



Wind Farms and Landscape Values

National Assessment Framework

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Introduction to the National Assessment Framework

Purpose

The Wind Farms and Landscape Values National Assessment Framework is intended to provide a rigorous and transparent method for assessing, evaluating and managing the **impact of wind farms on landscape values**. It offers a step-by-step process for assessing landscape values, describing and modelling wind farm proposals in the landscape, assessing the impacts (positive and negative) on landscape values, and managing and mitigating impacts. **Community engagement and consultation** is an integral and important part of the process. The process embraces **best practice** from across Australia and overseas.

The Framework has been designed to:

- Integrate with typical siting, design and development processes followed by wind farm developers
- Take account of the need to integrate with other investigations and assessment, such as heritage, noise or environmental issues (assessment of impacts on landscape values is only one of a number of assessments undertaken by wind farm developers)
- Provide improved processes of engagement, communication and consultation with local and wider communities in relation to landscape values assessment

It is a Framework, rather than a set of detailed prescribed methods, tools or techniques. This allows for methods to continue to evolve and adapt, as is inevitable when professional consultants compete by constantly improving techniques, and regulatory panels and authorities in different jurisdictions around Australia interrogate and test 'best practice.'

Benefits

The Framework is intended to provide **greater clarity and certainty** about the way that communities can participate in and contribute to the process of assessing landscape values and the impact of a wind farm proposal. It is intended to assist wind farm developers by setting out a **clear sequence of steps** for dealing with a subjective aspect of wind farm development. Many stakeholders will benefit from a **more consistent approach** to landscape assessment Australia-wide. One of the clients – Auswind, the peak wind energy body – intends to incorporate the Framework into industry Best Practice Guidelines and monitor its implementation through an **industry accreditation scheme**. The other client – the Australian Council of National Trusts – intends to promote its acceptance and use for landscape assessments of various kinds, possibly including for other types of energy infrastructure development.

Foundation

The Framework is founded on a study of best practice from across Australia and overseas, much of which is summarised in a companion Foundation Report. It has been overseen by a panel of experts and exposed to **wide community comment**, including face-to-face sessions in locations around Australia. Government departments and agencies, peak bodies and community groups have reviewed it and suggested improvements.

Successful Implementation of the Framework

Successful implementation of the Framework will depend on many factors, including the quality and independence of the **professional advice and services** involved in delivering the various tasks, including consultation. Special expertise is likely to be needed for specific tasks, including identification of landscape values, facilitation of community input, description of visual and other impacts and design of appropriate mitigation measures (see below, *Skills Required*).

Developers will need to be prepared to listen and respond to community views that may prove challenging or unpalatable.

Community members will need to accept that the Framework may help them to influence siting and design of wind farms in relation to landscape values, but decision making will remain in the hands of the relevant regulatory authority.

From a wind industry perspective, ultimate success of the Framework will depend on the extent to which developers integrate it into their processes. This can be monitored through their participation in the Auswind accreditation scheme.

Links to the Development Process

The steps in the Framework link directly into the following development processes:

- Site selection and pre-feasibility process (Step 1A)
- The environmental assessment undertaken in preparing a proposal for regulatory approval (Steps 1B to 4)

Links to the Regulatory Context

The Framework has been developed to provide a best practice tool for understanding values and impacts that is **consistent with Commonwealth, State and local government regulatory and approvals processes**. The Framework is intended to guide input to existing regulatory contexts without adding an additional assessment process.

Further direction should be sought from the relevant consent authority to determine the full requirements of such processes.

'Simple' vs. 'Complex' Development Processes

The Framework has been designed to allow its application to different circumstances. All Steps and all 'will' Tasks (see below) must be followed in all cases. However, where landscape values are relatively high and community interest is strong, a decision to proceed beyond Step 1A may require extensive investigations to fulfil the requirements of many tasks within the Framework. Where on the other hand landscape values are indisputably low and there is little or no public interest, then many of the tasks may be able to be satisfactorily fulfilled with less investigative effort.

Retrospective Use of the Framework

The Framework is not intended to be applied retrospectively to development processes started before the Framework came into use.

Availability of Information

A number of tasks in the Framework rely on the availability of existing information for successful execution. The intent of the Framework is that proponents will take all reasonable steps to obtain the necessary information, while acknowledging that in some circumstances it may not be available at a reasonable cost or for other reasons.

Structure of the Framework

The National Assessment Framework has four steps, the first of which is split into Steps 1A and 1B. These steps are as follows:

Step 1: Assess the Landscape Values

Step 1A: Preliminary Landscape Assessment

Step 1B: Full Landscape Assessment

Step 2: Describe and Model the Wind Farm in the Landscape

Step 3: Assess the Impacts of the Wind Farm on Landscape Values

Step 4: Respond to Impacts

Step 1A is intended to contribute to the proponent's pre-feasibility assessment. Steps 1B to 4 represent a process of detailed investigation that would form part of the proponent's formal application for regulatory approval (albeit in some cases the detail

of matters such as close-to-viewer mitigation measures may be resolved as a condition of approval, rather than pre-approval).

While the Steps represent a logical sequence of action, it is likely in practice that work undertaken in **one step may lead to refinement or review of a previous step**.

It is important to note that the details of a development will be subject to change as the investigations in Steps 1A to 4 proceed.

Content

Each Step is set out in the following sections:

Purpose – defines the purpose of the step in terms of the role it plays in identifying landscape values and establishing impacts.

Objectives – the specific objectives that must be met to fulfil the purpose of the step, including objectives regarding community consultation and engagement.

Tasks – outlines the tasks that need to be undertaken to meet the objectives and purpose of the step. Tasks introduced with the verb ‘will’ are essential; those introduced with the word ‘should’ are recommended but not essential. [Any statements in the Framework introduced by ‘may’ or ‘can’ or similar are advisory / optional.]

See also – contains a list of references which may assist the tasks contained in each step. (These references are for further information only and their inclusion does not mean the approach contained is advocated as best practice under this Framework. Consultants and proponents are encouraged to review the references in light of the requirements set out in the Framework.)

Required outputs – the outputs or products to be provided at the conclusion of the step, including information relating to the relevant **Questions to consider**.

Reporting to stakeholders – sets out any requirements for the consultant or proponent to produce a public report and / or report to stakeholders at the conclusion of the Step.

Questions to consider – outlines some questions that the wind farm proponent may use to decide whether or not to proceed to the next Step of assessment.

Throughout the Steps, **Practice Notes** (shown in the shaded right hand column) help guide the process by interpreting the purpose, tasks and objectives or by providing reference to accepted best practice.

Community Involvement and Information

An important finding of this study is that community values about a landscape affected by a wind farm proposal must be explicitly examined and considered. **Direct community input** is either ‘recommended’ or ‘essential’ in each step. The Framework acknowledges that any process of community engagement in landscape values assessment needs to be integrated as part of a broader stakeholder communication and consultation plan as per the *Auswind Best Practice Guidelines for Implementation of Wind Energy Projects in Australia (Auswind Best Practice Guidelines)*. This integrated approach recognises the relationships between landscape values and other aspects of wind farm development.

The Framework integrates consultation objectives and desired outcomes at each stage of the assessment process, but does not prescribe techniques for community engagement. A bibliography is provided of suggested resources to support the design of an appropriate consultation and engagement plan following the *Auswind Best Practice Guidelines*.

Consistent with the *Auswind Best Practice Guidelines*, the proponent or their consultant should provide information that:

- Helps communities and stakeholders to understand their role in the assessment of landscape values and impacts.

- Explains the role of wind energy in Australia's energy mix and the contribution of the proposed wind farm to this, in terms of generating capacity and continuity of supply.

It may also be useful to provide basic information about the latest designs of wind turbine, construction techniques, the wind farm's life-span and decommissioning, consistent with the *Auswind Best Practice Guidelines*.

Consideration needs to be given to the accessibility of information and the range of formats in which information is made available. This could include experiential understanding of impacts such as site visits and talking to communities in other areas.

