska-Guizzo et al., 2022; Olszewska-Guizzo, 2023).

The CLM allows for the technical evaluation of landscape scenes based on seven key components: *Landscape Layers*, *Landform*, *Biodiversity*, *Colour and Light*, *Compatibility*, *Archetypal Elements* and *Character of Peace and Silence*. A high aggregation of landscape features within each of these components, when combined, can trigger low-frequency brain activity, which is associated with decreased cognitive strain, increased relaxation, and positive affect. These effects have been shown to have positive effects on stress and improve mood disorders (Olszewska-Guizzo et al., 2022). This happens through passive exposure, i.e. the subject is not required to interact directly but merely “be” in the presence of the landscape to experience its positive benefits.

For evaluation purposes, each of the seven components in the CLM is scored on a 1–6-point scale, with an average final score revealing the landscape’s potential mental health benefits (Olszewska-Guizzo, Sia & Escoffier, 2023; Olszewska-Guizzo et al., 2022). The

total CLM score for the whole site can be calculated based on the average scores for a single view. Exceeding the threshold score of 4.33 points indicates that the landscape or the whole site has highly contemplative qualities, i.e. there is a strong probability of inducing positive brain responses and promoting mental health and well-being in most individuals (Olszewska-Guizzo, 2023). Conversely, landscapes or sites that score below 3.83 points are considered to have low contemplative value, implying they may induce increased cognitive load or psychological strain. Total scores ranging between 3.83 and 4.33 denote average contemplativeness of the sites or views, which can be interpreted as low to no probability of inducing a positive mental health response in most people (Olszewska-Guizzo, Sia & Escoffier, 2023). The evaluation can be performed *in situ* or remotely, using photographs, by selecting representative landscape views for each natural setting (Olszewska et al., 2018).

Unlike other landscape visual quality assessment tools, such as the Perceived Restorativeness Scale (PRS, Pasini et al., 2014), which rely on subjective user experiences in a place, the CLM focuses on specific spatial features and elements. This technical approach can directly inform design and management practices. The CLM can be used as an evaluation tool by raters with formal training in urban design, landscape architecture, architecture, and related disciplines. Evaluations can be conducted in person during a single visit using a technological device such as a tablet, simply with paper and pen, or remotely via digital photo galleries. It is applicable across urban, suburban and rural areas, regardless of weather conditions (although it is recommended to conduct assessments during the full growing season and avoid rain).

The Contemplative Landscape Model (CLM) is increasingly recognised by policymakers for its effectiveness in curating green spaces and natural settings to enhance users’ well-being. It bridges the gap between landscape design, environmental psychology and public mental health promotion. As such, Singapore’s National Parks Board has incorporated the CLM into its *City in Nature*