Skills Required

The successful implementation of this Framework relies on the use of a range of professional skills, including but not limited to:

- natural and cultural heritage;
- community consultation and facilitation;
- visual assessment;
- development modelling and computer graphics.

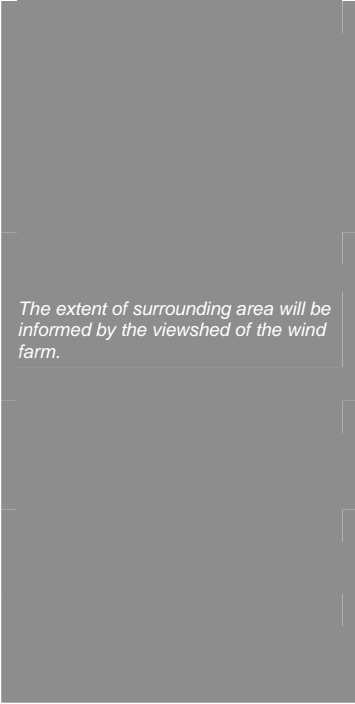
Requirements for Independent Reporting

Proponents may undertake aspects of the Framework directly or by engaging consultants. Where proponents choose to undertake many of the tasks listed in the Framework, they may still need to call on independent professional advice on such matters as landscape values, their likely significance and the nature of impacts on these values.

Definitions

Term	Definition	Notes
Community	A group with shared culture, beliefs, traditions, ethnicity, activity, experiences or locality. Consultation generally occurs with 'communities' (plural), as multiple values (and groups) exist and these often overlap.	<i>Where necessary, the term 'local community' is used to specifically refer to people who inhabit (live or work) in a locality (that is the community of a town or rural area) and similarly regional community, state-wide community, Australian community.</i>
Consent authority	The government department or agency (Commonwealth, State or local) responsible for considering and approving or rejecting an application for development of a proposed wind farm.	
Consultant	A suitably qualified practitioner engaged by the wind farm proponent for the purposes of completing assessment of landscape values and potential impacts under this Framework.	<i>The Tasks listed in this Framework are allocated to 'the proponent', even though in many instances it may be carried out by a professional consultant.</i>
Indigenous community	Indigenous people holding traditional, historical or contemporary associations with a locality or landscape. An Indigenous community may include formal Indigenous organisations, family groups and individuals.	<i>In this framework, reference to communities and stakeholders is interpreted to include Indigenous communities who may or do hold values of the landscape. Particular approaches may need to be considered in seeking to understand values held by Indigenous communities.</i>
Landscape character	A description of the physical (e.g. landform, vegetation, water features, land use) and social / cultural elements which make one landscape different from another.	<i>In this framework, the term 'natural and cultural character' is used as a catch all for the physical, biological, social and historical layers within the landscape which help to understand its values and meanings to communities.</i>
Landscape impact	A change to landscape values caused by development. Impacts can be either positive or negative.	<i>Where an impact is positive the term landscape benefit may be used.</i>
Landscape values	Landscape values include the existence value of a landscape or its value to present or future generations. Landscape values may include biodiversity, geo-diversity, historic and aesthetic values. The focus of this project is the development of methodologies for landscape values which derive from an individual's response to the landscape's natural or cultural character (including visual and aesthetic responses) or which otherwise arise from a person's associations, memories, knowledge or experiences of that landscape.	Landscape values can be visual or non-visual. Non visual values include associations, memories, knowledge or experiences or other cultural or natural values (e.g. historic land use patterns, presence of indigenous flora and fauna). Values held by communities about landscapes will vary and may not be universally agreed. Instead identification of landscape values should involve consideration of the aggregate community perceptions the values of a landscape and identification of values that are shared between communities or amongst community members.
Proponent	The individual or company proposing to develop a wind farm, the applicant for regulatory approval.	<i>All Tasks in the Framework are allocated to 'the proponent', even though in many instances they may be carried out by a professional consultant.</i>
Significance	Significance is the weighting of the relative importance of identified values. Landscape values that are likely to be significant are those which help understand the past, enrich the present, and which will be of value to future generations.	<i>The rating of significance usually involves comparison with other similar places, the extent to which values are likely to be held across communities or cultural groups (e.g. at local, regional, state, national, international scales), and / or by considering the strength and importance of the values within the community who holds them. The significance of any one value is usually given a rating of either local, state, national or universal (international) importance.</i>

Stakeholder	A party who has been identified as potentially having an interest in the wind farm site and surrounding landscape. This will include local and non-local communities (as well as future generations for whom the landscape is held in trust). Some stakeholders may not be readily identifiable as members of a community – they may be more commonly thought of as institutions, agencies, companies and the like.
Study area	The combination of the <i>wind farm site</i> and <i>surrounding area</i> .
Surrounding area	Those areas outside the <i>wind farm site</i> that have been identified through Steps 1A and / or 1B of this Framework as relevant for investigation of landscape values and potential impacts.
Viewshed	A viewshed is a region visible to an observer, defined by the extent of potential or theoretical visibility (influenced by for example topographic and atmospheric effects).
Wind farm site	Those areas of land or property containing the known, likely or potential development footprint of the wind farm.
Wind farm	One or more wind turbines located together for electricity generation. It includes all associated and ancillary infrastructure such as roads, sub-stations and transmission lines.



National Assessment Framework (NAF)

Summary Table

This table provides a summary of steps contained in the NAF. Compliance with the NAF requires that a proponent address the components of the detailed framework which follows, not just this table.

		STEP 1: Assess the Landscape Values		STEP 2 Describe & Model the Wind Farm in the Landscape		STEP 3 Assess the Impacts of the Wind Farm on Landscape Values		STEP 4 Respond to Impacts														
		1A: Preliminary Landscape Assessment		1B: Full Landscape Assessment																		
		<i>Input to proponent's site selection / pre-feasibility process</i>		<i>Input to proponent's environmental assessment process</i>																		
Purpose	To undertake a preliminary landscape assessment that will inform site selection / pre-feasibility.		To document the landscape values associated with the wind farm site and surrounding area, and to evaluate the significance of these values.		To provide reliable, objective data (including visual assessment) that can inform assessment of impacts in Step 3 and assist communities to understand the development and its potential impacts on landscape values.		To assess, in a rigorous and transparent manner, the likely impacts of the proposed wind farm on the identified landscape values.		To develop and test measures to respond to the identified negative impacts of the wind farm on landscape values.													
Tasks	1A.1 Desktop review	1A.2 Seek information from local authority	1A.3 Identify potential community and stakeholder interests	1A.4 Site survey	1A.5 Preliminary assessment of landscape values	1B.1 Define the study area for assessment, including the zone of visual influence	1B.2 Landscape character analysis	1B.3 Natural and cultural values analysis	1B.4 Involve communities and stakeholders in identifying landscape values	1B.5 Document values and analyse significance	2.1 Describe the development	2.2 Model the development	2.3 Prepare a visual assessment report	3.1 Seek community input to potential impacts	3.2 Identify and describe impacts	3.3 Identify potential cumulative impacts	3.4 Identify other relevant factors	3.5 Evaluate impacts	4.1 Changes to location or siting of the wind farm or ancillary infrastructure	4.2 Layout and design considerations	4.3 Minor changes and mitigation measures	4.4 Recommend changes to the development
Consultation	<i>Understand community values; scope potential stakeholders (direct community involvement recommended)</i>		<i>Involve community stakeholders in identifying landscape values (direct community involvement essential)</i>		<i>View points selected for visual modelling of the wind farm should relate to an understanding of community values of the landscape (direct community involvement recommended)</i>		<i>Seek community input to describe impacts (direct community involvement essential)</i>		<i>Involve communities in negotiating and reviewing measures to avoid, minimise or mitigate landscape impacts. (direct community involvement essential)</i>													
Required outputs	Statement of Preliminary Landscape Assessment		A detailed report on the landscape values of the wind farm site and surrounding area		Description / depiction of the wind farm in the landscape and a visual assessment report		An interim assessment of impacts report		Final impacts report, including proposed management and mitigation measures													

Step 1A is intended to contribute to the proponent's pre-feasibility assessment. Steps 1B to 4 represent a process of detailed investigation that would form part of the proponent's formal application for regulatory approval (in some cases the detail of matters such as close-to-viewer mitigation measures may be resolved as a condition of approval, rather than pre-approval). While the Steps represent a logical sequence of action, it is likely in practice that work undertaken in one step may lead to refinement or review of a previous step.

STEP 1: Assess the Landscape Values

Landscape values are values about places that are held by communities. These might be visual, cultural, spiritual, environmental, based on memories, perceptions or different ideas about what is 'beautiful'. Understanding landscape values involves identifying essential characteristics of the landscape and working with communities to understand the meaning of the landscape to them.

Purpose To establish the landscape values of the wind farm site and surrounding area.

The Framework proposes a two-step assessment of landscape values of a proposed wind farm site and surrounding area.

Step 1A is intended to inform a pre-feasibility analysis undertaken by a wind farm proponent at the earliest stage practical. It includes investigating existing knowledge about landscape values, scoping the communities and stakeholders likely to hold values regarding the proposed site and surrounding landscape area and identifying any issues that might influence the development of a wind farm on this site – for example, any known significant landscapes (or features) within or near the study area. It should also include preliminary community input through direct consultation or, where available, secondary sources.

Progression to Step 1B would only occur following evaluation of the outcomes of Step 1A by the proponent, which may take into account the views of government regulators, communities and stakeholders. Should a detailed landscape assessment be warranted, it would be expected then that Steps 2-4 of this method would follow.

Step 1B is a detailed assessment of the wind farm site and surrounding landscape. It will document the landscape values, who holds the values, and the relative significance of these values.

STEP 1A: Preliminary Landscape Assessment

Preliminary landscape assessment is important during the pre-feasibility process of a wind farm to allow for early identification of significant landscapes, to inform site selection and locational decisions, and to assist the relevant consent authority to determine the level of assessment required.

Purpose To undertake a preliminary landscape assessment that will inform site selection / pre-feasibility.

- Objectives**
1. Document the level of existing knowledge about the landscape values of the proposed wind farm site and surrounding area (including documented community values), and identify gaps in knowledge.
 2. Identify communities who may hold values of the wind farm site or surrounding area.
 3. Identify any significant landscapes (or features) in or near the proposed wind farm site and surrounding landscape.
 4. Make a preliminary assessment as to whether the wind farm may impact on any significant landscapes (or features).
 5. Provide information to inform the scope of further landscape assessment in Step 1B, should it be undertaken.

Consultation Direct community input is recommended in this step.

The information gathered in Step 1A will be relevant to informing regulatory processes which require preliminary landscape evaluation. For example in Victoria, preliminary assessment may inform notification to the Minister for Planning under the Victorian Environmental Effects Act; while in South Australia this step may assist decisions about Major Development Processes and the role of landscape within them. However, further direction should be sought from the relevant consent authority to determine the full requirements of such processes.

Proponents will need to understand the nature and scope of communities and stakeholders who may hold values in relation to the landscape, in order to assess the value of available data in representing community views.

The recommended point of initial contact is local government in the nominated area for development to

		<p>ensure early contact and the provision of accurate information at the local level.</p> <p>Proponents may be reluctant to engage with communities until the relevant land owners have been approached. However proponents should be aware that in some cases this has resulted in perceptions of a 'done deal', and dissention between those who are seen to benefit financially from the development and others in the local community.</p>
Tasks	<p>Note: the tasks listed below do not necessarily occur in the sequence shown; completion of some may require refinement or further development of earlier tasks.</p>	PRACTICE NOTES
<p>1A.1 Desktop review</p>	<p>The proponent will:</p> <ul style="list-style-type: none"> • gather and review existing sources relevant to understanding landscape values of the proposed wind farm site and surrounding area including, for example: <ul style="list-style-type: none"> - local government planning schemes / local environment plans / development plans; - local heritage or environmental studies and local government listed heritage places; - local National Trust register; - the relevant State heritage register; and - registers held by the Commonwealth including the National and Commonwealth Heritage Lists and the Register of the National Estate; • gather or prepare maps and descriptive material relevant to understanding the proposed development sufficient to inform preliminary assessment; and • identify gaps in knowledge about the wind farm site and surrounding area that can be filled by means of a site survey, expert evaluation, or in Step 1B. <p>The proponent should analyse desktop material for its currency and relevance to community and stakeholder interests and the extent of community input, and use this information to inform decisions about whether direct community input is sought in this Step.</p>	<p>State and local government authorities will be an important source of existing information on landscapes and landscape values in the area.</p> <p>Potential evidence of landscape values may also be found in art and literature sources; through proxy measures such as use and visitation; in tourism information; from past heritage, sense of place or community art projects etc. Some sources may be local while others may be regional</p> <p>A gap analysis of the available information against potential community and stakeholder interest will help to highlight areas for future investigation (the views of non-resident land owners for example).</p>
<p>1A.2 Seek information from local authority</p>	<p>During initial contact with local planning authority (<i>Auswind Best Practice Guidelines 3.2.1.1</i>), the proponent will seek the advice of the authority on whether the landscape contains any known significant landscape values, or is otherwise held in high esteem by impacted communities.</p> <p>The proponent should also seek from the local authority information about potential stakeholders, community interests, and sources of documented landscape values (to inform 1A.1 and 1A.3)</p>	

1A3	Identify potential community and stakeholder interests	In consultation with the local authority, the proponent will identify and document those people, groups and communities who may hold values relating to the wind farm site and surrounding landscape. This scoping activity should also assess the degree to which existing documentation captures the views of identified communities and stakeholders.	<p><i>The list of communities and stakeholders will be informed by the Stakeholder Communication and Consultation Plan for the overall project (Auswind Best Practice Guidelines, 3.2.1)</i></p> <p><i>The range of communities with associations with the landscape may be quite diverse, and include people who live locally as well as visitors, tourists and part-time residents with particular associations with the landscape. Recognition should also be given to future generations for whom the landscape is held in trust.</i></p>
1A4	Site survey	<p>The proponent will undertake a site survey to the proposed wind farm site and surrounding area in order to:</p> <ul style="list-style-type: none"> • define in a preliminary manner the likely extent of the study area for landscape assessment; • identify particular locations or features and characteristics within the landscape that are important to understanding its values (including current or historic land uses); • identify other wind farms or similar developments in the area which might be considered in assessing cumulative impacts of the wind farm. <p>The proponent should also identify in a preliminary manner prominent or culturally important locations from which the wind farm may be visible.</p>	<p><i>The extent of the study area will be informed by the viewshed of the wind farm. However, this may not need to be accurately modelled in this Step.</i></p> <p><i>Direct community input is valuable in determining culturally important locations from which the wind farm may be visible.</i></p>
1A5	Preliminary assessment of landscape values	<p>The proponent will draw conclusions about the values and likely significance of the landscape of the wind farm site and surrounding area (and elements within it) and provide the proponent with a Statement of Preliminary Landscape Assessment.</p> <p>The proponent may identify opportunities for direct contact with stakeholders and local communities (e.g. telephone or face to face surveys, focus groups) – either in conjunction with or in addition to other community consultation activities – to inform this assessment.</p> <p>In cases where the wind farm site or surrounding area contains documented or recognised values, these should be clearly outlined in the Statement of Preliminary Landscape Assessment along with any likely impacts of a wind farm on these values.</p> <p>The proponent should also identify any strongly-held values which may not be formally recognised, but which may affect the suitability of the landscape for a wind farm.</p>	
See also...	<p>Australia ICOMOS (1999). The Burra Charter – The Australia ICOMOS Charter for Places of Cultural Significance. Australia ICOMOS, Australia.</p> <p>Australian Heritage Commission (AHC), 2002. <i>Ask First: A guide to respecting Indigenous heritage places and values</i>. Australian Heritage Commission, Canberra.</p> <p>Australian Heritage Commission (AHC), 2002. <i>Australian Natural Heritage Charter</i>.</p>		
Required	A <i>Statement of Preliminary Landscape Assessment</i> that:		<p><i>Where sufficient information is available, make conclusions as to the</i></p>

outputs

- summarises existing research about landscape values in the area affected by the proposed wind farm;
- draws preliminary conclusions about locations from which the proposed wind farm is likely to be visible, or which the development may impact on in some manner, and the relative importance of the landscape values in the those locations;
- identifies any strongly-held community values that might influence the development of a wind farm in this landscape; and
- identifies substantial gaps in knowledge to be addressed in subsequent stages.

likely acceptability of the wind farm in the landscape and the occurrence of landscapes of high significance to inform decisions about whether to progress to Stage 1B.