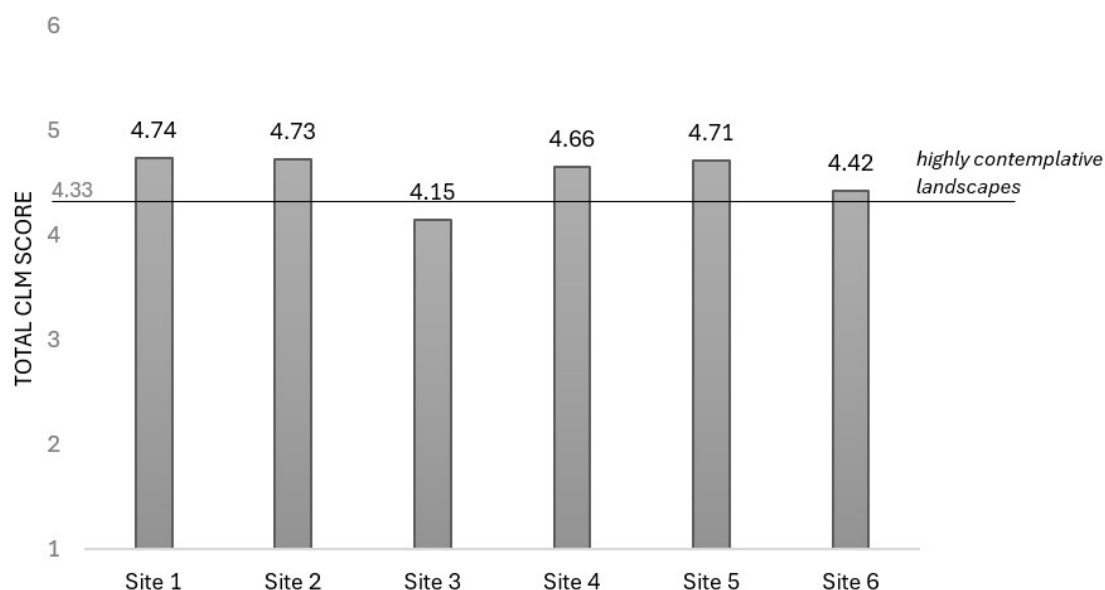


Figure 1. Results of the in-situ CLM evaluation. A score of 4.33 marks the threshold beyond which a site can be considered highly contemplative, indicating its significant potential for promoting mental health and well-being.

initiative, including the design of a network of public Therapeutic Gardens (National Geographic, 2025). The methodical research behind the CLM tool provides substantive evidence for assessing the health-promoting qualities of landscapes and natural settings, particularly in the context of NBR.

Application of CLM in Sweden

In the summer of 2024, six rural NBR sites were evaluated using the CLM. The properties were selected from the regions of Skåne and Halland for an *in-situ* assessment, including five NBR providers in Skåne and one in Halland. Three independent researchers, representing the fields of landscape architecture, cognitive psychology and environmental psychology, conducted the evaluations. Each assessment was based on several representative views from each of the six sites. All views were also photographed for documentation purposes. The scores per identified significant view were then averaged, and the total CLM score per site was calculated. In this way, the sites with the highest healing potential were identified and considered the most suitable for integration into the NBR programmes.

Results from the CLM assessment

The results of the *in-situ* CLM trials revealed that five out of the six sites evaluated, specifically sites 1, 2, 4, 5 and 6, were highly contemplative (see Figure 1). These landscapes demonstrated the highest potential to promote mental health and well-being benefits.

None of the sites scored within the low contemplativeness category, indicating that none of the evaluated sites posed a risk of increasing cognitive load or psychological strain for programme participants. However, one site fell within the average contemplativeness category, signalling low to no potential for promoting mental health and well-being benefits. This result highlights the need to improve certain environmental features at this site. Specific recommendations for improving the score include increasing the *Character of peace and silence* score by addressing noise and creating a visual barrier from the nearby busy road. Additionally, introducing more Archetypal Elements into the site, such as a water pond or a more defined path, could further enhance the site's contemplative qualities (see Figure 2).

The *in-situ* trials conducted in Skåne, Sweden, confirmed the usefulness of the CLM tool for evaluating entire areas of interest as opposed to single landscape scenes. It was also confirmed that the raters from different disciplines could successfully perform the on-site evaluations. Two of the three raters received a brief training course prior to the fieldwork and the evaluation of the NBR sites, while the third rater served as the CLM expert and instructor.

Practical implications and future work

The Contemplative Landscape Model (CLM) provides a quantitative and operational framework for assessing the health promotion potential of landscapes based on their visual quality. The neuroscience background behind the development of CLM strengthens the evidence base for health-promoting environments, helping to identify those with the highest restorative potential. The model can also be used when designing new health-promoting outdoor spaces. The NBR programme implemented in Region Skåne stands out as an innovative approach to healthcare in Sweden. It promotes an evidence-based approach and includes a quality assurance framework to maintain high service standards. As part of primary healthcare, this represents a new and progressive approach in the Nordic region.

The results show that the Contemplative Landscape Model (CLM) works well in evaluating southern Swedish landscapes. It is easily applicable as an objective tool for assessing restorative landscapes in NBR healthcare, ensuring the inclusion of restorative qualities in the official procurement process for future NBR providers. We recommended further testing of the CLM in other types of landscapes, e.g. forests and wilderness areas, further north in the country. However, we can confidently recommend that the CLM method be applied in forthcoming NBR procurements in southern Sweden to ensure an evidence-based approach in nature-based healthcare. By using restorative landscapes, the CLM supports clients' health and well-being.



Figure 2. Examples of landscape scenes from Skåne, Sweden, with different CLM scores: on the left is a highly contemplative scene (5.16 points), and on the right is a low contemplative score scene (3.16 points). Photos: NeuroLandscape (left) and Pálsdóttir (right).

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