Reporting to stakeholders

The proponent should make the *Statement of Preliminary Landscape Assessment* available to community and government stakeholders consulted in the preparation of the report.

The *Statement of Preliminary Landscape Assessment* may also be provided to the relevant consent authority to inform the level of further assessment required.

There is no mandatory requirement for public review of this step.

Reporting to stakeholders at the conclusion of this step is recommended.

Questions to consider

At the conclusion of this Step the proponent should consider the following questions to assist progression to the next step of the Framework:

- *From a landscape point of view, is the development worth proceeding with?*
- *Are landscapes of significance identified? Do they contain values which the wind farm might impact?*
- *Have landscapes, features and views/viewpoints held in high regard locally been identified? Can the wind farm avoid impacting on these?*
- *Have the views of potential stakeholders and identified communities of interest been identified and documented?*
- *Are there preliminary adjustments to location or scale (e.g. number of turbines) which would provide a better fit in this landscape?*
- *Is there enough information to proceed to Step 1B?*

As far as possible, questions about the suitability of this site at all for a wind farm should be addressed in this step, rather than left to subsequent steps in the Framework.

STEP 1B: Full Landscape Assessment

This Step is an assessment of the significance of landscape values, using various techniques including direct contact with community members, contributes to and forms part of the detailed investigations of ensuing steps 2-4.

Purpose	To document the landscape values associated with the wind farm site and surrounding area, and to evaluate the significance of the values.		Assessment of landscape significance will need to be made in context, by both understanding the surrounding area (potentially to the extent of visibility) and also by way of comparison of the landscape with other places.
Objectives	<ol style="list-style-type: none"> 1. Understand and document the range of landscape values relating to the wind farm site and surrounding area. 2. Involve communities and stakeholders in identifying landscape values. 3. Identify characteristics (natural and cultural) of the landscape that express or embody important values. 4. Evaluate the strength and significance of the identified values of the proposed wind farm site and surrounding landscape. 5. Identify, in a preliminary manner, those elements valued in the landscape which might be affected by the wind farm proposal. 		<p>Landscape values ought to be assessed in the absence of the proposed development. That is, as far as possible, landscape values that exist prior to the development being proposed should be sought and documented.</p> <p>Values are not necessarily transferable from one landscape or one community to another. Reports on the value or significance of similar landscapes elsewhere must not be relied upon as the sole source of information about landscape values.</p>
Consultation	Direct community input is essential in this step.		The landscape assessment process should actively seek input from identified communities and stakeholders to represent the diversity of views held.
Tasks	Note: the tasks listed below do not necessarily occur in the sequence shown; completion of some may require refinement or further development of earlier tasks.		PRACTICE NOTES
1B.1	Define the study area for assessment, including the zone of visual influence	<p>The proponent will define the study area for assessment, including zone of visual influence (ZVI, or 'seen area') mapping, demonstrating the potential visibility of the wind farm in the landscape.</p> <p>Separate ZVI calculations should be run for the overall height of turbines (to blade tip) and for height to the hub/nacelle.</p>	<p>See also Practice Notes for Step 1A</p> <p>Viewshed mapping should be undertaken early in a project to assist professionals and communities to identify locations from which the development will be visible, and to assist in determining the appropriate boundaries for the study area.</p>
1B.2	Landscape character analysis	<p>The proponent will:</p> <ul style="list-style-type: none"> • complete an inventory of the natural and cultural landscape character of the proposed wind farm site and surrounding area relevant to understanding community-held values of the place, including: <ul style="list-style-type: none"> - identification of vegetation type and cover; - landform scale and physical features; - current land use and built structures; - water features; - forces of change in the landscape (natural and human-induced); - views and viewing experiences. • undertake a site survey and prepare detailed documentation of the existing character (e.g. photographs, mapping, description). <p>Information gathered in Step 1A should be used to inform this inventory.</p> <p>The proponent should also identify and review additional secondary materials (e.g. landscape,</p>	<p>Landscape character analysis should be undertaken for the entire study area. This may involve more detailed resolution of the study area boundaries than provided in Step 1A.</p> <p>DPI (2004) suggest that in landscape character analysis, "descriptions must strike a balance between factual statements about the components that make up the landscape, and more evocative statements about its character".</p> <p>Visual arts and literature sources may assist in describing the characteristics of a landscape that may be valued by communities.</p>

		cultural and natural heritage studies) which assist in understanding the landscape of the study area.	
1B.3	Natural and cultural values analysis	<p>The proponent should obtain relevant ecological, Indigenous, historic and other heritage studies for the wind farm site and surrounding area (including those being undertaken for the current proposal) to inform understanding of landscape values.</p> <p>An analysis of historic landscape character and past land uses may also be undertaken.</p>	
1B.4	Involve communities and stakeholders in identifying landscape values	<p>As part of the consultation and engagement plan developed for the project (<i>Auswind Best Practice Guidelines</i>, 3.2.1) the proponent will develop a detailed approach to facilitating the identification of community-held landscape values which includes:</p> <ul style="list-style-type: none"> • further refinement of the community stakeholder list developed in Step 1A; and • identification of opportunities for communities and stakeholders to be involved in describing and evaluating landscape values and significance of the proposed wind farm site and surrounding area. <p>The proponent will provide a range of opportunities for stakeholders and communities to identify and describe the values they hold about landscapes. These opportunities should be readily accessible by the local community and relevant stakeholder groups (see resources below for development and design of consultation and engagement program). They should also, where possible, be undertaken as part of a broader community engagement program for the wind farm development.</p> <p>The proponent should also examine the nature and strength of values within each community and the aggregated values at a local, regional, state and national scale.</p>	<p><i>Various techniques can be used to establish community-held values about landscapes. However preference should be given to techniques that include direct contact with community members.</i></p> <p><i>Care needs to be taken to identify the range of communities and community sectors that may have particular associations with a landscape. It is not just the 'local community' that may have associations with a landscape. Nor can it be assumed that only people living within the viewshed of the wind farm will have an interest that should be recognised and explored.</i></p> <p><i>It may be important to consult with relevant communities to determine the best ways for them to be involved, considering their resources, priorities and cultural protocols. Different methods may be needed for different stakeholders and communities. For example, seeking input from non-resident land owners is likely to require a different approach compared with consulting with local government representatives.</i></p> <p><i>Information also needs to be provided to communities about the place, including its historical development, cultural heritage and natural values, as these will contribute to the community-held values of the landscape.</i></p>
1B.5	Document values and analyse significance	<p>The proponent will detail the values of the wind farm site and surrounding area based on the above information, potentially including descriptions of social, aesthetic (including visual, scenic) and other cultural and natural values.</p> <p>The proponent will undertake an assessment of the significance of identified values including:</p> <ul style="list-style-type: none"> • an analysis comparing the values of the landscape with other similar places within the region, state and / or nation; and • consideration of: <ul style="list-style-type: none"> - the strength and importance of the values within the community who holds them; and - the extent to which values are likely to be held across communities or cultural groups (e.g. at local, regional, state, 	<p><i>Documented values will take into account those beyond the wind farm site.</i></p> <p><i>The occurrence or depiction of a landscape in art, literature or tourism materials may provide information relevant to understanding the extent of recognition of landscape values across communities.</i></p> <p><i>The application of various assessment matrices may be useful in rating significance, for example:</i></p> <p><i>Visual / scenic preference matrices, including scenic quality ratings (e.g. Lothian, A, 2005; Caboolture Shire Council and Queensland Government, 2002);</i></p> <p><i>Aesthetic value rating (e.g. Lennon and Townsey 2004)</i></p> <p><i>However, measures such as public preference modelling, scenic quality ratings and surrogate assessments of community-held values, if they are to be relied upon, must be demonstrated to</i></p>

national, international scales).

The proponent may also inform the assessment of significance by considering:

- the extent to which the value or combination of values is special or particular to this landscape;
- the extent of recognition of the place for its landscape characteristics across geographic and cultural boundaries;
- the length of time that this landscape can be demonstrated to have been valued by a community or communities.

be relevant to the landscape of the study area and the communities who value it.

See also...

General

Macaulay Land Use Research Institute (n.d.). Review of Existing Methods of Landscape Assessment and Evaluation. <http://www.macaulay.ac.uk/ccw/task-two/index.html>

Ramsay, J. and Paraskevopoulos, J. *More than meets the eye: identifying and assessing aesthetic value, Report of the Aesthetic Value workshop held at the University of Melbourne 27 October 1993.* Australian Heritage Commission Technical Workshop Series No. 7.

Scottish Natural Heritage and Countryside Agency, 2002. *Landscape Character Assessment – Guidance for England and Scotland.* Countryside Agency Publications.

Specific jurisdictions

Forestry Commission Tasmania 1990, *A Manual for Forest Landscape Management*, Forestry Commission, Hobart.

Leonard and Hammond, 1984. *Landscape Character Types of Victoria.* Forests Commission Victoria.

Department of Primary Industries (DPI), 2004. *Landscape Analysis and Visual Modelling. The development of an innovative methodology for an Analysis of Significant Landscapes.* Primary Industries Research Victoria, Werribee, Victoria.

Lothian, A, 2005. *Landscape quality assessment of the South Australian coast.* Department of Primary Industries and Resources, South Australia.

Caboolture Shire Council and Queensland Government, 2002. *Scenic Amenity of Caboolture Shire.* Caboolture Shire, Queensland.

Lennon, J. and Townseay, M. 1998. *Integration of data for National Estate aesthetic values studies,* Queensland CRA/RFA Steering Committee.

Consultation & community engagement

Web based resources:

International Association for Public Participation @ <http://www.iap2.org/> . The International Association for Public Participation, working through its members, helps organizations and communities around the world improve their decisions by involving those people who are affected by those decisions.

The "Public Participation Toolbox" @ chppm-www.apgea.army.mil/risk/PDF/toolbox.pdf, provides a good overview of the usefulness of different research and consultation techniques.

Tools for Consultation planning:

City of Melbourne Consultation Guidelines 2001 outlines planning tools and approaches to community engagement.

Department of Sustainability & Environment (Vic) "Effective Engagement" resource kit 2005

Industry Examples:

Leading Practice Sustainable Development Program for the Mining Industry: Community Engagement & Development, Department of Industry, Tourism & Resources 2006

Community Consultation for Waste Management & Recycling Facilities, Government of South Australia 2003

Required outputs	<p>The proponent will produce a detailed report on the landscape values of the wind farm site and surrounding area that:</p> <ul style="list-style-type: none"> • describes (in words, maps and images) the natural and cultural characteristics and associated values of the landscape of the wind farm site and surrounding area; • identifies the community-stakeholder groups for whom the landscape is or might be held in high regard, including those involved in contributing values to the study; • describes places or features in the landscape, views and viewing experiences, characteristics or associations, that are valued by communities; • evaluates the significance of landscape values, and identifies elements of local, state or national significance; and • provides maps and other graphic material to support the description of landscape values. 	
Reporting to stakeholders	<p>The proponent may choose to confirm the landscape values identified by seeking either open public or targeted input from stakeholders on the findings of this step.</p> <p>The findings of Step 1B will be reported to stakeholders as part of Step 2.</p> <p>There is no mandatory requirement for public review of this step. The findings of Step 1B will be made publicly available for comment in conjunction with reports prepared for Steps 2-4 (e.g. during public comment on the complete environmental assessment process).</p>	<p><i>Reporting to stakeholders at the conclusion of this step is desirable.</i></p> <p><i>Proponents are encouraged to provide information about the values identified through this Step with local authorities, State agencies or community organisations (e.g. National Trust), which may choose to lodge or register the information to inform future work understanding the values of the area.</i></p>
Questions to consider	<p><i>[Decisions about the acceptability of the proposal should not arise in this step, as Step 1A determined whether to proceed with the full investigation, which involves following all of steps 1B to 4 in their entirety.]</i></p>	

STEP 2: Describe & Model the Wind Farm in the Landscape

This step compiles information about the development and assesses and models visual intrusion, providing objective information for both professional and community evaluation in Step 3. In practice, the visual models will be developed and refined during the assessment of and response to impacts in Steps 3 and 4, with revised models responding to the requirements of the process.

Purpose To provide reliable, objective data (including visual assessment) that can inform assessment of impacts in Step 3 and assist communities to understand the development and its potential impacts on landscape values.

Objectives

1. Accurately describe the proposed wind farm, including all features and characteristics that might impact on both visual and non-visual landscape values.
2. Provide information (including visual models) about the ultimate form and appearance of the wind farm in the landscape.
3. Prepare a visual assessment which considers the visibility and visual intrusion of the development.

Consultation Direct community input is recommended in this step.

Tasks Note: the tasks listed below do not necessarily occur in the sequence shown; completion of some may require refinement or further development of earlier tasks.

2.1 Describe the development

The proponent will describe and depict the development (graphically and in words) in sufficient detail to inform potential impacts on landscape values in Step 3. This will include accurate information about the type, size, location and design of the wind farm turbines and all ancillary infrastructure (e.g. sub-stations, transmission lines, roads, buildings) associated with the development.

Other (direct or indirect) landscape changes (e.g. vegetation clearing) which will result from the development will also be identified.

A graphical plan (map) of the proposed development and its components should be prepared to inform Step 3.

2.2 Model the development

The proponent will prepare photographic montages or other visual modelling (e.g. animation, video matching, scale models) to current best practice standards that accurately depict the wind farm in its landscape context. Consideration will need to be given to the following:

- in photography, choose a lens size and resolution that most closely represents the actual seen view from a selected viewpoints;
- depict the development in a variety of weather and atmospheric situations, including a 'worst case' or 'most visible' scenario (information about the likely frequency or occurrence of a particular scenario should be provided);
- accurately model the height, type, colour and other features of structures and buildings (including turbines);
- in digital models, make adjustments for potential inaccuracies in digital data (e.g.

Modelling the wind farm involves depicting it, as accurately as possible, in the form that it might take once constructed.

Other opportunities to communicate the development both to communities and consent authorities might be sought. For example, some proponents have found it useful to provide tours to existing wind farms of a similar scale to that proposed.

PRACTICE NOTES

Wind farms have a number of attributes which contribute to their landscape impacts, including location, the height of towers and turbines, the number of turbines, movement, colour and materials, ancillary infrastructure. Each of these needs to be accurately described and depicted in order to understand impacts.

In accurately describing the development, consideration should be given to the requirements of other authorities and how these alter the nature of the development and potential landscape impacts. For example, in some locations, the Civil Aviation Authority may require aircraft warning lights to be located on turbines.

ZVI data should be based on the most detailed (smallest cell size) terrain data available. The accuracy of data (the contours on which it is based) should be reported.

The extent of the Digital Terrain Model (DTM) constructed will be informed by Steps 1A and 1B. As a guide, a DTM which extends to 20-25km from the wind farm site has been found to be sufficient for assessing potential visibility of current generation turbines (overall height of up to 95m).

Accurate modelling requires consideration of size and scale of the development, topography, occurrence of vegetation, buildings and other features in the landscape, lighting, movement and orientation, distance, colour and contrast, contrast, 'skylining' and 'backclothing', elevation, and colour and design.

Corrections for the earth's curvature and for optical refraction in the earth's atmosphere are needed for accurate results over longer distances.

View points selected for visual modelling of the wind farm should relate to an understanding of community

	<p>limitations of contour data);</p> <ul style="list-style-type: none"> • use of high quality, high resolution production of hard and soft copy impacts, digital print or photo production; <p>The proponent will outline written justification for the choices made and report on the method and reliability of the models, including any margins of error.</p> <p>The visualisations will relate to key locations from which the wind farm will be viewed (e.g. public use locations, roads, settlements etc.) including those defined in Step 1B.</p>	<p>values of the landscape, and places of particularly important visibility, justified by community and statutory authority input, and viewshed mapping. View points must represent the significance of the impact while remaining representative of 'typical' viewing patterns (SNH 2005). Between 10 and 25 viewpoints should be provided.</p>
<p>2.3 Prepare a visual assessment report</p>	<p>Prepare a <i>Visual Assessment Report</i> that describes and rates the visibility and relative visual intrusion of the wind farm, to inform the assessment of impacts in Step 3. The report should reach conclusions about:</p> <ul style="list-style-type: none"> • key locations from which the wind farm will be viewed (e.g. public use locations, roads, settlements etc.); • the expected number of viewers at each viewing location, taking into consideration land tenure and access, occurrence of tourism and recreation locations; • the distance from which the wind farm, or elements of it, will be viewed (identification of distance zones may be appropriate); • local transient, seasonal and climatic influences on visibility (e.g. atmospheric effects); • occurrence of other buildings and structures and vegetation which will affect visibility; and • attributes of the wind farm turbines or ancillary infrastructure relevant to understanding visual intrusion (e.g. movement, colour, materials, reflectivity, transparency). <p>The visual assessment report will be informed by further resolved ZVI modelling to determine the visibility of the wind farm turbines and associated infrastructure as well as the visual modelling in 2.3 above. Separate ZVI calculations should be run for:</p> <ul style="list-style-type: none"> • the overall height of turbines (to blade tip); and • the height to the hub/nacelle. <p>The visibility of the wind farm from key viewpoints identified in Steps 1A, 1B or in this task will also be mapped.</p> <p>The proponent may choose to refer to data with which to explain the visibility of the wind farm (e.g. data relevant to the normal human field of view). Site visits to existing wind farms in order to test assumptions and assessment of visibility (e.g. in different weather conditions) may also be undertaken.</p>	<p><i>The report on visibility and visual intrusion will benefit from visual impact assessment techniques. However, this report should not make evaluations as to the acceptability of impacts, but rather provide an objective source against which to measure impacts on identified values in Step 3.</i></p> <p><i>The magnitude or size of wind farm elements, and the distance between them and the viewer, are basic physical measures that affect visibility, but the key issue is human perception of visual effects, and that is not simply a function of size and distance (SNH, 2005)</i></p> <p><i>Other characteristics that may be calculated are the proportion of horizontal view occupied by the wind farm, and the number of turbines that will be viewed against the sky.</i></p> <p><i>The extent of the wind farm for visibility analysis should be defined by the outer turbines.</i></p> <p><i>Viewer height should be 1.8m.</i></p> <p><i>Curvature of the earth and refraction of light should be considered in the calculation.</i></p> <p><i>The ZVI represents visibility regardless of local screening (buildings or vegetation) and atmospheric conditions. This represents a 'worst case scenario'.</i></p> <p><i>It is possible using some sophisticated techniques to model vegetation and buildings which might affect visibility. This should only be done in addition to the 'bare ground' visibility, not as an alternative to it.</i></p> <p><i>Separate ZVI calculations should be run for the overall height of turbines (to blade tip) and for height to the hub/nacelle.</i></p> <p><i>The visibility of the wind farm from key viewpoints identified in Steps 1A, 1B or task 2.4 (below) might also be mapped.</i></p> <p>A note of caution: <i>Zones of Visual Influence (ZVI) are never wholly accurate and other tools such as photomontages are never wholly realistic. The limitations of these tools need to be accurately reported and taken into account in assessing impacts in Step 3...</i></p>

See also...	<p>Visual Assessment of Wind Farms: Best Practice'. 2002. http://www.snh.org.uk/strategy/renewable/WindfarmsPDF/visualisation.pdf and http://www.snh.org.uk/pdfs/strategy/renewable/sr-vi.pdf</p> <p>Scottish Natural Heritage Commissioned Report, 2005, 'Visual Analysis of Wind Farms – Good Practice Guidance'. http://www.snh.org.uk/strategy/renewable/sr-we00.asp</p>	<p><i>More detailed guidelines and technical standards are contained within the Foundation Report.</i></p>
Required outputs	<p>The proponent will prepare:</p> <ul style="list-style-type: none"> • a description of the proposed development (in words, maps and images), including the size and type of turbines, all ancillary infrastructure and other landscape modifications. • graphic material (photomontages, animations, real-time models or video) depicting the wind farm in the landscape in ways that will allow impacts to be rated. • a visual assessment report describing the relative visual intrusion of the wind farm, to inform statements about impacts in Step 3. 	<p><i>The data should be presented in a large and clear format (at least A3 for the ZVI map) following all relevant conventions.</i></p>
Reporting to stakeholders	<p>The outputs of this Step will be provided to stakeholders as information in Step 3.</p> <p>There is no separate public review process required at this step.</p>	<p><i>Reporting to stakeholders in this step is recommended.</i></p>
Questions to consider	<p><i>At the conclusion of this Step the proponent should consider the following questions to assist progression to the next step of the Framework:</i></p> <ul style="list-style-type: none"> • <i>Is there sufficient information to describe all the potential impacts of the wind farm on landscape values (visual and non-visual)?</i> • <i>Has information been provided about the purpose of the wind farm, its size, location and life-span?</i> • <i>Have the accuracy and reliability of the visual models been reported and justified?</i> • <i>What information will support impacted communities and stakeholders to make informed decisions about the potential impacts of the wind farm on landscape values?</i> • <i>Is the visual assessment report sufficiently resolved to assist in assessment of impacts in Step 3?</i> <p>Note: Decisions about the acceptability of the proposal should not arise in this step, as the emphasis is on description, not evaluation.</p>	

STEP 3: Assess the Impacts of the Wind Farm on Landscape Values

Assessment of the impacts of the wind farm on the landscape derive from understanding the values of the place (Steps 1A+1B), coupled with the description and modelling of the wind farm in Step 2. Landscape impacts of wind farms can be positive (that is, have a landscape benefit); negative impacts should be defined against an established value of the place.

Purpose	To assess, in a rigorous and transparent manner, the likely impacts of the proposed wind farm on the identified landscape values.	<i>Landscape impacts of wind farms can be direct and indirect, and they may be cumulative; they may be of short (e.g. temporary) or long duration (e.g. life of the wind farm).</i>
Objectives	<ol style="list-style-type: none"> 1. Identify and assess impacts of the wind farm on identified landscape values. 2. Identify any positive landscape benefits of the wind farm. 3. Rate the level and magnitude of each impact, and of the impact of the wind farm as a whole. 4. Conclude about the level and acceptability of impacts. 	<p><i>In understanding impacts, consideration should be given to several related factors: significance (value); sensitivity (the 'robustness' or otherwise of values to the proposed development); type, nature, scale of development (including all turbines, roads, ancillary infrastructure).</i></p> <p><i>Direct input from affected communities is important in understanding impacts on landscape values, particularly those communities involved in identifying the values of the place.</i></p>
Consultation	Direct community input is essential in this step.	<i>Several phases of direct contact with communities may be required in order to respond to concerns about impacts, and to present and review the design or other responses proposed to minimise or mitigate impacts.</i>
Tasks	<p>Note: the tasks listed below do not necessarily occur in the sequence shown; completion of some may require refinement or further development of earlier tasks.</p> <p>3.1 Seek community input to potential impacts</p> <p>The proponent will seek community input to assist in describing potential impacts of the proposed wind farm on identified landscape values.</p> <p>In seeking community stakeholder input to the potential impacts of the wind farm, the proponent will provide:</p> <ul style="list-style-type: none"> • information reflecting the conclusions of Stage 1B – including those informed by direct community input, or derived from other sources (e.g. research or previous studies). • description of the development, visual models, ZVI analysis and the Visual Assessment Report prepared in Step 2. • any other technical reports which assist to understand landscape values or impacts (potentially including reports by other consultants). <p>The proponent may also provide information relating to other studies (e.g. ecological, historic or Indigenous) to assist community understanding of landscape values.</p>	<p>PRACTICE NOTES</p> <p><i>This task relates to the facilitation of transparent information flow and community understanding regarding the potential impacts of the wind farm on identified landscape values. A number of different methods should be used to support a two-way flow of information and community feedback.</i></p> <p><i>In seeking community input, it is important to recognise that different methods will generate different kinds of responses and some may be suited to particular kinds of stakeholders.</i></p> <p><i>Local tourism operators, travel agents and regional tourism organisations may be contacted to help understand impacts on values held by non-local communities and visitors.</i></p>

3.2 Identify and describe impacts	<p>Using material generated in Steps 1A, 1B and 2, the proponent will describe the way that the proposed wind farm impacts on identified landscape values, by:</p> <ul style="list-style-type: none"> • identifying specific features of the development which impact on identified landscape values; • describing the degree to which the value is lost or altered by the development; • obtaining community input about perceived impacts; and • rating the scale, nature, duration and reversibility of impacts. <p>The proponent should also identify positive landscape benefits of the wind farm, including those described by community-stakeholders.</p>	<p><i>Landscape impacts of wind farms can be positive (that is, have a landscape benefit), for example adding a 'scenic interest' element to a degraded landscape, or providing a symbolic or inspiring message.</i></p> <p><i>Negative impacts should be defined against an established value of the place (predominantly from Stage 1B, however other values which are identified later in the process should also be considered).</i></p>
3.3 Identify potential cumulative impacts	<p>The proponent will describe cumulative landscape impacts, including those arising from:</p> <ul style="list-style-type: none"> • adding to or expanding an existing wind farm (where relevant); • the occurrence of two or more wind farms visible from one location; • the effect of seeing two or more wind farms along a single journey, (e.g. a major route between two towns, identified tourism trail or walking track); • the visual compatibility of different wind farms in the same vicinity (e.g. are they of the same design and style?); • perceived or actual change in land use across a landscape character type or region; and • loss of a characteristic element (e.g. a sense of openness, or a specific landscape feature) across a landscape character type caused by multiple developments across that character type. <p>The proponent should also consider the cumulative impacts of the wind farm in combination with other developments (e.g. industrial, urban, large-scale agricultural) in the study area or region.</p> <p>In considering cumulative impacts, information should be sought from local regulatory authorities about developments in the region which have been approved but not yet built.</p>	<p><i>Approaches for understanding how affected communities perceive cumulative changes to the landscape are not well developed, however direct consultation using various scenario models can be useful.</i></p> <p><i>Information can be sought from local regulatory authorities about developments in the region which have been proposed but not yet built.</i></p> <p><i>Regulatory authorities may also provide direction as to the extent to which proposed developments should be considered in assessing potential cumulative impacts. There may, for example, be different considerations for developments which have been approved, but not built from those awaiting development approvals.</i></p>
3.4 Identify other relevant factors	<p>The proponent may also identify other characteristics of the proposal or subject landscape relevant to understanding the impact of the development on landscape values.</p>	<p><i>Other relevant factors may include information provided from other professional assessments of the wind farm (e.g. Indigenous heritage, or flora and fauna assessments).</i></p>
3.5 Evaluate impacts	<p>The proponent will evaluate the level of impact (e.g. high, moderate, low, negligible) of individual turbines, and the combined impact of the wind farm as a whole against identified</p>	<p><i>Some methods assign different 'sensitivities' to different types of communities (e.g. locals, tourists, forest workers). The research and methodological basis for such claims should be made transparent, and its</i></p>

landscape values.

In making statements about level of impact the proponent will consider:

- the significance of the value that is being impacted as defined in Step 1B (i.e. its strength within the community which defines it; and the extent to which it is held by one or more communities at a local, regional, state or national scale);
- the degree to which the value is lost or altered (e.g. completely / substantially / partially / negligibly);
- the duration and reversibility of the impact;
- evaluation by communities and stakeholders, ideally those involved in identification of values of the subject landscape; and
- the availability and practicality of mitigation measures.

The proponent may choose to use an assessment matrix which combines relevant factors such as those listed to compare significance of value with magnitude of impact for evaluation purposes.

In the case of visual and some aesthetic impacts, the *Visual Assessment Report* from Stage 2 will be the major input.

The evaluation of the acceptability of the wind farm as a whole will include consideration of the individual impacts, and their combined effect, as well as:

- the wind farm's contribution to negative cumulative impacts on the landscape;
- the extent to which negative landscape impacts are balanced by positive landscape benefits;
- the potential for removal of the wind farm and reinstatement of the landscape following decommissioning; and
- evaluation by community members, ideally those involved in identification of values of the subject landscape.

relevance to the wind farm site justified if it is are to be relied upon to understand impacts.

Different communities and stakeholders may perceive impacts differently. An approach which allows all views to be considered is desired.

Asking communities 'what is the legacy you would like to leave behind' may help to ensure consideration of future generations is given to landscape analysis.

Decommissioning of the wind farm after a limited life-span may be considered a relevant mitigating factor in limited circumstances and only where:

the life of the wind farm is 25 years or less;

there is an undertaking and allocation of resources to return the landscape to a condition consistent with or better than at the construction of the wind farm;

assurances can be made that the existence of the wind farm will not preclude other land uses on the site following its decommissioning.

See also...

Scottish Natural Heritage (SNH) (2005). Guidance: Cumulative Effect of Windfarms: Version 2 revised 13.04.05.

www.snh.org.uk/strategy/renewable/WindfarmsPDF/cumulative.pdf.

MosArt Association. n.d. Landscape Assessment for Wind Farm Planning and Design – Character and Sensitivity. Final report to Cork County Council.

<http://www.corkcoco.ie>

Macaulay Land use Research Institute, n.d. *Issues of preference and judgement: expert judgement versus public preference*. <http://www.macaulay.ac.uk/ccw/task-two/preference.html>

Lothian, A. (2006). 'Visual Impact Assessment of Wind Farms in South Australia'. Paper given at the New Zealand Association for Impact Assessment Conference, Dunedin, New Zealand, 30 November 2006.

Required outputs	<p>An interim assessment report that includes:</p> <ul style="list-style-type: none"> • a description of the identified landscape impacts, and the values on which they impact; • an evaluation of the acceptability of individual landscape impacts and of the wind farm as a whole; • a description of the method used to identify and rate impacts; and • supporting material including graphic depiction of impacts. <p>The report will clearly indicate any impacts on significant values for which there are unlikely to be any practical mitigation measures available.</p>
Reporting to stakeholders	<p>The assessment of impacts defined in this Step report will be provided to stakeholders as part of a complete report to impact assessment report (in conjunction with responses and mitigation measures) at the conclusion of Step 4 rather than at the conclusion of this Step. Nonetheless the proponent may seek to provide information to and obtain feedback from stakeholders on how the identified impacts are reported.</p> <p>Should a decision be made to abandon the project and not proceed to Step 4, a report on the basis of this decision should be given to stakeholders.</p> <p>There is no requirement for public review of this Step.</p>
Questions to consider	<p><i>At the conclusion of this Step the proponent should consider the following questions to assist progression to the next step of the Framework:</i></p> <ul style="list-style-type: none"> • <i>How does the wind farm impact on identified landscape values?</i> • <i>Is the impact on values of local, state, national or international importance?</i> • <i>Do the effected stakeholders and communities understand the potential impacts on landscape values?</i> • <i>Is the value completely or partially lost or altered?</i>

STEP 4: Respond to Impacts

This step is intended to identify changes to the development to avoid, remedy or mitigate landscape impacts identified in Step 3. The development of management and mitigation measures will be iterative, responding to the identification of impacts, the identification of potential solutions to these impacts, and the testing of the acceptability of solutions with communities, proponents and Government authorities.

Purpose	To develop and test measures to respond to the identified negative impacts of the wind farm on landscape values.		<p><i>In this Step the proponent is expected meet the requirements of the consent authority. Often this will involve the consent authority requiring the proponent to undertake appropriate mitigation actions as a condition of approval. In many instances, determination of the actual mitigation action may only occur after consent has been granted. Therefore some aspects of Step 4 may occur after approval of the development.</i></p> <p><i>The choice of action to mitigate impacts should respond to the magnitude of the likely impact, its frequency and / or duration, and the significance of the value or values being impacted upon.</i></p>
Objectives	<ol style="list-style-type: none"> 1. Using information gathered in Step 3; identify appropriate measures to respond to impacts on landscape values. 2. Identify other opportunities to mitigate the landscape impacts, including off-sets and on-site landscape improvements. 3. Involve communities, the wind farm proponent and Government authorities in negotiating and reviewing measures to avoid, minimise or mitigate landscape impacts. 		
Consultation	Direct community input is essential in this step.		<p><i>Several phases of direct contact with communities may be required in order to respond to concerns about impacts, and to present and review the design or other responses proposed to minimise or mitigate impacts.</i></p> <p><i>Understanding the level of community satisfaction or concern regarding potential impacts and proposed mitigation measures could be sought through a number of qualitative and/or quantitative techniques. These should form part of the overall Communication and Consultation Plan for the project.</i></p>
Tasks	<p>Note: the tasks listed below do not necessarily occur in the sequence shown; completion of some may require refinement or further development of earlier tasks.</p> <p>4.1 Changes to location or siting of the wind farm or ancillary infrastructure</p>	<p>The proponent will first address any high-level negative impacts (e.g. those on landscapes of state or national significance, or which totally and irreversibly alter a value), and identify whether any major changes to design or siting of the wind farm are warranted in response to those impacts;</p> <p>The proponent will review the viability of these measures and make recommendations for managing major impacts.</p>	<p>PRACTICE NOTES</p> <p><i>Major changes to design or siting include changes to the location of the wind farm, reduction in number of turbines, or changes to the siting of turbines or ancillary infrastructure.</i></p> <p><i>The following lists a range of approaches to avoiding, minimising or mitigating impacts on landscape values. These approaches are ordered roughly to correlate with resource / financial implications (most to least), although this will depend on the particular development.</i></p> <ul style="list-style-type: none"> <i>Changes to the location of the wind farm as a whole;</i> <i>Changes to siting of turbines within the proposed wind farm site;</i> <i>Reducing the number of turbines;</i> <i>Changes to the scale, size, height of turbines;</i> <i>Changes to location or siting of ancillary infrastructure;</i> <i>Design of turbines (including colours, materials, logos, lights);</i> <i>On-site landscaping;</i> <i>Off-site landscaping;</i> <i>On-site landscape improvements;</i> <i>Remote off-sets.</i> <p><i>An impact ought to be mitigated using the approach most appropriate to remedying that impact. Where two or</i></p>

4.2	Layout and design considerations	<p>The proponent will consider layout and design considerations, including (but not necessarily limited to):</p> <ul style="list-style-type: none"> • siting in response to landscape features; • avoidance of ‘crossing of blades’ from key view points; • using muted colours and non-reflective materials to reduce distant visibility and avoid drawing the eye; • even spacing and / or clustering of turbines; • landscape ‘refuges’ (areas with no turbines); • avoidance of gratuitous lighting, signs and logos. <p>The proponent may also engage an expert in art, design or aesthetics to advise on sympathetic or effective siting strategies.</p>
4.3	Minor changes and mitigation measures	<p>Once location and siting issues are agreed upon, the proponent will identify other impacts for which smaller scale mitigation measures might be available.</p> <p>The proponent will develop a suite of options to remedy other impacts either by directly addressing the impact or seeking to provide off-sets (see Practice Note) to communities and stakeholders.</p> <p>The proponent should also provide communities and stakeholders with opportunities to review proposed mitigation techniques.</p>
4.4	Recommend changes to the development	<p>The proponent will involve members of communities and, where necessary relevant experts, to develop and review mitigation measures, exploring answers to the following questions:</p> <ul style="list-style-type: none"> • Is the measure appropriate? • Does the measure mitigate the impacts? • What other alternatives should be considered? <p>The proponent will then recommend changes to the development which directly respond to identified landscape impacts.</p> <p>At the conclusion of this step, the proponent will revisit Step 3 and determine what, if any, landscape impacts remain following the response to impacts application of agreed mitigation measures in this Step.</p>

more mitigation measures are appropriate, the measure with least impact on the viability of the proposal will be preferred.

Enhancing positive attributes and responding sympathetically or artistically to the landscape in which the wind farm is sited can be a powerful mitigating factor.

Maintaining uniformity in turbine design and size, using simple muted colours, and avoiding lighting and gratuitous signs / logos have all been successfully applied to minimise landscape impacts of wind farms in Australia.

Wind farms which respond to the underlying form and lines of the landscape (e.g. uniform, varied, random or geometric) can be successful.

Other measures which do not respond directly to impacts might also be considered, including landscape improvements in and around the wind farm site or off-sets (the protection or management of other landscapes). However, these should not be considered to mitigate identified impacts but rather provide trade-offs which might be used in considering the overall acceptability of the wind farm and its impacts on landscape values.

See also...

Pasqualetti, M., Gipe, P. and Righter, R. (eds), 2002. *Wind Power in View: energy landscapes in a crowded world*. Academic Press, Sydney / San Diego.

Birke-Nielsen, 1996. *Wind Turbines and the Landscape: architecture and aesthetics*. Danish Energy Agency Development Program, Copenhagen.

Required outputs

The proponent will provide a report which includes:

- recommend changes to the development which directly respond to identified landscape impacts;
- an explanation of the rationale for management and mitigation measures in response to identified impacts;
- notes and proceedings of community evaluation / involvement sessions in which impacts and proposed management and mitigation measures were considered; and
- a final evaluation of the wind farm's impact on landscape values and recommendations to the wind farm proponent for development application.

The proponent will provide a report which includes:

- an outline of the process followed to determine and agree mitigation measures;
- any changes made to location, siting or design;
- recommendations for ongoing management and maintenance, including the preparation of landscaping plans (if required);
- the intended mechanism for ensuring mitigation measures are followed (e.g. contracts with land owners, statement of commitment etc.).

Reporting to stakeholders

A public report which combines the information from Steps 1A-4 will be provided for public review. This public review may be as part of a broader environmental assessment process review period.

The proponent may seek additional input on mitigation measures by way of an interim report to stakeholders.

*A report to stakeholders is **mandatory** at the conclusion of this step.*

Questions to consider

At the conclusion of this Step the proponent should consider.

- *What commitments have been made to respond to impacts?*
- *How will these be achieved?*
- *What negative impacts on landscape values (if any) remain following the implementation of agreed changes?*
- *How significant are the remaining negative impacts? (e.g. on values of local, state, or national importance?) To what extent might they be reversible at a future date?*